TECHNICAL DATA

PRE-PIPE PACKAGE FOR VERTICAL AND HORIZONTAL BLADDER TANKS

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. GENERAL DESCRIPTION

The pre-pipe package is a manufacturing option that can be added to bladder tanks that are feeding single or multiple wet, dry, deluge, preaction or pressure regulating foam systems. Simply select the bladder tank volume, the proportioner type and size then select from the pre-pipe options in ***section 3.4*** to configure a cost efficient and aesthetically pleasing foam proportioning package.

The pre-pipe package is available with various configurations to address different foam types or system flow rates. The pre-pipe package includes water line and foam concentrate line piping, isolation valves and a check valve on the foam concentrate line.

There is also a choice of different Concentrate Control Valve (CCV) configurations. We recommend the use of a concentrate control valve in all foam systems. The use of a CCV is a requirement in FM Global projects in accordance with property loss prevention data sheet 4-12.

For further information, please contact the appropriate sales office in ***Section 5*** or refer to the technical documentation. The contents of this publication are subject to modifications without notice.

Benefits

- Reduced installation time and lower labor costs
- Reduced footprint saving valuable space on the job site
- Aesthetically pleasing
- Factory pressure tested
- Compliant with FM Data Sheet 4-12 (Pipe ***option 4*** only)

2. LISTINGS AND APPROVALS

See individual component data pages for specific approval information.

3. TECHNICAL DATA

3.1 Construction Features

Each pre-pipe bladder tank package includes the following as standard:

- Suitable for use on tanks with system design pressure of 175 PSI (12.1 bar) or 233 PSI (16 bar)
- 100% pressure tested according to the applied design code
- Spring loaded check valve (foam line)
- Stainless steel full port lever ball valves (water line & foam line)
- Pipework painted flame red RAL3000 to match bladder tank
- Air relief/bleed valve
- Manifold section with grooved or flanged connection
- Use with ratio controller or wide range proportioner

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3.2 Standard Materials

Table 3.2.1 – Standard Materials	
Bladder tank	***Refer to page PS1.3.1.6VP, PS1.3.1.6HP, TD1.3.1.1 or TD1.3.1.3***
Water line pipework	Carbon steel
Foam line pipework	Stainless steel AISI 316
Proportioning device	***Refer to page PS1.3.2.6, TD1.3.2.1 or TD1.3.2.3***
CCV – Viking model F-2 Halar® coated	***Refer to Viking data page F_040204 or F_110902***
CCV – Hydraulic	Ball valve stainless steel AISI 304
Water / Foam isolation valve	Ball valve stainless steel AISI 304
Trim valves	Brass
Foam check valve	Brass
Air relief valve	Brass
Grooved couplings	Ductile cast iron, ASTM A536 Grade 65-45-12
PORV Connection package (sold separately)	Brass

3.3 Specifications

Table 3.3.1 – Standard Design Specifications	
Design pressure	175 PSI / 12.1 bar (1.2 MPa) or 232 PSI / 16.0 bar (1.6 MPa)
Operating temperature range	35°F to 120°F (1.7°C to 49°C)
Tank size	25 to 5,250 US Gallons (100 to 20,000 litres)
Configuration	Vertical, horizontal
Proportioner size - Ratio controller	2”, 2-1/2”, 3”, 4”, 6”, 8”
Proportioner size - Wide range proportioner	4”, 6”, 8”, 10”
System manifold connection	Grooved or flanged (ANSI or PN16 - define at order stage)

3.4 Ordering Information

The factory assembled pre-pipe package is only available in conjunction with a bladder tank and proportioning device. The factory assembled pre-pipe package cannot be supplied retrospectively and must be ordered at the same time as the bladder tank.
To ensure the correct configuration, please follow the following steps:

Step1 - Select bladder tank (see data page or list price schedule)

1.1 Volume
1.2 Orientation (vertical or horizontal)
1.3 Approved or non-approved
1.4 Design code (EN13445 or ASME)
1.5 Pressure (12 bar or 16 bar)

Step 2 - Select proportioning device

2.1 VRC – FM approved / UL listed ratio controller (***see data page TD1.3.2.1***)
2.2 RC – Non-approved ratio controller (***see data page TD1.3.2.3***)
2.3 WR – Wide range proportioner (***see submittal page PS1.3.2.6***)
2.4 VNR - FM approved wide range proportioner (***see data page TD1.3.2.10***)

Step 3 – Select pre-pipe configuration

3.1 Use ***table 3.4.1*** to select the required configuration. Then ***tables 3.4.3 to 3.4.5*** for the specific part number.
3.2 Specify the direction of flow.

Step 4 - Order PORV priming connection package (part number: 10985) **(if required in particular system configuration).**
See our design schematics for more information

Note: The PORV connection package is not factory assembled.

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Table 3.4.1 – Configuration Options	
Option	**Description**
1	Carbon steel water pipe with stainless steel foam pipe
2	Carbon steel water pipe with stainless steel foam pipe combined with Viking Halar® concentrate control valve
3	Carbon steel water pipe with stainless steel foam pipe combined with hydraulic ball concentrate control valve

Ordering Example

The part numbers shown in table 3.4.2 would be required to order a 600 US Gallon ASME 12 bar vertical bladder tank with a 4” ratio controller for use with AFFF 1%S C6 foam concentrate with carbon steel water line piping and stainless steel foam delivery line piping with a Viking Halar® Coated CCV. Proportioner manifold with grooved connections. PORV package required.

Table 3.4.2 - Ordering Example and weight selection				
Steps		**Select Part Number**	**Weight Data**	**Weight (kg)**
1	Bladder tank	VFTV0600GAF	Select weight from submittal / data page relevant to tank type	1,027
2	Proportioning device	VRC114JAA	Select weight from submittal / data page relevant to proportioner type	6.3
3	Pre-pipe configuration	EPP-RC04GH-CS	Select weight from table below relevant to pre-piping type	94
4	PORV	10985	Kit weight only	2.5
		Total approximate weight (example based on parts listed only)		1,129.8

Table 3.4.3 - Option 1 - Carbon steel water pipe with stainless steel foam pipe (without CCV)						
Part number		**Proportioner**	**Water line**	**Foam line**	**CCV size**	**Weight[1]**
Grooved[2]	**Flanged[3]**					
EPP-RC02GC-CS	EPP-RC02FC-CS	2” Ratio controller	Carbon steel	Stainless steel	N/A	47
EPP-RC25GC-CS	EPP-RC25FC-CS	2-1/2” Ratio controller	Carbon steel	Stainless steel	N/A	51
EPP-RC03GC-CS	EPP-RC03FC-CS	3” Ratio controller	Carbon steel	Stainless steel	N/A	54
EPP-RC04GC-CS	EPP-RC04FC-CS	4” Ratio controller	Carbon steel	Stainless steel	N/A	75
EPP-RC06GC-CS	EPP-RC06FC-CS	6” Ratio controller	Carbon steel	Stainless steel	N/A	88
EPP-RC08GC-CS	EPP-RC08FC-CS	8” Ratio controller	Carbon steel	Stainless steel	N/A	128
EPP-WR04GC-CS	EPP-WR04FC-CS	4” Wide range	Carbon steel	Stainless steel	N/A	89
EPP-WR06GC-CS	EPP-WR06FC-CS	6” Wide range	Carbon steel	Stainless steel	N/A	113
EPP-WR08GC-CS	EPP-WR08FC-CS	8” Wide range	Carbon steel	Stainless steel	N/A	175
EPP-WR10GC-CS	EPP-WR10FC-CS	10” Wide range	Carbon steel	Stainless steel	N/A	215

Table 3.4.4 - Option 2 - with Viking Halar® Concentrate Control Valve (CCV)						
Part number		**Proportioner**	**Water line**	**Foam line**	**CCV size[4]**	**Weight[1]**
Grooved[2]	**Flanged[3]**					
EPP-RC02GH-CS	EPP-RC02FH-CS	2” Ratio controller	Carbon steel	Stainless steel	1-1/2”	66
EPP-RC25GH-CS	EPP-RC25FH-CS	2-1/2” Ratio controller	Carbon steel	Stainless steel	1-1/2”	70
EPP-RC03GH-CS	EPP-RC03FH-CS	3” Ratio controller	Carbon steel	Stainless steel	1-1/2”	73
EPP-RC04GH-CS	EPP-RC04FH-CS	4” Ratio controller	Carbon steel	Stainless steel	2”	94
EPP-RC06GH-CS	EPP-RC06FH-CS	6” Ratio controller	Carbon steel	Stainless steel	2”	107
EPP-RC08GH-CS	EPP-RC08FH-CS	8” Ratio controller	Carbon steel	Stainless steel	2-1/2”	161
EPP-WR04GH-CS	EPP-WR04FH-CS	4” Wide range	Carbon steel	Stainless steel	2”	109
EPP-WR06GH-CS	EPP-WR06FH-CS	6” Wide range	Carbon steel	Stainless steel	2”	132
EPP-WR08GH-CS	EPP-WR08FH-CS	8” Wide range	Carbon steel	Stainless steel	2-1/2”	209
EPP-WR10GH-CS	EPP-WR10FH-CS	10” Wide range	Carbon steel	Stainless steel	2-1/2”	249

Table Notes

1 Weights in this table are approximate (+/- 20%) and are based on a 2,000 USG (7,500 l) bladder tank. **Actual assembled weight will be confirmed at shipment stage**. Weights shown in this table include the water/foam line, isolation valves, CCV (if fitted), check valve, fittings and proportioner manifold. Refer to bladder tank and proportioner data page for additional weights to be included.

2 Grooved outlet of pre-assembled pipe header will be the same outside diameter as the selected ratio controller. Grooved outlet of pre-assembled pipe header for wide range configuration to be confirmed with order.

3 Flanged outlet of pre-assembled pipe header in ANSI or PN16 – to be confirmed with order.

4 CCV is assembled complete with standard galvanised/brass trim (part number 12848-1 or 12929-1 depending on CCV size). The brass only trim (12848-2 & 12929-2) is only available on special request

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Table 3.4.5 - Option 3 - with Hydraulic Ball Concentrate Control Valve (CCV)

Part number		Proportioner	Water line	Foam line	CCV size	Weight (1)
Grooved[2]	Flanged[3]					
EPP-RC02GV-CS	EPP-RC02FV-CS	2” Ratio controller	Carbon steel	Stainless steel	1-1/2”	52
EPP-RC25GV-CS	EPP-RC25FV-CS	2-1/2” Ratio controller	Carbon steel	Stainless steel	1-1/2”	65
EPP-RC03GV-CS	EPP-RC03FV-CS	3” Ratio controller	Carbon steel	Stainless steel	1-1/2”	60
EPP-RC04GV-CS	EPP-RC04FV-CS	4” Ratio controller	Carbon steel	Stainless steel	2”	83
EPP-RC06GV-CS	EPP-RC06FV-CS	6” Ratio controller	Carbon steel	Stainless steel	2”	96
EPP-RC08GV-CS	EPP-RC08FV-CS	8” Ratio controller	Carbon steel	Stainless steel	2-1/2”	142
EPP-WR04GV-CS	EPP-WR04FV-CS	4” Wide range	Carbon steel	Stainless steel	2”	98
EPP-WR06GV-CS	EPP-WR06FV-CS	6” Wide range	Carbon steel	Stainless steel	2”	121
EPP-WR08GV-CS	EPP-WR08FV-CS	8” Wide range	Carbon steel	Stainless steel	2-1/2”	193
EPP-WR10GV-CS	EPP-WR10FV-CS	10” Wide range	Carbon steel	Stainless steel	2-1/2”	233

Table Notes

1 Weights in this table are approximate (+/- 20%) and are based on a 2,000 USG (7,500 l) bladder tank. **Actual assembled weight will be confirmed at shipment stage**. Weights shown in this table include the water/foam line, isolation valves, CCV (if fitted), check valve, fittings and proportioner manifold. Refer to bladder tank and proportioner data page for additional weights to be included.

2 Grooved outlet of pre-assembled pipe header will be the same outside diameter as the selected ratio controller. Grooved outlet of pre-assembled pipe header for wide range configuration to be confirmed with order.

3 Flanged outlet of pre-assembled pipe header in ANSI or PN16 – to be confirmed with order.

4. SCOPE OF DELIVERY

Ensure that all components are complete and in good condition.

- Unless otherwise stated, the pre-pipe package is shipped assembled to the bladder tank.
- The bladder tank is supplied in or on a suitable wooden pallet skid or shipping crate in the horizontal position.
- All bladder tanks have lifting lugs to allow safe maneuverability on site.
- Tank is supplied empty with pre-installed bladder.
- Small trim valves and contents level device are supplied pre-assembled to the tank as standard.
- Safety valve supplied as standard according to design code selected.
- Anchor fixing bolts are not included.

The PORV connection package (if selected) is not factory assembled. The kit, as detailed in Viking data page F_022192 includes 1/8” restricted orifice, model D-3 PORV, soft seat check valve, ball valve and “Y” strainer. Field piping to CCV valve and system riser is required.

5. AVAILABILITY

Please contact the manufacturer for further information.
The product is available directly from the manufacturer and official distributors only.

EMEA: Viking S.A., ZI Haneboesch, L-4562 Differdange / Niederkorn, Tel.: +352 58 37 37 - 1, Fax: +352 38 37 36, vikinglux@viking-emea.com

APAC: The Viking Corporation (Far East) Pte. Ltd., 69 Tuas View Square, Westlink Techpark, Singapore 637621
Tel: +65 6 278 4061, Fax: +65 6 278 4609, vikingsingapore@vikingcorp.com

6. PRODUCT VARIANTS

6.1 Additional Options (Special Order)

- Twin tank configurations
- Flow meter on tank water line to measure foam concentrate used in real time
- Additional proportioner manifold
- Stainless Steel Manifold and Water Pipework

Please contact your local representative for other bespoke configurations.

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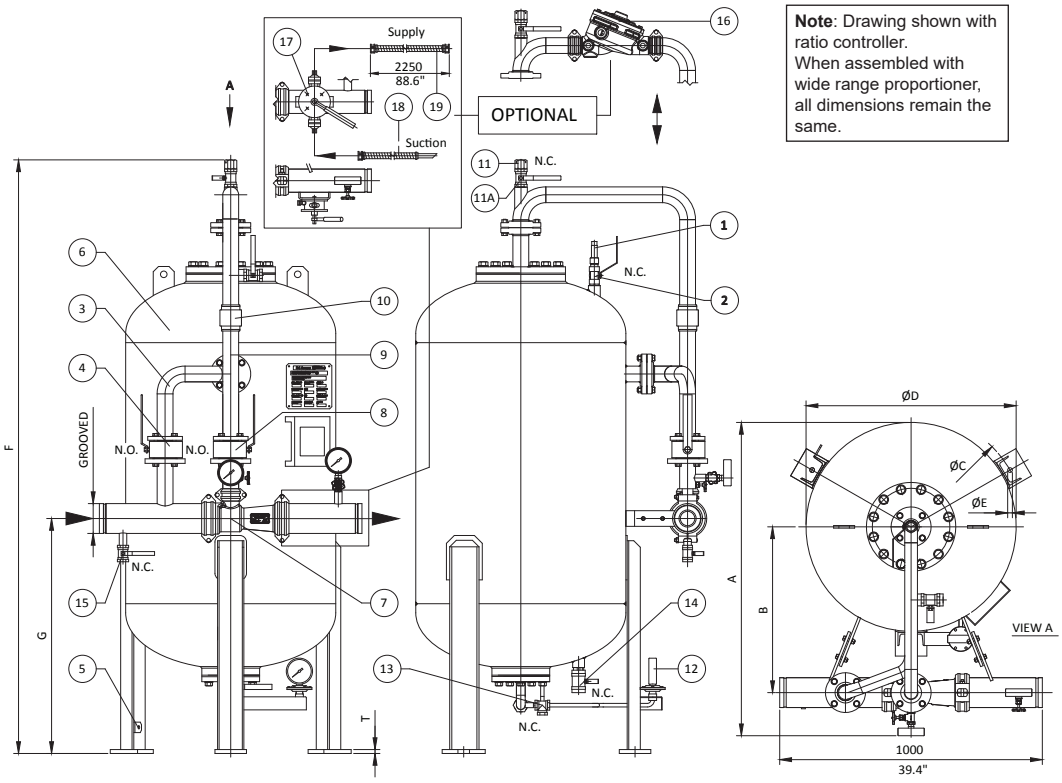
6.2 Dimensions



Note: Drawing shown with ratio controller.
When assembled with wide range proportioner, all dimensions remain the same.

Pos.	Description	Status
1	Safety valve	Auto
2	Water vent isolation valve	N.C.
3	Water line	-
4	Water cut off valve	N.O.
5	Ground connection	-
6	Tank	-
7	Ratio controller	-
8	Foam cut off valve	N.O.
9	Foam line	-
10	Check valve	-
11	Foam automatic vent valve	Auto
11A	Foam vent isolation valve	N.C.
12	Level indicator	-
13	Foam filling/drain valve	N.C.
14	Water filling/drain valve	N.C.
15	Drain valve	N.C.
16	(OPTIONAL) Concentrate control valve	N.C.
17	(OPTIONAL) Foam filling pump	-
18	(OPTIONAL) Foam pump suction hose	-
19	(OPTIONAL) Foam pump delivery hose	-

N.C. = Normally closed
N.O. = Normally open

Fig. 6.2.1 - Vertical tanks, 25 to 200 USG

Table 6.2.1 - Vertical pre-assembled bladder tank dimensions

Tanks FM/UL series (VFT)	Tanks PED/CE series (FT)	ØC	ØD	ØE	F	G	T	2" RC[1]		2-1/2" RC[1]		3" RC[1]		Pipework weight
								A	B	A	B	A	B	
US Gallons	Litres	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	lbs
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
25	Not available	22.4	19.7	0.7	65.3	19.7	0.6	34.4	18.3	34.6	18.5	35.0	18.9	Contact Viking
		570	500	18	1,660	500	15	875	465	880	470	890	480	Contact Viking
36	Not available	22.4	19.7	0.7	73.2	19.7	0.6	34.4	18.3	34.6	18.5	35.0	18.9	Contact Viking
		570	500	18	1,860	500	15	875	465	880	470	890	480	Contact Viking
50	200	26.4	23.6	0.7	79.1	35.4	0.6	38.2	20.1	38.4	20.3	38.8	20.7	Contact Viking
		670	600	18	2,010	900	15	970	510	975	515	985	525	Contact Viking
75	Not available	26.4	23.6	0.7	87.0	35.4	0.6	38.2	20.1	38.4	20.3	38.8	20.7	Contact Viking
		670	600	18	2,210	900	15	970	510	975	515	985	525	Contact Viking
100	400	26.4	23.6	0.7	100.8	35.4	0.6	38.2	20.1	38.4	20.3	38.8	20.7	Contact Viking
		670	600	18	2,560	900	15	970	510	975	515	985	525	Contact Viking
150	600	34.3	31.5	0.7	96.8	35.4	0.6	46.1	24.0	46.3	24.2	46.6	24.6	Contact Viking
		870	800	18	2,460	900	15	1,170	610	1,175	615	1,185	625	Contact Viking
200	Not available	34.3	31.5	0.7	108.7	35.4	0.6	46.1	24.0	46.3	24.2	46.6	24.6	Contact Viking
		870	800	18	2,760	900	15	1,170	610	1,175	615	1,185	625	Contact Viking

Notes:
[1] Available with RC (ratio controller) only at this header size.
(*) Direction of flow to be given at order stage. Direction shown in drawing is "Left to right"

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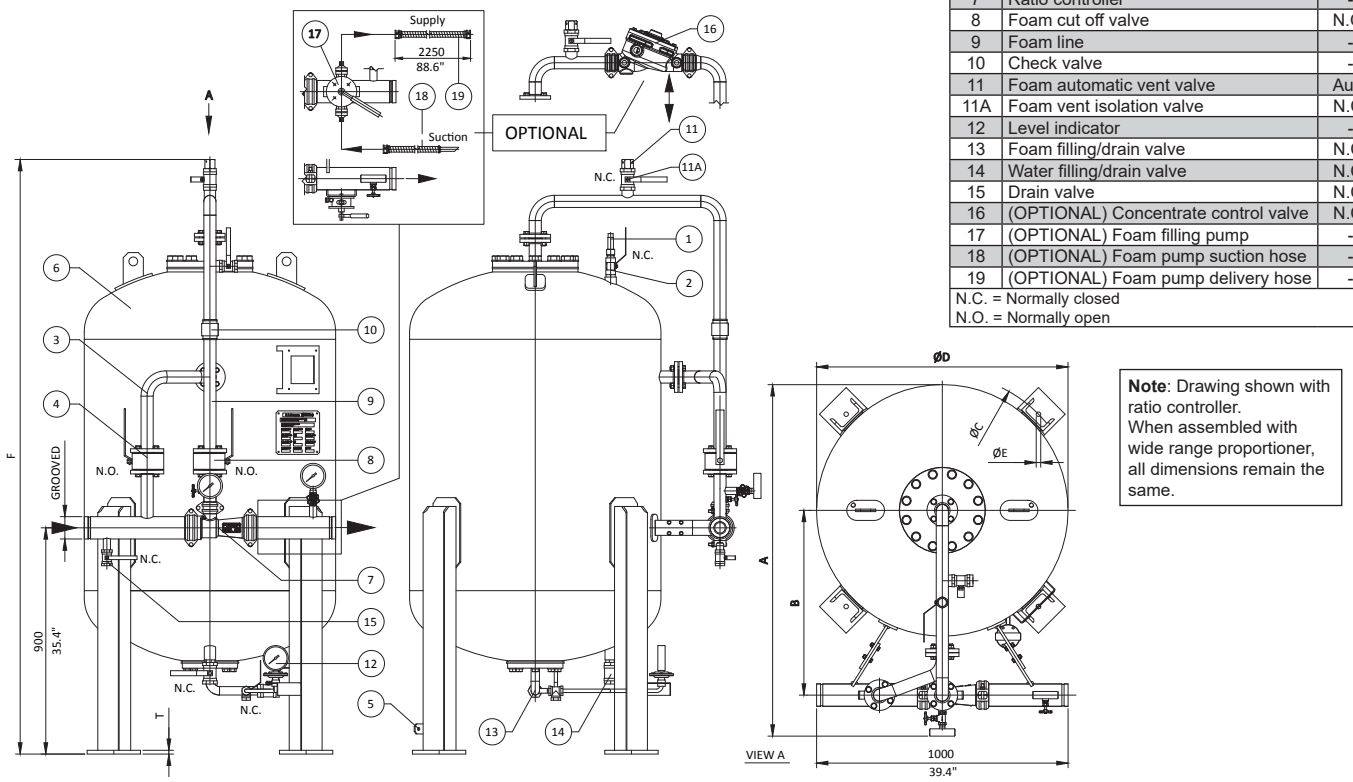
Pos.	Description	Status
1	Safety valve	Auto
2	Water vent isolation valve	N.C.
3	Water line	-
4	Water cut off valve	N.O.
5	Ground connection	-
6	Tank	-
7	Ratio controller	-
8	Foam cut off valve	N.O.
9	Foam line	-
10	Check valve	-
11	Foam automatic vent valve	Auto
11A	Foam vent isolation valve	N.C.
12	Level indicator	-
13	Foam filling/drain valve	N.C.
14	Water filling/drain valve	N.C.
15	Drain valve	N.C.
16	(OPTIONAL) Concentrate control valve	N.C.
17	(OPTIONAL) Foam filling pump	-
18	(OPTIONAL) Foam pump suction hose	-
19	(OPTIONAL) Foam pump delivery hose	-

N.C. = Normally closed
N.O. = Normally open



Note: Drawing shown with ratio controller.
When assembled with wide range proportioner, all dimensions remain the same.

Fig. 6.2.2 - Vertical tanks, 250 to 600 USG

Table 6.2.2 - Vertical pre-assembled bladder tank dimensions

Tanks FM/UL Series (VFT)	Tanks PED/CE Series (FT)	ØC	ØD	ØE	F	T	2-1/2" RC[1]		3" RC[1]		4" RC / 4" WRP[2]		Pipework weight
							A	B	A	B	A	B	
US Gallons	Litres	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	lbs
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
250	1,000	42.6	39.4	0.7	102.0	0.6	54.9	28.9	55.1	28.9	55.5	29.3	Contact Viking
		1,082	1,000	18	2,590	15	1,395	735	1,400	735	1,410	745	Contact Viking
300	Not available	42.6	39.4	0.7	113.8	0.6	54.9	28.9	55.1	28.9	55.5	29.3	Contact Viking
		1,082	1,000	18	2,890	15	1,395	735	1,400	735	1,410	745	Contact Viking
350	Not available	42.6	39.4	0.7	117.7	0.6	54.9	28.9	55.1	28.9	55.5	29.3	Contact Viking
		1,082	1,000	18	2,990	15	1,395	735	1,400	735	1,410	745	Contact Viking
400	1,500	42.6	39.4	0.7	127.6	0.6	54.9	28.9	55.1	28.9	55.5	29.3	Contact Viking
		1,082	1,000	18	3,240	15	1,395	735	1,400	735	1,410	745	Contact Viking
450	Not available	46.5	43.3	0.7	121.6	0.6	58.8	30.9	59.0	30.9	59.4	31.3	Contact Viking
		1,181	1,100	18	3,090	15	1,495	785	1,500	785	1,510	795	Contact Viking
500	2,000	46.5	43.3	0.7	133.5	0.6	58.8	30.9	59.0	30.9	59.4	31.3	Contact Viking
		1,181	1,100	18	3,390	15	1,495	785	1,500	785	1,510	795	Contact Viking
600	Not available	51.2	47.2	1.0	128.3	0.6	62.8	32.9	63.0	32.9	63.4	33.3	Contact Viking
		1,300	1,200	25	3,260	15	1,595	835	1,600	835	1,610	845	Contact Viking

Notes:
1 Available with RC (ratio controller) only at this header size.
2 Available with RC (ratio controller) and WRP (wide range proportioner) at this header size. RC shown in drawing but WRP shares the same approximate dimensions.
(*) Direction of flow to be given at order stage. Direction shown in drawing is "Left to right"

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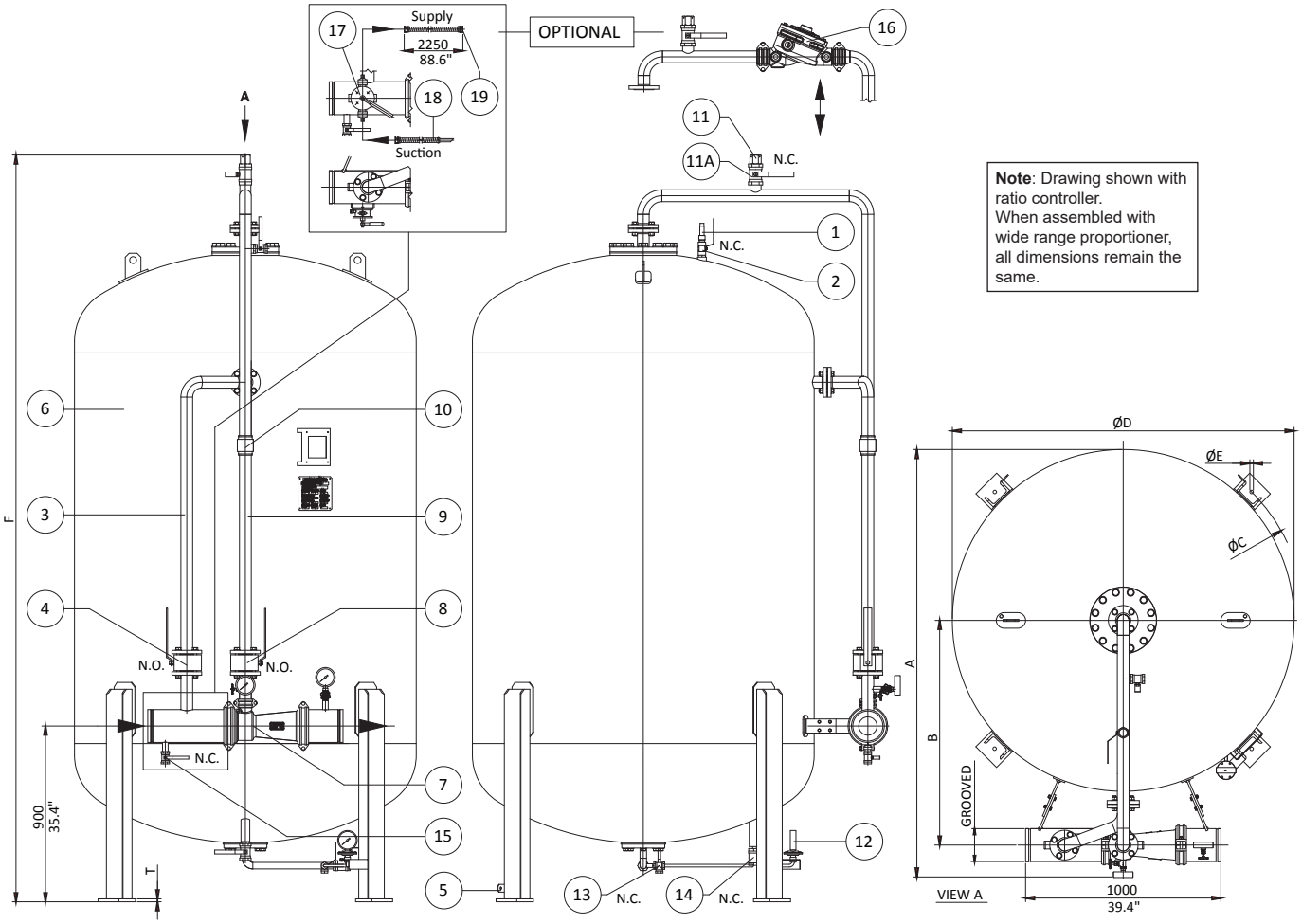

Fig. 6.2.3 - Vertical tanks, 700 to 4,000 USG

Pos.	Description	Status
1	Safety valve	Auto
2	Water vent isolation valve	Normally closed
3	Water line	-
4	Water cut off valve	Normally open
5	Ground connection	-
6	Tank	-
7	Ratio controller	-
8	Foam cut off valve	Normally open
9	Foam line	-
10	Check valve	-
11	Foam automatic vent valve	Auto
11A	Foam vent isolation valve	Normally closed
12	Level indicator	-
13	Foam filling/drain valve	Normally closed
14	Water filling/drain valve	Normally closed
15	Drain valve	Normally closed
16	(OPTIONAL) Concentrate control valve	Normally closed
17	(OPTIONAL) Foam filling pump	-
18	(OPTIONAL) Foam pump suction hose	-
19	(OPTIONAL) Foam pump delivery hose	-

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Table 6.2.3 - Vertical pre-assembled bladder tank dimensions

Tanks FM/UL Series (VFT)	Tanks PED/CE Series (FT)	ØC	ØD	ØE	F	T	4" RC / 4" WRP[1]		6" RC / 6" WRP[1]		8" RC / 8" WRP[1]	
							A	B	A	B	A	B
US Gallons	Litres	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
700	2,500	55.3	51.2	1.0	131.1	0.6	67.3	35.2	68.5	36.4	69.3	37.2
		1,405	1,300	25	3,330	15	1,710	895	1,740	925	1,760	945
800	3,000	55.3	51.2	1.0	144.9	0.6	67.3	35.2	68.5	36.4	69.3	37.2
		1,405	1,300	25	3,680	15	1,710	895	1,740	925	1,760	945
900	3,500	59.3	55.1	1.0	147.0	0.6	71.2	37.2	72.4	38.4	73.2	39.2
		1,505	1,400	25	3,735	15	1,810	945	1,840	975	1,860	995
1,000	Not available	61.2	57.1	1.0	144.3	0.6	73.2	38.2	74.4	39.4	75.4	40.3
		1,555	1,450	25	3,665	15	1,860	970	1,890	1,000	1,915	1,025
1,100	4,000	61.2	57.1	1.0	152.2	0.6	73.2	38.2	74.4	39.4	75.4	40.3
		1,555	1,450	25	3,865	15	1,860	970	1,890	1,000	1,915	1,025
1,200	4,500	63.2	59.1	1.0	153.2	0.6	75.2	39.2	76.4	40.3	77.4	41.3
		1,605	1,500	25	3,890	15	1,910	995	1,940	1,025	1,965	1,050
1,300	5,000	67.1	63.0	1.0	151.4	0.6	79.1	41.1	80.3	42.3	81.5	43.5
		1,705	1,600	25	3,845	15	2,010	1,045	2,040	1,075	2,070	1,105
1,400	5,500	67.1	63.0	1.0	161.2	0.6	79.1	41.1	80.3	42.3	81.5	43.5
		1,705	1,600	25	4,095	15	2,010	1,045	2,040	1,075	2,070	1,105
1,500	Not available	73.2	68.9	1.0	151.6	0.6	85.0	44.1	86.2	45.3	87.4	46.4
		1,860	1,750	25	3,850	15	2,160	1,120	2,190	1,150	2,220	1,180
1,600	6,000	73.2	68.9	1.0	155.5	0.6	85.0	44.1	86.2	45.3	87.4	46.4
		1,860	1,750	25	3,950	15	2,160	1,120	2,190	1,150	2,220	1,180
1,700	6,500	75.2	70.9	1.0	157.3	0.6	87.0	45.1	88.2	46.4	89.2	47.4
		1,910	1,800	25	3,995	15	2,210	1,145	2,240	1,180	2,265	1,205
1,800	Not available	83.5	78.7	1.0	139.0	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	3,530	20	2,410	1,245	2,440	1,280	2,465	1,305
1,900	7,000	83.5	78.7	1.0	143.0	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	3,630	20	2,410	1,245	2,440	1,280	2,465	1,305
2,000	7,500	83.5	78.7	1.0	148.9	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	3,780	20	2,410	1,245	2,440	1,280	2,465	1,305
2,200	8,500	83.5	78.7	1.0	162.6	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	4,130	20	2,410	1,245	2,440	1,280	2,465	1,305
2,400	9,000	83.5	78.7	1.0	168.5	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	4,280	20	2,410	1,245	2,440	1,280	2,465	1,305
2,600	10,000	83.5	78.7	1.0	182.3	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	4,630	20	2,410	1,245	2,440	1,280	2,465	1,305
2,800	11,000	83.5	78.7	1.0	194.1	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	4,930	20	2,410	1,245	2,440	1,280	2,465	1,305
3,000	Not available	83.5	78.7	1.0	202.0	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	5,130	20	2,410	1,245	2,440	1,280	2,465	1,305
3,200	12,000	83.5	78.7	1.0	213.8	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	5,430	20	2,410	1,245	2,440	1,280	2,465	1,305
3,400	13,000	83.5	78.7	1.0	225.6	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	5,730	20	2,410	1,245	2,440	1,280	2,465	1,305
3,600	Not available	83.5	78.7	1.0	231.5	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	5,880	20	2,410	1,245	2,440	1,280	2,465	1,305
3,800	14,000	83.5	78.7	1.0	245.3	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	6,230	20	2,410	1,245	2,440	1,280	2,465	1,305
4,000	15,000	83.5	78.7	1.0	253.1	0.8	94.9	49.0	96.1	50.4	97.0	51.4
		2,120	2,000	25	6,430	20	2,410	1,245	2,440	1,280	2,465	1,305

Notes:
[1] Available with RC (ratio controller) and WRP (wide range proportioner) at this header size. RC shown in drawing but WRP shares the same approximate dimensions.
(*) Direction of flow to be given at order stage. Direction shown in drawing is "Left to right"
For weight data, please contact Viking.

TECHNICAL DATA

PRE-PIPE PACKAGE FOR VERTICAL AND HORIZONTAL BLADDER TANKS

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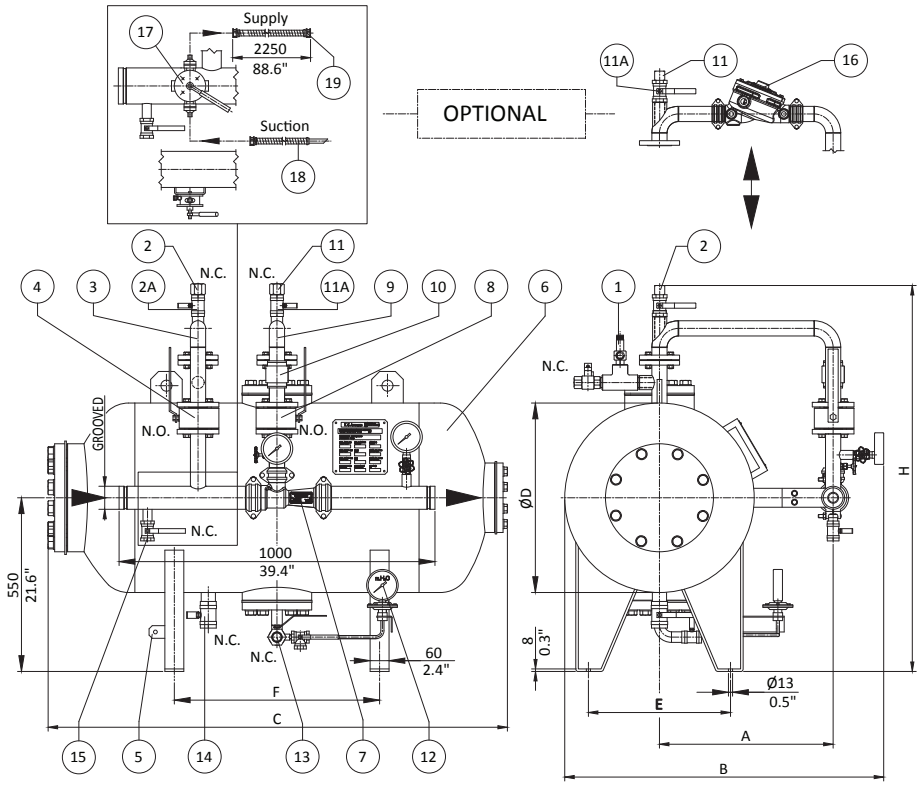

Pos.	Description	Status
1	Safety valve	Auto
2	Water automatic vent valve	Auto
2A	Water vent isolation valve	N.C.
3	Water line	-
4	Water cut off valve	N.O.
5	Ground connection	-
6	Tank	-
7	Ratio controller	-
8	Foam cut off valve	N.O.
9	Foam line	-
10	Check valve	-
11	Foam automatic vent valve	Auto
11A	Foam vent isolation valve	N.C.
12	Level indicator	-
13	Foam filling/drain valve	N.C.
14	Water filling/drain valve	N.C.
15	Drain valve	N.C.
16	(OPTIONAL) Concentrate control valve	N.C.
17	(OPTIONAL) Foam filling pump	-
18	(OPTIONAL) Foam pump suction hose	-
19	(OPTIONAL) Foam pump delivery hose	-

N.C. = Normally closed
N.O. = Normally open

Note: Drawing shown with ratio controller.
When assembled with wide range proportioner, all dimensions remain the same.

Fig. 6.2.4 - Horizontal tanks, 50 to 100 USG

Table 6.2.4 - Horizontal pre-assembled bladder tank dimensions

Tanks FM/UL Series (VFT)	Tanks PED/CE Series (FT)	C	ØD	E	F	H	2" RC[1]		2-1/2" RC[1]		3" RC[1]	
							A	B	A	B	A	B
US Gallons	Litres	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
50	Not available	55.4	19.7	13.8	32.3	47.2	21.6	37.8	21.6	38.0	21.6	38.2
		1,406	500	350	820	1,200	550	960	550	965	550	970
75	Not available	57.3	23.6	16.9	32.3	49.2	23.6	39.8	23.6	40.0	23.6	40.1
		1,456	600	430	820	1,250	600	1,010	600	1,015	600	1,020
100	Not available	67.2	23.6	16.9	40.2	49.2	23.6	39.8	23.6	40.0	23.6	40.1
		1,706	600	430	1,020	1,250	600	1,010	600	1,015	600	1,020

Notes:
[1] Available with RC (ratio controller) only at this header size.
(*) Direction of flow to be given at order stage. Direction shown in drawing is "Left to right".
For weight data, please contact Viking.

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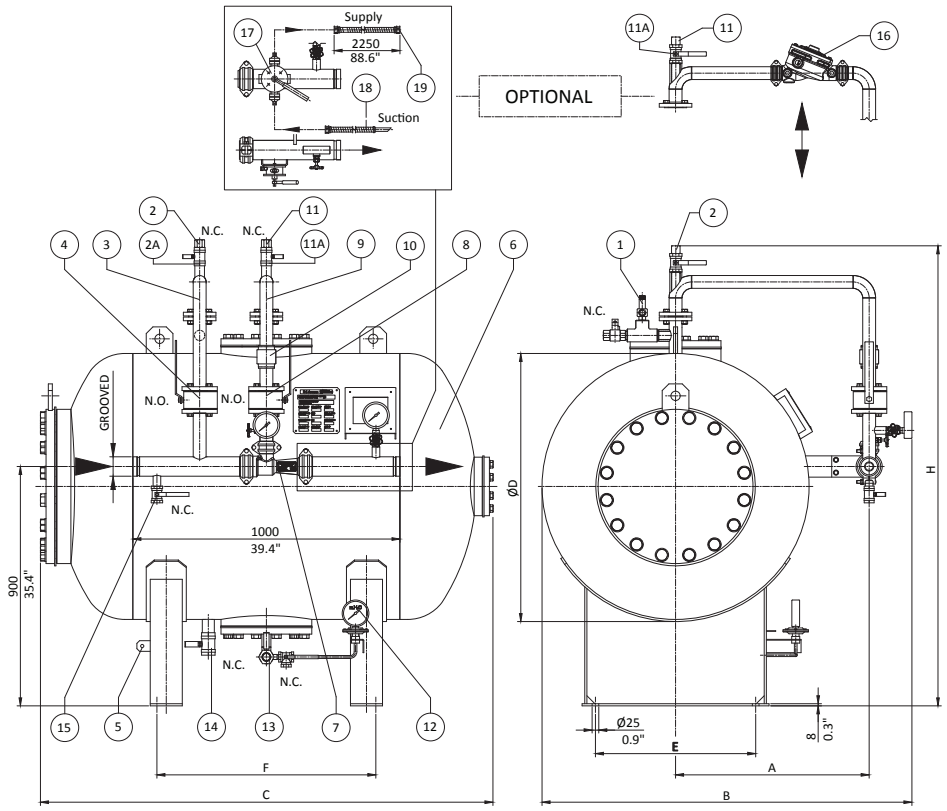

Pos.	Description	Status
1	Safety valve	Auto
2	Water automatic vent valve	Auto
2A	Water vent isolation valve	N.C.
3	Water line	-
4	Water cut off valve	N.O.
5	Ground connection	-
6	Tank	-
7	Ratio controller	-
8	Foam cut off valve	N.O.
9	Foam line	-
10	Check valve	-
11	Foam automatic vent valve	Auto
11A	Foam vent isolation valve	N.C.
12	Level indicator	-
13	Foam filling/drain valve	N.C.
14	Water filling/drain valve	N.C.
15	Drain valve	N.C.
16	(OPTIONAL) Concentrate control valve	N.C.
17	(OPTIONAL) Foam filling pump	-
18	(OPTIONAL) Foam pump suction hose	-
19	(OPTIONAL) Foam pump delivery hose	-

N.C. = Normally closed
N.O. = Normally open

Note: Drawing shown with ratio controller.
When assembled with wide range proportioner, all dimensions remain the same.

Fig. 6.2.5 - Horizontal tanks, 150 to 500 USG

Table 6.2.5 - Horizontal pre-assembled bladder tank dimensions

Tanks FM/UL Series (VFT)	Tanks PED/CE Series (FT)	C	ØD	E	F	H	2-1/2" RC[1]		3" RC[1]		4" RC / 4" WRP[2]	
							A	B	A	B	A	B
US Gallons	Litres	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
150	Not available	60.5	31.5	15.7	32.3	69.9	24.6	46.6	25.0	47.2	25.4	47.8
		1,536	800	400	820	1,775	625	1,185	635	1,200	645	1,215
200	Not available	72.3	31.5	15.7	42.1	69.9	24.6	46.6	25.0	47.2	25.4	47.8
		1,836	800	400	1,070	1,775	625	1,185	635	1,200	645	1,215
250	1,000	63.9	39.4	23.6	32.3	77.8	28.6	54.5	28.9	55.1	29.3	55.7
		1,624	1,000	600	820	1,975	725	1,385	735	1,400	745	1,415
300	1,250	75.7	39.4	23.6	42.1	77.8	28.6	54.5	28.9	55.1	29.3	55.7
		1,924	1,000	600	1,070	1,975	725	1,385	735	1,400	745	1,415
350	Not available	79.7	39.4	23.6	42.1	77.8	28.6	54.5	28.9	55.1	29.3	55.7
		2,024	1,000	600	1,070	1,975	725	1,385	735	1,400	745	1,415
400	1,500	89.5	39.4	23.6	53.9	77.8	28.6	54.5	28.9	55.1	29.3	55.7
		2,274	1,000	600	1,370	1,975	725	1,385	735	1,400	745	1,415
450	1,750	83.9	43.3	27.6	48.0	81.7	30.5	58.5	30.9	59.0	31.3	59.6
		2,130	1,100	700	1,220	2,075	775	1,485	785	1,500	795	1,515
500	2,000	95.7	43.3	27.6	59.8	81.7	30.5	58.5	30.9	59.0	31.3	59.6
		2,430	1,100	700	1,520	2,075	775	1,485	785	1,500	795	1,515

Notes:
1 Available with RC (ratio controller) only at this header size.
2 Available with RC (ratio controller) and WRP (wide range proportioner) at this header size. RC shown in drawing but WRP shares the same approximate dimensions.
(*) Direction of flow to be given at order stage. Direction shown in drawing is "Left to right".
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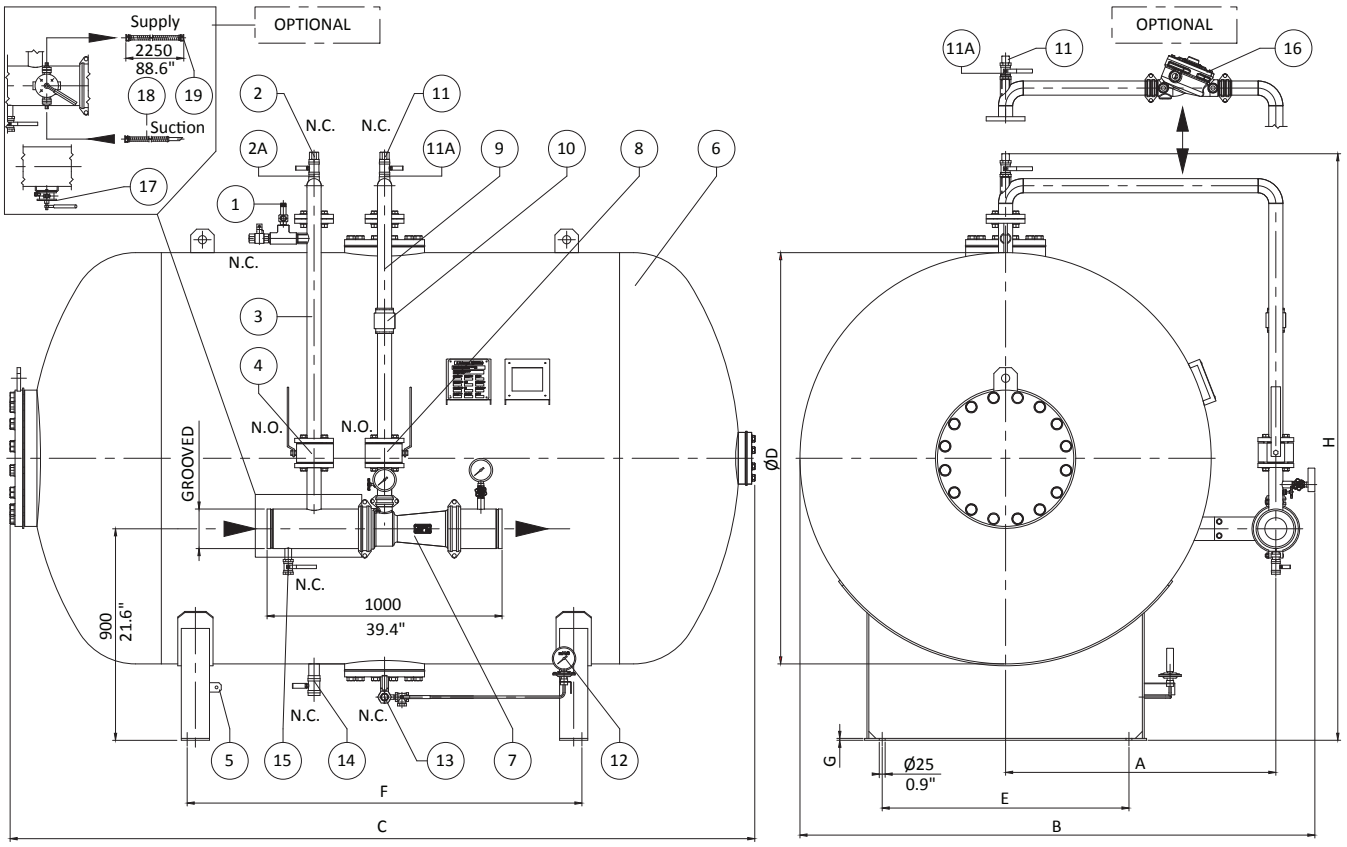

Note: Drawing shown with ratio controller.
When assembled with wide range proportioner, all dimensions remain the same.

Fig. 6.2.6 - Horizontal tanks, 600 to 5,250 USG

Pos.	Description	Status
1	Safety valve	Auto
2	Water automatic vent valve	Auto
2A	Water vent isolation valve	Normally closed
3	Water line	-
4	Water cut off valve	Normally open
5	Ground connection	-
6	Tank	-
7	Ratio controller	-
8	Foam cut off valve	Normally open
9	Foam line	-
10	Check valve	-
11	Foam automatic vent valve	Auto
11A	Foam vent isolation valve	Normally closed
12	Level indicator	-
13	Foam filling/drain valve	Normally closed
14	Water filling/drain valve	Normally closed
15	Drain valve	Normally closed
16	(OPTIONAL) Concentrate control valve	Normally closed
17	(OPTIONAL) Foam filling pump	-
18	(OPTIONAL) Foam pump suction hose	-
19	(OPTIONAL) Foam pump delivery hose	-

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Table 6.2.6 - Horizontal pre-assembled bladder tank dimensions

Tanks FM/UL Series (VFT)	Tanks PED/CE Series (FT)	C	ØD	E	F	G	H	4" RC / 4" WRP[1]		6" RC / 6" WRP[1]		8" RC / 8" WRP[1]	
								A	B	A	B	A	B
US Gallons	Litres	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
600	Not available	91.9	47.2	31.5	61.4	0.3	85.6	33.3	63.4	34.4	64.6	35.6	66.1
		2,333	1,200	800	1,560	8	2,175	845	1,610	875	1,640	905	1,680
700	2,500	94.0	51.2	31.5	66.1	0.3	89.6	35.2	67.3	36.4	68.5	37.6	70.1
		2,387	1,300	800	1,680	8	2,275	895	1,710	925	1,740	955	1,780
800	3,000	107.8	51.2	31.5	66.1	0.3	89.6	35.2	67.3	36.4	68.5	37.6	70.1
		2,737	1,300	800	1,680	8	2,275	895	1,710	925	1,740	955	1,780
900	3,500	110.3	55.1	33.5	66.1	0.3	93.5	37.2	71.3	38.4	72.4	39.6	74.0
		2,801	1,400	850	1,680	8	2,375	945	1,810	975	1,840	1,005	1,880
1,000	Not available	107.4	57.1	33.5	66.1	0.4	95.5	38.2	73.2	39.4	74.4	40.5	76.0
		2,728	1,450	850	1,680	10	2,425	970	1,860	1,000	1,890	1,030	1,930
1,100	4,000	115.3	57.1	33.5	66.1	0.4	95.5	38.2	73.2	39.4	74.4	40.5	76.0
		2,928	1,450	850	1,680	10	2,425	970	1,860	1,000	1,890	1,030	1,930
1,200	4,500	116.4	59.1	33.5	70.1	0.4	97.4	39.2	75.2	40.4	76.4	41.5	78.0
		2,957	1,500	850	1,780	10	2,475	995	1,910	1,025	1,940	1,055	1,980
1,300	5,000	114.6	63.0	37.4	68.1	0.4	104.4	41.1	79.1	42.3	80.3	43.5	81.9
		2,910	1,600	950	1,730	10	2,575	1,045	2,010	1,075	2,040	1,105	2,080
1,400	5,500	124.4	63.0	37.4	76.0	0.4	104.4	41.1	79.1	42.3	80.3	43.5	81.9
		3,160	1,600	950	1,930	10	2,575	1,045	2,010	1,075	2,040	1,105	2,080
1,500	Not available	115.0	68.9	41.3	66.1	0.4	107.3	44.1	85.0	45.3	86.2	46.5	87.8
		2,920	1,750	1,050	1,680	10	2,725	1,120	2,160	1,150	2,190	1,180	2,230
1,600	6,000	118.9	68.9	41.3	66.1	0.4	107.3	44.1	85.0	45.3	86.2	46.5	87.8
		3,020	1,750	1,050	1,680	10	2,725	1,120	2,160	1,150	2,190	1,180	2,230
1,700	6,500	120.0	70.9	41.3	66.1	0.4	109.2	45.1	87.0	50.4	88.2	47.4	89.8
		3,047	1,800	1,050	1,680	10	2,775	1,145	2,210	1,180	2,240	1,205	2,280
1,800	Not available	104.4	78.7	53.1	49.2	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		2,652	2,000	1,350	1,250	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
1,900	7,000	108.3	78.7	53.1	49.2	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		2,752	2,000	1,350	1,250	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
2,000	7,500	114.3	78.7	53.1	55.1	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		2,902	2,000	1,350	1,400	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
2,200	8,500	128.0	78.7	53.1	68.9	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		3,252	2,000	1,350	1,750	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
2,400	9,000	133.9	78.7	53.1	74.8	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		3,402	2,000	1,350	1,900	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
2,600	10,000	147.7	78.7	53.1	88.6	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		3,752	2,000	1,350	2,250	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
2,800	11,000	159.5	78.7	53.1	100.4	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		4,052	2,000	1,350	2,550	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
3,000	Not available	167.4	78.7	53.1	100.4	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		4,252	2,000	1,350	2,550	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
3,200	12,000	179.2	78.7	53.1	114.2	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		4,552	2,000	1,350	2,900	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
3,400	13,000	191.0	78.7	53.1	131.9	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		4,852	2,000	1,350	3,350	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
3,600	Not available	196.9	78.7	53.1	131.9	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		5,002	2,000	1,350	3,350	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
3,800	14,000	204.8	78.7	53.1	145.7	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		5,202	2,000	1,350	3,700	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
4,000	15,000	218.6	78.7	53.1	145.7	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		5,552	2,000	1,350	3,700	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
4,250	16,000	230.4	78.7	53.1	145.7	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		5,852	2,000	1,350	3,700	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
4,500	17,000	242.2	78.7	53.1	151.5	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		6,152	2,000	1,350	3,850	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
4,750	18,000	256.0	78.7	53.1	151.5	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		6,502	2,000	1,350	3,850	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
5,000	19,000	267.8	78.7	53.1	159.4	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		6,802	2,000	1,350	4,050	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480
5,250	20,000	281.6	78.7	53.1	159.4	0.4	117.1	49.0	94.9	50.4	96.1	51.4	97.6
		7,152	2,000	1,350	4,050	10	2,975	1,245	2,410	1,280	2,440	1,305	2,480

Notes:
[1] Available with RC (ratio controller) and WRP (wide range proportioner) at this header size. RC shown in drawing but WRP shares the same approximate dimensions.
(*) Direction of flow to be given at order stage. Direction shown in drawing is "Left to right".
For weight data, please contact Viking.

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7. INSTALLATION

Refer to appropriate Installation Standards (i.e. NFPA, VdS, LPCB, etc.) and / or applicable FM Global Property Loss Prevention Data Sheets such as 4-12, Foam-Water Sprinkler Systems.

The installation, operation and maintenance bladder tank manual shall also be referenced.

See technical data ***page 61*** for details on how to connect the Viking Halar® CCV to the system.

Straight piping equal to a minimum of five (5) pipe diameters should be installed before and after the ratio controller or wide range proportioner to minimise turbulence and help ensure proportioning accuracy. This section of straight pipe should not include any valves or branches, including the foam solution test valve.

NOTICE

When designing a bladder tank into your fire protection system, please give consideration to future maintenance activities. Ensure that adequate clearance above a vertical bladder tank or at the inspection flange end of a horizontal tank is allowed. For further guidance, please contact us.

8. OPERATION

1. Foam concentrate is stored inside the bladder. When used in conjunction with a ratio controller it proportions foam concentrate accurately into the water stream.
2. During system activation, the outer side of the bladder is pressurized by the system water supply which forces foam concentrate to the ratio controller.
3. Simultaneously, as water flows through the venturi area of the ratio controller, a metered pressure drop draws foam concentrate into the system water stream creating a foam solution mixed to the appropriate ratios.
4. The foam solution flows through the system pipework and out of any open sprinklers, nozzles or other discharge devices.
5. As the foam concentrate continues to flow from the inside of the bladder, system water enters the bladder tank on the outside of the bladder keeping a balanced pressure system.

9. GUARANTEE

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

10. INSPECTION, TESTS AND MAINTENANCE

Refer to respective requirements, according to the relevant standards for Inspection, Testing and Maintenance.

If applicable, refer to FM Global Property Loss Prevention Datasheet 4-12 for specific test and commissioning criteria.

In addition, the "Authority Having Jurisdiction" (AHJ) 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 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 areas.

11. DISPOSAL

At end of use the product described here should be disposed of via the national recycling system.
Upon request the manufacturer can take back and properly dispose of the electrical equipment and electronic devices.

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12. ACCESSORIES AND SPARE PARTS

Table 12.1 - Accessories and spares

Item	Part number
Pressure switch for CCV monitoring (as required in FM Global Property Loss Prevention Data Sheet 4-12)	PS101A
PORV connection package	10985
Manual foam filling pump	EXCAR-K2
Filling device assembly	FILLDEVICE
Safety valve (12.0 bar) PED tanks	B10C12
Safety valve (12.0 bar) PED UL/FM tanks	D10C12.1
Hydrometer level indication gauge	HYDROMETER
Foam/Water line air vent valve	EFTVENT8

Refer to individual component data page for spare parts information or contact us for further assistance.

13. DECLARATION OF CONFORMITY

If required, contact the appropriate sales office in ***Section 5 Availability*** for further assistance.