



TECHNICAL DATA

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

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. A Deluge Foam/Water System Supplied by Bladder Tank with a hydraulically actuated Viking Halar® coated concentrate control deluge valve consists of a standard deluge system using a Viking deluge valve (C) complete with full standard trim and detection and releasing devices, a concentrate controller-proportioning device (B) with appropriately sized orifice, a hydraulically actuated Viking Halar® coated concentrate control deluge valve (D) on foam concentrate line, a foam concentrate bladder tank, and trim and foam agent.

2. LISTINGS AND APPROVALS

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

- Deluge Valve and Trim
 - UL Listed - Guide VLFT
 - FM - Automatic Water Control Valves
- Concentrate Controller (Proportioner)
 - 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
- Viking Bladder Tank ASME Sect. VIII Certified
 - UL Listed - Guide GHXV
 - FM Approved - Low Expansion Foam Systems

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 3.

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

- Open standard spray sprinklers
- Foam/water sprinklers
- Non-aspirating spray nozzles
- Manual and oscillating monitors
- Foam chambers
- Sub-surface injection (forcing foam maker)
- Hose reels and hand lines
- ... and other dispensing devices

B. General Instructions And Warnings

1. Refer to the Warnings and General Notes on pages 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, codes, and Authority Having Jurisdiction for additional installation, operation, and maintenance instructions.



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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 affected area.
5. The valve, trim, and assembly must be installed in an area not subject to freezing temperatures or physical damage.

C. Design and 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 20e and Warnings and General Notes on pages 2a-d in the "Foam Design" section of the Viking foam data book.
2. Install the deluge valve (C) and trim in accordance with the *Viking Engineering and Design Data* book.
3. Install the proportioning device (B), concentrate controller with integral orifice, in riser piping.
4. Install foam solution test valve (17) and system isolation valve (18). These valves are used to conduct foam/water solution tests.
5. Install hydraulically actuated Viking Halar® coated concentrate control deluge valve (D) and associated trim as indicated on Figure 1, and trim charts or technical data pages.
6. Install bladder tank (A) in accordance with the manufacturer's instructions with connections as shown on Figure 1, and herein described.
 - a. Locate the tank as close as practical to the system riser. (See Special Note B on Page 20e.)
 - b. Allow enough room around the tank to service the bladder.
 - 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. Install the piping from the tank (A) to the concentrate controller (B) as straight as possible.
 - e. All valves and devices should be located for easy access for operation and maintenance.
7. Pressurize System
 - a. Verify that water supply valve (10) is closed, then place bladder tank (A) in service by following manufacturer's instructions.
 - b. Close tank water supply control valve (11), then place the deluge valve (C) in service. (See installation instructions on Viking Technical Data Sheet.)
 - c. Set release and detection system according to installation instructions for type of release used (Pneumatic, Hydraulic, or Electric).
 - d. Prime both Viking deluge valves (C & D) by opening the priming valve on the deluge valve (C) trim. Bleed off any air pressure trapped in the priming line (13) to the Viking Halar® coated concentrate control deluge valve (D) by opening the 3-way pressure gauge valve (14). Once air pressure has been relieved, close the 3-way valve and plug outlet. Re-open 3-way valve to maintain pressure on gauge (14).
 - e. When pressure in deluge valve (C) priming chamber equals system water supply pressure, turn on system water supply by opening main drain on deluge valve (C) and partially opening water supply valve (10). When water appears at main drain, slowly close main drain. Before fully opening water supply control valve (10), place alarm test shut-off valve in alarm position, and open tank water supply control valve (11) and system isolation valve (18). With system fully set, fully open and secure water supply control valve (10).
 - f. Verify normal valve positions and secure in proper position.
 - g. Check for and repair any leaks.

D. Removing The System From Service And Returning The System To Service

WARNING: See Warning in Section 6 - Inspections, Tests, and Maintenance

1. For system and riser piping maintenance and service:
 - a. Close water supply control valve (10).
 - b. Close concentrate shut-off valve (9***) and tank water supply valve (11).
 - c. Open all drain valves on deluge system.
 - d. Leave system isolation valve (18) open.
 - e. Refer to instructions for removing the deluge valve (C) from service in the *Viking Engineering and Design Data* book.
 - f. Perform maintenance and service on system and riser piping.
 - g. Open concentrate shut-off valve (9***)
 - h. With tank water supply valve (11) closed, place the deluge valve (C) in service as follows (see installation instructions in the *Viking Engineering and Design Data* book).



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- i. Set release and detection system according to installation instructions for type of release used (Pneumatic, Hydraulic, or Electric).
- j. Prime both Viking deluge valves (C & D) by opening the priming valve on the deluge valve (C) trim. Bleed off any air pressure trapped in the priming line to the Viking Halar® coated concentrate control deluge valve by opening the 3-way pressure gauge valve (14). Once air pressure has been relieved, close the 3-way valve and plug the outlet. Re-open 3-way valve to maintain pressure on gauge (14).
- k. When pressure in deluge valve (C & D) priming chambers equal system water supply pressure, turn on system water supply by opening main drain on deluge valve (C), and partially opening water supply valve (10). When water appears at main drain, slowly close main drain. Before fully opening water supply valve (10), place alarm test shut-off valve in alarm position. Verify system isolation valve (18) is open and open tank water supply valve (11). With system fully set, fully open and secure water supply control valve (10).
- l. Verify normal valve positions and secure in proper position.
- m. Check for and repair any leaks.
2. For tank maintenance and service - while leaving deluge system in service:
 - a. Close concentrate shut-off valve (9***) and tank water supply (11).
 - b. Follow tank manufacturer's procedures for removing from service, and perform maintenance.
 - c. To return to service, close water supply control valve (10), and verify Halar® coated concentrate control valve (D) is closed. Follow tank manufacturer's procedure.
 - d. Verify that concentrate shut-off valve (9***), tank water supply (11), and system isolation valve (18) are open. Verify deluge valve (C) is primed, then open water supply control valve (10).
 - e. Verify normal valve positions and secure in proper position.
 - f. Check for and repair any leaks.
3. For total system maintenance and service:
 - a. Close water supply control valve (10), concentrate control shut-off valve (9***), and tank water supply valve (11).
 - b. Open all drain valves on deluge system.
 - c. Leave system isolation valve (18) open.
 - d. Refer to instructions for removing the deluge valve (C) from service. See appropriate Viking Technical Data Sheet.
 - e. Perform maintenance and service as required.
 - f. Refer to the Special Notes on page 20e and the Warnings and General Notes in the "Foam Design" section of the Viking foam data book.
 - g. All valves should be closed, including concentrate control shut-off valve (9***), water supply control valve (10), tank water supply valve (11), foam solution test valve (17), system isolation valve (18), and Halar® coated foam concentrate control valve (D), and alarm test shut-off valve on deluge valve (C) trim.
 - h. Verify that water supply valve (10) is closed, then place bladder tank (A) in service by following manufacturer's instructions.
 - i. Place the deluge valve (C) in service. (See installation instructions on Viking Technical Data Sheet.)
 - j. Set release and detection system according to installation instructions for type of release used (Pneumatic, Hydraulic, or Electric).
 - k. Prime both Viking deluge valves (C & D) by opening the priming valve on the deluge valve (C) trim. Bleed off any air pressure trapped in the priming line (13) to the Viking Halar® coated concentrate control deluge valve by opening the 3-way pressure gauge valve (14). Once air pressure has been relieved, close the 3-way valve and plug outlet. Re-open 3-way valve to maintain pressure on gauge (14).
 - l. When pressure in deluge valve (C & D) priming chambers equal system water supply pressure, turn on system water supply by opening main drain on deluge valve (C), and partially opening water supply valve (10). When water appears at main drain, slowly close main drain. Before fully opening water supply control valve (10), place alarm test shut-off valve in alarm position, and open tank water supply control valve (11) and system isolation valve (18). With system set, fully open and secure water supply control valve (10).
 - m. Verify normal valve positions and secure in proper position.
 - n. Check for and repair any leaks.

E. Troubleshooting

1. For operating and maintenance instructions pertaining to Viking manufactured equipment, refer to the appropriate Viking Technical Data Sheet.
2. For operating and maintenance instructions pertaining to foam equipment manufactured for Viking, refer to the appropriate section of the Viking foam data book.
3. For operation and maintenance instructions for all other equipment, refer to appropriate equipment data.



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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). Post a person at the valve ready to turn it back on, should the fire re-kindle. Close the tank water supply valve (11).
 - c. Open the flow test angle 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 concentrate control shut-off valve (9***), and verify that the tank water supply control valve (11) is closed.
 - f. Check the level of foam concentrate and refill the foam concentrate bladder tank (A) by following tank manufacturer's instructions. 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 4-D-1, Steps i through n.
 - 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, activate the deluge system portion of the foam/water system until the replacement concentrate arrives.

2. For emergency shut down of the complete system:
 - a. Close main water supply valve (10).
 - b. Close concentrate control shut-off valve (9***) to eliminate the flowing of the foam concentrate to the hydraulically actuated Viking Halar® coated concentrate control deluge valve (D) and the concentrate controller (B).
 - c. Close tank water supply control valve (11) 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 4-D-1, Steps i through n.
3. If the foam concentrate pipe system is damaged:
 - a. Close the concentrate control shut-off valve (9***) to eliminate the flowing of the foam concentrate to the hydraulically actuated Viking Halar® coated concentrate control deluge valve (D) and the concentrate controller (B).
 - b. Close the tank water supply control valve (11) to reduce the pressure on the bladder tank (A).
 - c. Verify that the Viking Halar® coated concentrate control deluge valve (D) is closed by observing water pressure gauge (14). If the water pressure gauge reads the same or higher than the system water pressure gauge located on the Viking deluge valve (C), the Viking Halar® coated concentrate control deluge valve (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-2, Steps c through f.

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.

5. OPERATION

Actuation of the release line (pneumatic, hydraulic or electric) relieves the pressure in the priming chamber of both the Viking deluge valve (C) and the Viking Halar® coated concentrate control deluge valve (D). This allows the clapper to open on both valves (C) and (D). The system piping is filled with water, activating connected alarms and pressurizing the bladder tank (A) by the water supply piping (12). System water pressure in the space between the flexible bladder and the inside surface of the steel tank causes the bladder to collapse, forcing the foam concentrate out through the foam concentrate discharge piping (15), Viking Halar® coated concentrate control deluge valve (D), and the metering orifice of the concentrate controller (B), into the venturi, (low pressure) area of the concentrate controller (B). The foam concentrate is proportioned (usually 1% or 3%), with the main water supply, sending foam solution to the sprinklers and foam/water discharge devices downstream.



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6. INSPECTION, 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 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 Authority Having Jurisdiction for minimum requirements. Prior to testing the equipment, notify appropriate personnel.

7. AVAILABILITY

The Deluge Foam/Water System Supplied by Bladder Tank 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.
- B. The combined total equivalent length of pipe, fittings and valves in both the water supply inlet piping (12) and the foam concentrate discharge piping (15), must not exceed 50 equivalent feet (15.2 meters). This will allow both pipes to be the same size as the foam liquid inlet to the concentrate controller. Should the total equivalent length exceed 50 feet (15.2 meters), then refer to the "Proportioning Equipment" section of this data book for the method of calculating these pipe sizes.
- C. The Halar® coated concentrate control deluge valve (D) and swing check valve (16) must be connected adjacent to the concentrate controller using pipe nipples as short as possible.
- D. Figures 1 - 3 are general schematics 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 Halar® coated concentrate control deluge valve (D) does not require any trim, except for a ½" priming line (13) and water pressure gauge and 3-way valve (14) from the main deluge valve (C) to the priming chamber of valve (D). Plug all the remaining valve trim outlets. Connect Halar® coated concentrate control deluge valve (D) priming line (13) to deluge valve (C) as shown on Figure 2. Refer to the "Valves" section of this data book to find the correct trim kit part number for the corresponding size of Halar® coated foam concentrate control deluge valve (D) required.
- G. A strainer is not required in the foam concentrate discharge piping (15) of bladder tank systems per NFPA Standards.



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DELUGE FOAM/WATER 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 O & M Manual for specific details.
 6. Tank Water Vent Valve - NORMALLY CLOSED
 7. Diaphragm Concentrate Vent Valve - NORMALLY CLOSED
 - B. Proportioning Device - Concentrate Controller with Integral Orifice
 - C. Type of System - Deluge Valve with Standard Trim and Gauges connected to an appropriate release and detection system
 - D. Concentrate Control Valve (CCV)
 - Hydraulically actuated Halar Coated Viking Deluge Valve (*Angle Style and Straight Through Style CCV available.)
 14. Water Pressure Gauge and 3-way valve and remainder of CCV special trim
 19. 1/2" foam concentrate auxiliary drain valve
 - E. Accessory Trim - (Order each item separately)
 9. Concentrate Control Shut-off Valve - NORMALLY OPEN ***
 11. Tank Water Supply Control Valve - NORMALLY OPEN
 12. Water Supply Piping to Bladder Tank
 13. Release Line/Priming Line Piping to foam CCV (D)
 15. Foam Concentrate Discharge Piping
 16. Foam Concentrate Swing Check Valve
 17. Foam Solution Test Valve - NORMALLY CLOSED
 18. System Isolation Valve - NORMALLY OPEN
- *** Full Port Bronze Body with 316 Stainless Steel Trim and Ball (2" and under). Cast Iron Body OS & Y with Bronze Trim and seats (over 2")

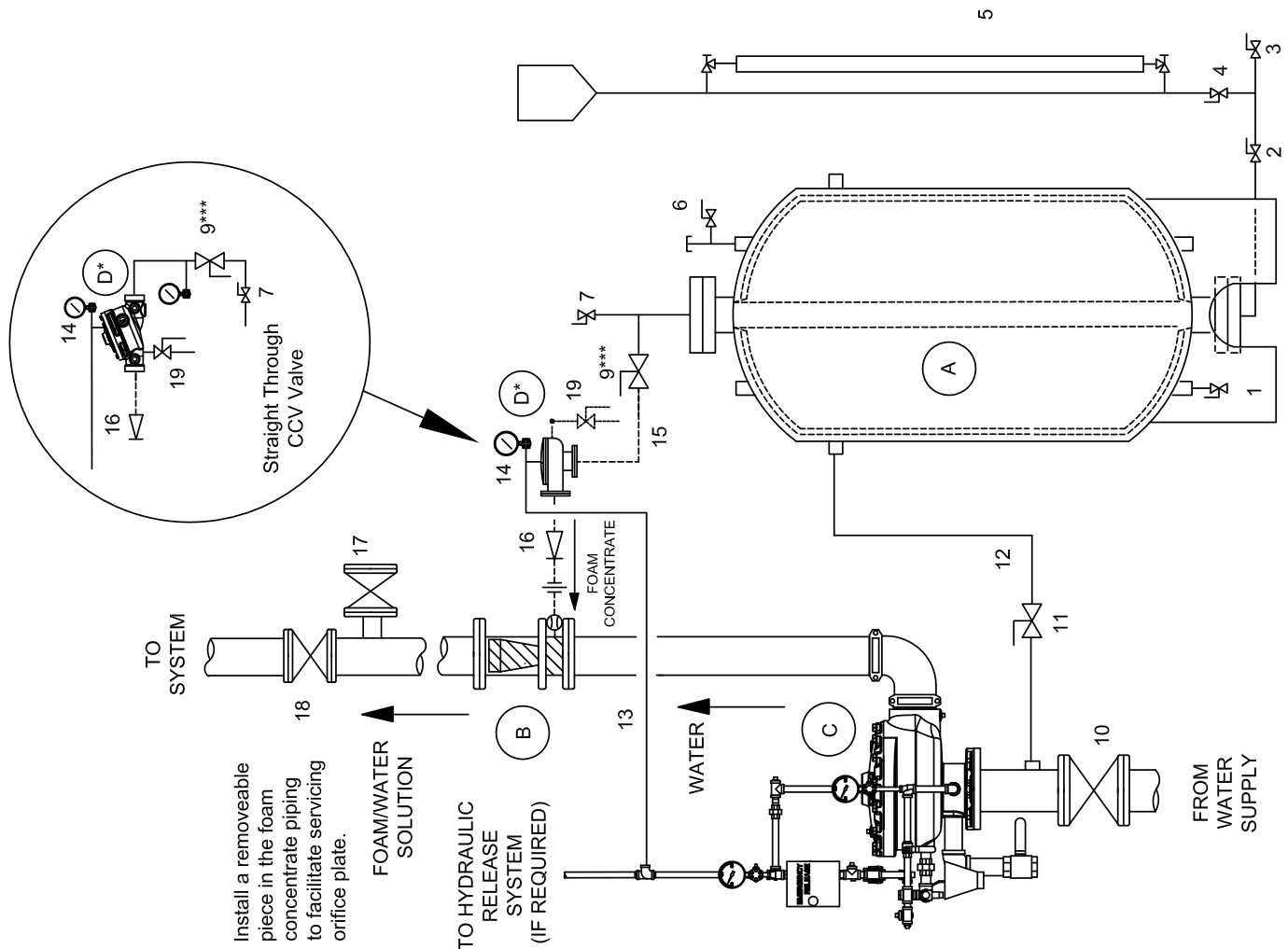


Figure 1



TECHNICAL DATA

DELUGE FOAM/WATER SYSTEM SUPPLIED BY BLADDER TANK

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DELUGE FOAM/WATER 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 O & M Manual for specific details.
 6. Tank Water Vent Valve
 - NORMALLY CLOSED
 7. Diaphragm Concentrate Vent Valve
 - NORMALLY CLOSED
- B. Proportioning Device - Concentrate Controller with Integral Orifice
- C. Type of System - Deluge Valve with Standard Trim and Gauges connected to an appropriate release and detection system
 10. Water Supply Control Valve
 - NORMALLY OPEN
- D. Concentrate Control Valve (CCV)
Hydraulically actuated Halar Coated Viking Deluge Valve
(*Angle Style and Straight Thru Style CCV available.)
 14. Water Pressure Gauge and 3-way valve and remainder of CCV special trim
 19. 1/2" foam concentrate auxiliary drain valve
- E. Accessory Trim - (Order each item separately)
 9. Concentrate Control Shut-off Valve
 - NORMALLY OPEN ***
 11. Tank Water Supply Control Valve
 - NORMALLY OPEN
 12. Water Supply Piping to Bladder Tank
 13. Release Line/Priming Line Piping to foam CCV (D)
 15. Foam Concentrate Discharge Piping
 16. Foam Concentrate Swing Check Valve
 17. Foam Solution Test Valve - NORMALLY CLOSED
 18. System Isolation Valve - NORMALLY OPEN

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

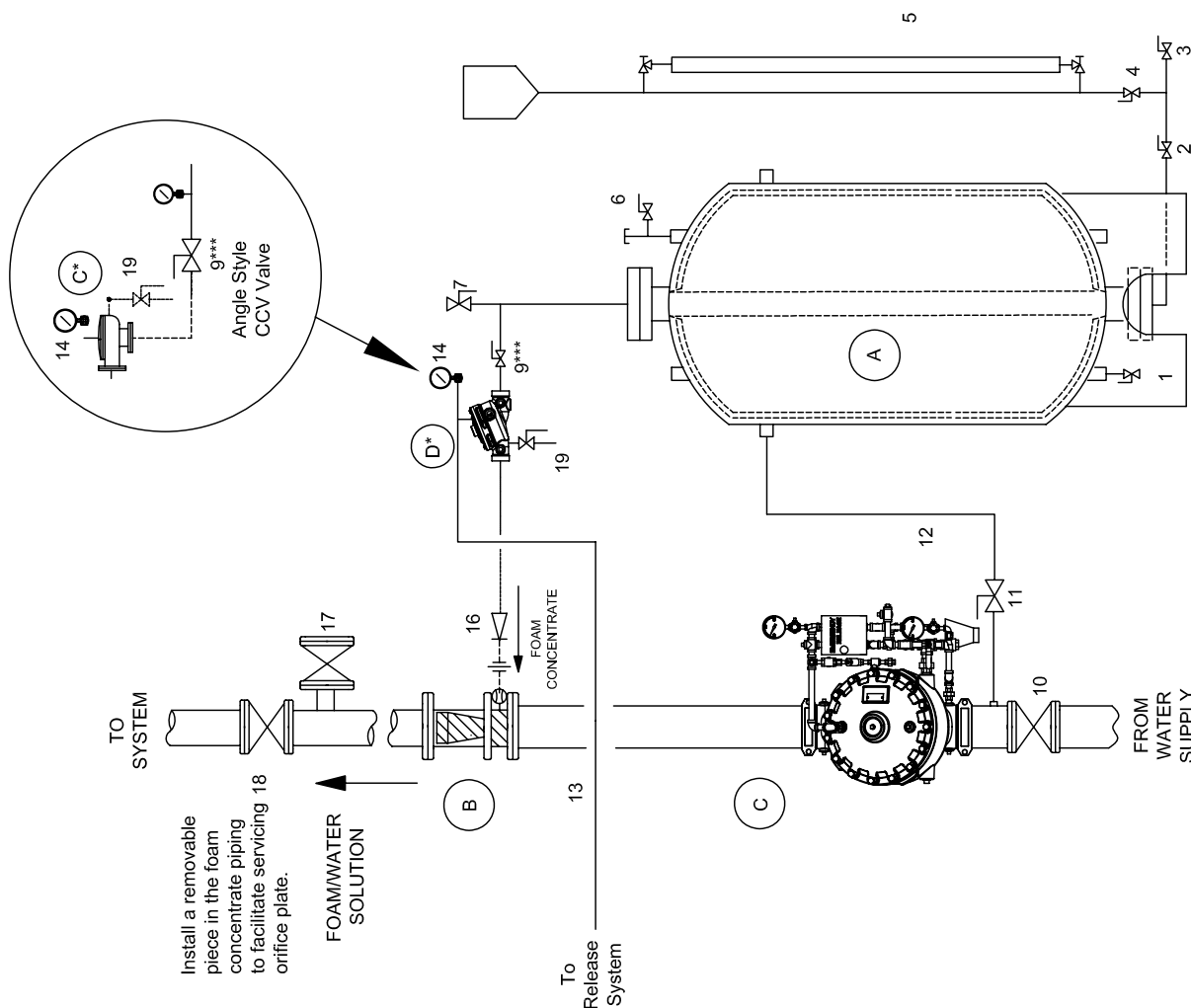


Figure 2



TECHNICAL DATA

DELUGE FOAM/WATER SYSTEM SUPPLIED BY BLADDER TANK

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DELUGE FOAM/WATER 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 O & M Manual for specific details.
6. Tank Water Vent Valve - NORMALLY CLOSED
7. Diaphragm Concentrate Vent Valve - NORMALLY CLOSED

B. Proportioning Device - Concentrate Controller with Integral Orifice

C. Type of System - Deluge Valve with Standard Trim and Gauges connected to an appropriate release and detection system

10. Water Supply Control Valve - NORMALLY OPEN

D. Concentrate Control Valve (CCV) Hydraulically actuated Halar Coated Viking Deluge Valve

(*Angle Style and Straight Thru Style CCV available.)

14. Water Pressure Gauge and 3-way valve and remainder of CCV special trim

19. 1/2" foam concentrate auxiliary drain valve

E. Accessory Trim - (Order each item separately)

9. Concentrate Control Shut-off Valve - NORMALLY OPEN ***

11. Tank Water Supply Control Valve - NORMALLY OPEN

12. Water Supply Piping to Bladder Tank

13. Release Line/Priming Line Piping to foam CCV (D)

15. Foam Concentrate Discharge Piping

16. Foam Concentrate Swing Check Valve

17. Foam Solution Test Valve - NORMALLY CLOSED

18. System Isolation Valve - NORMALLY OPEN

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

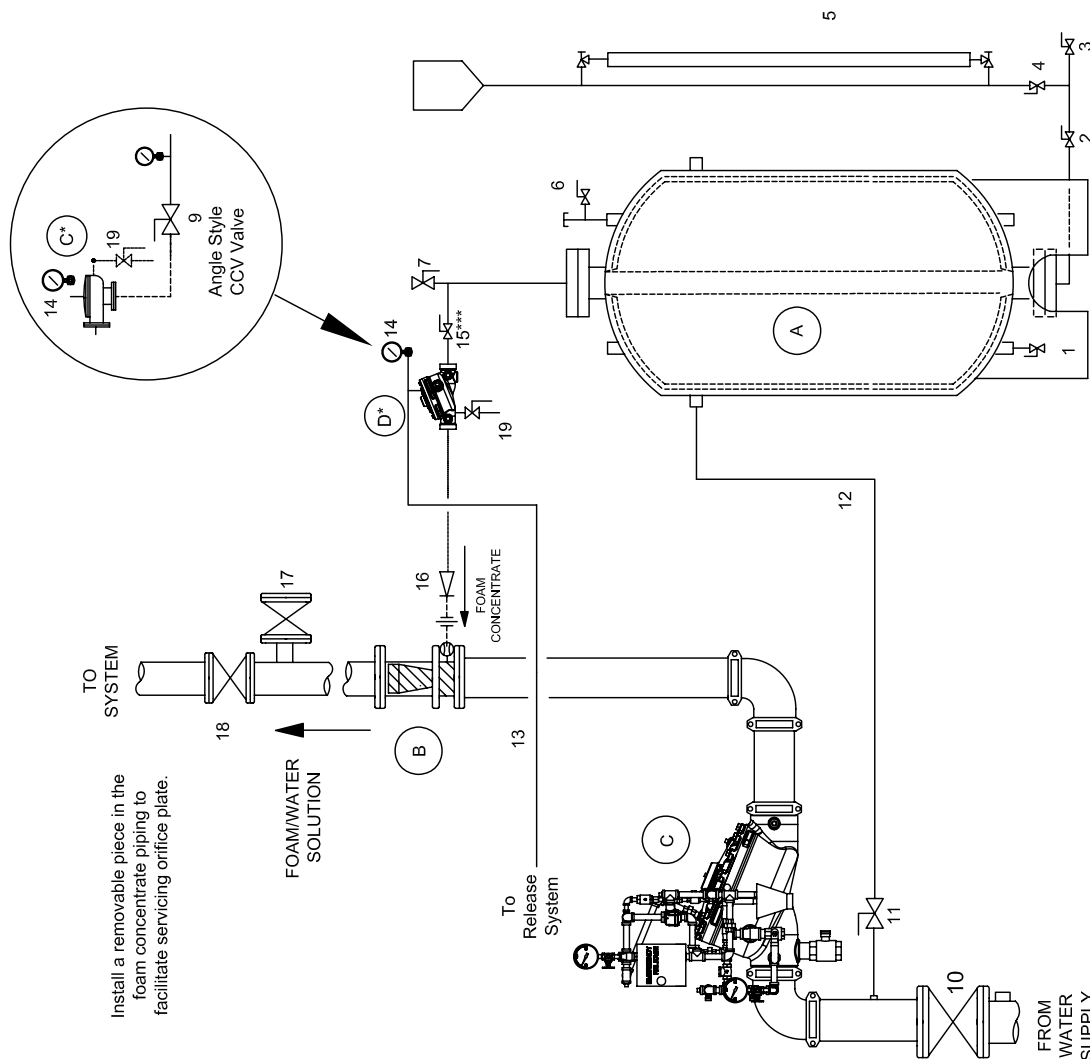


Figure 3



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For complete Deluge Foam/Water System Supplied by a Bladder Tank, select Deluge Valve and Trim, Release Trim, Foam Concentrate Control Valve and Trim, Foam Concentrate, Ratio Flow Controller, Bladder Tank, and Accessories.

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
DELUGE VALVES - ANGLE STYLE			
Threaded	Model & Pipe O.D.	Painted Red	
	Model E-3 48 mm	1½" / DN40	09889 209 a-h
	Model E-1 60 mm	2" / DN50	05852C 210 a-h
	Model & Pipe O.D.	Halar Coated	
	Model E-4 48 mm	1½" / DN40	09890Q/B 212 a-j
	Model E-2 60 mm	2" / DN50	08361Q/B 213 a-j
Flange/ Flange	Flange Drilling	Model E-1	Painted Red
	ANSI	3"	05912C
	ANSI	4"	05909C
	ANSI	6"	05906C
	ANSI/Japan	6"	07136
	PN10/16	DN80	08626
	PN10/16	DN100	08629
	PN10/16	DN150	08631
	Flange Drilling	Model E-2	Halar Coated
	ANSI	3"	08362Q/B
	ANSI	4"	08363Q/B
	ANSI	6"	08364Q/B
	PN10/16	DN80	08862Q/B
	PN10/16	DN100	08863Q/B
	PN10/16	DN150	08864Q/B
Flange/ Groove	Flange Drilling / Pipe O.D.	Model E-1	Painted Red
	ANSI / 89 mm	3"	05835C
	ANSI / 114 mm	4"	05839C
	ANSI / 168 mm	6"	05456C
	PN10/16 / 89 mm	DN80	09539
	PN10/16 / 114 mm	DN100	09540
	PN10/16 / 168 mm	DN150	05456C
	Flange Drilling / Pipe O.D.	Model E-2	Halar Coated
	ANSI / 89 mm	3"	11064Q/B
	ANSI / 114 mm	4"	11065Q/B
	ANSI / 168 mm	6"	11001Q/B
	PN10/16 / 168 mm	DN150	11001Q/B

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
DELUGE VALVES - STRAIGHT THROUGH			
Threaded	Pipe O.D.	Model F-1	Painted Red
	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
	Pipe O.D.	Model F-2	Halar® Coated
	NPT 65 mm	2½"	12402Q/B 219 a-k

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
DELUGE VALVES - STRAIGHT THROUGH			
Flange/ Flange	Flange Drilling	Model F-1	Painted Red
	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
	Flange Drilling	Model F-2	Halar Coated
	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	Flange Drilling / Pipe O.D.	Model F-1	Painted Red
	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
	Flange Drilling / Pipe O.D.	Model F-2	Halar Coated
	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
Groove/ Groove	Pipe O.D.	Model F-1	Painted Red
	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
	Pipe O.D.	Model F-2	Halar Coated
	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

Table 1



TECHNICAL DATA

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

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
DELUGE VALVE TRIM			
Use with Angle Style Valves		Galvanized	Brass
	1½" / DN40	14629-1	14629-2
	2" / DN50	14630-1	14630-2
	3" / DN80	14631-1	14631-2
	4" / DN100	14632-1	14632-2
	6" / DN150	14633-1	14633-2
Use with Straight Through Valves	Horizontal	1½" / DN40	14635-1
		2" / DN50	14635-2
		2½" / DN65	14637-1
		3" / DN80	14637-2
		4" / DN100	14638-1
		6" / DN150	14640-1
	Vertical	8" / DN200	14643-1
		1½" / DN40	14634-1
		2" / DN50	14634-2
		2½" / DN65	14636-1
		3" / DN80	14636-2
		4" / DN100	14639-1
		6" / DN150	14641-1
		8" / DN200	14643-2

DESCRIPTION	MATERIAL	PART NUMBER	DATA PAGE
RELEASE TRIM PACKAGES			
Use with Angle or Straight Through Valves	PNEUMATIC RELEASE		
	Galvanized	10809	265 b
	Brass	10811	
	ELECTRIC RELEASE		
	Galvanized	10830	265 a
	Brass	10832	

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
TRIMPAC®			
Includes Conventional Trim, Release Trim, and Flexible Hose Kit	PNEUMATIC RELEASE		
	Galvanized	13788B-2	245 a-t
	Brass	13788B-2B	
	ELECTRIC RELEASE		
	Galvanized	137887B-1	244 a-s
	Brass	13787B-1B	
DRAIN PACKAGE			
Use with TrimPac (above)	1½" / DN40	11894-1	Refer to Trimpac Data Page
	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	DATA PAGE
FOAM CONCENTRATE CONTROL VALVE HALAR® COATED				
Angle Style				61a-f
Threaded NPT	Model & Pipe O.D.			
	Model E-4 48 mm	1½" / DN40	09890Q/B	
	Model E-2 60 mm	2" / DN50	08361Q/B	
Straight Through				
Threaded NPT	Pipe O.D.	Model F-2		
	NPT 65 mm	2½"	12402Q/B	
Groove/ Groove	Pipe O.D.	Model F-2		
	48 mm	1½" / DN40	12127Q/B	
	60 mm	2" / DN50	12058Q/B	
	73 mm	2½" / DN65	12404Q/B	

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

DESCRIPTION	TANK SIZE	PART NUMBER	DATA PAGE
HORIZONTAL BLADDER TANK	50 - 4500 Gallon	CHBT2-xxxx *	240 a-h
VERTICAL BLADDER TANK	25 - 4500 Gallon	CVBT2-xxxx *	
* Where xxxx is the tank size			

Table 2



TECHNICAL DATA

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

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, Controller, Bladder Tank and accessories.

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" / 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	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 RATIO FLOW CONTROLLERS					
FOAM CONCENTRATE			RATIO FLOW CONTROLLER		
DESCRIPTION	PART NUMBER	DATA PAGE	SIZE	PART NUMBER	DATA PAGE
1% AFFF C103	F14969	100 a-b	2½" (65 mm) Threaded 1" NPT	F15001/A	170 a-d
			3" (80 mm) Wafer 1-1/4" NPT	F15007/A	
			4" (100 mm) Wafer 1½" NPT	F15013/A	
			6" (150 mm) Wafer 2" NPT	F15019/A	
			8" (200 mm) Wafer 2½" NPT	F15026/A	
3% AFFF C303	F14970	101 a-b	2½" (65 mm) Threaded 1" NPT	F15001/B	
			3" (80 mm) Wafer 1-1/4" NPT	F15007/B	
			4" (100 mm) Wafer 1½" NPT	F15013/B	
			6" (150 mm) Wafer 2" NPT	F15019/B	
			8" (200 mm) Wafer 2½" NPT	F15026/B	
3% AFFF MS C301 MS	F14971	102 a-b	2½" (65 mm) Threaded 1" NPT	F15001/C	
			3" (80 mm) Wafer 1-1/4" NPT	F15007/C	
			4" (100 mm) Wafer 1½" NPT	F15013/C	
			6" (150 mm) Wafer 2" NPT	F15019/C	
			8" (200 mm) Wafer 2½" NPT	F15026/C	
3% / 6% AR-AFFF @ 3% C363	F14973	103 a-b	2½" (65 mm) Threaded 1" NPT	F15001/D	
			3" (80 mm) Wafer 1-1/4" NPT	F15007/D	
			4" (100 mm) Wafer 1½" NPT	F15013/D	
3% / 6% AR-AFFF @ 6% C363	F14973	103 a-b	6" (150 mm) Wafer 2" NPT	F15022	
			2½" (65 mm) Threaded 1" NPT	F15001/E	
			3" (80 mm) Wafer 1-1/4" NPT	F15007/E	
3% AR-AFFF CUG	F14972	104 a-b	4" (100 mm) Wafer 1-1/2" NPT	F15013/E	
			6" (150 mm) Wafer 2" NPT	F15019/D	
			2½" (65 mm) Threaded 1" NPT	F15001/J	
			3" (80 mm) Wafer 1-1/4" NPT	F15007/J	
2% High Ex C2	F14974	105 a-b	4" (100 mm) Wafer 1½" NPT	F15013/J	
			6" (150 mm) Wafer 2" NPT	F15019/J	
			8" (200 mm) Wafer 2½" NPT	F15026/J	
			2½" (65 mm) Threaded 1" NPT	F15001/H	
			3" (80 mm) Wafer 1-1/4" NPT	F15007/H	
			4" (100 mm) Wafer 1-1/2" NPT	F15013/H	
			6" (150 mm) Wafer 2" NPT	F15019/H	

Table 3

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