



## TECHNICAL DATA

## VSH1230 EXTINGUISHING AGENT CYLINDERS

The Viking Corporation | 210 N Industrial Park Drive | Hastings MI 49058

Viking Special Hazards | Technical Services: 877-384-5464 | Email: techsvcs@vikingcorp.com | www.vikinggroupinc.com

The technical data described herein is for components of the Viking VSH1230 Clean Agent Systems.

For design, installation, and operation instructions, refer to the latest edition of the original source documents as outlined below.

VSH1230: Installation and Service Manual (Part No. 932159), Design Manual (Part No. 932157), and Operation Manual (Part No. 932161).

Visit the Viking website for the latest edition of the technical manuals listed above.

### 1. DESCRIPTION

The Viking VSH1230 Fire Extinguishing System uses 3M™ Novec™ 1230 extinguishing fluid that is stored in the system's extinguishing agent container(s) until system activation. The container assembly includes a welded or seamless steel cylinder filled with Novec™ 1230 fluid, assembled with the following components:

- Cylinder valve with burst disc, pressure gauge, protective neck ring, protective cylinder cap and valve cap.
- Five cylinder sizes available for 360 psi (25 bar): 22 L, 52 L, 106 L, 147 L, and 180 L.
- Four cylinder sizes are available for 725 psi (50 bar): 40 L, 80 L, 140 L, and 180 L.
- 106 L, 147 L, and 180 L cylinders are available with Liquid Level Indicators for the 360 psi (25 bar) system.
- Cylinders are designed, manufactured, and labeled in accordance with the US Dept. of Transportation Standard DOT 4BW-500, DOT 3AA-910, and TC (Transportation Canada).
- Cylinders can only be installed in the upright position.
- To create the pressure necessary for the agent to be released, the extinguishing agent container is superpressurized with nitrogen at a pressure of 360 psi (25 bar) or 725 psi (50 bar).
- Cylinder fill density is dependent on the area of protection size. Agent concentration varies due to the expected class of fire (A, B, or C).

Each cylinder is equipped with a special pressure differential valve:

- Operates according to the differential pressure principle and has a piston and a brass housing.
- Includes a burst disc to protect from excessive pressure.
- Includes a pressure gauge for indication of the filling pressure.
- The valve is appropriate for high discharge rates and makes the extinguishant discharge possible within 10 seconds.
- Available in the nominal sizes 1-1/2" for the 22 L, 52 L, 40 L cylinder, and 2" for 80 L, 106 L, 147 L, and 180 L cylinders.

An optional manual release assembly with pneumatic discharge pressure switch can be ordered separately for installation in the piping:

- The pneumatic discharge pressure switch is required with manual release installation per NFPA 2001.
- The status of the pressure switch can be monitored by the fire agent release control panel.

A cylinder nameplate label is attached to the extinguishing agent container:

- Contains maintenance and filling information, as well as information about the filling quantity.
- A UL Listing label and FM Approval label are also attached to the cylinder.

Protective caps are used to protect sensitive components (e.g. valves) of the extinguishing agent containers:

- Protects the valves from damage during transport.

**NOTE: The protective valve caps must be attached before each transport.**

An installation clamp is required to be ordered with each container assembly (available separately):

- The cylinder must be attached to a wall using the designated installation clamp.

**NOTE: System detection is controlled by an approved system release control panel with compatible detection.**

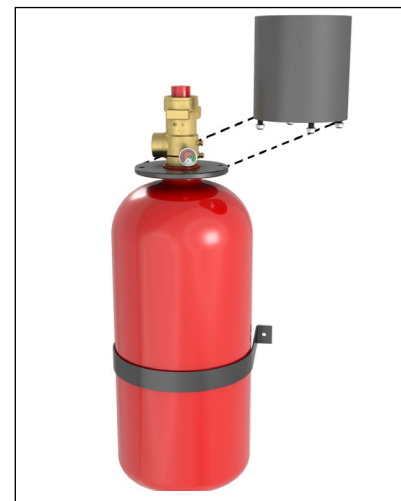
### 2. LISTINGS AND APPROVALS



**UL Listed:** Clean Agent Extinguishing System Unit



**FM Approved:** Clean Agent Fire Extinguishing System



**WARNING:** Cancer and Reproductive Harm-  
www.P65Warnings.ca.gov



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### 3. TECHNICAL DATA

- Minimum and Maximum Agent Storage Temperatures: 0°F to 122°F (-18°C to 50°C)
- Minimum and Maximum Temperatures of Protected Spaces per UL and FM: 60°F to 80°F (15.6°C to 26.7°C)

#### Cylinder Specifications

- Fill Density: Min. 25 lb/ft<sup>3</sup> (400 kg/m<sup>3</sup>), Max. 74.9 lb/ft<sup>3</sup> (1200 kg/m<sup>3</sup>) at 69.8°F (21°C)

**NOTE: The accurate filling quantity depends on the necessary extinguishant quantity and the layout of the piping.**

#### Valve Specifications

- Working Pressure: 360 psi (25 bar) or 725 psi (50 bar) at 70°F (21°C)
- Max. Working Pressure: 508 psi (35 bar) or 870 psi (60 bar) at 122°F (50°C)
- Response Pressure at Bursting Disc for 360 psi (25 bar) System: 900 psi (62 bar) at 68°F (20°C)
- Response Pressure at Bursting Disc for 725 psi (50 bar) System: 1276 psi (88 bar) for 2" valves, 1291 psi (89 bar) for 1-1/2" valves at 68°F (20°C)

#### Gauge Specifications

- FK-5-1-12 (Novec™ 1230)
- 360 psi (25 bar) system:
  - Maximum Pressure: 725 psi (50 bar)
  - Indicating Range: 0 to 508 psi (35 bar)
- 725 psi (50 bar) system:
  - Maximum Pressure: 1160 psi (80 bar)
  - Indicating Range: 0 to 870 psi (60 bar)
- Gauge Nominal Size: 2" (50 mm)
- Accuracy Class: 1.6

#### Material Standards

Cylinder: Welded Steel, Powder Coated Red, DOT Standard 4BW-500 or Seamless Steel, Powder Coated Red, DOT Standard 3AA-910/TPED

Protective Neck Ring: AISI 1015 Hot Rolled Steel, Powder Coated Black

Cylinder Valve:

- Housing, Adapter, Screws: Brass
- Seal Retainer: Brass
- O-ring/Seal of Seat: NBR
- Bursting Disk: Nickel
- Spring: Steel

Gauge: Aluminum

Liquid Level Indicator

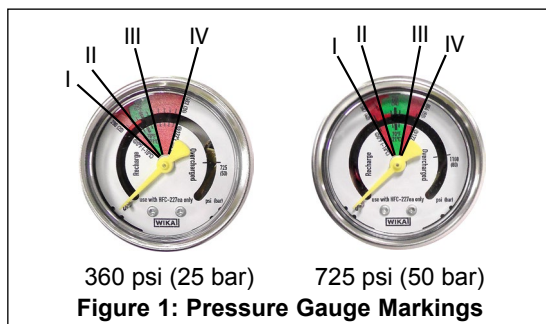
- Stem: Brass
- O-Ring: Buna N
- Float: Ceramic
- Protective Cap: PVC
- Tape: Painted Steel

Protective Cylinder Cap: AISI 1026, Hot Rolled Steel, Powder Coated Black

Installation Clamp: Steel

#### Ordering Information

The cylinders are filled according to the ordering designations. Extinguishant cylinders are completely assembled and filled. For a complete Single Container System, the following must be ordered separately: release devices, optional manual release assembly with pneumatic discharge pressure switch, discharge nozzles, hose or NPT connections, installation clamp, and warning signs. An approved release control panel with compatible detection system is also required.



#### Gauge Indicating Range:

- I. Pressure at minimum temperature 0°F (-18°C)
- II-III. Pressure from 90% to 110% from charging pressure at 70°F (21°C)
- IV. Pressure at max. temperature 122°F (50°C)

#### Gauge Color Marked:

- 0 to I.....Recharge
- I to II.....Red
- II to III.....Green
- III to IV.....Red
- IV to max....Overcharge

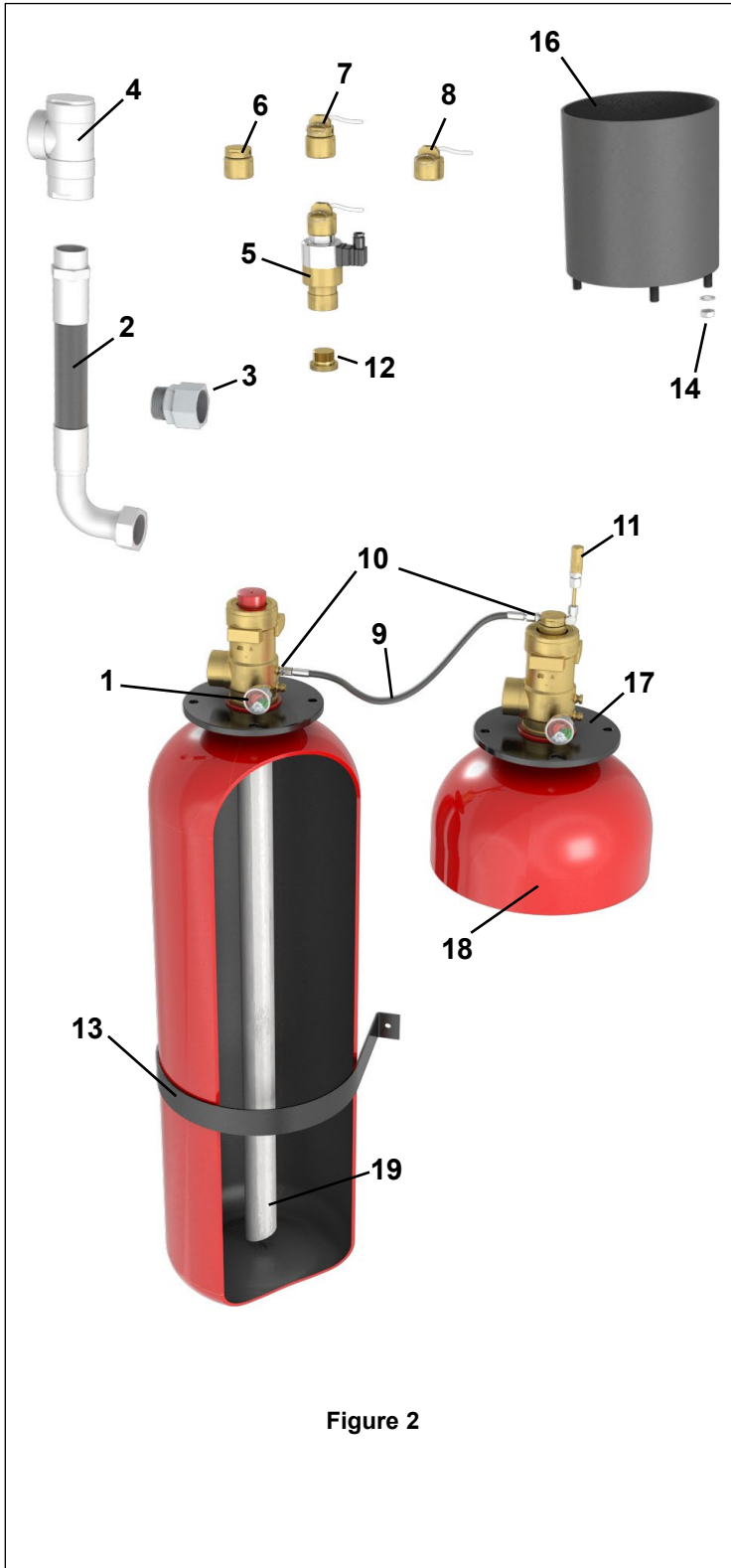


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**Figure 2**

**TABLE 1: VSH1230 Fire Extinguishing System Components**

Item No.	Description	Part No.	
1	Contact Pressure Gauge/ Low Pressure Switch (N.O. under pressure)	360 psi (25 bar)	889303
		725 psi (50 bar)	889305
	Pressure Gauge Only-Optional	360 psi (25 bar)	912097
		725psi (50 bar)	912099
2	Hose**	1-1/2" 90° Bend	912075
		2" 90° Bend	912076
3	Swivel Adaptor	1-1/2" NPT	17562 914154*
		2" NPT	17563 914155*
		2"	912071
4	Check Valve	2"	912071
5	Electric Release Device		889323D
6	Pneumatic Release Device		887669
7	Pneumatic/Manual Release Device		887670
8	Manual Release Device		887668
9	Pilot Hose	20"	24463 887834*
		39"	24464 887835*
		59"	24465 887836*
10	Pilot Hose Adaptor		887644
11	Pressure Malfunction Safety Assembly		16010
12	Screw Reset Tool		887645
13	Clamp for Extinguishing Agent Cylinder	22 L and 52 L	923157
		40 L	888014
		80 L, 106 L, 147 L, and 180 L	887639
14	Locknut, flange head		18046
16	Protection Cap		16353W/B
17	Ring-Protection Cap		16539
18	Extinguishing Agent Cylinder		Varies
19	Siphon Tube	2.0 inch	16355
		1.5 inch	16354

\*Confirm availability with Viking.

\*\*Not for use on single container systems.



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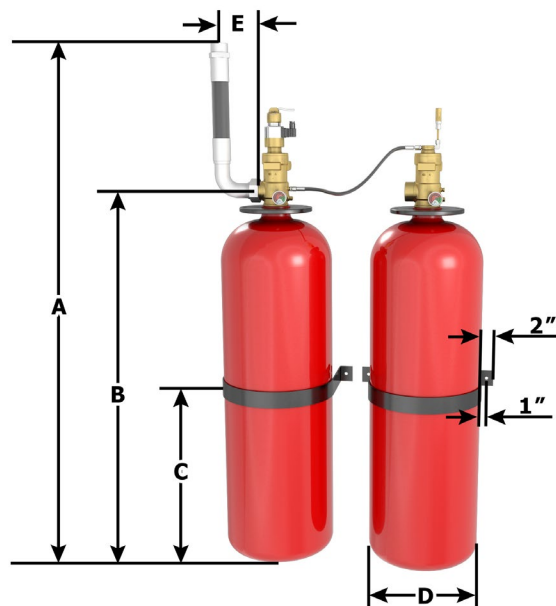


Figure 3

TABLE 2: VSH1230 Cylinder Part Numbers and Dimensions<sup>1,2</sup>

PRESSURE AT 70° F (20° C)	Nominal Volume (lbs)	Part No. Valve Type A / A25	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	Amount Filled		Empty Weight (lbs)
								Min. (lbs)	Max. (lbs)	
360 PSI (25 bar)	60	914147	40.8	23.2	15.8	10	4.75	20	58	88
	140	889109	65.4	47.8	27.5	10	4.75	46	137	108
	280	889111	61.4	40.9	27.5	16	6	94	280	190
	390	889113	74.5	54.0	41.1	16	6	130	388	229
	500	910510	86.0	65.5	51.2	16	6	159	476	313
725 PSI (50 bar)	110	888499	64.4	46.8	26.5	9	4.75	36	105	84
	220	926274 888591 <sup>3</sup>	55.4	34.9	23.6	16	6	71	211	218
	390	926278 888593 <sup>3</sup>	74.3	53.8	41.4	16	6	124	370	289
	500	926280 888595 <sup>3</sup>	88.0	67.5	51.2	16	6	159	476	395
<b>With Liquid Level Indicator</b>										
360 PSI (25 bar)	280	914151	61.4	40.9	27.5	16	6	94	280	210
	390	914152	74.5	54.0	41.4	16	6	130	388	251
	500	914153	86.0	65.5	51.2	16	6	159	476	286

<sup>1</sup> Extinguishing agent cylinder complete with valve, siphon tube, ring and protection cap, without extinguishing agent.

<sup>2</sup> All dimensions are approximate, variations due to manufacturing tolerances are possible.

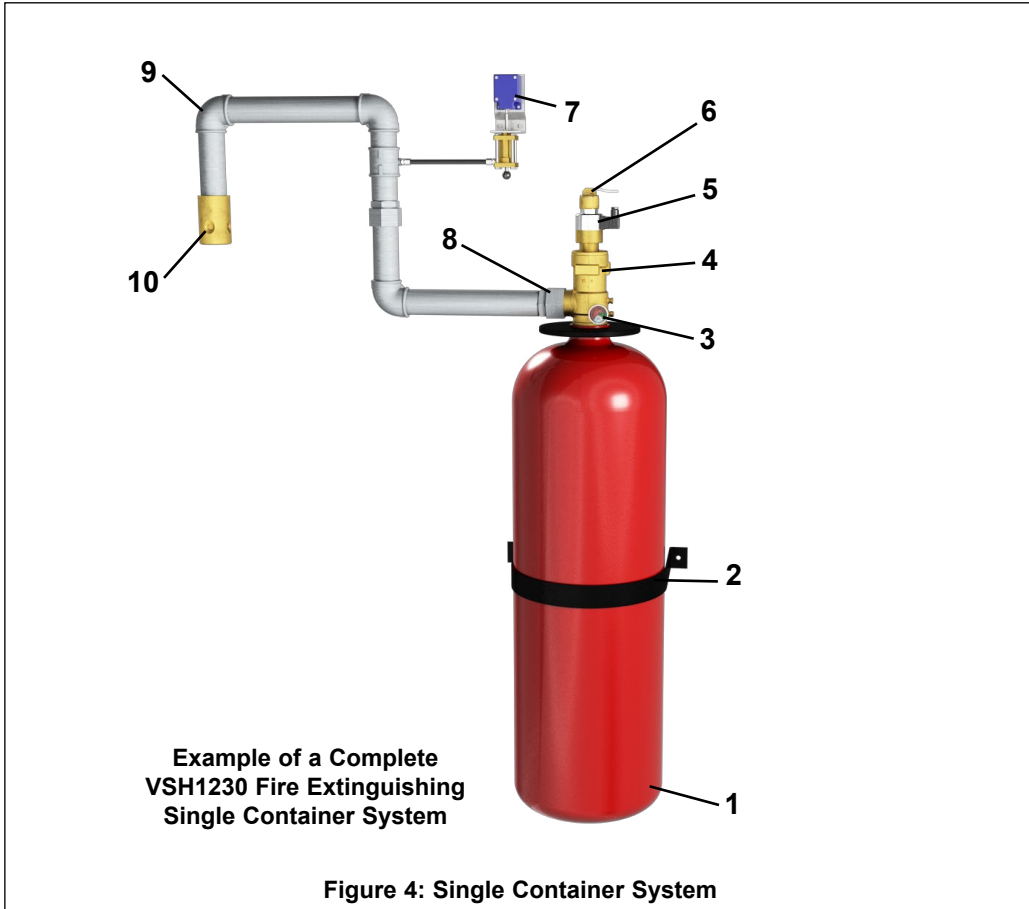
<sup>3</sup> Confirm availability with Viking.



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**TABLE 3: SYSTEM COMPONENTS FOR A COMPLETE VSH1230 SINGLE CONTAINER SYSTEM WITH ELECTRIC RELEASE DEVICE**

Item No.	Description
1	Extinguishing agent container
2	Installation clamp**
3	Pressure gauge
4	Cylinder valve with burst disc
5	Release device, electric**
6	Release device, manual
7	Pneumatic discharge pressure switch (optional)**†
8	Swivel adapter**
9	Pipeline**
10	Discharge nozzle**

\*\*Ordered separately.

† Required if manual release device is installed (available as part of the manual release assembly).

**NOTE:** Additional components are required for a Multi Container System.

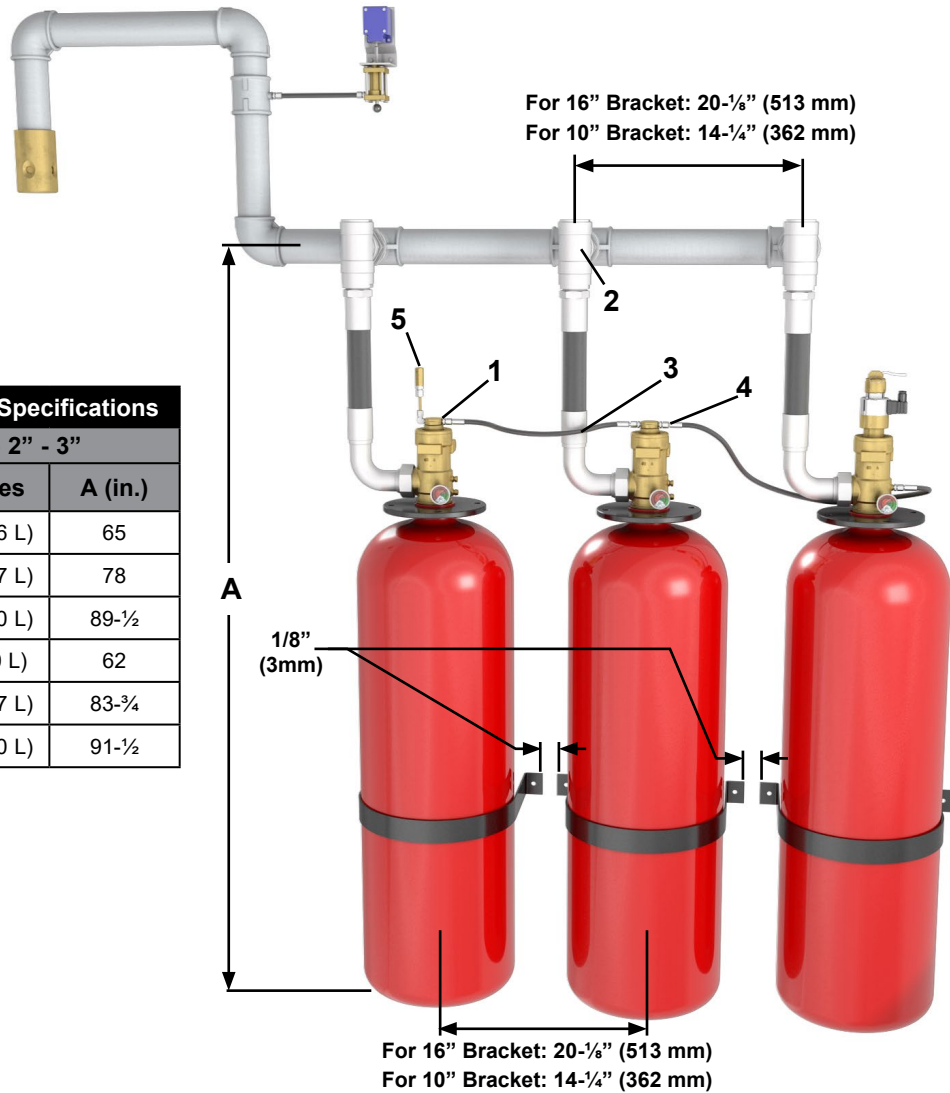


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Table 4: Manifold Height Specifications		
Manifold Pipe Size 2" - 3"		
PSI	Tank Sizes	A (in.)
360 psi (25 bar)	280 lb. (106 L)	65
360 psi (25 bar)	390 lb. (147 L)	78
360 psi (25 bar)	500 lb. (180 L)	89-1/2
725 psi (50 bar)	220 lb. (80 L)	62
725 psi (50 bar)	390 lb. (147 L)	83-3/4
725 psi (50 bar)	500 lb. (180 L)	91-1/2



**Figure 5: Example of a Complete VSH1230 Fire Extinguishing Multi Container System**

**Table 5: Additional System Components Required For a VSH1230 Multi-Container System\*\*\***

Item No.	Description
1	Pneumatic Release Device
2	Check Valve
3	Pilot Line
4	Pilot Line Adapter (one required for connecting each pilot line end and for connecting each pilot line safety valve)
5	Pressure Malfunction Safety Assembly

\*\*\*Components required in addition to the items indicated in Figure 3 for a Single Container System.