



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): 60, 140, 280, 390, and 500 lbs. (22, 52, 106, 147, and 180 l).
- Three cylinder sizes are available for 725 psi (50 bar): 220, 390, and 500 (80, 140, and 180 l)
- 280, 390, and 500 lbs. (106, 147, 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 - 360 psi (25 bar) system only).
- 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 60 lb and 140 lb. cylinder, and 2" for 220, 280, 390, and 500 lb. 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.

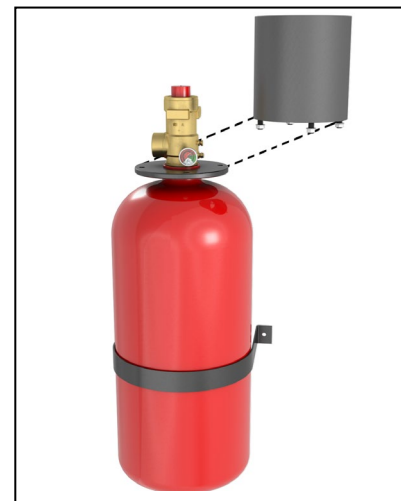
2. LISTINGS AND APPROVALS



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/ft³ (400 kg/m³), Max. 74.9 lb/ft³ (1200 kg/m³) 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

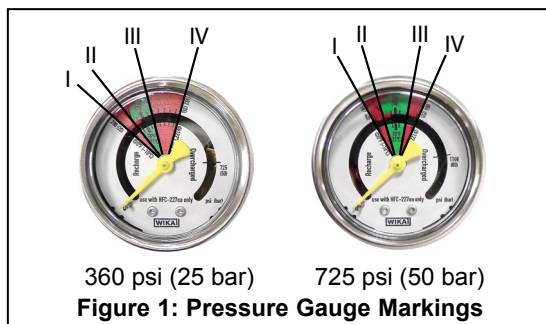
- Stem: Brass
- O-Ring: Buna N
- Float: Ceramic
- Protective Cap: PVC
- Tape: Painted Steel

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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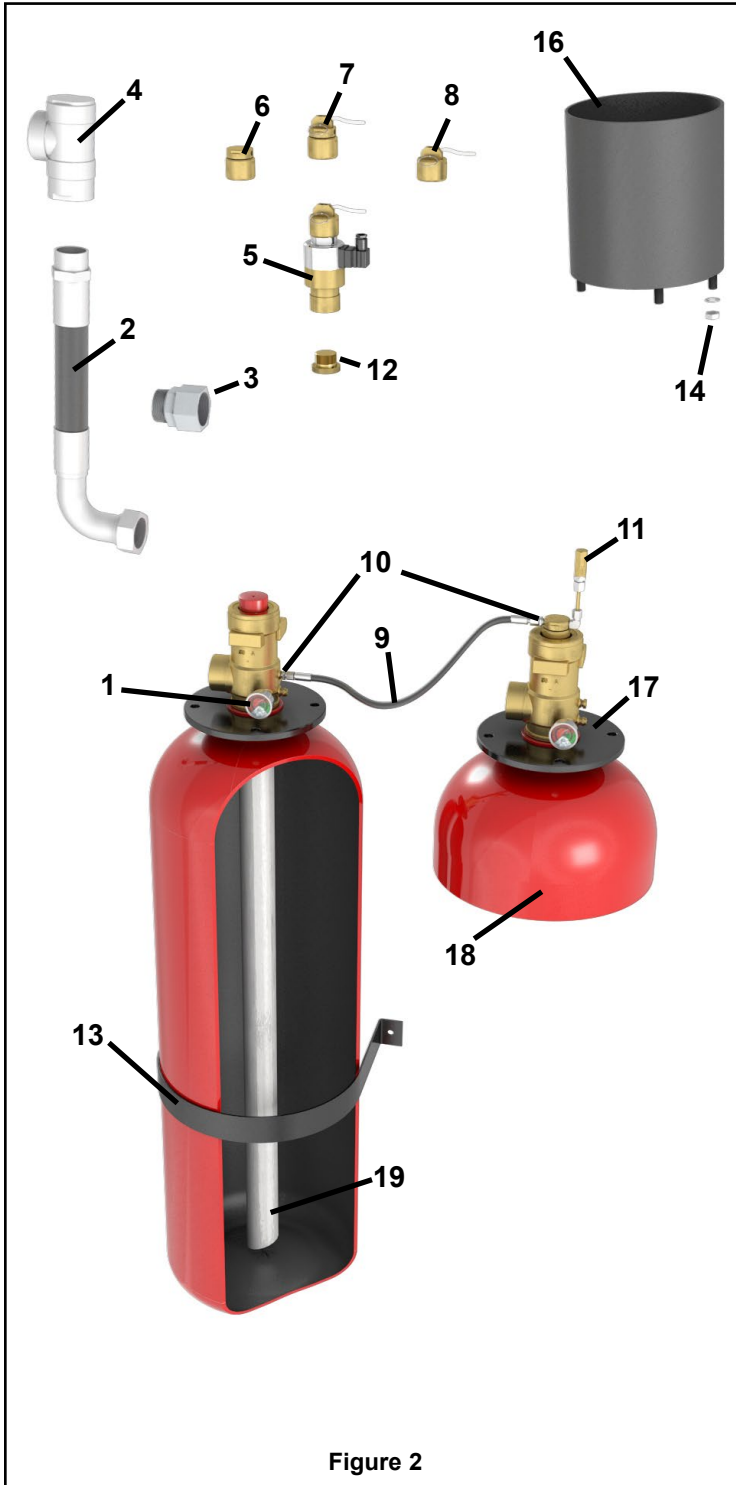


Figure 2

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
		2" NPT	17563
4	Check Valve	2"	912071
5	Electric Release Device		889323
6	Pneumatic Release Device		887669
7	Pneumatic/Manual Release Device		887670
8	Manual Release Device		887668
9	Pilot Hose	24"	887834
		39"	887835
		59"	887836
10	Pilot Hose Adaptor		887644
11	Pressure Malfunction Safety Assembly		16010
12	Screw Reset Tool		17096
13	Clamp for Extinguishing Agent Cylinder	60 lb / 140 lb	19368W/B
		280 lb / 390 lb / 220 lb / 500 lb	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



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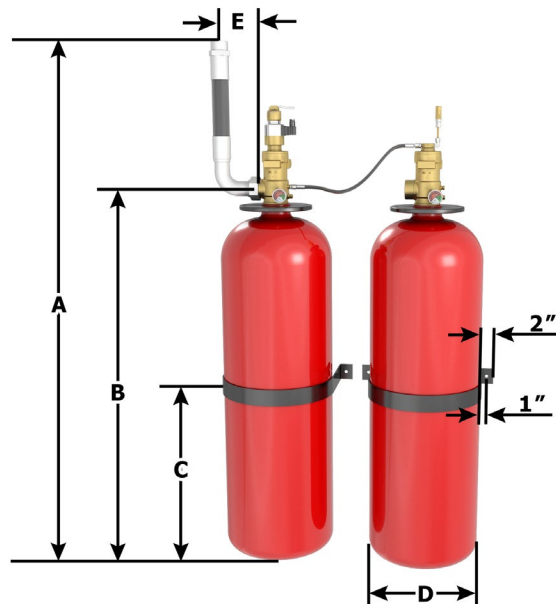


Figure 3

TABLE 2: VSH1230 Cylinder Part Numbers and Dimensions^{1, 2}

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

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

² All dimensions are approximate, variations due to manufacturing tolerances are possible.

³ Limited availability.



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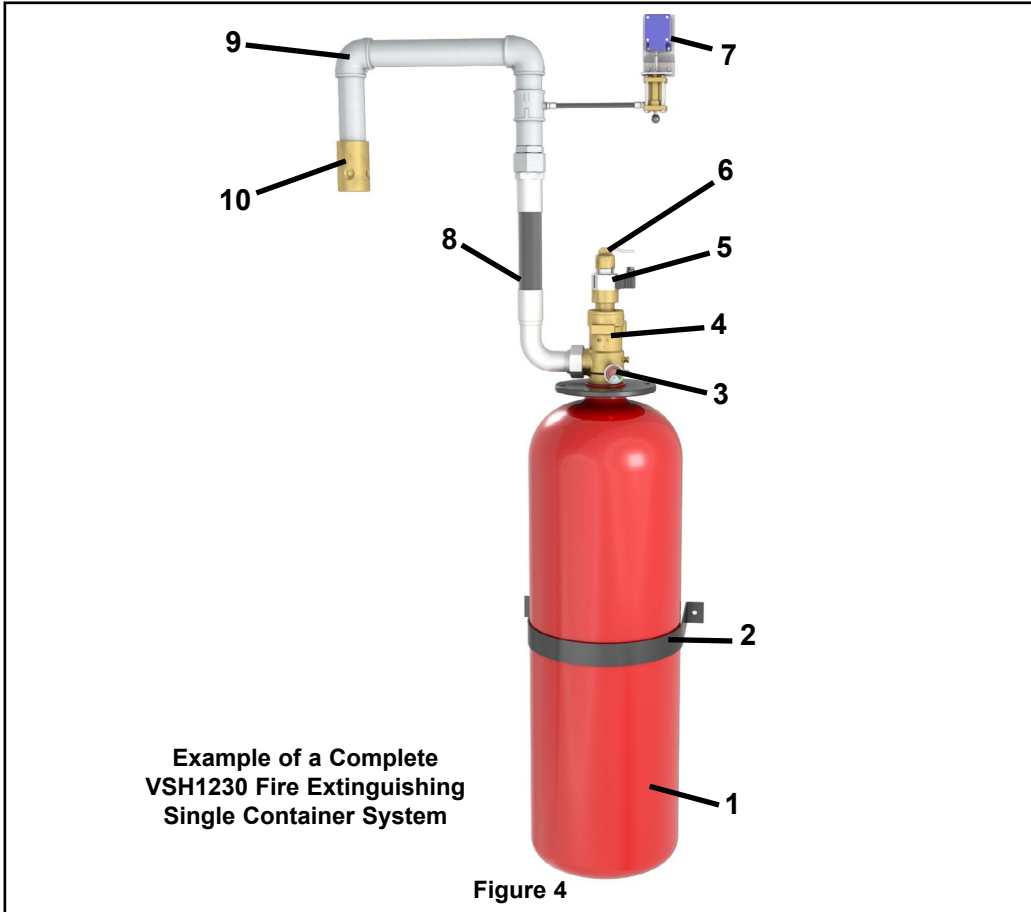


TABLE 3: SYSTEM COMPONENTS FOR A COMPLETE VSH1230 SINGLE CONTAINER SYSTEM WITH ELECTRIC RELEASE DEVICE

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 (optional, also see Item 9)**
7	Pneumatic Discharge Pressure Switch (optional)**†
8	Hose (90° Shown)**
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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Figure 5: Example of a Complete VSH1230 Fire Extinguishing Multi Container System

TABLE 4: 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.