



## TECHNICAL BULLETIN

### DELUGE FOAM/WATER SYSTEM SUPPLIED BY BLADDER TANK

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

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## 1. DESCRIPTION

A Deluge Foam/Water System Supplied by Bladder Tank is a standard deluge system capable of discharging a foam/water solution automatically through open sprinklers, spray nozzles, monitor nozzles, and other discharge devices. This system consists of a standard Viking deluge valve with standard trim, detection and releasing devices as well as a ratio controller, a concentrate control valve (CCV), and a bladder tank.

## 2. LISTINGS AND APPROVALS

No formal approval as a Deluge System. Main component and sub-system approvals below:

- Deluge Valve and Trim  
UL Listed - Guide VLFT  
FM Approved - Automatic Water Control Valves
- Model VNR Wide-Range Proportioner  
FM Approved - Low Expansion Foam Systems
- Model F2 or J2 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.
- Model VFT Viking Bladder Tank - with ASME Section VIII and/or EN13455 Design Code  
UL Listed - Guide GHXV  
FM Approved - Low-Expansion Foam Systems
- Fomtec Enviro ARK (3% AR-SFFF) Fluorine-Free Foam Concentrate  
FM Approved
- Fomtec Enviro USP (3% SFFF) Fluorine-Free Foam Concentrate  
UL Listed  
FM Approved

## 3. TECHNICAL DATA

### Specifications:

Refer to individual component technical data page.

### Material Standards:

Refer to individual component technical data page.

### Ordering Information:

Please contact your local Viking office or distributor.

## 4. INSTALLATION

### A. Discharge Devices

- Standard Spray Open Sprinklers (refer to water/foam sprinkler data page)
- Model VFM Foam Makers
- Standard Spray Sprinklers (refer to water/foam sprinkler data page)
- Non-aspirating spray nozzles
- Manual monitors
- Hose reels and hand lines

### B. General Instructions and Warnings

1. Refer to specific technical data sheets, FM Global Property Loss Prevention Data Sheet 4-12, acceptable installation standards, codes, and Authority Having Jurisdiction for additional installation, operation, and maintenance instructions.
2. Inspections - It is imperative that the system is inspected and tested on a regular basis. See Section 6 - Inspections, Tests, and Maintenance.
3. The valve, trim, and assembly must be installed in an area not subject to freezing temperatures or physical damage.

### WARNING

**After the proportioning system is tested or activated, foam concentrate needs to be flushed from the pipe network downstream of the concentrate control valve. Connect a water supply to the commissioning valve on the concentrate line and flush through the test header.**



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### C. Design and Installation

The following guidance is given with reference to the general system schematics (Figures) detailed later in this document.

#### ⚠ 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.**

1. Install the deluge valve and trim (C) in accordance with the relevant Viking technical data page.
2. Install the proportioning device (B) in the system riser in accordance with the proportioner technical data page and Special Notes Section of this document.
3. Install foam solution test valve (16) and system isolation valve (18). These valves are used to conduct foam/water solution tests and are required.
4. Install the CCV (D) and associated trim as indicated. FM systems require electrical supervision in accordance with FM Global Property Loss Prevention Data Sheet 4-12.
5. Install bladder tank (A) in accordance with the bladder tank operation manual and the following:
  - a) Refer to Figure 1 for recommended connections.
  - b) Locate the tank as close as practical to the system riser. (See Special Note B on Page 5).
  - c) Allow enough room around the tank to perform maintenance on the bladder.
  - d) Allow access to the tank for filling from containers of foam concentrate.
  - e) All valves and devices should be located for easy access for operation and maintenance.
  - f) Install the water supply piping (13) from the riser to the bladder tank as shown in Figure 1.  
**NOTE:** To eliminate water hammer effects during system activation, Viking recommends that the bladder tank water supply piping connection for a deluge system should be installed below the deluge valve (C) as shown in Figure 1.
  - g) Install the piping from the tank (A) to the proportioner (B) as straight as possible to limit pressure loss.
  - h) Fill bladder tank (A) with foam concentrate in accordance with the bladder tank operation manual and leave isolated from the system.

### D. Placing System Into Service & Removing System from Service

1. Placing the System into Service:
  - a) Refer to the Special Notes section on page 5.
  - b) Verify the following valves are in the closed position: water supply control valve (10), bladder tank water supply control valve (13), foam concentrate shut-off valve (14), foam solution test valve (16) and foam concentrate auxiliary drain valve (12), and vent valves (21)
  - c) Place the deluge valve (C) in service in accordance with the relevant Viking technical data page. The priming line for the CCV (D) is taken directly from the system deluge valve (C) priming line as shown in Figure 1. When priming the deluge valve (C), the CCV (D) will also be primed closed. Bleed off any air pressure trapped in the priming line to the CCV (D) by opening the 3-way pressure gauge valve (11). Once air pressure has been relieved, close the 3-way valve and plug outlet. Re-open 3-way valve to maintain pressure on gauge (11). Continue placing the deluge valve in service.
  - d) The CCV (D) is closed and set when gauge (11) displays equal pressure to the system supply pressure gauge.
  - e) The deluge system's release control system should be in service. To place the bladder tank (A) in service refer to the bladder tank operation manual for the complete start-up procedure.
  - f) Verify the CCV (D) is closed.
  - g) Verify normal valve positions and secure in correct position (see Figure 1).
  - h) Slowly open the shut-off valves (13) and (14).
  - i) **IMPORTANT:** Bleed air from vent valves (21).
  - j) Check for and repair any leaks in the foam/water system pipe network.

#### NOTICE

**In accordance with the bladder tank operation manual, ensure that CCV (D) is closed, shut-off valves (13) and (14) are opened slowly, and the bladder tank is vented of air.**



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2. For System and Riser Piping Service and Maintenance:
  - a) Refer to the Special Notes section on page 5.
  - b) Close the water supply control valve (10).
  - c) Close the bladder tank water supply control valve (13) and foam concentrate shut-off valve (14).
  - d) Leave the foam system isolation valve (18) open.
  - e) Refer to instructions for removing the deluge valve (C) from service in the relevant Viking technical data page.
  - f) Open the main drain(s) on deluge valve (C).
  - g) Perform required service and maintenance on system devices or piping network.
  - h) Refer to instructions for returning the deluge valve (C) to service in the relevant Viking technical data page. The CCV (D) will also be primed close as described in Section E1c above.
  - i) Verify the CCV (D) is closed by checking water pressure gauge (11) to ensure that it is the same as or higher than the system pressure.
  - j) **IMPORTANT:** Bleed air from vent valves (21).

#### NOTICE

**In accordance with the bladder tank operation manual, ensure that CCV (D) is closed, shut-off valves (13) and (14) are opened slowly, and the bladder tank is vented of air.**

- k) Open bladder tank water supply valve (13) and foam concentrate shut-off valve (14).
  - l) Verify normal valve positions and secure in correct position (as detailed in Figure 1).
3. For Total System Service and Maintenance:
    - a) Refer to the Special Notes section on page 5.
    - b) Close the bladder tank water supply control valve (13) and foam concentrate shut-off valve (14).
    - c) Refer to instructions for removing the bladder tank (A) from service in the bladder tank operation manual.
    - d) Leave the foam system isolation valve (18) open.
    - e) Refer to instructions for removing the deluge valve (C) from service in the relevant Viking technical data page.
    - f) Open the main drain(s) on deluge valve (C).
    - g) Perform required service and maintenance on system devices or piping network.
    - h) Refer to instructions for removing the bladder tank (A) from service in the bladder tank operation manual.
    - i) Perform required service and maintenance on bladder tank (A) in accordance with the bladder tank operation manual.
    - j) To return the system into service, refer to section E1.
  4. For Bladder Tank Service and Maintenance - While Leaving System in Service:
    - a) Refer to the Special Notes section on page 5.
    - b) Close the bladder tank water supply control valve (13) and foam concentrate shut-off valve (14).
    - c) Refer to instructions for removing the bladder tank (A) from service in the bladder tank operation manual.
    - d) Perform required service and maintenance on bladder tank (A) in accordance with the bladder tank operation manual.
    - e) To place the bladder tank (A) in service refer to the bladder tank operation manual.
    - f) **IMPORTANT:** Bleed air from vent valves (21).

#### NOTICE

**In accordance with the bladder tank operation manual, ensure that CCV (D) is closed, shut-off valves (13) and (14) are opened slowly, and the bladder tank is vented of air.**

- g) Verify normal valve positions and secure in correct position (as detailed in Figure 1).
5. For Riser Only Service and Maintenance:
    - a) Refer to the Special Notes section on page 5.
    - b) Close the water supply control valve (10).
    - c) Close the bladder tank water supply control valve (13) and concentrate control shut-off valve (14).
    - d) Close the system isolation valve (18).



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- e) Refer to instructions for removing deluge valve (C) from service in the relevant Viking technical data page.
- f) Open the main drain(s) on deluge valve (C).
- g) Perform required service and maintenance on deluge valve (C).
- h) Refer to instructions for returning the deluge valve (C) to service in the relevant Viking technical data page.
- i) The CCV (D) will also be primed close as described in 1.c above.
- j) Verify CCV (D) is closed by checking water pressure gauge (11) to ensure that it is the same as or higher than the system pressure.
- k) Open the system isolation valve (18).
- l) Open tank water supply valve (13) and concentrate control shut-off valve (14).
- m) **IMPORTANT:** Bleed air from vent valves (21).

#### NOTICE

**In accordance with the bladder tank operation manual, ensure that CCV (D) is closed, shut-off valves (14) and (13) are opened slowly, and the bladder tank is vented of air.**

- n) Verify normal valve positions and secure in correct position (as detailed in Figure 1.)
6. Testing the foam concentrate swing check valve:
- a) After a flow test or proportioning test has been conducted, the foam concentrate swing check valve (15) should be checked to ensure that it maintains a positive seal between the CCV (D) and the preaction system riser, by following the procedure outlined below.
  - b) Bleed off any pressure which may have been trapped between the outlet of the chamber of the CCV (D) and the swing check valve (15) by placing a container under the foam concentrate auxiliary drain valve (12) and opening the valve slowly.
  - c) Drain excess foam concentrate into container. Should the leakage continue, check the priming pressure gauge (11) on the CCV (D) to ensure that the valve is primed and closed.
  - d) Flush the concentrate line downstream of the CCV (D)
  - e) If the foam concentrate auxiliary drain valve (12) continues to leak foam concentrate, then the CCV (D) must be checked for proper operation and repaired if necessary. Follow the procedure in section D.1.d and refer to component data page for repair instructions.
  - f) Should water continue to leak from the foam concentrate auxiliary drain valve (12), the foam concentrate swing check valve (15) clapper rubber and seat should be inspected or replaced. Refer to component data page for repair instructions.

#### E. Troubleshooting

1. For operating and maintenance instructions pertaining to Viking manufactured products, refer to the appropriate Viking documentation.
2. For operating and maintenance instructions pertaining to foam equipment manufactured for Viking, refer to the appropriate manufacturer's documentation.
3. For operation and maintenance instructions for all other equipment, refer to appropriate manufacturer's documentation.

#### F. Emergency Instructions

1. During and after a fire:
  - a) Make sure the fire is OUT! Make a complete inspection of all areas covered by this system, including areas not involved in the fire. Place a fire watch in the entire area until the system is back in service.
  - b) Close the system water supply control valve (10) and the bladder tank water supply valve (13). Post a person at the valve ready to turn them back on, should the fire rekindle.
  - c) Open the flow test valve, system drain valve and all auxiliary drain valves. Close drain valves once the system has completely drained.
  - d) Replace any fused sprinklers in the pilot line (if so equipped), with the same type and temperature rating as were removed. Check all releases and/or detectors in the fire area for damage.
  - e) Isolate the bladder tank (A) by closing the foam concentrate shut-off valve (14), and verify that the bladder tank water supply control valve (13) is closed.
  - f) Check the level of foam concentrate and refill the foam concentrate bladder tank (A) in accordance with the bladder tank operation manual. Always replace the foam concentrate with the same brand and type as that being used currently.
 

**NOTE:** *Never intermix different types or brands of foam concentrate, as this could cause them to gel or solidify, and render the concentrate useless.*
  - g) Return the complete system to service by following the procedure listed in Section E1.



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- h) Perform quarterly test.
  - i) Fire can damage piping and supports, so call your Viking representative for assistance in obtaining a complete inspection and additional replacement sprinklers. For additional details, see technical data sheets for specific device.
 

**NOTE:** *If replacement foam concentrate is not immediately available, the deluge portion of the system can remain in service independent of the foam portion if desired.*
2. For emergency shut down of the complete system:
    - a) Close main water supply valve (10).
    - b) Close foam concentrate shut-off valve (14) to eliminate the flowing of the foam concentrate to the CCV (D) and the proportioner (B).
    - c) Close bladder tank water supply control valve (13) to reduce the pressure on the bladder tank (A).
    - d) Open main drain.
    - e) Completely drain system.
    - f) Repair the damaged portion of the discharge system, or perform emergency maintenance as required.
    - g) Return the riser and foam system to service by following the procedure listed in Section E1.
  3. If the foam concentrate pipe system is damaged:
    - a) Close the foam concentrate shut-off valve (14) to eliminate the flowing of the foam concentrate to the CCV (D) and the ratio controller (B).
    - b) Close the bladder tank water supply control valve (13) to reduce the pressure on the bladder tank (A).
    - c) Verify that the CCV (D) is closed by observing water pressure gauge (11). If the water pressure gauge reads the same or higher than the system water pressure gauge located on the deluge valve (C), the CCV (D) is closed.
    - d) Repair the damaged portion of the foam concentrate piping system.
    - e) Return the foam concentrate system to service, by following the procedure as described above in Section 4.D, Steps 4a through 4f.
 

**NOTE:** *If there are no damaged sections of the distribution system, the deluge portion of the sprinkler system may be kept in service for protection, while repairs to the foam concentrate system are performed.*

### SPECIAL NOTES

- A. Provide a minimum of 5 pipe diameters of straight pipe on the inlet and outlet of the ratio controller (B) to minimize turbulence inside the proportioner.

#### **⚠ WARNING**

**If the outlet to the foam solution test valve is located closer than 5 pipe diameters, there may be turbulence at high flow rates.**

- B. The combined total equivalent length of pipe (pipe length, plus equivalent lengths for fittings and valves) including both the water supply inlet piping (13) and the foam concentrate discharge piping (14), should not exceed 165 equivalent feet (50.3 meters); specifically, 100' (30.5 m) water supply and 65' (19.8 m) foam concentrate piping.
- C. The CCV (D) and swing check valve (15) must be connected adjacent to the ratio controller using pipe nipples as short as possible.
- D. Figure 1 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.
- E. The technical information, statements, and recommendations contained in this manual are based on information and tests that, 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.
- F. The CCV (D) does not require any trim, except for a ½" priming line and water pressure gauge and 3-way valve (11) from the main deluge valve (C) to the priming chamber of valve (D). Plug all the remaining valve trim outlets. Connect the CCV (D) priming line to deluge valve (C) as shown on Figure 1. Refer to the Valves section of the website to find the correct trim kit part number for the corresponding size of CCV (D) required.
- G. A strainer is not required in the foam concentrate discharge piping of bladder tank systems per NFPA Standards.
- H. FM Global Property Loss Prevention Data Sheet 4-12 requires that the activation of the CCV must be supervised.



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- A. Foam Concentrate Bladder Tank**
  - 1. Water Vent Valve – NORMALLY CLOSED
  - 2. Safety Thermal Relief Valve
  - 3. Foam Concentrate Vent Valve – NORMALLY CLOSED
  - 4. Filling Vent Valve (Optional)
  - 5. Filling Pressure Gauge (Optional)
  - 6. Water filling/drain valve –NORMALLY CLOSED
  - 7. Foam concentrate filling/drain valve – NORMALLY CLOSED
  - 8. Concentrate level sight tube drain valve – NORMALLY CLOSED
  - 9. Concentrate level sight tube
- B. Proportioning Device – Ratio Controller**
- C. Type of System – DELUGE**
  - C.1 Deluge (Each item below sold separately)
    - Deluge Valve (Straight through or angle style)
    - Conventional Trim (Vertical or Horizontal)
    - Release Trim (Electric or Pneumatic)
    - Release Device (Solenoid valve or Pneumatic Actuator )
  - 10. Water Supply Control Valve – NORMALLY OPEN
- D. Concentrate Control Valve (CCV)  
 (Hydraulically activated Halar® coated straight through deluge valve)**
  - 11. CCV Priming pressure gauge
  - 12. ½" Foam concentrate auxiliary drain valve
- Accessory Trim – (Each item below sold separately)**
  - 13. Bladder tank water supply control valve – NORMALLY OPEN (sized per bladder tank)
  - 14. 2-1/2" Foam concentrate shut-off valve – NORMALLY OPEN\*
  - 15. Foam concentrate swing check valve
  - 16. Foam solution test valve – NORMALLY CLOSED
  - 17. Foam solution test header
  - 18. Foam system isolation valve – NORMALLY OPEN
  - 19. Prime line supervision switch
- Commissioning and Flushing Valves**
  - 20. 2½" Ball Valves (2) - NORMALLY CLOSED (installed on customer-supplied outlet)
- Air Vent and Drain Valves**
  - 21. ½" Air vent valves (2) - NORMALLY CLOSED (Installed on customer-supplied outlet)
  - 22. 1" Drain valve (1) - NORMALLY CLOSED (Installed on customer-supplied outlet)
- Bladder Tank Dip Valve**
  - 23. 1" Dip valve - NORMALLY CLOSED (installed on customer-supplied outlet)

\*Full port bronze body with 316 stainless steel trim and ball valve

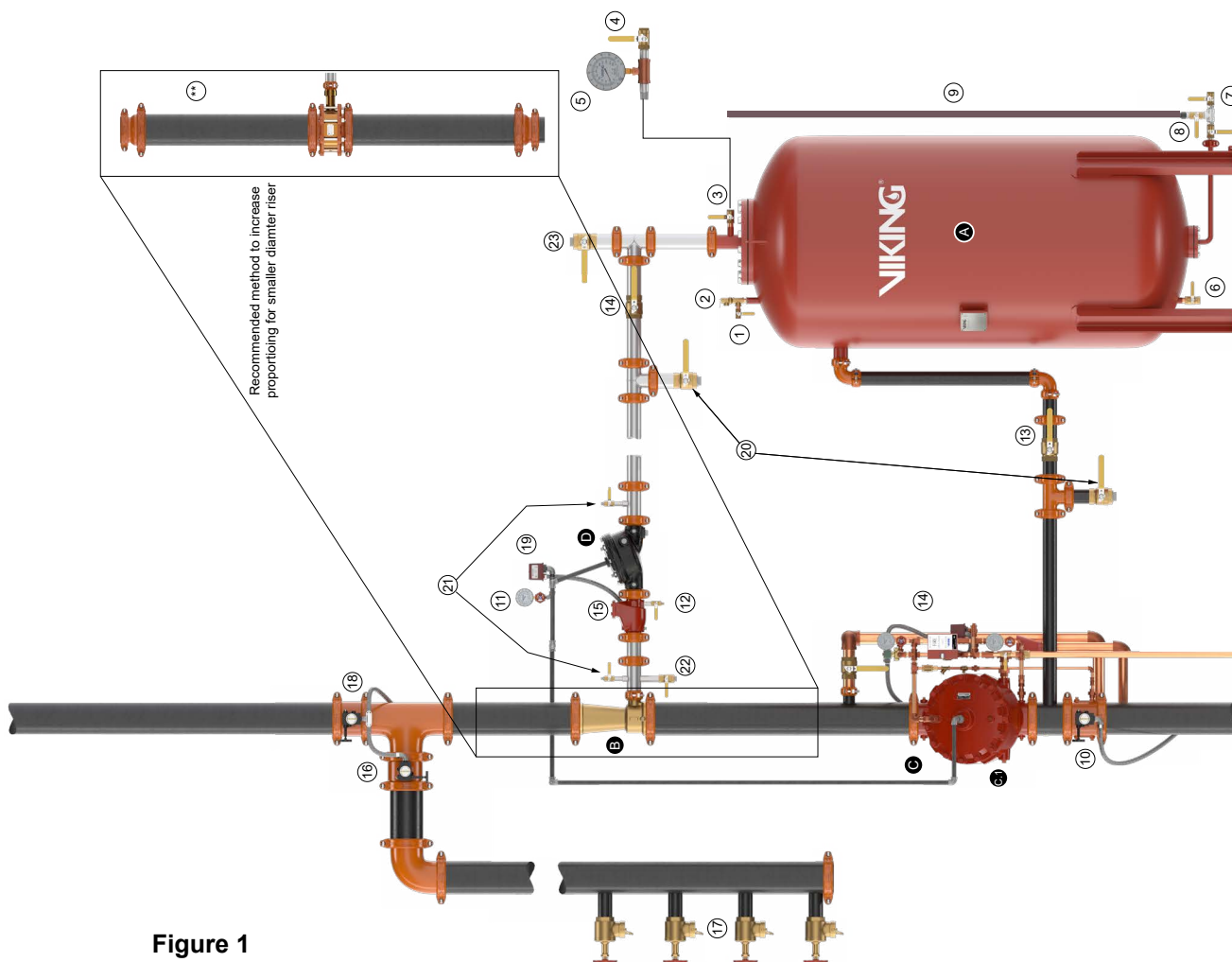


Figure 1



# TECHNICAL BULLETIN

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Scan or click to visit Viking's digital system estimators.



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### ORDERING INSTRUCTIONS:

For complete Deluge Foam/Water System Supplied by a Bladder Tank, select 1 each of the following as well as all desired Accessories from the tables below:

- Deluge Valve and Trim
- Release Trim
- Foam Concentrate Control Valve and Trim,
- Foam Concentrate
- Ratio Controller
- Bladder Tank

DESCRIPTION		NOMINAL SIZE	PART NUMBER
<b>Deluge Valves - Straight Through</b>			
Flange/ Flange	<b>Flange Drilling</b>	<b>Model F-1</b>	<b>Painted Red</b>
	ANSI	3"	12014
	ANSI	4"	11953
	ANSI	6"	11955
	ANSI	8"	11991
	ANSI/Japan	6"	11964
	PN10/16	DN80	12026
	PN10/16	DN100	11965
	PN10/16	DN150	11956
	PN10	DN200	11995
	PN16	DN200	11999
	<b>Flange Drilling</b>	<b>Model F-2</b>	<b>Halar® Coated</b>
	ANSI	3"	12015Q/B
	ANSI	4"	11960Q/B
	ANSI	6"	11962Q/B
	ANSI	8"	11992Q/B
	PN10/16	DN80	12027Q/B
	PN10/16	DN100	11966Q/B
	PN10/16	DN150	11963Q/B
	PN10	DN200	11996Q/B
PN16	DN200	12000Q/B	
Flange/ Groove	<b>Flange Drilling / Pipe O.D.</b>	<b>Model F-1</b>	<b>Painted Red</b>
	ANSI / 89 mm	3"	12018
	ANSI / 114 mm	4"	11952
	ANSI / 168 mm	6"	11954
	PN10/16 / 89 mm	DN80	12030
	PN10/16 / 114 mm	DN100	11958
	PN10/16 / 165 mm	DN150	12640
	PN10/16 / 168 mm	DN150	11954
	<b>Flange Drilling / Pipe O.D.</b>	<b>Model F-2</b>	<b>Halar® Coated</b>
	ANSI / 89 mm	3"	12019Q/B
	ANSI / 114 mm	4"	11959Q/B
	ANSI / 168 mm	6"	11961Q/B
	PN10/16 / 89 mm	DN80	12644Q/B
	PN10/16 / 114 mm	DN100	12645Q/B
	PN10/16 / 165 mm	DN150	12641Q/B
	PN10/16 / 168 mm	DN150	11961Q/B

<b>Deluge Valves - Straight Through (continued)</b>			
Groove/ Groove	<b>Pipe O.D.</b>	<b>Model F-1</b>	<b>Painted Red</b>
	48 mm	1½" / DN40	12125
	60 mm	2" / DN50	12057
	73 mm	2½" / DN65	12403
	76 mm	DN80	12729
	89 mm	3" / DN80	12022
	114 mm	4" / DN100	11513
	165 mm	DN150	11910
	168 mm	6" / DN150	11524
	219 mm	8" / DN200	11018
	<b>Pipe O.D.</b>	<b>Model F-2</b>	<b>Halar® Coated</b>
	48 mm	1½" / DN40	12127Q/B
	60 mm	2" / DN50	12058Q/B
	73 mm	2½" / DN65	12404Q/B
	76 mm	DN80	12730Q/B
	89 mm	3" / DN80	12023Q/B
	114 mm	4" / DN100	11514Q/B
	165 mm	DN150	11911Q/B
168 mm	6" / DN150	11525Q/B	
219 mm	8" / DN200	11118Q/B	
Threaded	<b>Pipe O.D.</b>	<b>Model F-1</b>	<b>Painted Red</b>
	NPT 48 mm	1½"	12126
	NPT 60 mm	2"	12059
	NPT 65 mm	2½"	12401
	BSP 48 mm	DN40	12682
	BSP 60 mm	DN50	12686
	<b>Pipe O.D.</b>	<b>Model F-2</b>	<b>Halar® Coated</b>
	NPT 65 mm	2½"	12402Q/B

Table 1



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DESCRIPTION	NOMINAL SIZE	PART NUMBER	
<b>Deluge Valve Trim</b>			
Horizontal	1½" / DN40	14635-1	14635-2
	2" / DN50		
	2½" / DN65	14637-1	14637-2
	3" / DN80		
	4" / DN100	14638-1	14638-2
	6" / DN150	14640-1	14640-2
8" / DN200	14643-1	14643-2	
Vertical	1½" / DN40	14634-1	14634-2
	2" / DN50		
	2½" / DN65	14636-1	14636-2
	3" / DN80		
	4" / DN100	14639-1	14639-2
	6" / DN150	14641-1	14641-2
8" / DN200	14643-1	14643-2	

DESCRIPTION	MATERIAL	PART NUMBER
<b>Release Trim Packages</b>		
<b>Use with Straight Through Valves</b>	Pneumatic Release	
	Galvanized	10809
	Brass	10811
	Electric Release	
	Galvanized	10830
	Brass	10832

DESCRIPTION	NOMINAL SIZE	PART NUMBER
<b>Trimpac®</b>		
<b>Includes Conventional Trim, Release Trim, and Flexible Hose Kit</b>	Pneumatic Release	
	Galvanized	13788B-2
	Brass	13788B-2B
	Electric Release	
	Galvanized	137887B-1
	Brass	13787B-1B
<b>Drain Packages</b>		
<b>Use with TrimPac (above)</b>	1½" / DN40	11894-1
	2" / DN50	11894-2
	2½" / DN65	11894-3
	3" / DN80	11894-3
	4" / DN100	11894-4
	6" / DN150	11894-4
8" / DN200	11894-4	

DESCRIPTION	NOMINAL SIZE	PART NUMBER	
<b>Foam Concentrate Control Valves (Halar®-Coated)</b>			
<b>Straight Through</b>			
Groove/ Groove	Pipe O.D. 73 mm	Model F-2 2½" / DN65	12404Q/B

DESCRIPTION	NOMINAL SIZE	PART NUMBER
<b>CCV Trims</b>		
Use with Straight Through Valves	Brass 2½" / DN65	12929-2

DESCRIPTION	PRESSURE RATING	TANK SIZE	DESIGN CODE	PART NUMBER
Vertical Bladder Tank	175psi (12bar)	25 to 4,000 US Gallon	EN13445	VFTV****GF
Horizontal Bladder Tank	175psi (12bar)	50 to 5,250 US Gallon	EN13445	VFTH****GF
Vertical Bladder Tank	232psi (16bar)	25 to 4,000 US Gallon	EN13445	VFTV****GF-16
Horizontal Bladder Tank	232psi (16bar)	50 to 5,250 US Gallon	EN13445	VFTH****GF-16
Vertical Bladder Tank	175psi (12bar)	25 to 4,000 US Gallon	ASME Sec.VIII Div.1	VFTV****GAF
Horizontal Bladder Tank	175psi (12bar)	50 to 5,250 US Gallon	ASME Sec.VIII Div.1	VFTH****GAF
Vertical Bladder Tank	232psi (16bar)	25 to 4,000 US Gallon	ASME Sec.VIII Div.1	VFTV****GAF-16
Horizontal Bladder Tank	232psi (16bar)	50 to 5,250 US Gallon	ASME Sec.VIII Div.1	VFTH****GAF-16

Where \*\*\*\* is the tank size in US Gallon

(Example1: VFTV0025F = Model VFT Vertical 25 US Gallon Bladder Tank in accordance with EN13445 design code)

(Example2: VFTH2000AF = Model VFT Horizontal 2000 US Gallon Bladder Tank in accordance with ASME Sec.VIII Div.1 design code)



# TECHNICAL BULLETIN

## DELUGE FOAM/WATER SYSTEM SUPPLIED BY BLADDER TANK

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

Visit the Viking website for the latest edition of this technical data page [www.vikinggroupinc.com](http://www.vikinggroupinc.com)

For complete Wet Pipe Low Flow Foam Water System, 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, Ratio Flow Controller, Bladder Tank and accessories.

Accessories		
DESCRIPTION	NOMINAL SIZE	PART NUMBER
Foam Concentrate Swing Check Valve		
	2½" / DN65	05497C
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		
Grooved Butterfly Valve	2½" / DN65	01G-0250
	3" / DN80	01G-0300
	4" / DN100	01G-0400
	6" / DN150	01G-0600
	8" / DN200	01G-0800
Foam Concentrate Shut-Off Valve		
Ball Valve	2½" / DN65	23247
ACCESSORIES FOR FOAM/WATER SPRINKLER SYSTEMS		
Model D-3 PORV	½" / DN15	16970
1/8" / 3 mm 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
Bladder Tank Water Supply Control Valve		
Ball Valve	2½" / DN65	23247
VENT VALVES		
Ball Valve	½" / DN15	10355
Ball Valve	1" / DN25	10356
PRESSURE SWITCH FOR CCV		
Alarm pressure switch	1/2" NPT	PS102A

Foam Type	Foam Concentrate		
	Part Number		
	US Gallon		
	6.5	55	265
Fomtec Enviro ARK	12-3370-00	12-3370-03	12-3370-05
Fomtec Enviro USP	11-6000-00	11-6000-03	11-6000-05



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Ratio Controller						
Connection		Foam Type	Part Number		Specification	
Body (grooved)	Foam Inlet (grooved)		Nickel Aluminum Bronze	Brass	FM	UL
2" (51mm)	1.5" (48,3mm)	Fomtec Enviro USP, 3%	VRC060JAL	F20282L	x	
		Fomtec Enviro ARK, 3%	VRC060JP	F20282P	x	
		Fomtec Enviro USP, 3%	VRCS060JAL	F25332L	x	
		Fomtec Enviro ARK, 3%	VRCS060JP	F25332P	x	
2.5" (76,0mm)	1.5" (48,3mm)	Fomtec Enviro USP, 3%	VRC076JAL	--	x	
		Fomtec Enviro ARK, 3%	VRC076JP	--	x	
2.5" (73,0mm)	1.5" (48,3mm)	Fomtec Enviro USP, 3%	VRC073JAL	F20162L	x	
		Fomtec Enviro ARK, 3%	VRC073JP	F20162P	x	
3" (88,9mm)	1.5" (48,3mm)	Fomtec Enviro USP, 3%	VRC089JAL	F20152L	x	
		Fomtec Enviro ARK, 3%	VRC089JP	F20152P	x	
4" (114,3mm)	2" (60,3mm)	Fomtec Enviro USP, 3%	VRCF114JAL	F20217L	x	
		Fomtec Enviro ARK, 3%	VRC114JAL	F25331L		x
		Fomtec Enviro ARK, 3%	VRC114JP	F20217P	x	
6" (165,1mm)	2" (60,3mm)	Fomtec Enviro USP, 3%	VRC165JAL	--	x	x
		Fomtec Enviro ARK, 3%	VRC165JP	--	x	
6" (168,3mm)	2" (60,3mm)	Fomtec Enviro USP, 3%	VRC168JAN	F20214N		x
		Fomtec Enviro USP, 3%	VRC168JAL	F20214L	x	x
		Fomtec Enviro ARK, 3%	VRC168JP	F20214P	x	
8" (219,1mm)	2.5" (76,1mm)	Fomtec Enviro USP, 3%	VRC2196JAL	--	x	x
		Fomtec Enviro ARK, 3%	VRC2196JP	--	x	
8" (219,1mm)	2.5" (73,0mm)	Fomtec Enviro USP, 3%	VRC2193JAL	F20137L	x	x
		Fomtec Enviro ARK, 3%	VRC2193JP	F20137P	x	
Flanged Connection						
Connection		Foam Type	Part Number		Specification	
Body (flanged)	Foam Inlet (threaded)		Nickel Aluminum Bronze	Brass	FM	UL
3" (DN80)	1,5" NPT (ANSI) or BSP (PN16) Thread	Fomtec Enviro USP, 3%	VRC080JAL	VRC080PJAL	x	
		Fomtec Enviro ARK, 3%	VRC080JP	VRC080PJP	x	
4" (DN100)	2" NPT (ANSI) or BSP (PN16) Thread	Fomtec Enviro USP, 3%	VRCF100AJAL	VRCF100PJAL	x	
		Fomtec Enviro ARK, 3%	VRC100AJAL	VRC100PJAL		x
6" (DN150)	2" NPT (ANSI) or BSP (PN16) Thread	Fomtec Enviro USP, 3%	VRC150AJAL	VRC150PJAL	x	x
		Fomtec Enviro ARK, 3%	VRC150AJP	VRC150PJP	x	
8" (DN200)	2,5" NPT (ANSI) or BSP (PN16) Thread	Fomtec Enviro USP, 3%	VRC200AJAL	VRC200PJAL	x	x
		Fomtec Enviro ARK, 3%	VRC200AJP	VRC200PJP	x	