



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

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking Low-Flow Foam/Water Proportioning System is a UL Listed and FM Approved system, for use with National Foam and Viking brand foam concentrate. This sprinkler system consists of the following: A standard single-interlocked preaction sprinkler system, using a Viking flow control valve with pressure regulating deluge trim, Viking Easy Riser™ check valve, release module for the supplemental detection system, an in-line balanced-pressure foam concentrate proportioning assembly (ILBP), hydraulically actuated Viking Halar® coated concentrate control valve, and foam concentrate that is UL Listed and FM Approved for use with the Viking system.

This system was developed to provide an accurate foam/water solution at much lower flow ranges than a conventional concentrate controller. The low-flow foam system will also provide positive foam injection throughout the full range of system flows.

It will provide a rich foam solution at low flows, which makes it ideal for use on closed-head preaction sprinkler systems. Therefore, it is now possible to obtain the desired concentrate percentage at lower flows, which results in the operation of fewer sprinklers on the pre-action system to achieve the desired foam/water solution percentage. The Viking low-flow foam system combines the advantages of a conventional foam pump/ILBP system, but without the additional maintenance or cost of a foam pump. Although the system cannot be re-filled while it is in operation, it requires less service than a foam pump system, while maintaining the dependability of a bladder tank system.

The Viking preaction low-flow foam system also allows for the use of multiple foam discharge points with variable pressure. It is capable of sizing the proportioner specifically for the area of application, while using only a single source of foam concentrate supply. Water supply pressure to the bladder tank must be provided from an upstream source, preceding the pilot regulating control valve and preferably near a main fire water source, pump, or centrally located bladder tank. The inlet foam concentrate pressure to balancing valve (43) must be 15-20 psig (1.03-1.38 BAR) higher for the Viking ILBP assembly than the water inlet pressure to the concentrate controller (CC) (B) at each proportioner location. The balancing valve (43) senses inlet water pressure and balances the foam concentrate pressure to match water pressure at inlet of foam concentrate to metering orifice of (CC). At initial flow conditions of the sprinkler system (low flow), the foam/water mixture is rich in foam concentrate—approximately 6% for 3% mixtures—until the flow rate reaches the indicated minimum flow rate of the ILBP. To obtain the pressure differential between foam concentrate and water pressure, the pilot pressure regulating valve on the pressure regulating deluge trim must be adjusted to reduce the water pressure to the ILBP to meet the required pressure differential between gauges (38 and 30). For best results, the pilot pressure regulating deluge valve (E) should be set using the downstream dual pressure gauge (30) of the pressure control valve (B) and the water pressure gauge (38) pilot pressure control valve (E). For existing sprinkler systems which are restricted in flow and pressure capacity, this system should not be used without supplementing the available supply pressure. The minimum pressure to the ILPB (B) is 40 psi (2.76 BAR) in flow condition, which requires 55-60 psi (3.79-4.14 BAR) at point of usage for ILBP foam concentrate pressure.

NOTE: The system requires a minimum ΔP , also a maximum ΔP of 50 psig (3.45 BAR) between foam concentrate pressure vs. water pressure. If this ΔP is exceeded, the foam water solution will proportion rich (higher than 3.9%) at low flows listed.

2. LISTINGS AND APPROVALS

- As a Complete Viking System
 - UL Listed Category GHXV
 - FM Approved Category Low Expansion Foam Systems
- Deluge Valve and Trim
 - UL Listed Category VLFT
 - FM Category Automatic Water Control Valves
- In-line Balanced Pressure Proportioner
 - UL Listed Category GFGV
 - FM Approved Category Low Expansion Foam Systems
- Halar® Coated Concentrate Control Valve (CCV)
 - UL Listed Category VLFT
 - FM Approved Category Automatic Water Control Valve as standard deluge valve. No formal approval available for coating.
- Foam Concentrate
 - UL Listed Category GFGV
 - FM Approved Category Low Expansion Foam Systems
- Viking Bladder Tank ASME Sect. VIII Certified
 - UL Listed Category GHXV
 - FM Approved Category Low Expansion Foam Systems



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Note: The Listings and Approvals for the Viking low-flow foam system are based on a complete system as indicated and described in "Preaction Low-Flow Foam System" technical data pages 32 a-e. Any alteration to the system configuration will void the Listings and Approvals as well as any Viking warranty.

3. TECHNICAL DATA

Specifications:

Refer to individual component technical data page

Material Standards:

Refer to individual component technical data page

Ordering Information:

Refer to Tables 1 through 6

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikingcorp.com>.
The Web site may include a more recent
edition of this Technical Data Page.

4. INSTALLATION

A. Discharge Devices

- Standard spray sprinklers approved with specific foam concentrate and specific fuel being protected.
- Non-aspirating spray nozzles.
- Manual monitors or oscillating monitors.
- Hose reels and hand lines.

B. General Instructions And Warnings

1. Refer to the Warnings and General Notes on pages 50a-d in the Design Notes section of the Viking Foam Data book.
2. Refer to specific technical data sheets, acceptable installation standards, codes, and Authority Having Jurisdiction for additional installation, operation, and maintenance instructions.
3. Inspections: The system must be inspected and tested in accordance with NFPA 25. See Section 7, "Inspection and Maintenance" on page 32f.
4. Warning: Any system maintenance or testing which involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.
5. The valve, trim, bladder tank, and appurtenances must be installed in an area NOT subject to freezing temperatures or physical damage.

C. Design And Installation

Warning: All portions of the foam/water system that are subject to freezing must be located in a heated area.

1. Refer to "Special Notes" on page 32g and the Warnings and General Notes in the Design Notes section of the Viking Foam Data book.
2. Install the flow control valve with pilot pressure regulating deluge trim and the Easy Riser® check valve in accordance with the Viking Engineering and Design Data book and Figures 32A, B or C.
3. Install the in-line balanced proportioning assembly in the riser level with the top of the bladder tank. This will help prevent the foam concentrate from draining or siphoning from the tank into the water supply piping due to expansion of foam in the bladder tank. (See Special Notes A and B, page 32g.)
4. Install foam solution test valve (25) and system isolation valve (26), if they are required at these locations. These valves are shown in an optional location based on the concentrate controller being downstream of the system riser valve. These test valves are required in accordance with NFPA 16 and NFPA 16A.
5. Install the Viking hydraulically actuated Halar® coated concentrate control valve (D) and associated trim as indicated in Figure 32, trim charts, or technical data pages.
6. Install bladder tank (A) in accordance with the manufacturer's instructions with connections as shown in Figures 32A, B or C and herein described.
 - a. Locate the tank as close as practical to the system riser.
 - b. Allow enough room around the tank to service the bladder.



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- c. Allow access to the tank for filling from barrels of foam concentrate.
- d. Install the pipe from the riser to the tank as indicated on Figure 1. The bladder tank water supply piping (16) must be connected below the pilot pressure regulating deluge valve (E). Install the piping from the tank (A) to the ILBP (B) as straight as possible.
- e. All valves and devices should be located for easy access for operation and maintenance.
7. All valves should be closed, including the water supply control valve (8), the PORV water supply ball valve, the tank water supply control valve, the " ball valve, the concentrate control shut-off valve, and the foam solution test valve.
8. Pressurize System.
 - a. Verify that the water supply control valve (9) is closed, the tank water supply control valve (10) is closed, and then place the pressure regulating deluge valve (E) in service. Open system isolation valve (26) if it was closed.
 - b. Set release and detection system according to installation instructions for a single-interlocked (pneumatic or electric release) preaction system.
 - c. Prime the Viking pressure regulating deluge valve (E) by opening the priming valve on the preaction deluge valve (E) trim. Prime the Halar[®] coated concentrate control valve by opening the concentrate control priming valve (21). Bleed off any air pressure trapped in the priming line to the Viking Halar[®] coated concentrate control valve by opening the three-way pressure gauge valve (27). Once air pressure has been relieved, close the three-way valve to maintain pressure on gauge (27).
 - d. When pressure in the pilot pressure regulating preaction deluge valve (E) and the concentrate control valve (D) priming chambers equal system water supply pressure, turn on system water supply by opening water supply valve (9), and place alarm test shut-off valve in alarm position.
 - e. Place bladder tank (A) in service by following manufacturer's instructions, but SLOWLY open the concentrate control shut-off valve (22^{***}) to allow foam concentrate to flow slowly to the Viking Halar[®] coated concentrate control valve (D). With system fully set, fully open and secure the water supply control valve (15).
 - f. Verify normal valve positions and secure them in proper position.
 - g. Check for and repair any leaks.
9. Testing the foam concentrate swing check valve: After a flow test or proportioning test has been conducted, follow the four steps below to check the foam concentrate swing check valve (24) to ensure that it maintains a positive seal between the concentrate control deluge valve (D) and the preaction riser.
 - a. Bleed off any pressure which may have been trapped between the outlet chamber of the concentrate control deluge valve (D) and the swing check valve (24) by placing a container under the foam concentrate auxiliary drain valve (29) and slowly opening the valve.
 - b. Drain excess foam concentrate into container. Should the leakage continue, check the priming pressure gauge (27) on the Viking concentrate control deluge valve to ensure that the valve is primed and closed.
 - c. If the foam concentrate auxiliary drain valve (29) continues to leak foam concentrate, then the concentrate control valve must be checked for proper operation and be repaired if necessary. For repair, follow the procedure indicated in Section 6-D of foam technical data page, entitled "Wet Pipe Foam/Water System".
 - d. If water continues to leak from the foam concentrate auxiliary drain valve (29), the foam concentrate check valve (24) clap-per rubber and seat should be maintained. For repair, follow the procedure as indicated in section 6-A of foam technical data page titled "Wet Pipe Foam/Water System".

5. OPERATION

Actuation of the supplemental detection system (pneumatically or electrically) will release the priming water pressure in the deluge valve's priming chamber, allowing the deluge valve to open and filling the preaction system with water. While water flows through the Easy Riser[®] check valve, water will flow out the lower port of the Easy Riser[™] check valve and pressurize the sensing end of the pressure operated relief valve (PORV) which will release the prime pressure of the Halar[®] coated concentrate control valve, allowing it to open and supply foam concentrate to the ILBP. Foam/water solution will be proportioned throughout the system (normally 1%, 3%, or 6%). When a sprinkler head activates, the foam water solution will proportion at a richer concentration unless additional sprinklers open and reach the lower flow rate of the ILBP.

The bladder tank is already pressurized by the water supply valve and piping. System water pressure in the space between the flexible bladder and the inside surface of the tank causes the bladder to collapse, forcing foam concentrate out through the foam concentrate supply piping, through the Halar[®] concentrate control valve, and to the balancing valve of the ILBP assembly. The balancing valve senses the inlet water pressure upstream of the concentrate controller and adjusts the foam concentrate pressure to the same water pressure as the inlet to the metering orifice.



TECHNICAL DATA

PREACTION LOW FLOW FOAM SYSTEM

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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 which must be followed.

WARNING: Any system maintenance or testing which 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 be inspected and tested on a regular basis. Refer to NFPA 25 for the standard 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 System 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.

SPECIAL NOTES

- A** Provide a minimum of 5 pipe diameters of straight pipe on the inlet and outlet of the concentrate controller (B) to minimize turbulence inside the concentrate controller. **WARNING!** If the outlet to the foam solution test valve (25) is located closer than 5 pipe diameters there may be turbulence at high flow rates.
- B** The release of the concentrate control valve and the preaction valve must NOT be combined. The concentrate control valve must be primed and released separately from the pressure regulating preaction valve to ensure open position of the concentrate control valve clapper.
- C** Figure 32 is a general schematic of the required piping arrangement. Refer to the appropriate technical data page for specific information regarding the valve, tank, and related trim and devices.
- D** The technical information, statements and recommendations contained in this manual are based on information and tests which, to the best of our knowledge, we believe to be dependable. It represents general guidelines only, and the accuracy or completeness thereof, are not guaranteed since conditions of handling and usage are outside our control. The purchaser should determine the suitability of the product for its intended use and assumes all risks and liability whatsoever in connection therewith.
- E** A strainer is not required in the foam concentrate discharge piping (23) of bladder tank systems per NFPA Standards.
- F** The foam deluge CCV (D) does not require any trim except for a 1/2" Priming line (28), 1/2" auxiliary drain valve (29) and and gauge with 3 way valve (27). Plug all remaining valve trim outlets. Refer to the Equipment section of this data book under Valves, to find the correct trim kit part number for the corresponding size of foam concentrate control Halar® coated deluge valve (D) required.

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PREACTION LOW-FLOW FOAM SYSTEM

- A. Foam Concentrate Bladder Tank complete with Items 1-7
1. Water Drain/Fill Valve - NORMALLY CLOSED
 2. Fill Line Master Shut-off Valve - NORMALLY CLOSED
 3. Concentrate Drain/Fill Valve - NORMALLY CLOSED
 4. Fill Cup/Sight Gauge Shut-off Valve - NORMALLY CLOSED
 5. Sight Gauge Assembly - The trim for this assembly varies with the type of foam concentrates to be used. Refer to Tank Manufacturer's D & M Manual for specific details.
 6. Tank Water Vent Valve - NORMALLY CLOSED
 7. Diaphragm Concentrate Vent Valve - NORMALLY CLOSED
- B. Viking In-line Balanced Pressure Proportioner Assembly (ILBP) Including Concentrate Controller with Metering Drifrice
24. Check Valve
 30. Duplex Gauge (Optional) - ILBP Piping (Stainless Steel or Brass) braided hose and fitting Δ P foam vs. water, min. 15 PSIG
 43. Spool Balancing Valve w/TFE lined stainless steel
- C. Easy Riser® Check Valve
- D. Concentrate Control Valve (CCV) - Hydraulically actuated Halco® Coated Viking Deluge Valve (* Angle or Straight Through Style CCV Valve available)
17. P.D.R.V.
 18. Restricted Drifrice .125"
 19. 1/2" Soft Seat Check Valve
 20. 1/2" Strainer
 21. 1/2" Ball Valve - NORMALLY OPEN
 27. Water Pressure Gauge and 3-way valve and remainder of CCV special trim
 29. 1/2" foam concentrate auxiliary drain valve
- E. Pilot Pressure Regulating Deluge Valve
31. Viking Model H Flow Control Valve
 32. Viking Model C-1 Pilot Pressure Regulating Valve
 33. Viking Model A-1 Speed Control Assembly
 34. Check Valve
 35. Priming Valve
 36. Restricted Drifrice
 37. Strainer
 38. Water Supply Pressure Gauge
 39. Drain Valve
 40. Air Bleed Valve and Pressure Gauge
 41. Downstream Pressure Gauge
 42. Emergency Release
- F. Accessory Trim (Under each item separately)
8. Water Supply Control Valve -NORMALLY OPEN
 13. CCV release piping to PDRV
 14. 1/2" P.D.R.V. Water Supply Ball Valve - NORMALLY OPEN
 15. Tank Water Supply Control Valve - NORMALLY OPEN
 22. Concentrate Control Shut-off Valve - NORMALLY OPEN ***
 25. Water Supply Piping to Bladder Tank
 53. Foam Concentrate Discharge Piping
 54. Check Solenoid Test Valve -NORMALLY CLOSED
 56. System Isolation Valve - NORMALLY OPEN
- *** Full Port Bronze Body with 316 Stainless Steel Trim and Ball (2" and under). Cast Iron Body DS & Y with Bronze Trim and seats (over 2")

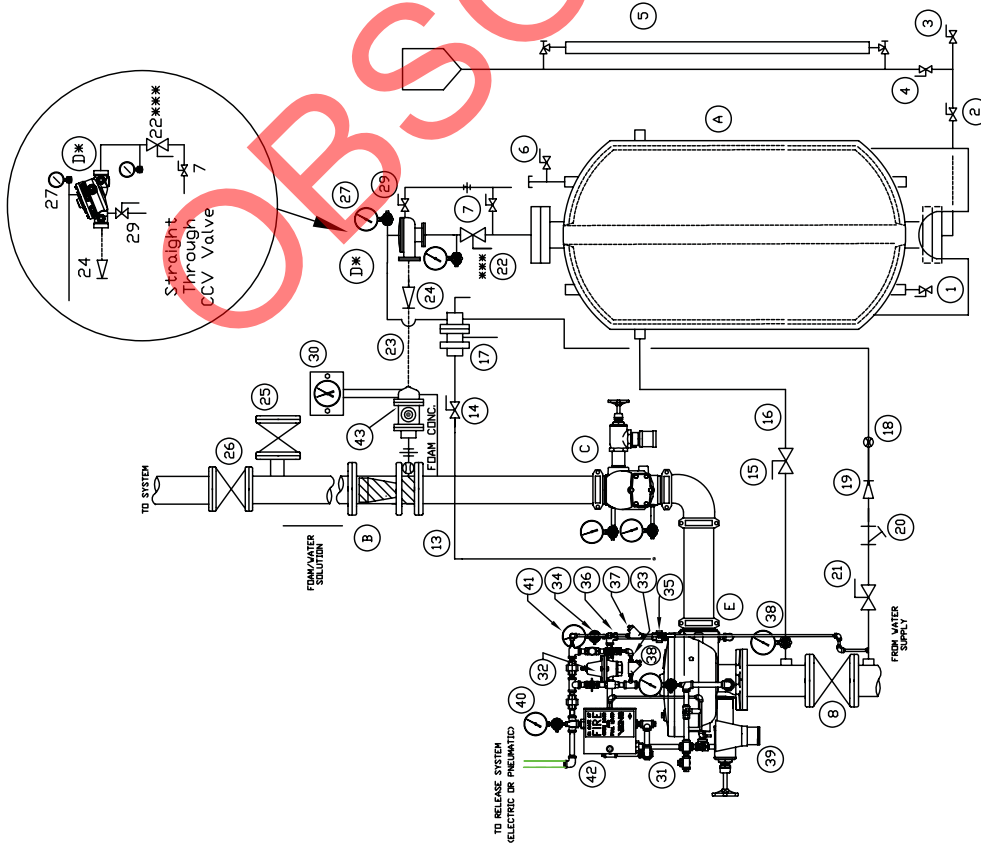


Figure 32A

VIKING® TECHNICAL DATA

PREACTION LOW FLOW FOAM SYSTEM

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PREACTION LOW-FLOW FOAM SYSTEM

- A. Foam Concentrate Bladder Tank complete with Items 1-7
 - 1. Water Drain/Fill Valve - NORMALLY CLOSED
 - 2. Fill Line Master Shut-off Valve - NORMALLY CLOSED
 - 3. Concentrate Drain/Fill Valve - NORMALLY CLOSED
 - 4. Fill Cup/Sight Gauge Shut-off Valve - NORMALLY CLOSED
 - 5. Sight Gauge Assembly - The trim for this assembly varies with the type of foam concentrates to be used. Refer to Tank Manufacturer's I & M Manual for specific details.
 - 6. Tank Water Vent Valve - NORMALLY CLOSED
 - 7. Diaphragm Concentrate Vent Valve - NORMALLY CLOSED
- B. Including In-line Balanced Pressure Proportioner Assembly (ILBP)
 - 24. Check Valve
 - 30. Duplex Gauge (Optional) - ILBP Piping (Stainless Steel or Brass)
 - 43. Spool Balancing Valve w/1/2" lined stainless steel braided hose and fitting - P foam vs. water, min. 15 PSIG
- C. Easy Riser® Check Valve
- D. Concentrate Control Valve (CCV) - Hydraulically actuated
 - Halar® Coated Viking Deluge Valve
 - (* Angle or Straight Through Style CCV Valve available)
 - 17. P.D.R.V.
 - 18. Restricted Driftice .125"
 - 19. 1/2" Soft Seat Check Valve
 - 20. 1/2" Strainer
 - 21. 1/2" Ball Valve - NORMALLY OPEN
 - 27. Water Pressure Gauge and 3-way valve and remainder of CCV special trim
 - 29. 1/2" foam concentrate auxiliary drain valve
- E. Pilot Pressure Regulating Deluge Valve
 - 31. Viking Model H Flow Control Valve
 - 32. Viking Model C-1 Pilot Pressure Regulating Valve
 - 33. Viking Model A-1 Speed Control Valve
 - 34. Check Valve
 - 35. Priming Valve
 - 36. Restricted Driftice
 - 37. Strainer
 - 38. Water Supply Pressure Gauge
 - 39. Drain Valve (Not Shown)
 - 40. Air Bleed Valve and Pressure Gauge
 - 41. Downstream Pressure Gauge
 - 42. Emergency Release (Not Shown)
- F. Accessory Trim - (Order each item separately)
 - 8. Water Supply Control Valve - NORMALLY OPEN
 - 13. CCV release piping to P.D.R.V.
 - 14. 1/2" P.D.R.V. Water Supply Ball Valve - NORMALLY OPEN
 - 15. Tank Water Supply Control Valve - NORMALLY OPEN
 - 16. Water Supply Piping to Bladder Tank
 - 22. Concentrate Control Shut-off Valve - NORMALLY OPEN ***
 - 23. Foam Concentrate Discharge Piping
 - 25. Foam Solution Test Valve - NORMALLY CLOSED
 - 26. System Isolation Valve - NORMALLY OPEN

*** Full Port Bronze Body with 316 Stainless Steel Trim and Ball (2" over 2") Cast Iron Body DS & Y with Bronze Trim and seats

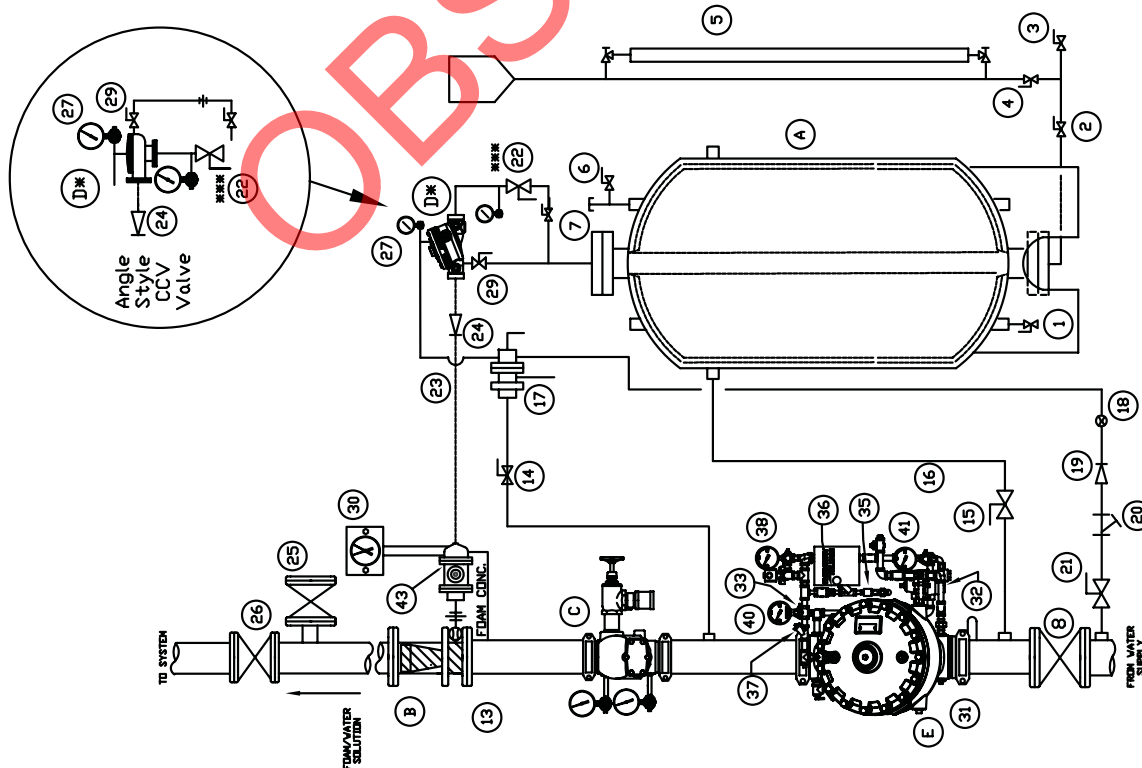


Figure 32B



TECHNICAL DATA

PREACTION LOW FLOW FOAM SYSTEM

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PREACTION LOW-FLOW FOAM SYSTEM

- A. Foam Concentrate Bladder Tank complete with Items 1-7
- 1. Water Drain/Fill Valve - NORMALLY CLOSED
- 2. Fill Line Master Shut-off Valve - NORMALLY CLOSED
- 3. Concentrate Drain/Fill Valve - NORMALLY CLOSED
- 4. Fill Cup/Sight Gauge Shut-off Valve - NORMALLY CLOSED
- 5. Sight Gauge Assembly - The trim for this assembly varies with the type of foam concentrates to be used. Refer to Tank Manufacturer's D & M Manual for specific details.
- 6. Tank Water Vent Valve - NORMALLY CLOSED
- 7. Diaphragm Concentrate Vent Valve - NORMALLY CLOSED
- B. Viking In-line Balanced Pressure Proportioner Assembly (ILBP) including Concentrate Controller with Metering Driftice
- 24. Check Valve
- 30. Duplex Gauge (Optional) - ILBP Piping (Stainless Steel or Brass)
- 43. Spool Balancing Valve w/1/2" lined stainless steel braided hose and fitting - P foam vs. water, min. 15 PSIG
- C. Easy Riser® Check Valve
- D. Concentrate Control Valve (CCV) - Hydraulically actuated Halar® Coated Viking Deluge Valve (at Angle or Straight Through Style CCV Valve available)
- 17. PDR.V.
- 18. Restricted Driftice .125"
- 19. 1/2" Soft Seat Check Valve
- 20. 1/2" Strainer
- 21. 1/2" Ball Valve - NORMALLY OPEN
- 27. Water Pressure Gauge and 3-way valve and remainder of CCV special trim
- 29. 1/2" Foam Concentrate auxiliary drain valve
- E. Pilot Pressure Regulating Deluge Valve
- 31. Viking Model H Flow Control Valve
- 32. Viking Model C-1 Pilot Pressure Regulating Valve
- 33. Viking Model A-1 Speed Control Valve (Not Shown)
- 34. Check Valve
- 35. Priming Valve
- 36. Restricted Driftice
- 37. Strainer
- 38. Water Supply Pressure Gauge
- 39. Drain Valve (Not Shown)
- 40. Air Bleed Valve and Pressure Gauge
- 41. Downstream Pressure Gauge
- 42. Emergency Release (Not Shown)
- E. Accessory Trim - (Order each item separately)
- 8. Water Supply Control Valve -NORMALLY OPEN
- 13. CCV release piping to PDRV
- 14. 1/2" PDRV Water Supply Ball Valve - NORMALLY OPEN
- 15. Tank Water Water Supply Control Valve - NORMALLY OPEN
- 16. Water Supply Piping to Bladder Tank
- 22. Concentrate Control Shut-off Valve - NORMALLY OPEN ***
- 23. Foam Concentrate Discharge Piping - NORMALLY CLOSED
- 25. Foam Solution Test Valve - NORMALLY OPEN
- 26. System Isolation Valve - NORMALLY OPEN

*** Full Port Bronze Body with 316 Stainless Steel Trim and Ball (2" and Under). Cast Iron Body DS & Y with Bronze Trim and seats (over 2")

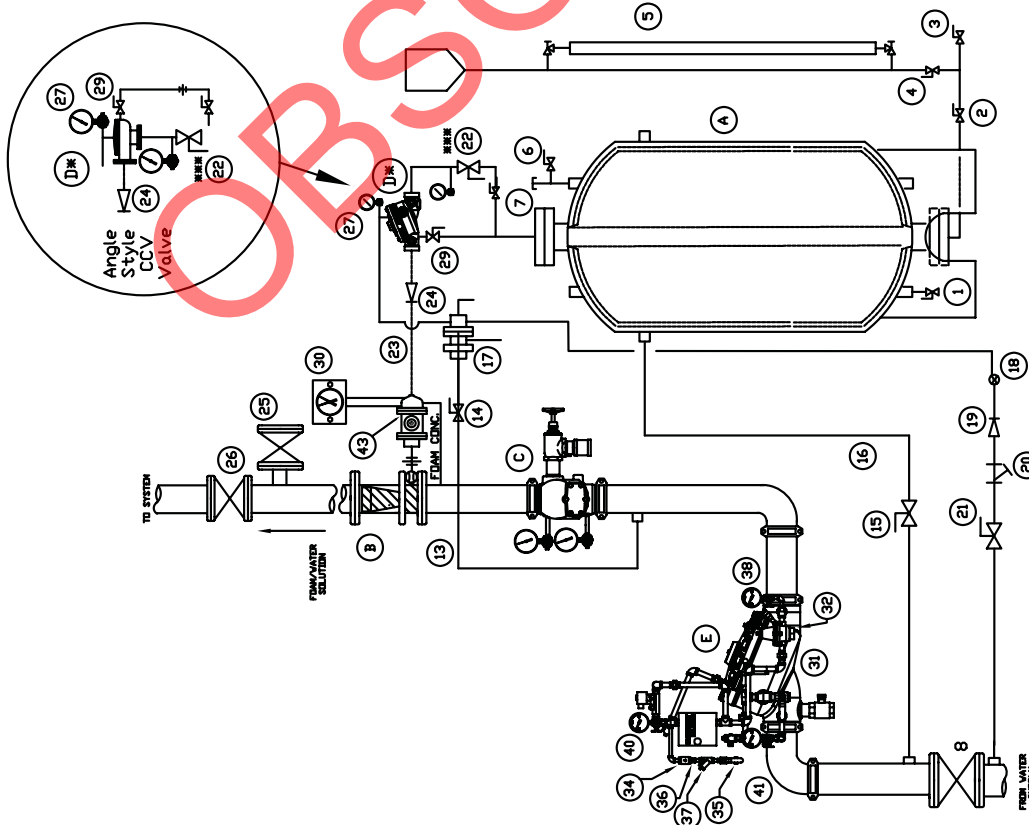


Figure 32C



TECHNICAL DATA

PREACTION LOW FLOW FOAM SYSTEM

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For a Preaction Low Flow Foam System supplied from a Bladder Tank, select deluge valve, conventional trim and release trim, Foam Concentrate Control Valve and Trim, Foam Concentrate, In-line Balanced Pressure Proportioner, Bladder Tank and accessories. Click on part number listed for technical data page. If there is no hyperlinked part number, there is either no data page available or the parts are provided by Viking SupplyNet (<http://www.supplynet.com>)

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DESCRIPTION	NOMINAL SIZE	PART NUMBER	
FLOW CONTROL VALVE This valve is available painted red or coated with HALAR® for protection in mildly corrosive environments such as chemical plants or installations using sea water. Angle Style Threaded NPT			Flange/Flange Painted Red Flange Drilling	Model J-1		
		Rated to 250 psi (1 724 kPa)			ANSI 3"	12016
					ANSI 4"	11968
					ANSI 6"	11970
					ANSI 8"	11993
					ANSI/Japan 4"	11975
					ANSI/Japan 6"	11981
					PN10/16 DN80	12028
					PN10/16 DN100	11973
					PN10/16 DN150	11971
					PN10 DN200	11997
					PN16 DN200	12001
					HALAR®	
					Flange Drilling	Model J-2
	Flange/Flange					ANSI 3"
				ANSI 4"	11977Q/B	
				ANSI 6"	11979Q/B	
				ANSI 8"	11994Q/B	
				PN10/16 DN80	12029Q/B	
				PN10/16 DN100	11982Q/B	
				PN10/16 DN150	11980Q/B	
				PN10 DN200	11998Q/B	
				PN16 DN200	12002Q/B	
				Flange/Groove		
				Painted Red		
				Flange Drilling / Pipe O.D.	Model J-1	
				ANSI / 89mm 3"	12020	
				ANSI / 114mm 4"	11967	
				ANSI / 168mm 6"	11969	
			PN10/16 / 89mm DN80	12031		
			PN10/16 / 114mm DN100	11974		
			PN10/16 / 165mm DN150	12642		
			PN10/16 / 168mm DN150	11969		
			HALAR®			
			Flange Drilling / Pipe O.D.	Model J-2		
			ANSI / 89mm 3"	12021Q/B		
			ANSI / 114mm 4"	11976Q/B		
			ANSI / 168mm 6"	11978Q/B		
			PN10/16 / 89mm DN80	12646Q/B		
			PN10/16 / 114mm DN100	12647Q/B		
			PN10/16 / 165mm DN150	12643Q/B		
			PN10/16 / 168mm DN150	11978Q/B		
			Groove/Groove			
			Painted Red			
			Pipe O.D.	Model J-1		
			48mm 1½" / 40mm	12129		
			60mm 2" / 50mm	12061		
			73mm 2½" / 65mm	12407		
			76mm DN80	12731		
			89mm 3" / DN80	12024		
			114mm 4" / DN100	11516		
			165mm DN150	11912		
			168mm 6" / DN150	11527		
			219mm 8" / DN200	11019		
			HALAR®			
			Pipe O.D.	Model J-2		
			48mm 1½" / 40mm	12131Q/B		
			60mm 2" / 50mm	12062Q/B		
			73mm 2½" / 65mm	12408Q/B		
			76mm DN80	12732Q/B		
			89mm 3" / DN80	12025Q/B		
			114mm 4" / DN100	11517Q/B		
			165mm DN150	11913Q/B		
			168mm 6" / DN150	11528Q/B		
			219mm 8" / DN200	11119Q/B		
Threaded Straight Through						

Table 1

	<h1 style="margin:0;">TECHNICAL DATA</h1>	<h2 style="margin:0;">PREACTION LOW FLOW FOAM SYSTEM</h2>
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The Viking Corporation, 210 N Industrial Park Road, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

For a Preaction Low Flow Foam System supplied from a Bladder Tank, select deluge valve, conventional trim and release trim, Foam Concentrate Control Valve and Trim, Foam Concentrate, In-line Balanced Pressure Proportioner, Bladder Tank and accessories. Click on part number listed for technical data page. If there is no hyperlinked part number, there is either no data page available or the parts are provided by Viking SupplyNet (<http://www.supplynet.com>)

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DESCRIPTION	NOMINAL SIZE	PART NUMBER
CONVENTIONAL DELUGE VALVE TRIM	Rated to 250 psi (1 724 kPa)		FLOW CONTROL VALVE TRIM	Rated to 250 psi (1 724 kPa)	
	Use with Angle Style Valves			Use with Angle Style Valves	
Includes Deluge Valve Accessory Package	Galvanized		Includes Flow Control Valve Accessory Package P/N 10685	Galvanized	
Galvanized Deluge trim available pre-assembled* in sections for additional cost of \$180.00 list. Add suffix "P" to Part No. to denote preassembled.	1½" / DN40	10202		1½" / DN40	10260
	2" / DN50	10203		2" / DN50	10261
	3" / DN80	10204		3" / DN80	10262
	4" / DN100	10205		4" / DN100	10263
	6" / DN150	10206		6" / DN150	10264
	Brass			Brass	
	1½" / DN40	10250		1½" / DN40	10275
	2" / DN50	10251		2" / DN50	10276
	3" / DN80	10252		3" / DN80	10277
	4" / DN100	10253		4" / DN100	10278
6" / DN150	10254	6" / DN150	10279		
Use with Straight Through Valves			Use with Straight Through Valves		
Hoz. Vert. Hoz. Vert. Hoz. Vert. Hoz. Vert.	Galvanized		Galvanized		
	1½" / DN40	12410-1	1½" / 40mm		12419-1
	2" / DN50	12410-1	2" / 50mm		12419-1
	2½" / DN65	12299-1	2½" / 65mm		12307-1
	3" / DN80	12299-1	3" / DN80		12307-1
	4" / DN100	11938-1	4" / DN100		11941-1
	6" / DN150	11939-1	6" / DN150		11942-1
	8" / DN200	11072	8" / DN200		11079
	1½" / DN40	12409-1	1½" / 40mm		12418-1
	2" / DN50	12409-1	2" / 50mm		12418-1
	2½" / DN65	12298-1	2½" / 65mm		12306-1
	3" / DN80	12298-1	3" / DN80		12306-1
	4" / DN100	11712-1	4" / DN100		11719-1
	6" / DN150	11714-1	6" / DN150		11720-1
	8" / DN200	11077	8" / DN200		11081
	Brass		Brass		
1½" / DN40	12410-2	1½" / 40mm		12419-2	
2" / DN50	12410-2	2" / 50mm		12419-2	
2½" / DN65	12299-2	2½" / 65mm		12307-2	
3" / DN80	12299-2	3" / DN80		12307-2	
4" / DN100	11938-2	4" / DN100		11941-2	
6" / DN150	11939-2	6" / DN150		11942-2	
8" / DN200	11164	8" / DN200		11162	
1½" / DN40	12409-2	1½" / 40mm		12418-2	
2" / DN50	12409-2	2" / 50mm		12418-2	
2½" / DN65	12298-2	2½" / 65mm		12306-2	
3" / DN80	12298-2	3" / DN80		12306-2	
4" / DN100	11712-2	4" / DN100		11719-2	
6" / DN150	11714-2	6" / DN150		11720-2	
8" / DN200	11165	8" / DN200		11163	

Table 2

	<h1 style="margin: 0;">TECHNICAL DATA</h1>	<h2 style="margin: 0;">PREACTION LOW FLOW FOAM SYSTEM</h2>
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For a Preaction Low Flow Foam System supplied from a Bladder Tank, select deluge valve, conventional trim and release trim, Foam Concentrate Control Valve and Trim, Foam Concentrate, In-line Balanced Pressure Proportioner, Bladder Tank and accessories. Click on part number listed for technical data page. If there is no hyperlinked part number, there is either no data page available or the parts are provided by Viking SupplyNet (<http://www.supplynet.com>)

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DESCRIPTION	NOMINAL SIZE	PART NUMBER		
PRESSURE REGULATION OPTIONS							
For Deluge, Preaction and Flow Control Systems							
To order complete Pressure Regulation System, order a Flow Control Valve, either conventional deluge or flow control trim, speed control assembly, C-2 Pilot Pressure regulating valve and C-2 Pilot regulator trim (either for deluge or flow control trim).			Use with Straight Through Valves				
Speed Control Assembly Use with conventional trim to control speed of valve opening	Galvanized	08780	Model C-2 Pilot Regulator Trim Use with Conventional Deluge Trim for Deluge and Preaction Systems, and with Conventional Flow Control Trim Includes: - Speed Control Valve - Pilot Pressure Regulating Valve	Vertical Galvanized			
	Stainless Steel	11192			1½" / DN40	12758-1	
	Brass	11181			2" / DN50	12758-1	
					2½" / DN65	12759-1*	
					3" / DN80	12759-1*	
					4" / DN100	12760-1	
					6" / DN150	12761-1	
					8" / DN200	12762-1	
Model C-2 Pilot Pressure Regulating Valve		10799			Brass	1½" / DN40	12758-2
					2" / DN50	12758-2	
Pressure Relief Valve	1/2" / 15mm	13310		2½" / DN65	12759-2*		
Speed Control Valve		08313		3" / DN80	12759-2*		
Y Strainer	1/2" / 15mm	01054A		4" / DN100	12760-2		
				6" / DN150	12761-2		
				8" / DN200	12762-2		
Model C-2 Pilot Regulator Trim			Horizontal Galvanized	Brass			
Use with Flow Control Valves equipped with Conventional Deluge Trim for Deluge and Preaction Systems					1½" / DN40	12752-1	
Use with Angle Style Valve					2" / DN50	12752-1	
	Galvanized	2" / DN50			09066	2½" / DN65	12753-1*
		3" / DN80			09068	3" / DN80	12753-1*
		4" / DN100			09068	4" / DN100	12754-1
		6" / DN150			09068	6" / DN150	12755-1
	Brass	2" / DN50			11188	8" / DN200	12756-1
		3" / DN80			11183	1½" / DN40	12752-2
		4" / DN100			11183	2" / DN50	12752-2
		6" / DN150	11183	2½" / DN65	12753-2*		
				3" / DN80	12753-2*		
				4" / DN100	12754-2		
				6" / DN150	12755-2		
				8" / DN200	12756-2		
Use with Flow Control Valves equipped with Conventional Flow Control Trim			*Not listed or approved				
	Galvanized	2" / DN50	09066				
		3" / DN80	09067				
		4" / DN100	09067				
		6" / DN150	09067				
	Brass	2" / DN50	11188				
		3" / DN80	11182				
		4" / DN100	11182				
		6" / DN150	11182				

Table 3

	<h1 style="margin: 0;">TECHNICAL DATA</h1>	<h2 style="margin: 0;">PREACTION LOW FLOW FOAM SYSTEM</h2>
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DESCRIPTION	NOMINAL SIZE	PART NUMBER	DESCRIPTION	NOMINAL SIZE	PART NUMBER	
ACCESSORIES FOR FOAM/WATER SPRINKLER SYSTEMS						
Bladder Tank Water Supply Control Valve	Ball Valve	1½" / DN40	FOAM CONCENTRATE CONTROL VALVE TRIM	Use with Angle Style Valve		
	Ball Valve	2" / DN50		Galvanized	1½" / DN40	08098
	OS & Y	2½" / DN65		2" / DN50	08099	
	OS & Y	3" / DN80		Brass	1½" / DN40	09694
Foam Concentrate Swing Check Valve		1½" / DN40	2" / DN50	09695		
		2" / DN50	Use with Straight Through Valves			
		2½" / DN65	Galvanized	1½" / DN40	12848-1	
Foam Solution Test Valve	Grooved Butterfly Valve	2½" / DN65	2" / DN50	12848-1		
	Grooved Butterfly Valve	3" / DN80	2½" / DN65	12929-1		
	Grooved Butterfly Valve	4" / DN100	Brass	1½" / DN40	12848-2	
	Grooved Butterfly Valve	6" / DN150	2" / DN50	12848-2		
	Grooved Butterfly Valve	8" / DN200	2½" / DN65	12929-2		
System Isolation Valve	Grooved Butterfly Valve	2½" / DN65	RELEASE TRIM PACKAGES			
	Grooved Butterfly Valve	3" / DN80	Use with Conventional Trim			
	Grooved Butterfly Valve	4" / DN100	Use with Angle Style Valves			
	Grooved Butterfly Valve	6" / DN150	Galvanized		09069	
	Grooved Butterfly Valve	8" / DN200	Pneumatic		09314	
Water Supply Control Valve	OS & Y	2½" / DN65	Electric/Pneumatic		09070	
	OS & Y	3" / DN80	Electric		10372	
	OS & Y	4" / DN100	Pneumatic/Pneumatic	Brass	09717	
	OS & Y	6" / DN150	Pneumatic		09714	
	OS & Y	8" / DN200	Electric/Pneumatic		09698	
Foam Concentrate Shut-Off Valve	Ball Valve	1½" / DN40	Electric		11187	
	Ball Valve	2" / DN50	Pneumatic/Pneumatic			
FOAM CONCENTRATE CONTROL VALVE		This valve is HALAR® coated for protection in corrosive environments and can be used with ARC or AFFF foam concentrates.				
Angle Style						
Threaded NPT	HALAR® Model & Pipe O.D.		Use with Conventional Trim			
	Model E-4 48mm	1½" / DN40	Galvanized		10809	
	Model E-2 60mm	2" / DN50	Electric/Pneumatic		12661-1	
			Electric		10830	
			Pneumatic/Pneumatic		12662-1	
			Brass		10811	
			Electric/Pneumatic		12661-2	
			Electric		10832	
			Pneumatic/Pneumatic		12662-2	
			Use with Straight Through Valves			
			NOTE: Solenoid valve and/or pneumatic actuator must be ordered separately. (Pneumatic/pneumatic trims include pneumatic actuator.)			
Straight Through						
Threaded NPT	HALAR® Pipe O.D.	Model F-2				
	NPT 65mm	2½"				
Groove/Groove	HALAR® Pipe O.D.	Model F-2				
	48mm	1½" / DN40				
	60mm	2" / DN50				
	73mm	2½" / DN65				

Table 4

	<h1 style="margin: 0;">TECHNICAL DATA</h1>	<h2 style="margin: 0;">PREACTION LOW FLOW FOAM SYSTEM</h2>
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DESCRIPTION	NOMINAL SIZE	PART NUMBER	DESCRIPTION	NOMINAL SIZE	PART NUMBER	
IN LINE BALANCED PRESSURE PROPORTIONER (ILBP)			FOAM CONCENTRATES			
For use with Low-Flow Bladder Tank or Foam Concentrate Pump ILBP Systems. Includes: - Balancing valve - Lines - Duplex gauge - Concentrate Controller - Brass nipples - Connections - Check Valve	WAFFER STYLE		NATIONAL FOAM CONCENTRATE AFFF 3% Fluoroprotein Aer-o-Foam XL-3 AR-AFFF Universal Plus 3x6 AFFF -20°F Aer-o-Lite 3 cold Aer-o-Water 1 Aer-o-Lite 3 Aer-o-Water 3EM Aer-o-Water 6EM ARC Universal Gold			
	Use with VF1NWAFFF / Aer-O-Water 1%				3%	
	3" / DN80	F02233A		3%	3" x 6"	F02398
	4" / DN100	F02235A				
	6" / DN150	F02237A				
	8" / DN200	F02239A				
	Use with VF3NLAFFF / Aer-O-Lite 3%					F02397
	3" / DN80	F02233B				
	4" / DN100	F02235B				F02399
	6" / DN150	F02237B				
	8" / DN200	F02239B				
	Use with VF3NWAFFF-MS/Aer-O-Water 3EM				F02404	
	3" / DN80	F02233C			F02405	
	4" / DN100	F02235C				
	6" / DN150	F02237C				
	8" / DN200	F02239C			F02406	
	Use with SUPREME3G-ARC / Universal Gold				F02403	
	3" / DN80	F02233J				
	4" / DN100	F02235J				
	6" / DN150	F02237J				
8" / DN200	F02239J			F02407		
FLANGED STYLE			Note: Foam Concentrate sold in 55 gallon drums. 5 gallon containers available upon request, POA.			
Use with VF1NWAFFF / Aer-O-Water 1%						
3" / DN80	F02234A					
4" / DN100	F02236A					
6" / DN150	F02238A					
8" / DN200	F02240A					
Use with VF3NLAFFF / Aer-O-Lite 3%						
3" / DN80	F02234B					
4" / DN100	F02236B					
6" / DN150	F02238B					
8" / DN200	F02240B					
Use with VF3NWAFFF-MS/Aer-O-Water 3EM						
3" / DN80	F02234C					
4" / DN100	F02236C					
6" / DN150	F02238C					
8" / DN200	F02240C					
Use with SUPREME3G-ARC / UniversalGold						
3" / DN80	F02234J					
4" / DN100	F02236J					
6" / DN150	F02238J					
8" / DN200	F02240J					

Table 5

	TECHNICAL DATA	PREACTION LOW FLOW FOAM SYSTEM
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DESCRIPTION	MODEL	PART NUMBER	DESCRIPTION	MODEL	PART NUMBER
VERTICAL BLADDER TANK			HORIZONTAL BLADDER TANK	Volume (gal/ltrs)	
				100 / 379	VB100H
				150 / 568	VB150H
				200 / 757	VB200H
				300 / 1136	VB300H
Vertical Tank	Volume		Horizontal Tank	400 / 1514	VB400H
Includes:	(gal/ltrs)		Includes:	500 / 1893	VB500H
- Water Drain / Fill Valve			- Water Drain / Fill Valve	600 / 2271	VB600H
- Fill Line Master Shut-Off Valve	36 / 136	VB36V	- Fill Line Master Shut-Off Valve	700 / 2650	VB700H
- Concentrate Drain / Fill Valve	50 / 189	VB50V	- Concentrate Drain / Fill Valve	800 / 3028	VB800H
- Fill Cup / Sight Gauge	75 / 284	VB75V	- Fill Cup / Sight Gauge	900 / 3407	VB900H
- Shut-Off Valve	100 / 379	VB100V	- Shut-Off Valve	1000 / 3785	VB1000H
- Sight Gauge Assembly	150 / 568	VB150V	- Tank Water Vent Valve	1100 / 4164	VB1100H
- Tank Water Vent Valve			- Diaphragm Concentrate	1200 / 4542	VB1200H
- Diaphragm Concentrate	200 / 757	VB200V	Vent Valve	1300 / 4921	VB1300H
Vent Valve	250 / 946	VB250V		1400 / 5299	VB1400H
	300 / 1136	VB300V		1500 / 5678	VB1500H
	400 / 1514	VB400V		1600 / 6056	VB1600H
	500 / 1893	VB500V		1700 / 6435	VB1700H
	600 / 2271	VB600V		1800 / 6813	VB1800H
	700 / 2650	VB700V		1900 / 7192	VB1900H
	750 / 2839	VB750V		2000 / 7570	VB2000H
	800 / 3028	VB800V		2100 / 7949	VB2100H
	900 / 3407	VB900V		2200 / 8327	VB2200H
	1000 / 3785	VB1000V		2300 / 8706	VB2300H
	1100 / 4164	VB1100V		2400 / 9084	VB2400H
	1200 / 4542	VB1200V		2500 / 9463	VB2500H
	1300 / 4921	VB1300V		2600 / 9841	VB2600H
	1400 / 5299	VB1400V		2700 / 10220	VB2700H
	1500 / 5678	VB1500V		2800 / 10598	VB2800H
	1600 / 6056	VB1600V		2900 / 10977	VB2900H
	1700 / 6435	VB1700V		3000 / 11355	VB3000H
	1800 / 6813	VB1800V		3100 / 11734	VB3100H
	1900 / 7192	VB1900V		3200 / 12112	VB3200H
	2000 / 7570	VB2000V		3300 / 12491	VB3300H
	2100 / 7949	VB2100V		3400 / 12869	VB3400H
	2200 / 8327	VB2200V		3500 / 13248	VB3500H
	2300 / 8706	VB2300V		3600 / 13626	VB3600H
	2400 / 9084	VB2400V		3700 / 14005	VB3700H
				3800 / 14383	VB3800H
				3900 / 14762	VB3900H
				4000 / 15140	VB4000H
Foam System Start-Up Service available.					

Table 6

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