

# CLEAN AGENT FIRE EXTINGUISHING SYSTEM

## MX 200 Extinguishing Agent Cylinders

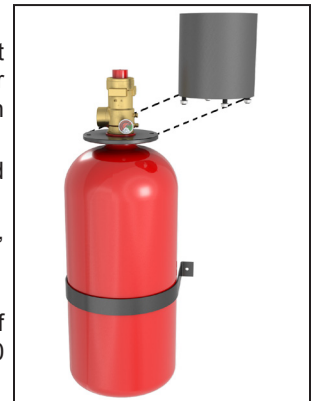
Minimax Fire Products Technical Services: (480) 553-5670 Email: [mxtechsupport@minimaxfp.com](mailto:mxtechsupport@minimaxfp.com)

The technical data described herein is for components of the Minimax Fire Products MX 200 Clean Agent System. For design, installation, and operation instructions, refer to the latest edition of the original source documents: Installation and Service Manual (Part No. 889331), Design Manual (Part No. 889336), and Operation Manual (Part No. 889329).

### 1. DESCRIPTION

The Minimax Fire Products MX 200 Fire Extinguishing System uses HFC-227ea extinguishing agent 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 HFC-227ea 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 are available for 360 psi (25 bar): 55, 130, 270, 370, and 450 lbs. (22, 52, 106, 147, and 180 l).
- Three cylinder sizes are available for 725 psi (50 bar): 200, 350, and 450 lbs (80, 140, and 180 l)
- 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) systems 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 high-speed opening cylinder 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 inch for the 55 and 130 lb. cylinders, and 2 inch for 200, 270, 350, 370, and 450 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.

Minimax Technical Data may be found on  
Minimax Fire Products' Web site at  
<http://www.minimaxfp.com/>.  
The Web site may include a more recent  
edition of this Technical Data Page.

### 2. LISTINGS AND APPROVALS

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

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

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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. 31.2 lb/ft<sup>3</sup> (500 kg/m<sup>3</sup>), Max. 71.1 lb/ft<sup>3</sup> (1140 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

- Agent: HFC-227ea
- 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.

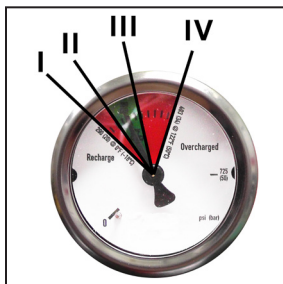


Figure 1: Pressure Gauge Markings

#### 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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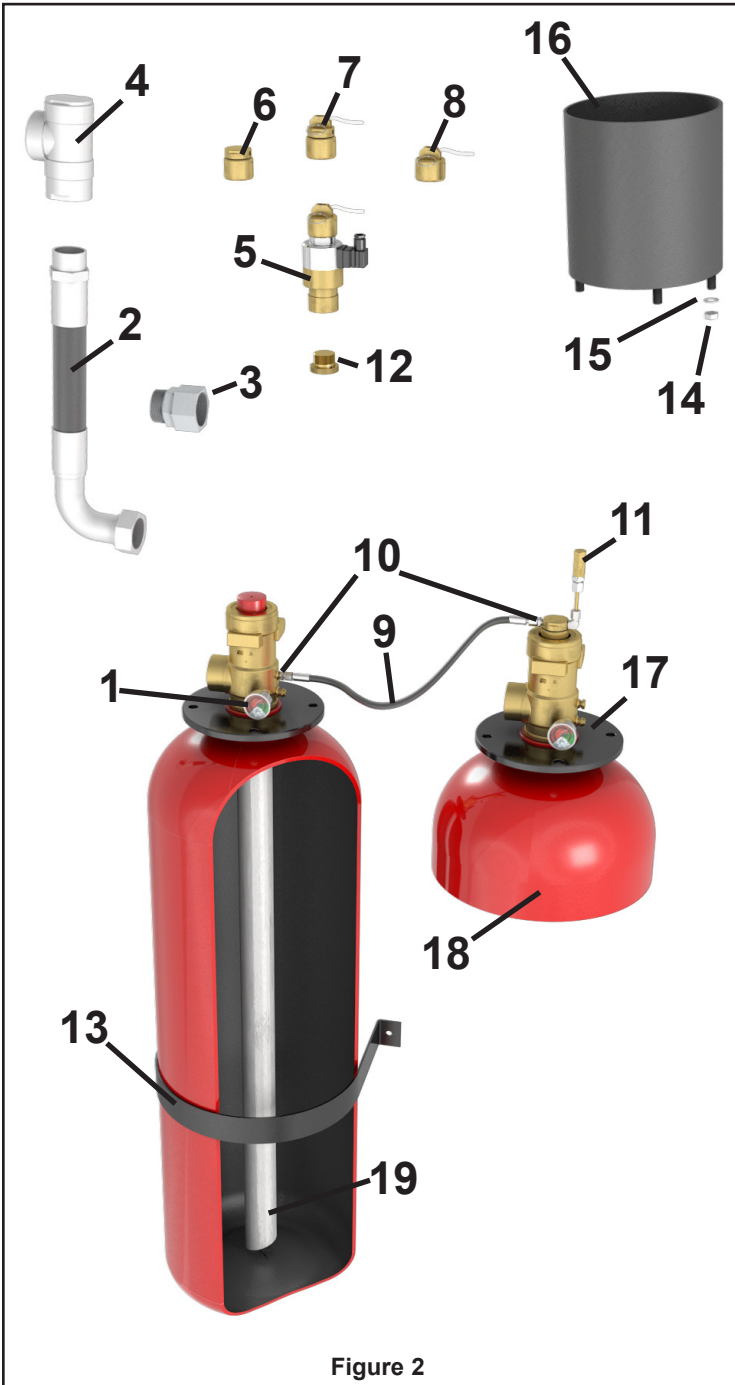


Figure 2

TABLE 1: MX Fire Extinguishing System Components

Item No.	Description		Part No.
1	Pressure Gauge	360psi (25 bar)	91 2100
		725psi (50 bar)	91 2102
	Contact Pressure Gauge / Low pressure Switch (Optional)	360psi (25 bar) NO	88 9306
		725psi (50 bar) NO	88 9309
2	Hose	1-1/2" 90° Bend	91 2075
		2" 90° Bend	91 2076
3	Swivel Adaptor	1-1/2" NPT	91 4154
		2" NPT	91 4155
4	Check Valve	2"	91 2071
5	Electric Release Device		88 9323
6	Pneumatic Release Device		88 7669
7	Pneumatic/Manual Release Device		88 7670
8	Manual Release Device		88 7668
9	Pilot Hose	24"	88 7834
		39"	88 7835
		59"	88 7836
10	Pilot Hose Adaptor		88 7644
11	Pressure Malfunction Safety Assembly		88 9320
12	Screw Reset Tool		17096
13	Clamp for Extinguishing Agent Cylinder	60lb / 140lb	19368
		280lb / 390lb / 220lb / 500lb	88 7639
14	Hex. Nut DIN934-M12-B-GAL ZN/B		81 1386
15	Washer DIN125-B13ST GAL ZN/B		10 9886
16	Protection Cap		
17	Ring-Protection Cap		
18	Extinguishing Agent Cylinder		
19	Siphon Tube		

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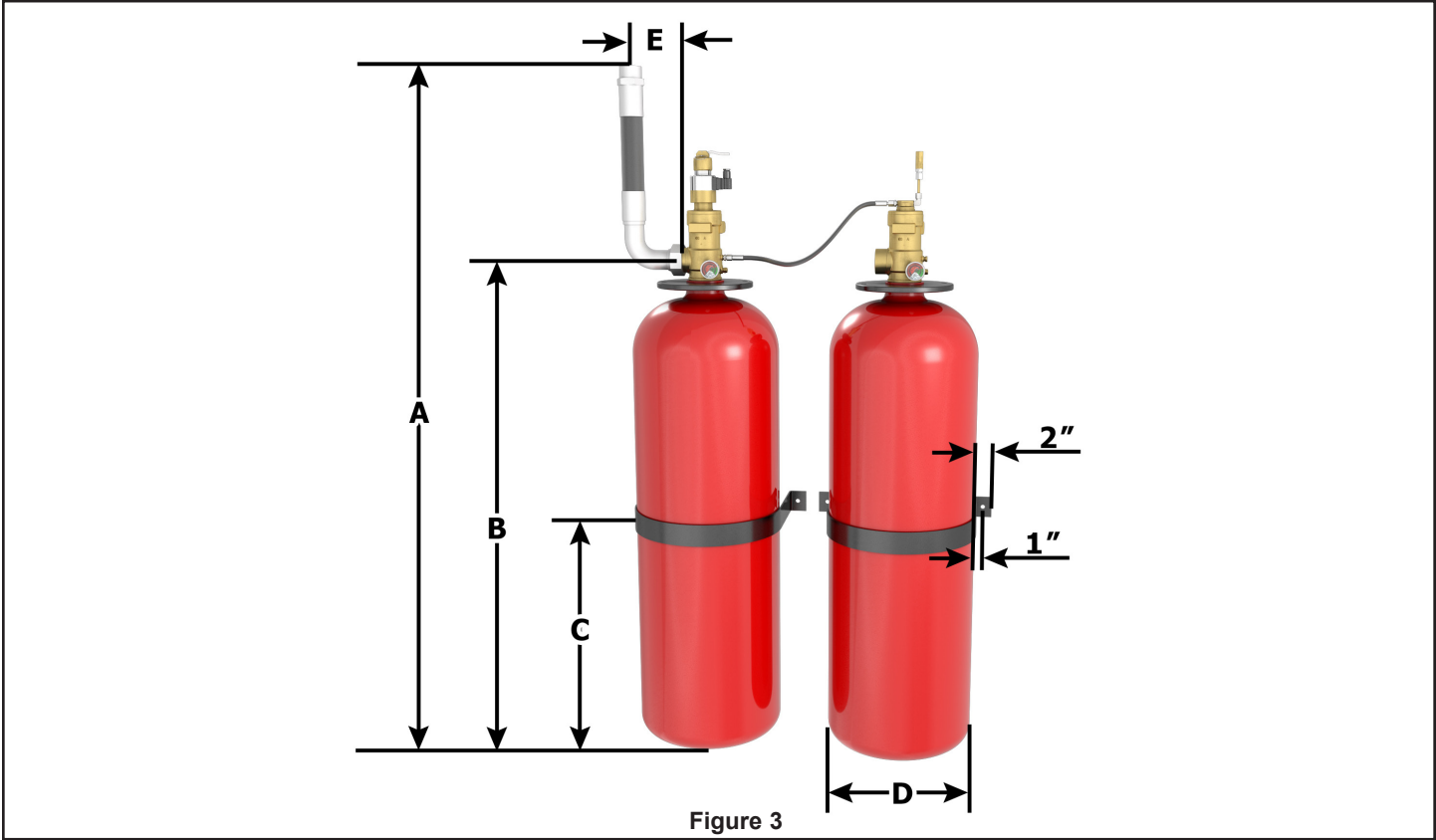


Figure 3

TABLE 2: MX 200 Cylinder Part Numbers and Dimensions<sup>12</sup>

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)	55 lb	91 4146	40.8	23.2	15.8	10	4.75	25 lbs	55 lbs	88 lbs
	130 lb	88 9098	65.4	47.8	27.5	10	4.75	58 lbs	130 lbs	108 lbs
	270 lb	88 9100	61.4	40.9	27.5	16	6	117 lbs	266 lbs	190 lbs
	370 lb	88 9103	74.5	54.0	41.1	16	6	163 lbs	369 lbs	229 lbs
	450 lb	91 0508	86.0	65.5	51.2	16	6	199 lbs	452 lbs	313 lbs
725 PSI (50 bar)	200 lb	88 8571	55.4	34.9	23.6	16	6	89 lbs	185 lbs	218 lbs
	350 lb	88 8574	74.3	53.8	41.4	16	6	155 lbs	324 lbs	289 lbs
	450 lb	88 8576	88.0	67.5	51.2	16	6	199 lbs	416 lbs	395 lbs
<b>With Liquid Level Indicator</b>										
360 PSI (25 bar)	270 lb	91 4148	61.4	40.9	27.5	16	6	116 lbs	266 lbs	210 lbs
	370 lb	91 4149	74.5	54.0	41.4	16	6	162 lbs	369 lbs	251 lbs
	450 lb	91 4150	86.0	65.5	51.2	16	6	199 lbs	452 lbs	286 lbs

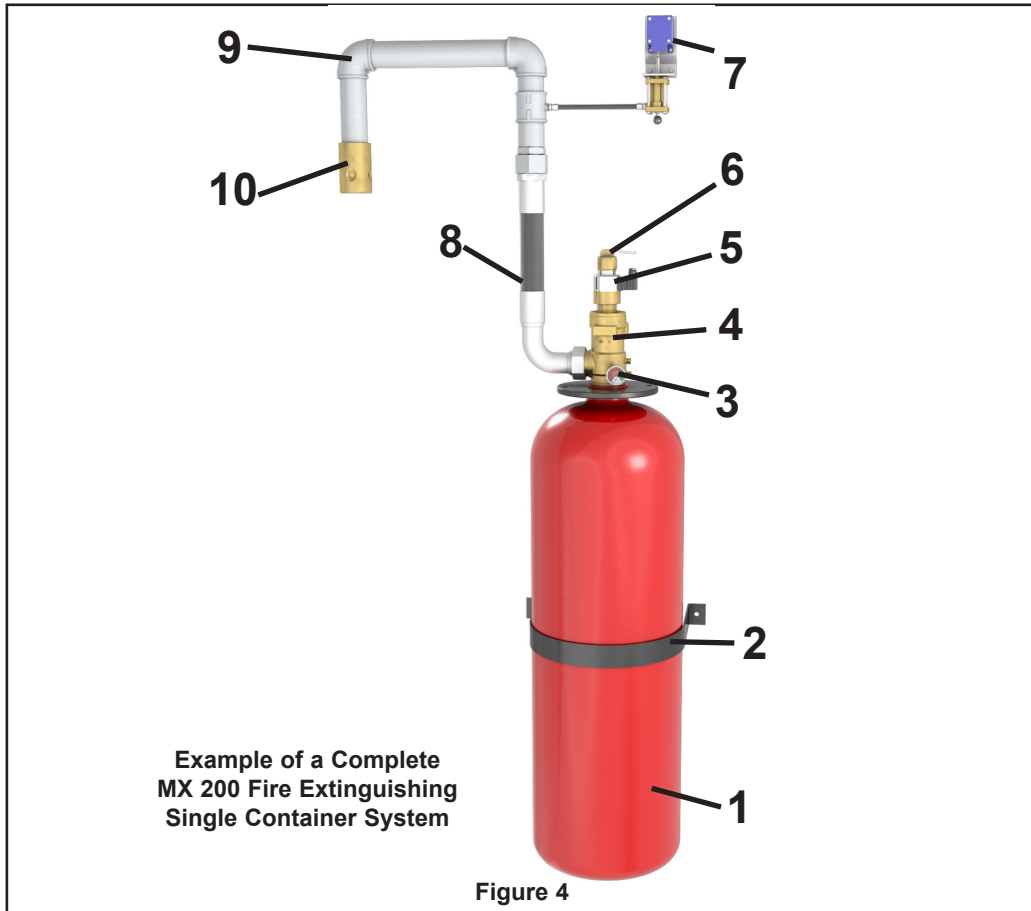
<sup>1</sup> Extinguishing agent cylinder complete with valve, ciphon tube, ring and protection cap, without extinguishing agent.

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

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**TABLE 3: SYSTEM COMPONENTS FOR A COMPLETE MX 200 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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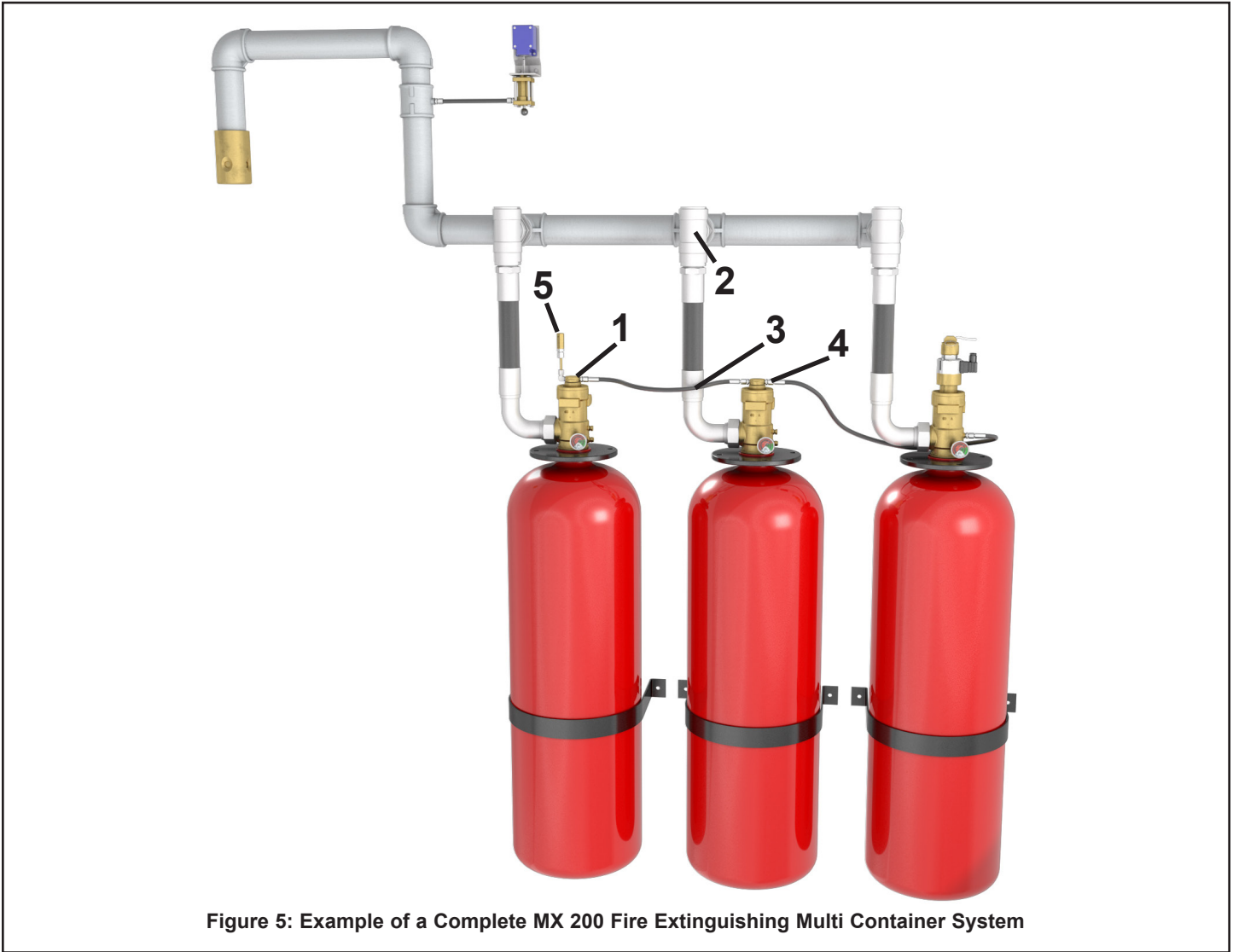


Figure 5: Example of a Complete MX 200 Fire Extinguishing Multi Container System

TABLE 4: ADDITIONAL SYSTEM COMPONENTS REQUIRED FOR A MX 200 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.