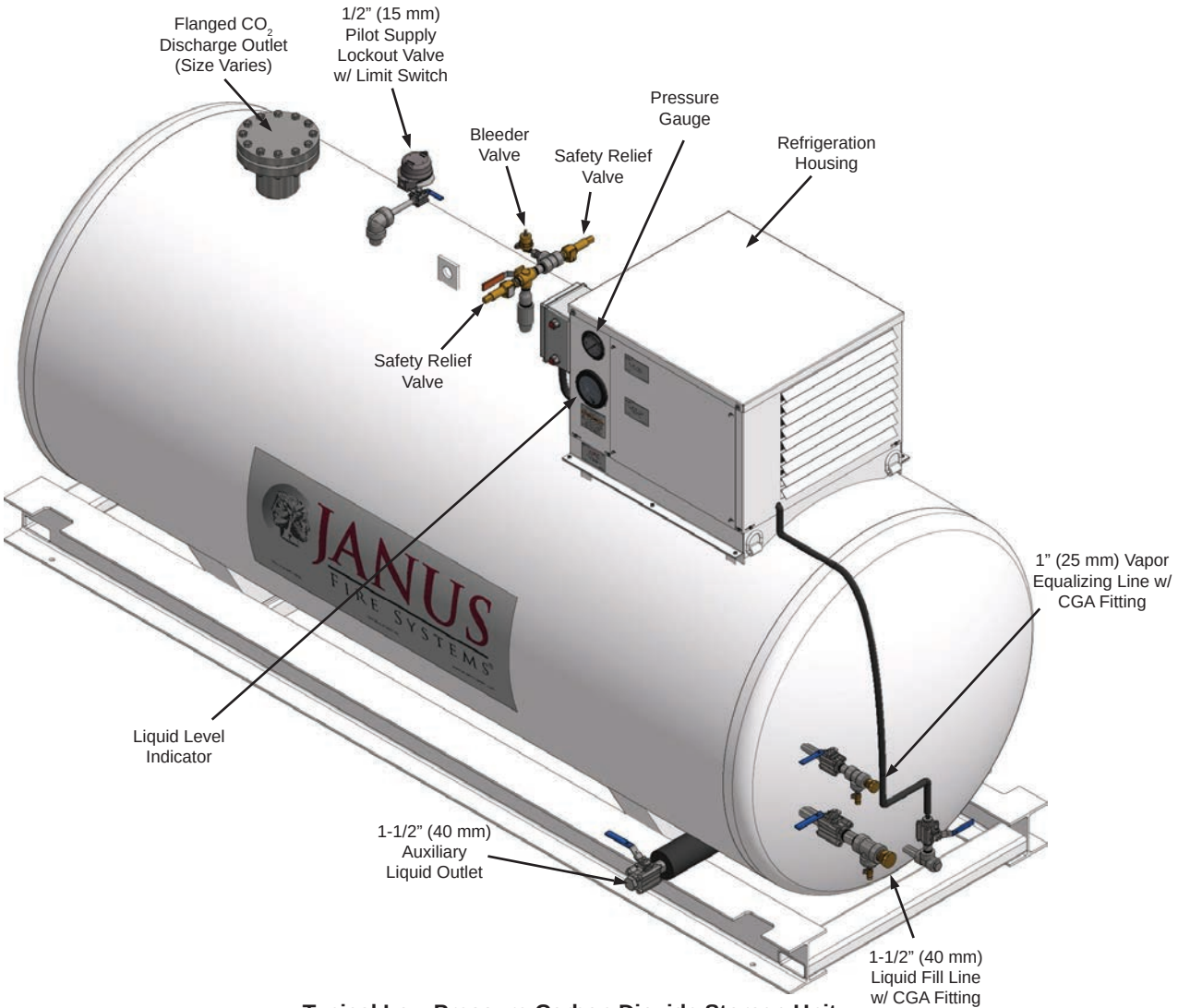
$LPCO_2$ System

Refrigerated Storage Units

Janus Fire Systems® Low Pressure Carbon Dioxide Refrigerated Storage Units are specifically designed to store the carbon dioxide agent supply utilized in the Janus Fire Systems® Low Pressure Carbon Dioxide Fire Extinguishing System. Each storage unit consists of an insulated pressure vessel, outer shell, integrated refrigeration unit, ASME safety relief and bleeder valve(s), and liquid level and pressure gauges. Each unit has appropriately sized piping outlets for filling, discharge of CO_2, and connection of the extinguishing system vapor supply. Janus Fire Systems® Low Pressure Carbon Dioxide Refrigerated Storage Units have capacities that range from 1.25 to 45 tons.

FEATURES

The pressure vessel is built in accordance with Section VIII, Division 1 of the ASME Code for Unfired Pressure Vessels. A 4 in (102 mm) layer of polyurethane acts as insulation between the vessel and the painted steel (10-gauge) outer housing.



Typical Low Pressure Carbon Dioxide Storage Unit

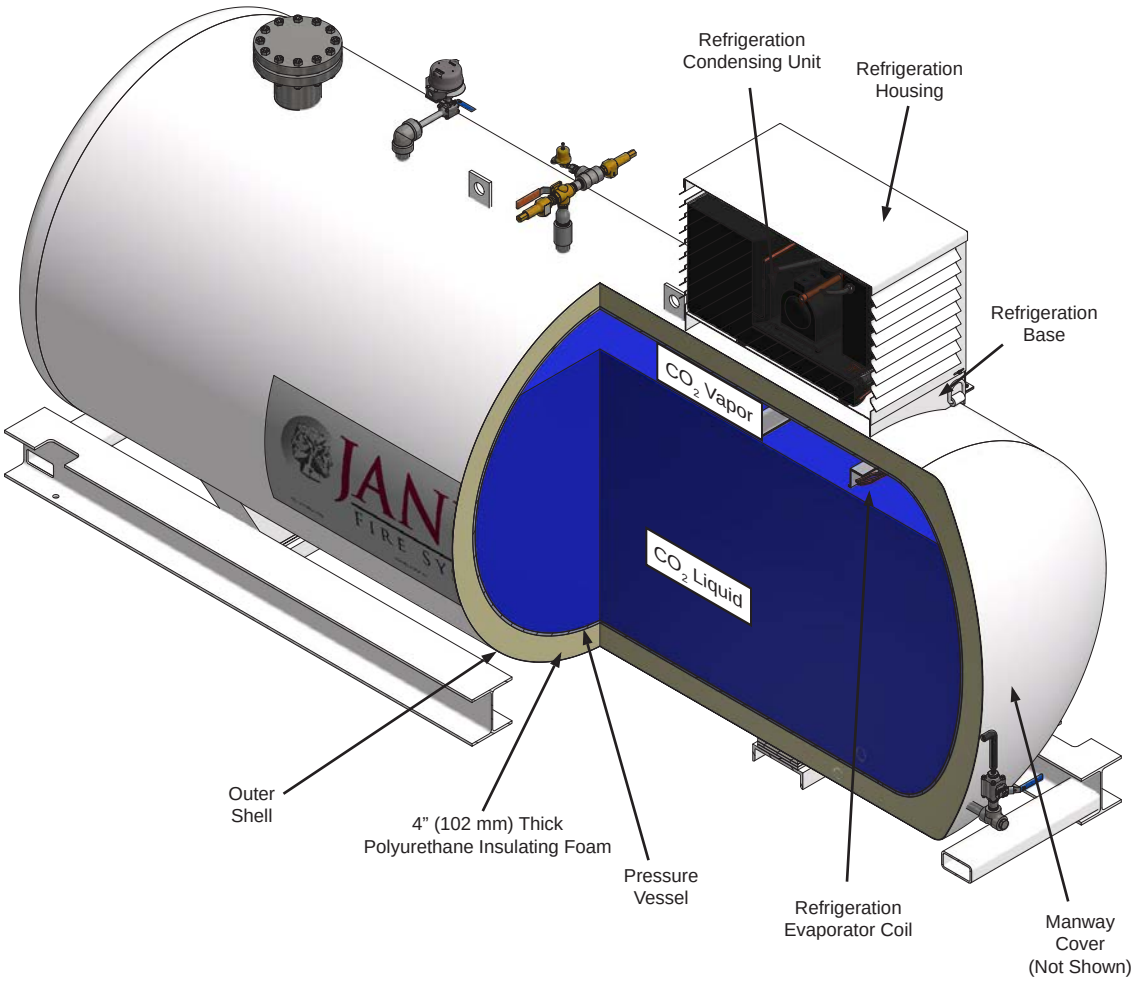
© 2009 Janus Fire Systems. All rights reserved (2/2009) Janus Fire Systems® is a registered trademark of Janus Fire Systems.

The vessel has an integrated refrigeration system that utilizes CFC-free R-404A refrigerant. A pressure switch monitors the internal pressure of the vessel and controls the refrigeration compressor. The optimal internal pressure is 300 psi (20.7 bar). The refrigeration coils are located in the pressure vessel vapor space to provide the required cooling of the CO_2 vapor. When the CO_2 pressure within the vessel reaches approximately 310 psi (21.4 bar), the pressure switch closes starting the compressor. It continues running, cooling the CO_2 until pressure within the vessel drops to approximately 290 psi (20.0 bar) at which point the pressure switch opens and the compressor stops operating. An optional external tank heater is available to maintain CO_2 pressure in severe low temperatures and is recommended where temperatures are below -10°F (-23.3°C) for seven (7) consecutive days.

Each storage unit is fitted with pressure and liquid level gauges. In the event of power failure, a bleeder valve set at 341 psi (23.5 bar) allows a small amount of vaporous CO_2 to bleed out of the vapor space providing natural cooling of the liquid CO_2 within the vessel. An ASME VIII approved safety valve provides emergency pressure relief should the bleeder valve be unable to maintain the CO_2 pressure and is set to open at 357 psi (24.6 bar).

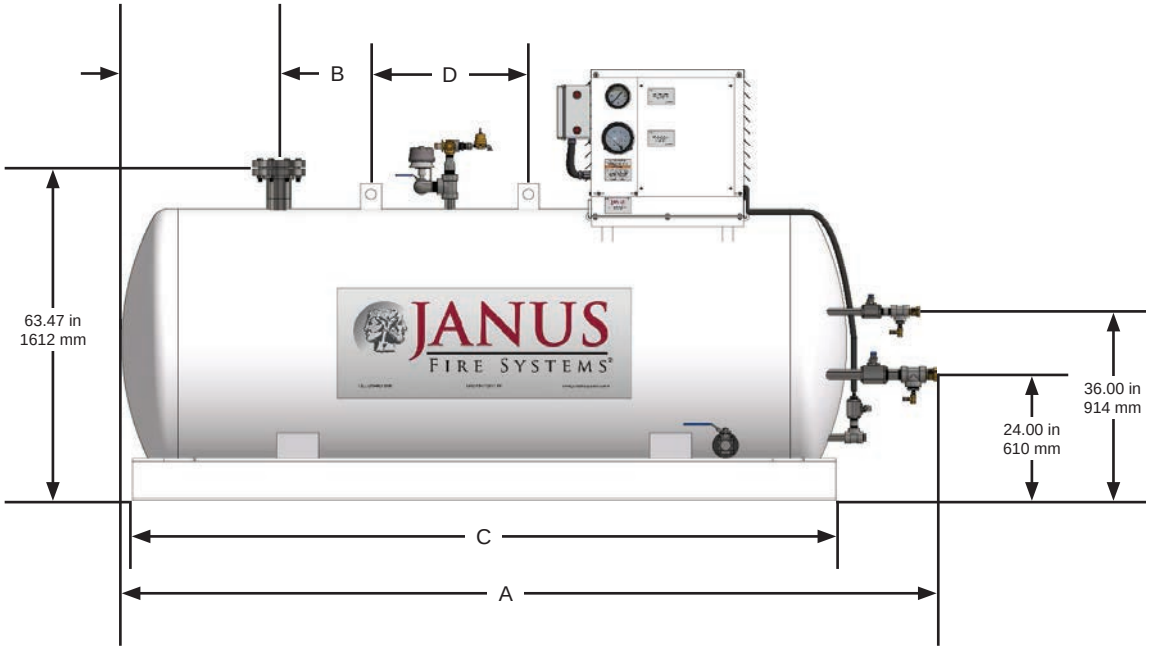
The standard voltage for 42” storage units is 120V, 1 phase, 60 Hz, while the 54” and 78” storage units are 460V, 3 phase, 60 Hz. Alternative voltage refrigeration systems are available.

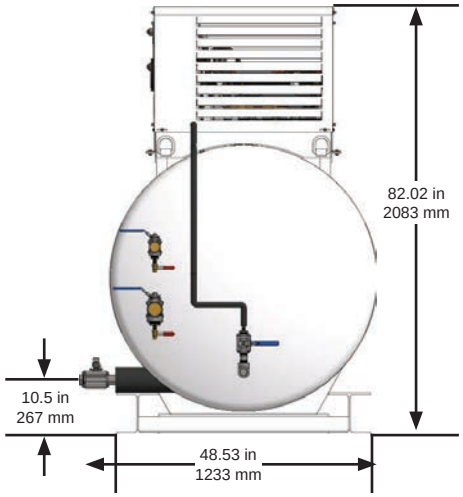
Optional dual refrigeration units are available. Each refrigeration unit for this option is designed to operate as a standalone system with individual refrigeration compressors, controls, and coils. The refrigeration controls operate both refrigeration units independently to enable the units to cycle separately. The refrigeration system has a separate pressure control switch set at approximately 325 psi (22.4 bar) rise to operate both units simultaneously should a high ambient condition require additional cooling capacity.

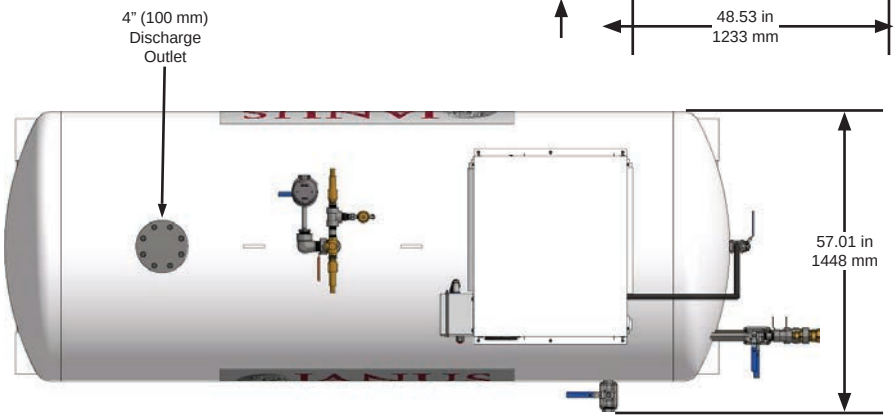


Typical Low Pressure Carbon Dioxide Storage Unit Interior View

42” $LPCO_2$ Storage Unit



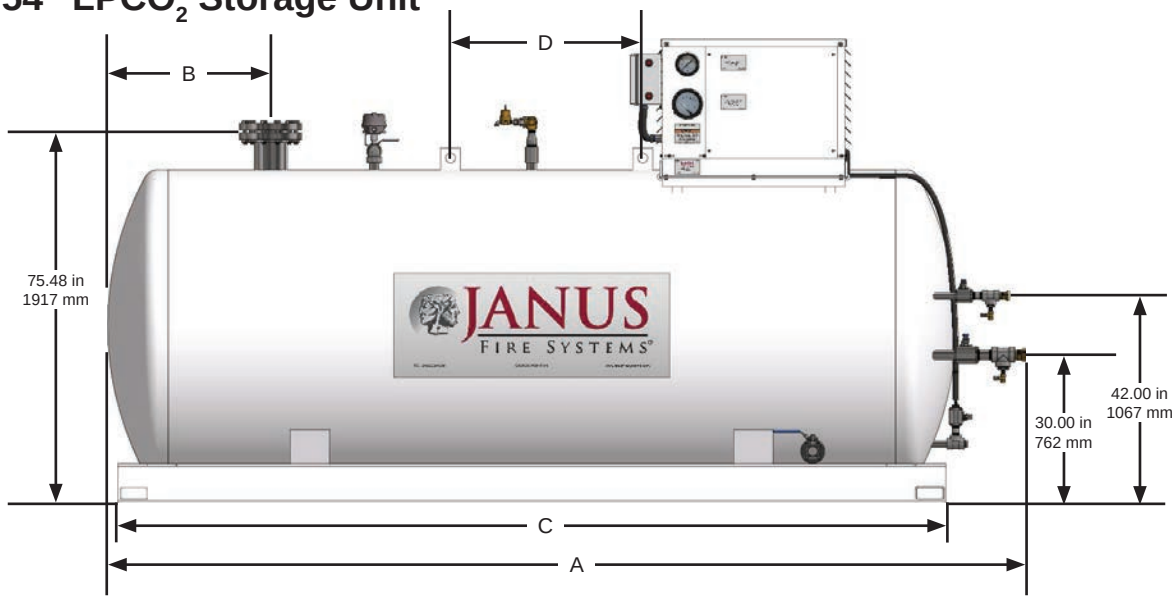


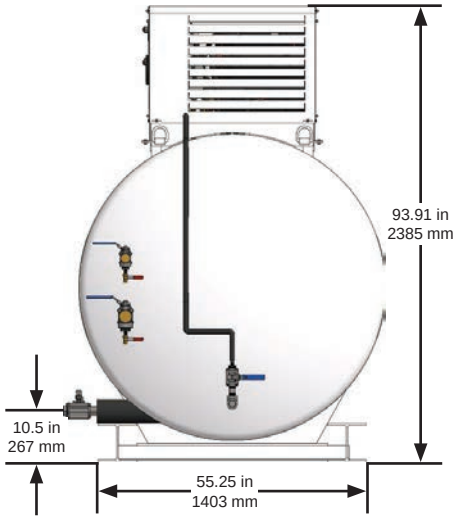


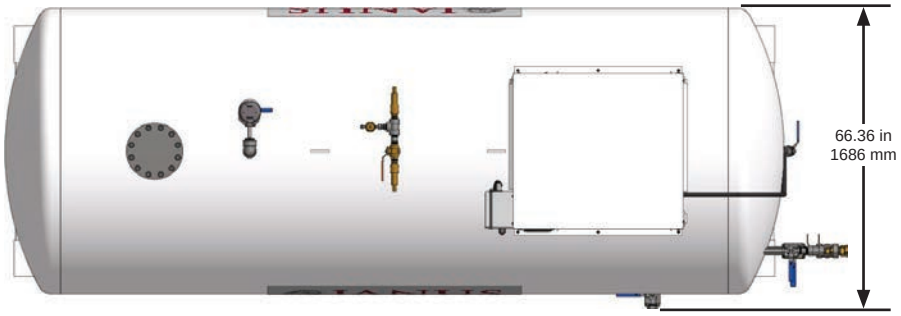
Nominal Tank Capacity	P/N	Dimensions										Empty Weight	
		A		B		C		D		E			
		in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
1.25 ton	19354	107.53	2731	22.06	560	86.25	2191	N/A[1]	N/A[1]	4000	1814	3025	1372
2.75 ton	19355	155.28	3944	30.00	762	134.00	3404	30.00	762	5300	2404	4950	2245

[1] 1.25-Ton Storage Unit only contains one lifting lug.

54” $LPCO_2$ Storage Unit



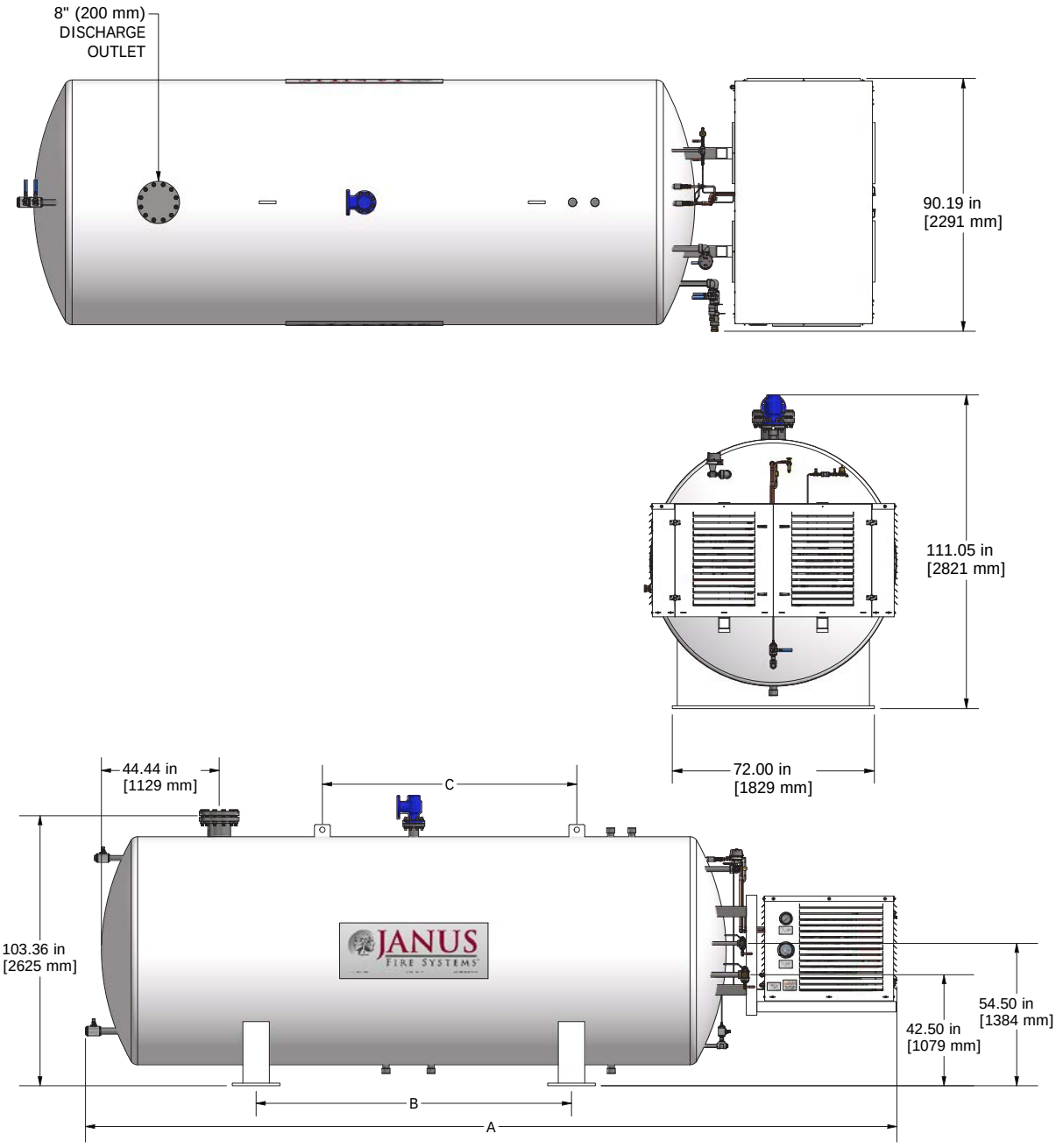




Nominal Tank Capacity	P/N	Dimensions								Empty Weight	
		A		B		C		D			
		in	mm	in	mm	in	mm	in	mm	lb	kg
4 ton	19356	139.1	3533	35.5	903	130.0	3302	N/A[1]	N/A[1]	7250	3289
6 ton	19357	186.1	4728	33.0	839	168.0	4267	39.0	991	9150	4150
8 ton	19358	238.1	6048	33.0	839	220.0	5588	72.0	1829	10850	4921
10 ton	19359	290.1	7369	33.0	839	272.0	6909	116.5	2959	12950	5874
12 ton	19360	342.1	8690	33.0	839	324.0	8230	150.5	3823	14850	6736

[1] 4-Ton Lifting Lugs located on end of base. Contact Janus Fire System for further information.

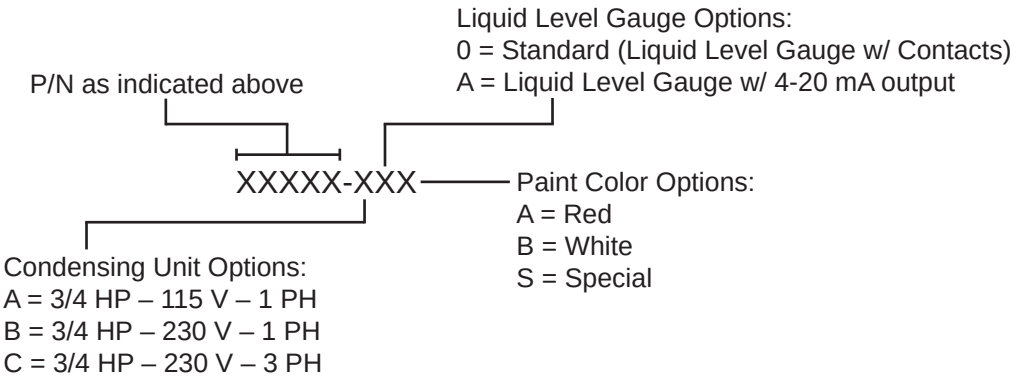
78” $LPCO_2$ Storage Unit



Nominal Tank Capacity	Dimensions						Empty Weight	
	A		B		C			
	in	mm	in	mm	in	mm	lb	kg
13 ton	258.13	6556	73.0	1854	84.5	2146	14565	6606
17 ton	306.13	7776	119.0	3023	96.0	2438	17186	7795
24 ton	399.12	10138	212.0	5385	128.0	3251	22012	9984
31 ton	483.13	12271	288.0	7315	180.0	4572	26448	11996
38 ton	574.27	14586	377.0	9576	240.0	6096	31149	14128
45 ton	663.27	16847	466.0	11836	240.0	6096	35850	16259

Ordering Information (42” Low Pressure Carbon Dioxide Storage Units)		
P/N	**Tank Size**	**Description (see below for options)**
19354	**1.25 ton**	**Storage Unit, LPCO2, 42”**
19355	**2.75 ton**	**Storage Unit, LPCO2, 42”**

Ordering Instructions: Specify the $LPCO_2$ Storage Unit P/N followed by a dash and the appropriate three digit option code as illustrated below.

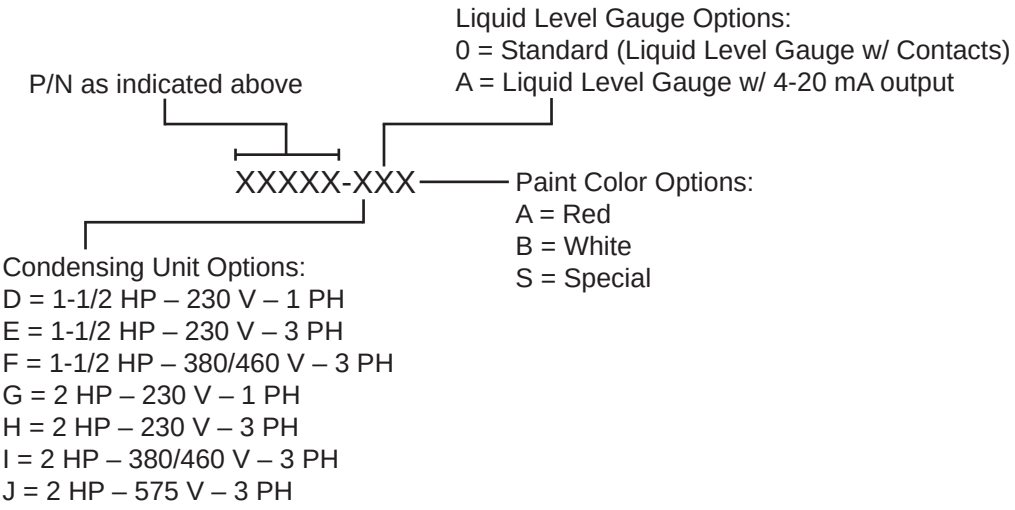


Note:
All condensing units operate at both 50Hz and 60Hz. However, operating at 50Hz reduces the refrigeration capacity to 83%

Examples:
19354-C0B – Storage Unit, LPCO2, 42”, 1.25 ton, 230 V, 3 PH, 3/4 HP, Standard LLG, White
19355-AAB – Storage Unit, LPCO2, 42”, 2.75 ton, 115 V, 1 PH, 3/4 HP, LLG w/ 4-20 mA output, White

Ordering Information (54” Low Pressure Carbon Dioxide Storage Units)		
P/N	**Tank Size**	**Description (see below for options)**
19356	**4 ton**	**Storage Unit, LPCO2, 54”**
19357	**6 ton**	**Storage Unit, LPCO2, 54”**
19358	**8 ton**	**Storage Unit, LPCO2, 54”**
19359	**10 ton**	**Storage Unit, LPCO2, 54”**
19360	**12 ton**	**Storage Unit, LPCO2, 54"**

Ordering Instructions: Specify the $LPCO_2$ Storage Unit P/N followed by a dash and the appropriate three digit option code as illustrated below.

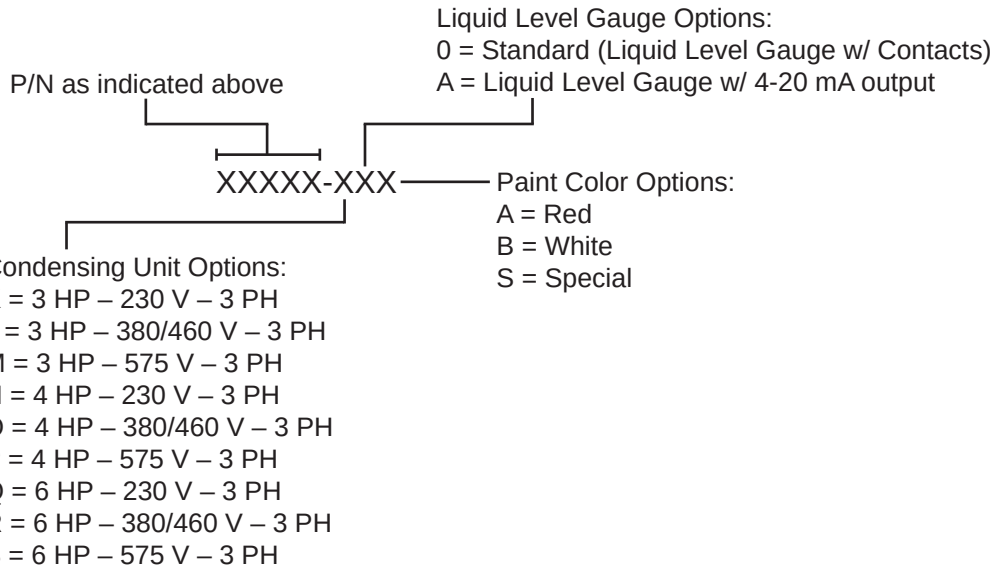


Notes:
2 Horse Power Condensing Units are standard for 4,6, 8, 10, and 12-Ton Storage Units.
All condensing units operate at both 50Hz and 60Hz. However, operating at 50Hz reduces the refrigeration capacity to 83%

Examples:
19357-G0B – Storage Unit, LPCO2, 54”, 6 ton, 230 V, 1 PH, 2 HP, Standard LLG, White
19358-JAB – Storage Unit, LPCO2, 54”, 8 ton, 575 V, 3 PH, 2 HP, LLG w/ 4-20 mA output, White

Ordering Information (78” Low Pressure Carbon Dioxide Storage Units)		
P/N	**Tank Size**	**Description (see below for options)**
97492	**13 ton**	**Storage Unit, LPCO2, 78”**
19361	**17 ton**	**Storage Unit, LPCO2, 78”**
19362	**24 ton**	**Storage Unit, LPCO2, 78”**
19363	**31 ton**	**Storage Unit, LPCO2, 78”**
19364	**38 ton**	**Storage Unit, LPCO2, 78”**
19365	**45 ton**	**Storage Unit, LPCO2, 78”**

Ordering Instructions: Specify the $LPCO_2$ Storage Unit P/N followed by a dash and the appropriate three digit option code as illustrated below.



Notes:
3 Horse Power Condensing Units are standard for 13, 17, and 24-Ton Storage Units.
6 Horse Power Condensing Units are standard for 31 and 38-Ton Storage Units.
All condensing units operate at both 50Hz and 60Hz. However, operating at 50Hz reduces the refrigeration capacity to 83%

Examples:
19361-K0B – Storage Unit, LPCO2, 78”, 17 ton, 230 V, 3 PH, 3 HP, Standard LLG, White
19364-SAB – Storage Unit, LPCO2, 78”, 38 ton, 575 V, 3 PH, 6 HP, LLG w/ 4-20 mA output, White

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller’s sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

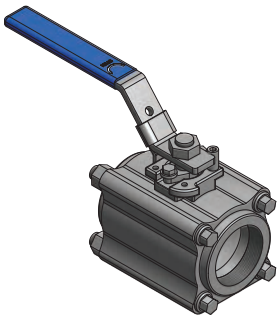
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Crown Point, IN 46307
TEL: (219) 663-1600 FAX: (219) 663-4562
e-mail: info@janusfiresystems.com
www.janusfiresystems.com

CLEAN AGENT, CO2

LOCKOUT/ISOLATION VALVES

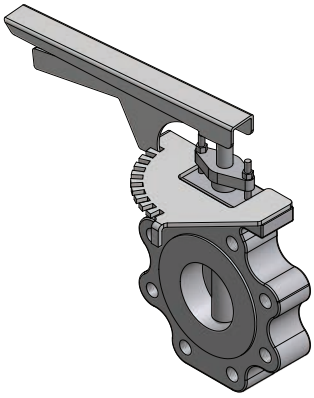
The Janus Fire Systems® line of Lockout/Isolation Valves offers a wide assortment of size, valve style, and material options to make them suitable for a variety of uses in Janus Fire Systems® Low-Pressure and High-Pressure Carbon Dioxide (CO2) Fire Extinguishing Systems and Clean Agent Fire Extinguishing Systems utilizing FM-200® or 3M™ Novec™ 1230 Fire Protection Fluid.

VALVE TYPES



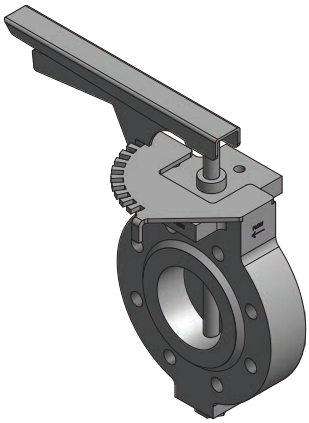
Manually Actuated Ball Valve

Janus Fire Systems® manually actuated ball valves have ANSI Class 600 pressure ratings suitable for use as lock-out/isolation valves in clean agent and high-pressure or low-pressure carbon dioxide systems. They have a stain-less steel ball and stem with either a coated carbon steel or stainless steel body as specified. The valves have Xtreme fluoropolymer-based blend seats with TFM and graphite seals. Available valves sizes are 1/2 in (15 mm), 3/4 in (20 mm), 1 in (25 mm), 1-1/2 in (40 mm), or 2 in (50 mm). Each valve may be fitted with an optional limit switch and/or stem extension.



Manually Actuated Wafer Valve 830 Series

The 830 Series of the Janus Fire Systems® manually ac-tuated wafer valves have ANSI Class 300 pressure rat-ings suitable for use as lockout/isolation valves in clean agent and low-pressure carbon dioxide systems. The 830 Series has a stainless steel disc with either a coated carbon steel or stainless steel body as specified. 830 Series valves have Xtreme fluoropolymer-based blend seats with carbon filled enhanced PTFE seals. Available valves sizes are 3 in (80 mm), 4 in (100 mm), 6 in (150 mm), or 8 in (200 mm). Each valve may be fitted with an optional limit switch and/or stem extension.

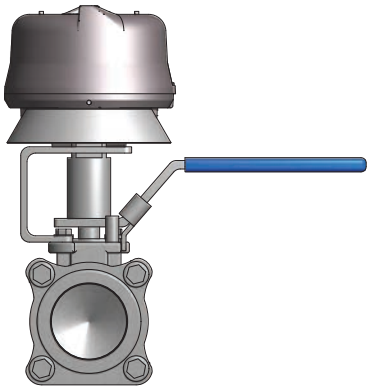


Manually Actuated Wafer Valve 860 Series

The 860 Series of the Janus Fire Systems® manually ac-tuated wafer valves have ANSI Class 600 pressure rat-ings suitable for use as lockout/isolation valves in high-pressure carbon dioxide systems. The 860 Series has a stainless steel disc with either a coated carbon steel or stainless steel body as specified. 860 Series valves have Xtreme fluoropolymer-based blend seats with carbon filled enhanced PTFE seals. Available 860 Series valve size is 3 in (80 mm). Each valve may be fitted with an optional limit switch and/or stem extension.

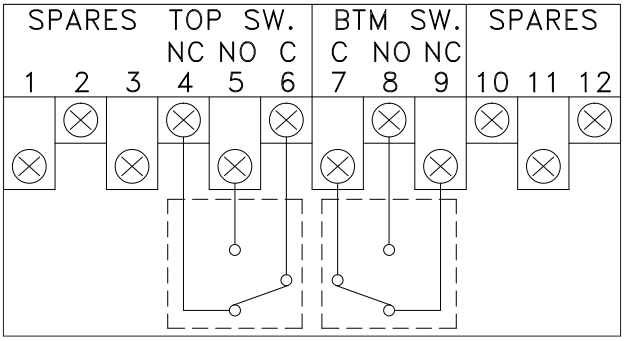
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FM-200® is a registered trademark of E. I. du Pont de Nemours and Company. 3M and Novec are trademarks of 3M Company.

VALVE OPTIONS



Limit Switch

An optional explosion-proof limit switch may be placed on the manually actuated valves to provide electronic confirmation that the valves are in proper position. The limit switch has a NEMA 4, 4x, and 6 enclosure with one (1) 3/4 in (20 mm) NPT and one (1) 1/2 in (15 mm) conduit connection. It has an explosion proof rating of Class I Divisions 1 and 2 Groups B, C, D and Class II Divisions 1 and 2 Groups E, F, G. The switch consists of two single pull double throw switches with contacts rated 10 Amps at 125/250 VAC and 0.5 Amp at 125 VDC.



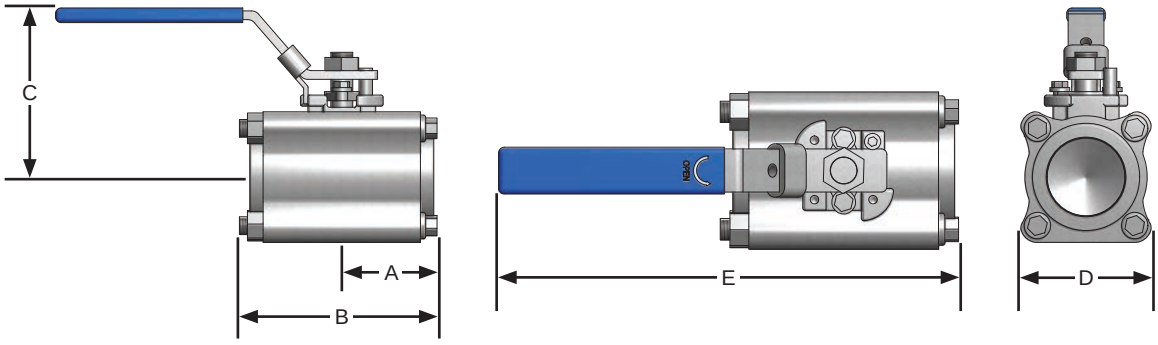
Limit Switch Wiring Diagram



Stem Extension

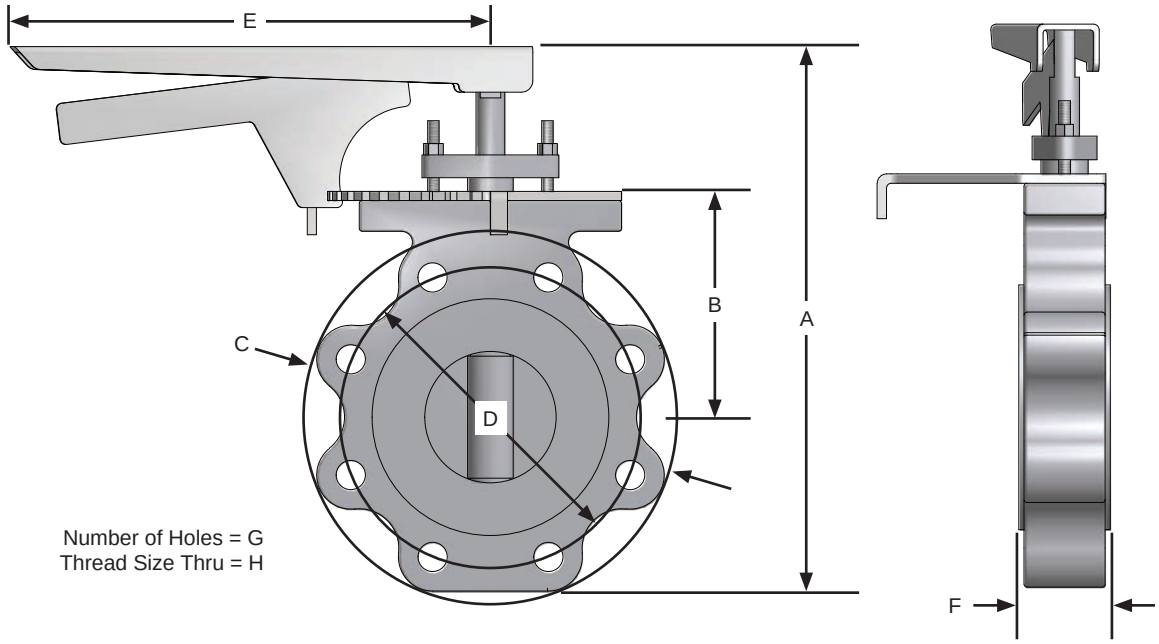
An optional 4 in (102 mm) stem extension is available for manually actuated valves for improved accessibility, particularly when used in insulated pipelines. Contact Janus Fire Systems for ordering information.

DIMENSIONS



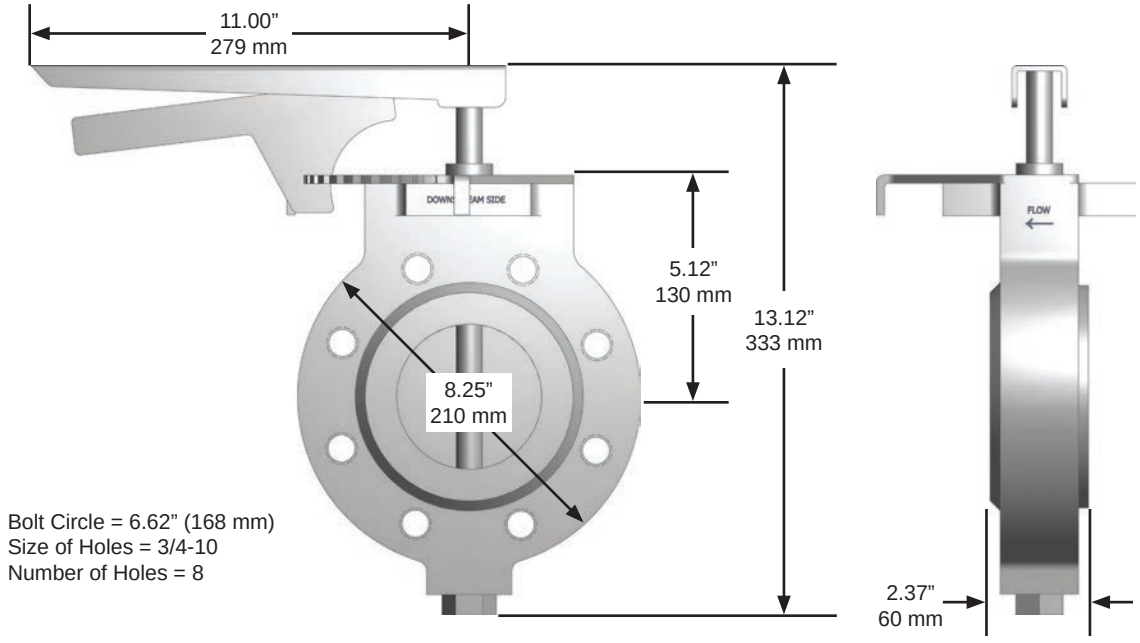
Manually Actuated Ball Valve

Valve Size		Dimensions									
		A		B		C		D		E	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/2	15	1.28	33	2.59	66	2.36	60	2.05	52	6.29	160
3/4	20	1.50	38	3.05	78	2.53	64	2.24	57	6.50	165
1	25	1.86	47	3.76	96	3.28	83	2.57	65	8.54	217
1-1/2	40	2.43	62	5.05	128	4.27	108	3.31	84	10.42	265
2	50	2.66	68	5.53	140	4.73	120	3.64	93	10.66	271



Series 830 Manually Actuated Wafer Valve

Valve Size		Dimensions													
		A		B		C		D		E		F		G	H
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
3	80	12.44	316	4.75	121	8.13	207	6.63	168	11.00	279	1.94	49	8	3/4-10
4	100	13.44	341	5.25	133	9.38	238	7.88	200	11.00	279	2.13	54	8	3/4-10
6	150	16.25	413	6.88	175	12.13	308	10.63	270	22.00	559	2.31	59	12	3/4-10
8	200	19.50	495	8.38	213	15.00	381	13.00	330	22.00	559	2.88	73	12	7/8-9

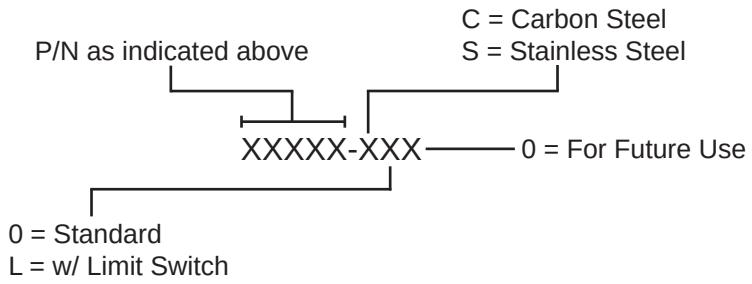


3” (80 mm) Series 860 Manually Actuated Wafer Valve

Ordering Information			
P/N	Valve Size	Description (see below for options)	Nominal Weight lb (kg)
19465	1/2”	Ball Valve, Manually Actuated	1.9 (0.9)
19466	3/4”	Ball Valve, Manually Actuated	2.7 (1.2)
19467	1”	Ball Valve, Manually Actuated	4.8 (2.2)
19468	1-1/2”	Ball Valve, Manually Actuated	9.8 (4.4)
19469	2”	Ball Valve, Manually Actuated	12.7 (5.8)
19470	3”	Wafer Valve, 830 Series, Manually Actuated	23.0 (10.3)
19471	4”	Wafer Valve, 830 Series, Manually Actuated	32.0 (14.3)
19472	6”	Wafer Valve, 830 Series, Manually Actuated	69.0 (30.8)
19473	8”	Wafer Valve, 830 Series, Manually Actuated	107.0 (48.8)
19474	3”	Wafer Valve, 860 Series, Manually Actuated	29.0 (13.3)

NOTE: UL Listing/FM Approval varies for type of agent used. Refer to DOC108 for models listed/approved for Novec 1230 Fluid. Refer to DOC102 for models listed/approved for FM-200®. Refer to DOC153 for models listed for HPCO2. Refer to relevant manual for models listed for LPCO2.

Ordering Instructions: Specify the Valve P/N followed by a dash and the appropriate three digit option code as illustrated below.



Examples:
19465-C00 – 1/2” Ball Valve, Carbon Steel
19467-SL0 – 1” Ball Valve, with Limit Switch, Stainless Steel

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller’s sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

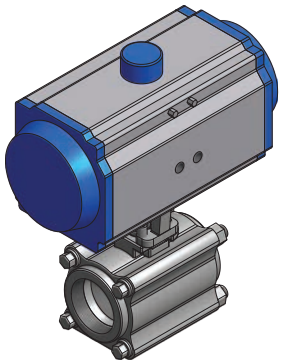
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e-mail: info@janusfiresystems.com
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CLEAN AGENT, CO2

MASTER/SELECTOR VALVES

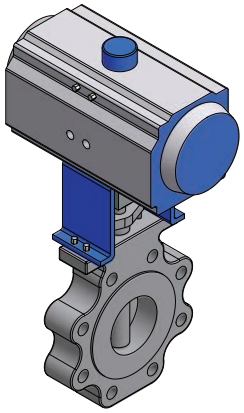
The Janus Fire Systems® line of Master/Selector Valves offers a wide assortment of size, valve style, and material options to make them suitable for a variety of uses in Janus Fire Systems® Low-Pressure and High-Pressure Carbon Dioxide (CO2) Fire Extinguishing Systems and Clean Agent Fire Extinguishing Systems utilizing FM-200® or 3M™ Novec™ 1230 Fire Protection Fluid.

VALVE TYPES



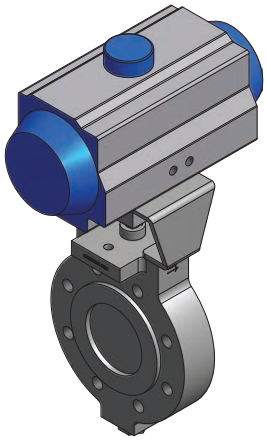
Pneumatically Actuated Ball Valve

Janus Fire Systems® pneumatically actuated ball valves have ANSI Class 600 pressure ratings suitable for use as master/selector valves in clean agent and high-pressure or low-pressure carbon dioxide systems. They have a stainless steel ball and stem with either a coated carbon steel or stainless steel body as specified. The valves have Xtreme fluoropolymer-based blend seats with TFM and graphite seals. Available valve sizes are 1/2 in (15 mm), 3/4 in (20 mm), 1 in (25 mm), 1-1/2 in (40 mm), or 2 in (50 mm). Each valve may be fitted with an optional solenoid and/or position indicator switch.



Pneumatically Actuated Wafer Valve 830 Series

The 830 Series of the Janus Fire Systems® pneumatically actuated wafer valves have ANSI Class 300 pressure ratings suitable for use as master/selector valves in clean agent and low-pressure carbon dioxide systems. The 830 Series has a stainless steel disc with either a coated carbon steel or stainless steel body as specified. 830 Series valves have Xtreme fluoropolymer-based blend seats with carbon filled enhanced PTFE seals. Available valve sizes are 3 in (80 mm), 4 in (100 mm), 6 in (150 mm), or 8 in (200 mm). Each valve may be fitted with an optional solenoid and/or position indicator switch.



Pneumatically Actuated Wafer Valve 860 Series

The 860 Series of the Janus Fire Systems® pneumatically actuated wafer valves have ANSI Class 600 pressure ratings suitable for use as master/selector valves in high-pressure carbon dioxide systems. The 860 Series has a stainless steel disc with either a coated carbon steel or stainless steel body as specified. 860 Series valves have Xtreme fluoropolymer-based blend seats with carbon filled enhanced PTFE seals. Available 860 Series valve size is 3 in (80 mm). Each valve may be fitted with an optional solenoid and/or position indicator switch.

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VALVE OPTIONS



Solenoid

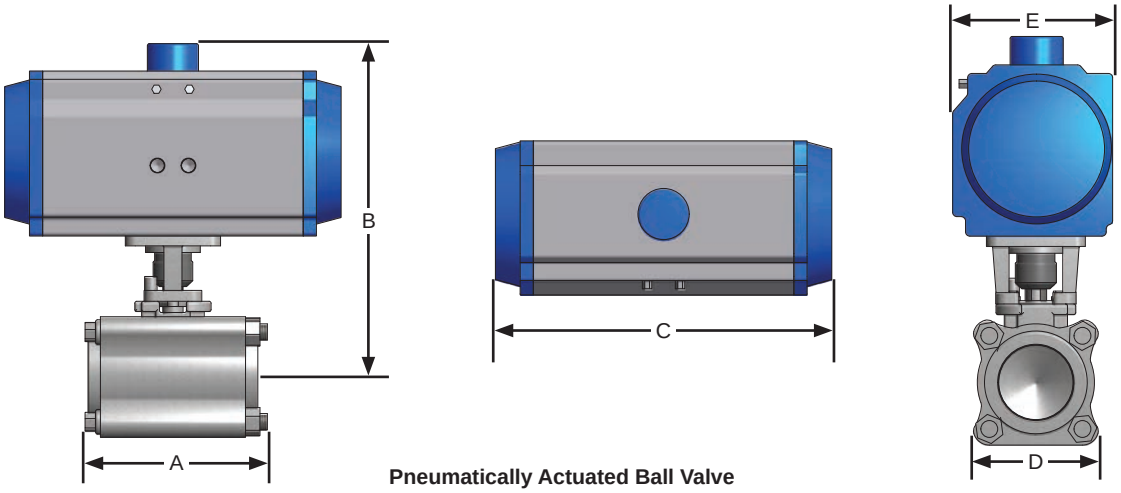
An optional solenoid may be fitted to the pneumatically actuated valves to allow electrical valve actuation. The solenoid has a NEMA 4 and 4X enclosure with a 1/4 in (8 mm) inlet and 1/8 in (6 mm) exhaust. The solenoid has a standard voltage of 24 VDC or optional voltage of 120 VAC 60 Hz (110/50), 240 VAC 60 Hz, 12 VDC. It consumes 6.9 watts AC and 6.3 watts DC. An explosion-proof model is also available with the enclosure ratings: NEMA 4, 4X, 5P, 6, 7, 9, and explosion-proof ratings Class I, Div. 1 (Groups A,B,C,D) and Class II, Div. 1 Type 9 (Groups E,F,G).



Position Indicator Switch

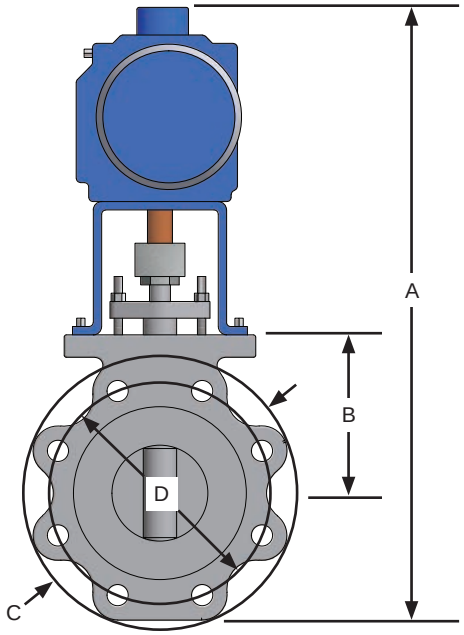
An optional explosion-proof/weatherproof position indicator switch may be mounted on the top of the pneumatic valve actuator to provide visual and/or electronic confirmation of whether the valve is in open or closed position. It has a green “open” indicator and a red “closed” indicator. The switch has a NEMA 4, 4x, and 6 enclosure with one (1) 3/4 in (20 mm) NPT and one (1) 1/2 in (15 mm) conduit connection. The switch is double pull double throw with contacts rated 10 Amps at 125/250 VAC and 0.5 Amp at 125 VDC. The explosion-proof ratings are Class I, Division 1 and 2 (Groups B,C,D), Class II, Division 1 and 2 (Groups E,F,G).

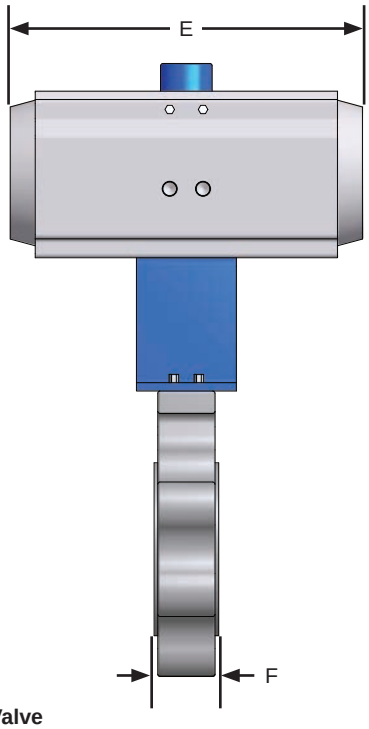
DIMENSIONS



Pneumatically Actuated Ball Valve

Valve Size		Port Size		Dimensions									
				A		B		C		D		E	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/2	15	1/8	6	2.56	65	6.00	152	5.38	137	2.06	52	2.81	71
3/4	20	1/8	6	3.00	76	6.94	176	6.06	154	2.25	57	3.31	84
1	25	1/8	6	3.69	94	7.06	179	6.06	154	2.63	67	3.31	84
1-1/2	40	1/8	6	4.56	116	9.56	243	9.50	241	3.31	84	4.06	103
2	50	1/4	8	5.13	130	10.19	259	10.19	259	3.69	94	4.69	119

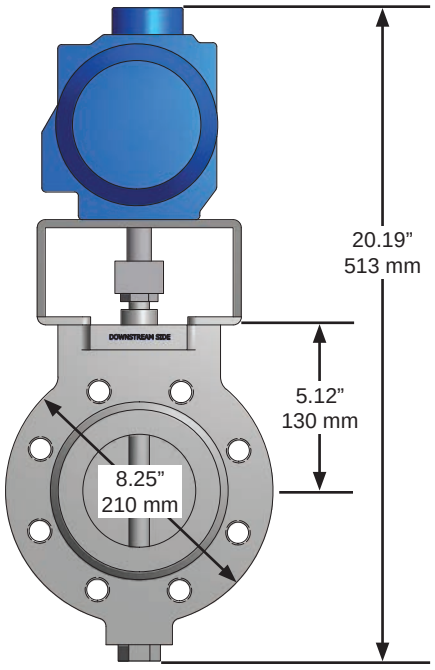


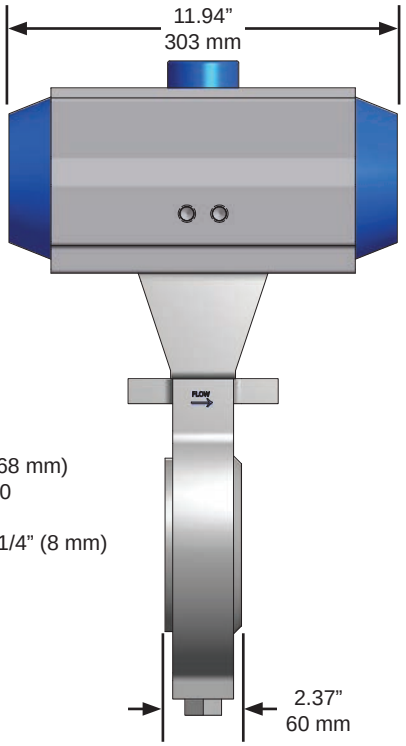


Number of Holes = G
Thread Size Thru = H

Series 830 Pneumatically Actuated Wafer Valve

Valve Size		Port Size		Dimensions													
				A		B		C		D		E		F		G	H
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
3	80	1/4	8	18.38	467	4.69	119	8.13	207	6.63	168	10.20	259	1.94	49	8	3/4-10
4	100	1/4	8	23.13	587	5.25	133	9.31	236	7.88	200	13.11	333	2.13	54	8	3/4-10
6	150	1/4	8	27.75	705	6.88	175	12.13	308	10.63	270	16.63	422	2.31	59	12	3/4-10
8	200	1/4	8	34.13	867	8.38	213	15.00	381	13.00	330	20.79	528	2.88	73	12	7/8-9





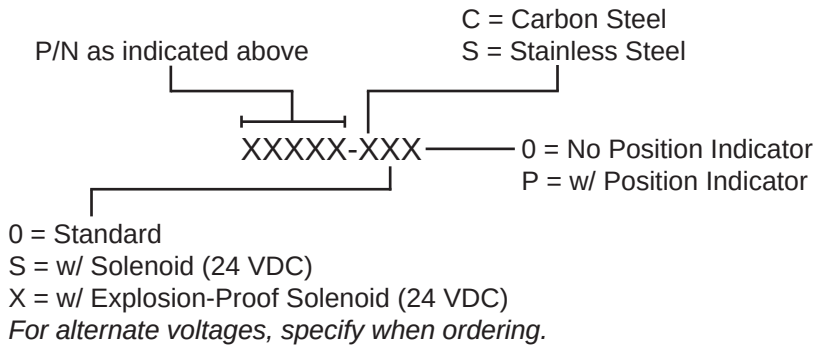
Bolt Circle = 6.62” (168 mm)
Size of Holes = 3/4-10
Number of Holes = 8
Actuator Port Size = 1/4” (8 mm)

3” (80 mm) Series 860 Pneumatically Actuated Wafer Valve

Ordering Information			
P/N	Valve Size	Description (see below for options)	Nominal Weight lb (kg)
19483	1/2”	Ball Valve, Pneumatically Actuated	4.2 (1.9)
19484	3/4”	Ball Valve, Pneumatically Actuated	6.5 (2.9)
19485	1”	Ball Valve, Pneumatically Actuated	8.6 (3.9)
19486	1-1/2”	Ball Valve, Pneumatically Actuated	19.5 (8.8)
19487	2”	Ball Valve, Pneumatically Actuated	27.0 (12.3)
19488	3”	Wafer Valve, 830 Series, Pneumatically Actuated	34.3 (15.5)
19489	4”	Wafer Valve, 830 Series, Pneumatically Actuated	56.8 (26.0)
19490	6”	Wafer Valve, 830 Series, Pneumatically Actuated	105.0 (48.0)
19491	8”	Wafer Valve, 830 Series, Pneumatically Actuated	191.0 (87.0)
19492	3”	Wafer Valve, 860 Series, Pneumatically Actuated	47.3 (21.5)

NOTE: UL Listing/FM Approval varies for type of agent used. Refer to DOC108 for models listed/approved for Novec 1230 Fluid. Refer to DOC102 for models listed/approved for FM-200®. Refer to DOC153 for models listed for HPCO2. Refer to relevant manual for models listed for LPCO2.

Ordering Instructions: Specify the Valve P/N followed by a dash and the appropriate three digit option code as illustrated below.



Examples:
19483-C00 – 1/2” Ball Valve, Carbon Steel
19485-SS0 – 1” Ball Valve, with Solenoid (24 VDC), Stainless Steel

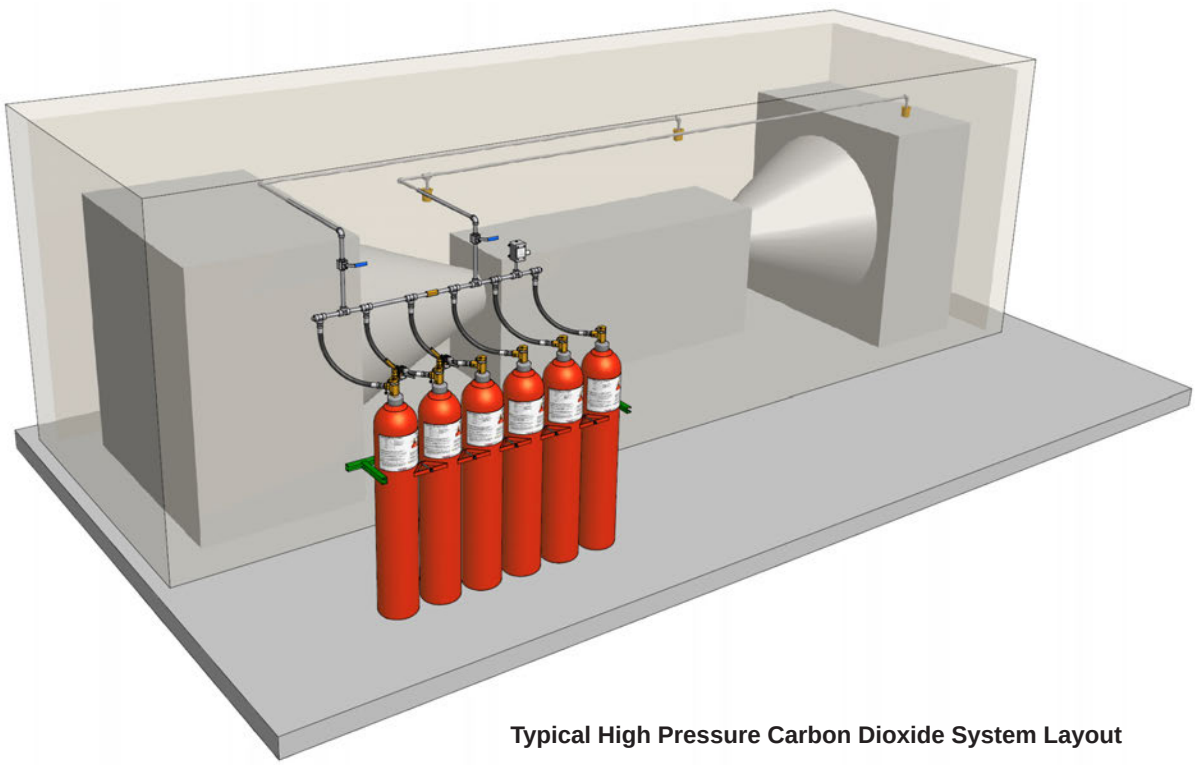
The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller’s sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

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$HPCO_2$
Fire Extinguishing System

The Janus Fire Systems® $HPCO_2$ Fire Extinguishing System utilizes highly pressurized carbon dioxide as the extinguishing medium. Carbon dioxide (CO_2) is a dry, inert, non-corrosive fire suppression agent perfectly suited to protect high value assets in normally unoccupied and unoccupiable areas when an electrically non-conductive agent is required and where clean-up of other agents is problematic. Each system consists of the following components and their associated accessories:

1. **$HPCO_2$ Storage Components** - Storage components consist of the cylinder assembly(s), which contains the liquid CO_2 agent, and the cylinder bracket(s), which holds the cylinder assembly securely in place.
2. **$HPCO_2$ Distribution Components** - Distribution components consist of the discharge nozzles used to introduce the CO_2 agent into a protected hazard along with the associated piping system used to connect the nozzles to the cylinder assembly.
3. **Trim Components** - Trim components complete the installation of the $HPCO_2$ system and consist of discharge flex hose, discharge outlet adapters or check valves, actuation flex hose, connection fittings, solenoid valves, and manual valve actuators.
4. **Supplemental Components** - Supplemental components include the discharge pressure switch, inline check valves, selector valves, lockout valves, rupture discs, and regulators. They supplement the core equipment or complete a specific cylinder configuration.
5. **Control Panel** - This device monitors the condition of the solenoid valve, detectors, warning devices, and any manual release stations. All electric or electronic devices must connect to the control panel in order to function.
6. **Early Warning Detection and Alarm Devices** - Early warning detection devices coupled with manual release stations maximize system efficiency while audible and visual alarm devices alert staff of alarm conditions.



Typical High Pressure Carbon Dioxide System Layout

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EQUIPMENT DESCRIPTION

The CO_2 agent is stored as a liquid in cylinder assemblies designed specifically for this purpose and pressurized to 850 psi (58.6 bar) at 70°F (21°C). An identification label is affixed to the cylinder body indicating the empty cylinder weight, filled cylinder weight, fill quantity of CO_2, charging pressure, date of fill, and fill station. Except for special temperature conditions, all cylinders are filled to their specified weight. Winterized cylinders are filled to 90% of their capacity with carbon dioxide and then superpressurized with nitrogen to the remaining full capacity in order to prevent cylinder pressure from dropping below 750 psi (51.7 bar) in extremely cold environments. Cylinders are not partially filled.

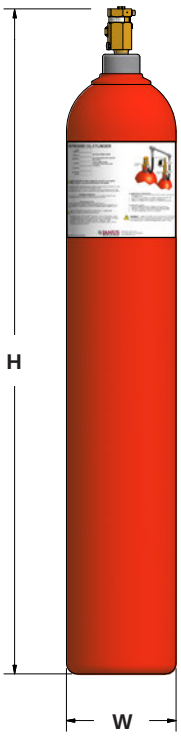
CO_2 fire extinguishing systems are designed in accordance with National Fire Protection Association (NFPA) 12 - Standard on Carbon Dioxide Extinguishing Systems. CO_2 may be used in a total flooding system where the supply of CO_2 is discharged into a normally unoccupied or unoccupiable enclosed space, filling it to a proper concentration. It also may be used for local applications where the specially designed CO_2 nozzle is arranged to discharge CO_2 directly on the burning material.

The ambient temperature range for cylinders used in total flooding systems is 0°F to 130°F (-18°C to 54°C). For cylinders used in local application systems, the ambient temperature range is 32°F to 120°F (0°C to 49°C).

Nominal Cylinder Size[1]		P/N		Empty Weight		Full Weight		Height (H)		Width (W)	
lb	kg	Standard	Winterized	lb	kg	lb	kg	in	mm	in	mm
50	22.7	19561	20470	96	43.5	146	66.2	55.6	1412	8.5	216
75	34.0	19560	20471	160	72.6	235	106.6	61.1	1552	9.2	234
100	45.4	19559	20472	210	95.3	310	140.6	62.6	1590	10.4	264

1 Additional sizes available for special orders.

The cylinder assembly is composed of a cylinder, dip tube, and cylinder valve.

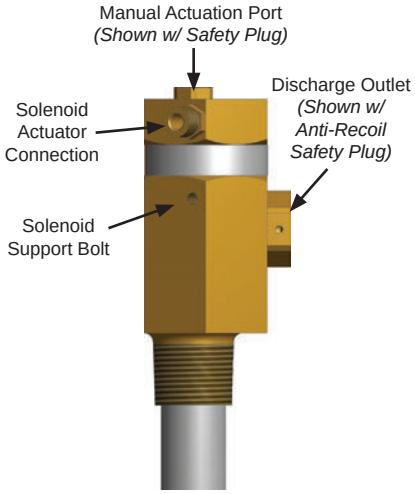


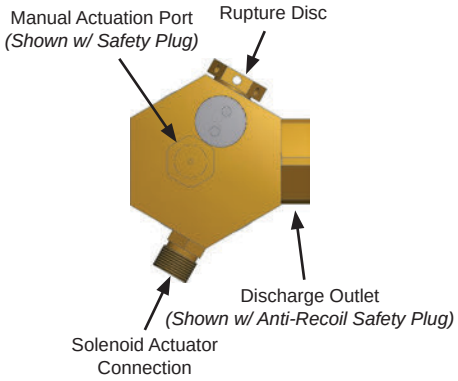
Cylinder Valve: The automatic release of CO_2 is controlled by a forged brass, force differential operated cylinder valve connected to the neck of the cylinder. Each valve assembly is shipped with an anti-recoil safety plug installed in the discharge outlet and a manual actuation safety plug installed in the manual actuation connection. Both safety plugs are chained to the cylinder valve.

Dip Tube: A rigid dip tube is used in all cylinders to ensure liquid discharge.

Cylinder: The seamless cylinder is manufactured according to the requirements of the U.S. Department of Transportation (USDOT) and/or Transport Canada for compressed gas. The cylinder is designed for mounting in a vertical position only.

CYLINDER VALVE w/ DIP TUBE ADAPTOR (P/N 19428)





The cylinder valve has five key features:

Manual Actuation Port: A threaded female connection on the top of the primary valve serves as the attachment point for the manual valve actuator. It is shipped with a manual actuation safety plug installed.

Solenoid Actuator Connection: A threaded male connection serves as the attachment point for the solenoid valve.

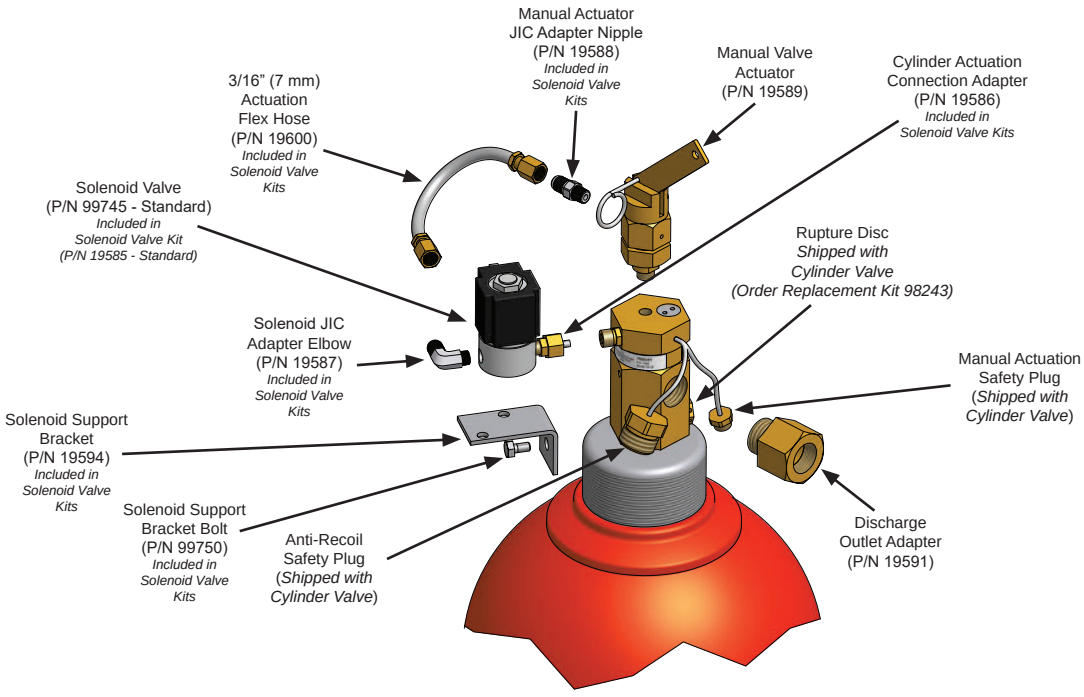
Solenoid Support Bolt: A bolt located on the side of the cylinder valve directly underneath the solenoid actuator connection is used to connect the solenoid support bar to the valve.

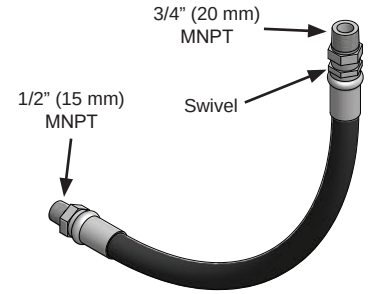
Discharge Outlet: A 1-1/16" threaded female connection serves as the attachment point for the discharge outlet adapter or discharge check valve. It is shipped with an anti-recoil safety plug installed.

Rupture Disc: A rupture disc is affixed to the cylinder valve as an emergency relief device in the event of excessive pressure within the cylinder. Its rupture point is in the range of 2,650 to 3,000 psi (182.7 to 206.8 bar).

TRIM COMPONENTS

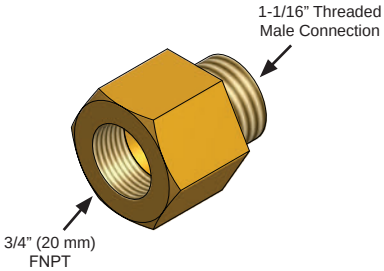
Trim components are required to operate a single $HPCO_2$ cylinder.





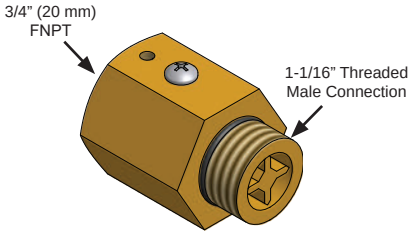
Discharge Flex Hose

A 22 in (559 mm) discharge flex hose is used to connect the cylinder valve outlet to the system manifold and discharge piping. The flexible hose allows for temporary misalignment of the cylinders to ease installation or removal for maintenance. It has a minimum bend radius of 9.5 inches (241 mm). It is shipped with the discharge outlet adapter attached for single cylinder systems (P/N 99707) or the discharge outlet check valve attached for multiple cylinder systems (P/N 99706).



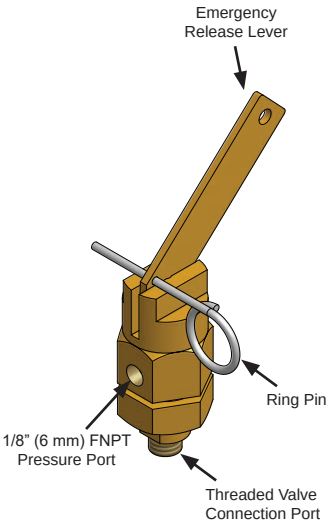
Discharge Outlet Adapter

A 3/4” (20 mm) FNPT discharge outlet adapter threads into the cylinder valve outlet in a single cylinder system. It facilitates the attachment of the discharge flex hose to the cylinder valve. The discharge outlet adapter is shipped attached to the discharge flex hose (P/N 99707). When multiple cylinders share a common manifold, a outlet check valve must be used instead.



Discharge Outlet Check Valve

A 3/4” (20 mm) FNPT discharge outlet check valve must be threaded into the cylinder valve outlet of each cylinder sharing a common manifold in a multiple cylinder system. When threaded into the valve outlet, the check valve is upset allowing direct back pressure from the discharge manifold to actuate the secondary cylinder valves. When a cylinder is removed for service, the check valve remains connected to the discharge flex hose and functions to prevent the backflow of CO_2 agent should accidental discharge occur before the cylinder is replaced. The discharge outlet check valve is shipped attached to discharge flex hose (P/N 99706).

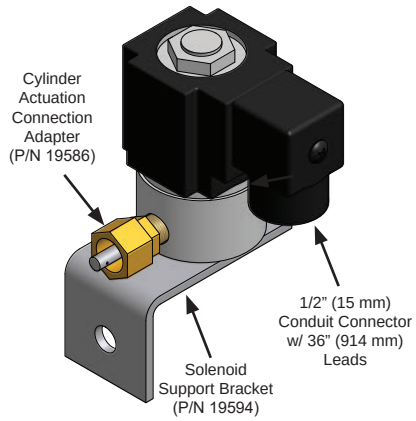


Manual Valve Actuator (P/N 19589)

A manual valve actuator attaches to the manual actuation port on top of the primary cylinder valve and provides a means to manually open the cylinder valve. The manual valve actuator consists of a brass body, emergency release lever, pressure port, and steel safety ring pin.

To discharge the cylinder arrangement manually, the ring pin is removed and the emergency release lever is pulled. This forces the actuation pin to depress the Schrader valve inside the manual actuation port causing pressure above the cylinder valve piston to be vented. Cylinder pressure then raises the piston to open the cylinder valve.

Solenoid Valve Kit (See Chart for P/N)



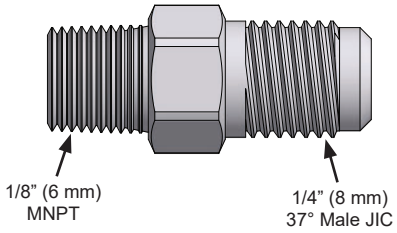
The solenoid valve attaches to the primary cylinder valve at the solenoid actuator connection via a cylinder actuation connection adapter and is utilized to automatically open the cylinder valve upon receipt of a signal from the control panel or other source. It has a standard voltage of 24 VDC, 10 Watts and enclosure rating NEMA 4X. Orifice size is 1/32 inch (0.8 mm). It has a temperature range of -20°F to 130° F (-29°C to 54°C).

The outlet port of the solenoid valve is connected to the pressure port of the manual valve actuator with 3/16" (7 mm) flexible hose. When energized, the solenoid valve opens allowing pressure from above the main piston of the cylinder valve to vent out through an opening in the manual valve actuator causing the cylinder valve to open.

An optional explosion-proof solenoid is available with an enclosure rating NEMA 4x, 7, and 9. Both the standard and explosion-proof solenoids are available in optional 120 VAC, 50/60Hz voltage or 220 VAC, 50Hz/240 VAC, 60Hz voltage models. All port sizes are identical to the standard model. Valve kits contain all necessary components to install the solenoid valve.

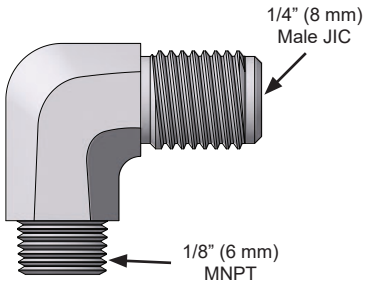
P/N		Voltage	Enclosure Rating
Solenoid Valve Kit[1]	Solenoid Valve		
19585	99745	24 VDC	NEMA 4x
99733	99744	24 VDC	NEMA 4x, 7, and 9
99594	99617	120 VAC	NEMA 4x
99593	99616	120 VAC	NEMA 4x, 7, and 9
99163	99165	220/240 VAC	NEMA 4x
99164	99166	220/240 VAC	NEMA 4x, 7, and 9

[1] All Solenoid Valve Kits include Cylinder Actuation Connection Adapter (19586), JIC Adapter Elbow (19587), Flex Hose (19600), JIC Adapter NIpple (19588), Support Bracket (19594), Support Bolt (99750), 2x Screws (99751), and Lock Washer (99746)



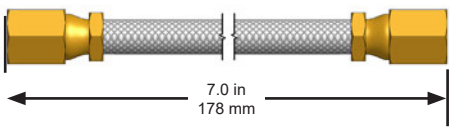
JIC Adapter Nipple (P/N 19588)

A 1/8" (6 mm) MNPT by 1/4" (8 mm) 37° male JIC adapter nipple is threaded into the pressure port of the manual valve actuator to facilitate the connection of actuation flex hose. One adapter nipple is shipped as part of each solenoid valve kit.



JIC Adapter Elbow (P/N 19587)

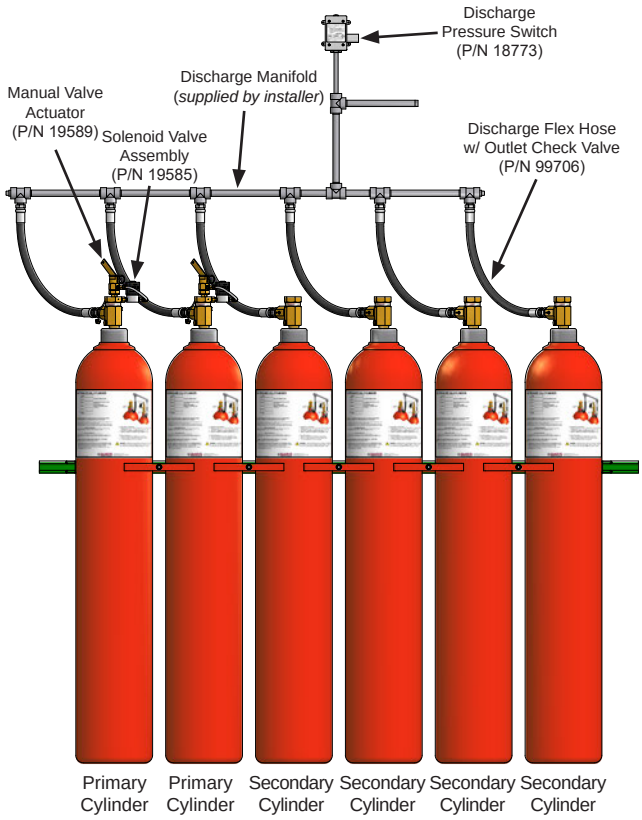
A 1/8" (6 mm) MNPT by 1/4" (8 mm) 37° male JIC adapter elbow is threaded into the outlet of the solenoid valve to facilitate the connection of flexible hose. One adapter elbow is shipped as part of each solenoid valve kit.



Actuation Flex Hose (P/N 19600)

A 3/16 in (7 mm) Teflon® lined stainless steel wire braided flex hose with 1/4 in (8 mm) 37° female JIC fittings is utilized to connect the solenoid valve outlet port to the pressure port of the manual valve actuator. One length of hose is shipped as part of each solenoid valve kit.

MULTIPLE CYLINDER ARRANGEMENTS



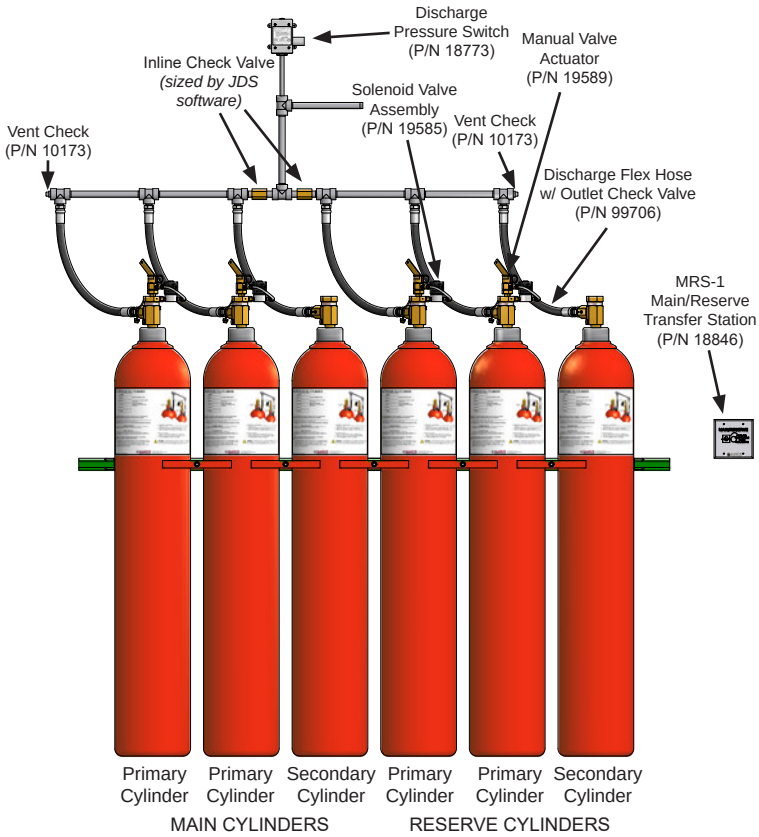
Typical Primary and Secondary Cylinder Arrangement

In multiple cylinder arrangements, each primary cylinder is actuated manually or electrically, and then each secondary cylinder is actuated by direct back pressure from the discharge manifold.

For cylinder arrangements composed of two cylinders, one primary cylinder is used with one secondary cylinder. For cylinder arrangements composed of three or more cylinders, NFPA 12 requires two primary cylinders be used.

Note: The minimum manifold pressure for pneumatic actuation is 500 psi (34.5 bar).

MAIN/RESERVE CYLINDER ARRANGEMENTS



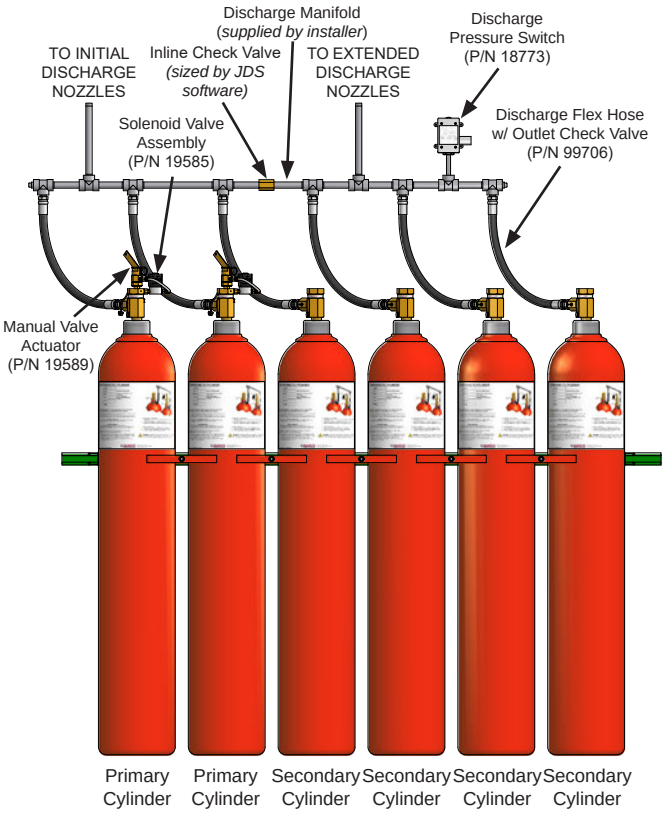
Typical Main/Reserve Cylinder Arrangement

$HPCO_2$ cylinders may be installed in a main/reserve arrangement. In a main/reserve system, the number of cylinders required to protect a hazard are installed as the main cylinders. A second set of reserve cylinders is installed and connected to the same discharge piping as the main cylinders. This allows for cylinders to be removed for maintenance without taking the $HPCO_2$ system offline.

Discharge preference is shifted between the main and reserve cylinders using the Janus Fire Systems® MRS-1 Main/Reserve Transfer Station (refer to datasheet DS1066).

Inline check valves are implemented in the discharge manifold to prevent the discharge flow of the main cylinders from actuating any reserve cylinder valves or vice versa.

INITIAL/EXTENDED CYLINDER ARRANGEMENTS

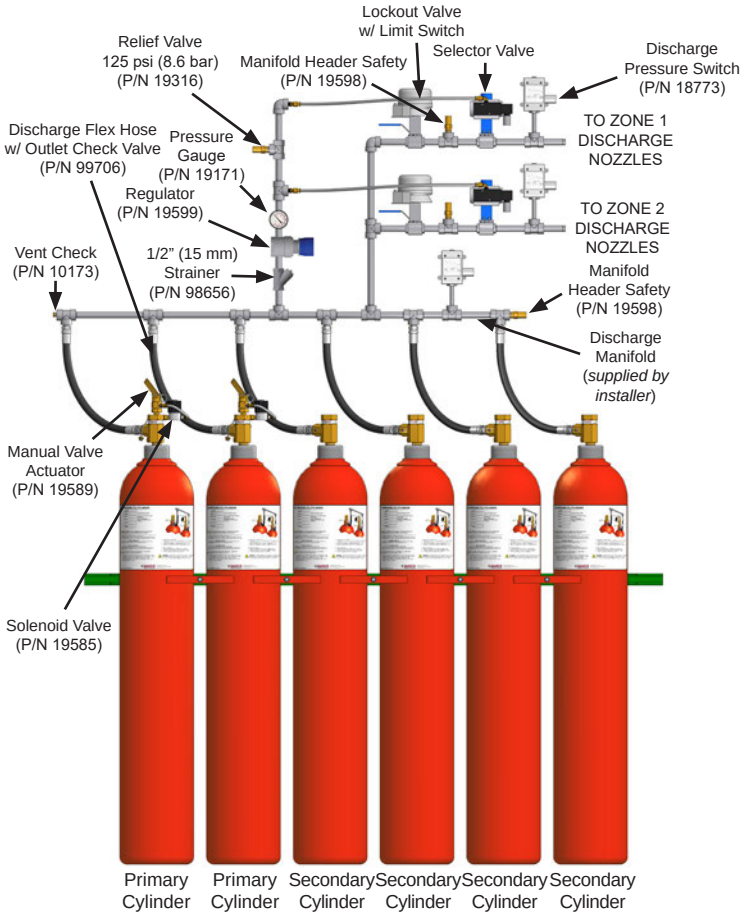


Typical Initial/Extended Cylinder Arrangement

For protecting hazards capable of deep-seated fires, initial / extended cylinder arrangements are implemented. Upon actuation, this arrangement provides an initial discharge to suppress the fire and an extended discharge to prevent the fire from rekindling.

An inline check valve is required in the discharge manifold between the initial discharge cylinders and extended discharge cylinders.

SELECTOR VALVE CYLINDER ARRANGEMENTS



Typical Selector Valve Cylinder Arrangement

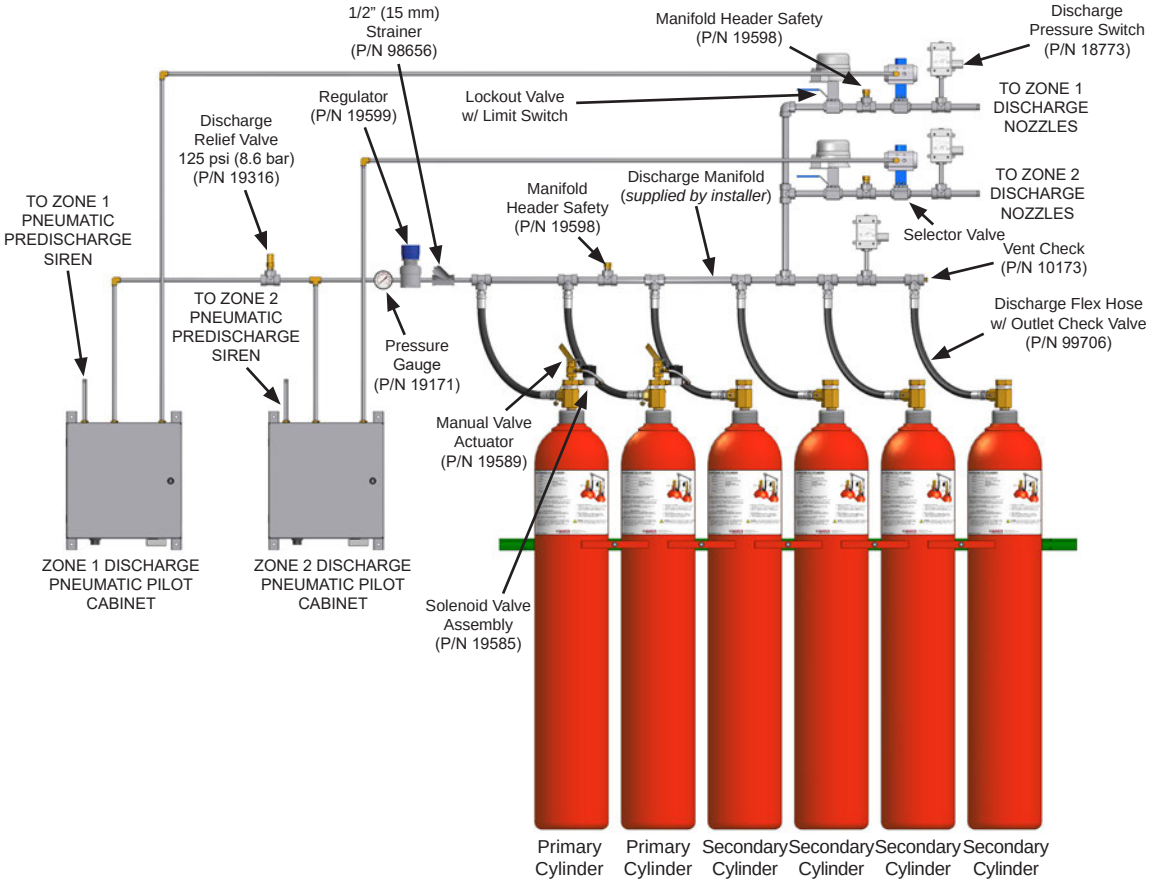
Selector valve arrangements are implemented when protecting two or more separate hazards or hazard zones with the same $HPCO_2$ cylinders. Pneumatically actuated selector valves fitted with solenoid valves are installed between the discharge manifold and discharge nozzles. When the $HPCO_2$ cylinders are actuated, pneumatic pressure from the discharge manifold is regulated down to 100 psi (6.89 bar) and directed into the solenoid valve inlet ports of each selector valve. Only the solenoid valve electrically actuated by the releasing panel will then allow this pressure to pass through to the selector valve pneumatic actuation port causing that selector valve to open and allow CO_2 discharge into the selected hazard zone.

SELECTOR VALVE W/ TIME DELAY CYLINDER ARRANGEMENTS

NFPA 12 mandates that total flooding CO_2 systems for occupiable enclosures and certain local application systems (refer to NFPA 12, 2008, Section 4.5.6.1) be provided with pneumatic time delays and pneumatic predischarge alarms. This is achieved with the use of a pneumatically actuated selector valve operated by the Janus Fire Systems® Pneumatic Pilot Cabinet.

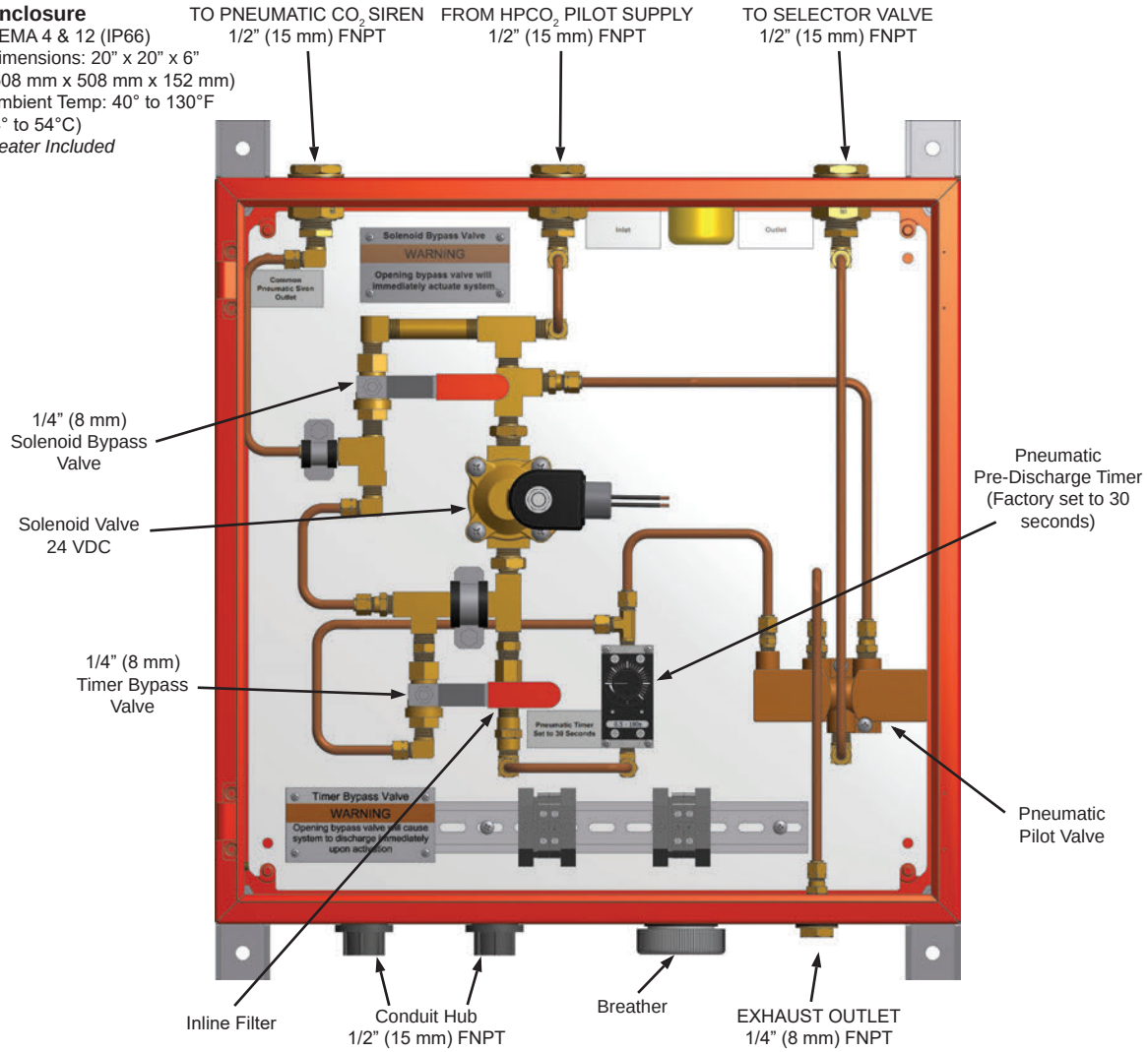
The Pneumatic Pilot Cabinet is normally depressurized. When the $HPCO_2$ cylinders are actuated, pneumatic pressure from the discharge manifold is regulated down to 100 psi (6.89 bar) and enters the Pneumatic Pilot Cabinet. A solenoid valve within the cabinet is opened by a signal from the releasing panel initiating a pneumatic timer and directing pilot pressure to sound a pneumatic predischarge siren. Upon completion of the predischarge period, the pneumatic timer opens allowing pressure to actuate the pneumatic actuation port of the selector valve, opening the valve and beginning discharge.

Multiple Pneumatic Pilot Cabinets may be implemented with multiple selector valves to allow protection over multiple hazards or hazard zones.



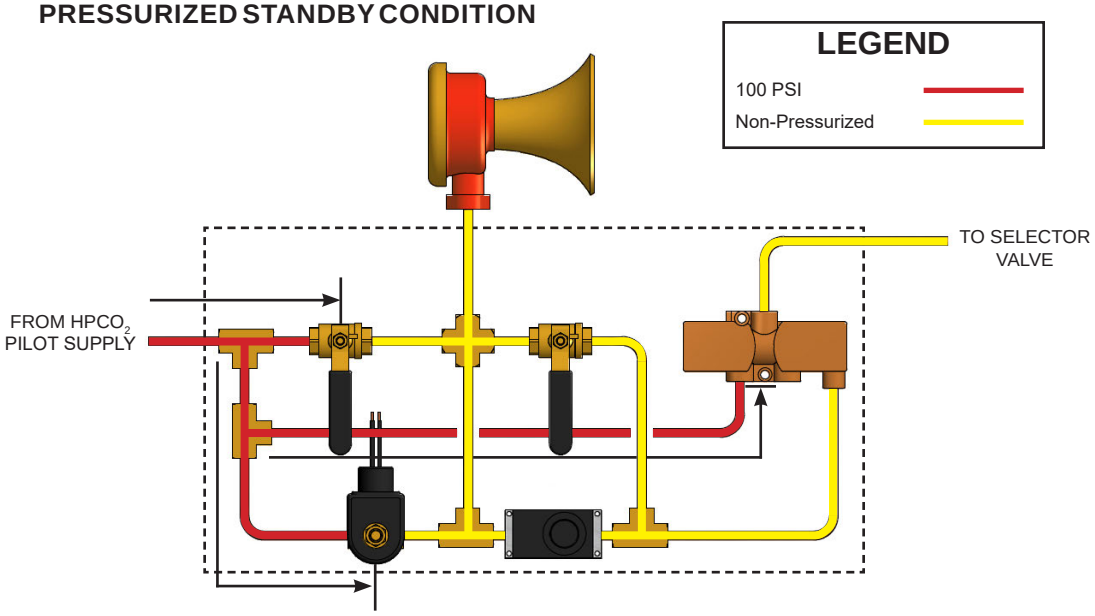
Typical Selector Valve Cylinder Arrangement w/ Pneumatic Time Delay

Enclosure
NEMA 4 & 12 (IP66)
Dimensions: 20" x 20" x 6"
(508 mm x 508 mm x 152 mm)
Ambient Temp: 40° to 130°F
(4° to 54°C)
Heater Included



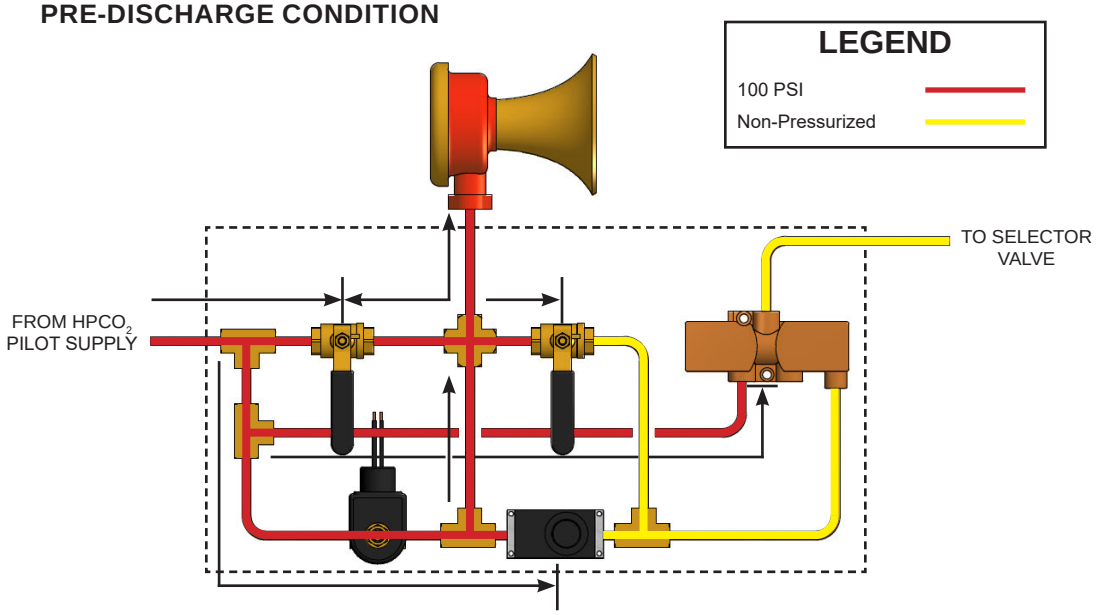
Standard Selector Pilot Cabinet (P/N 99728)

SELECTOR PILOT CABINET IN PRESSURIZED STANDBY CONDITION



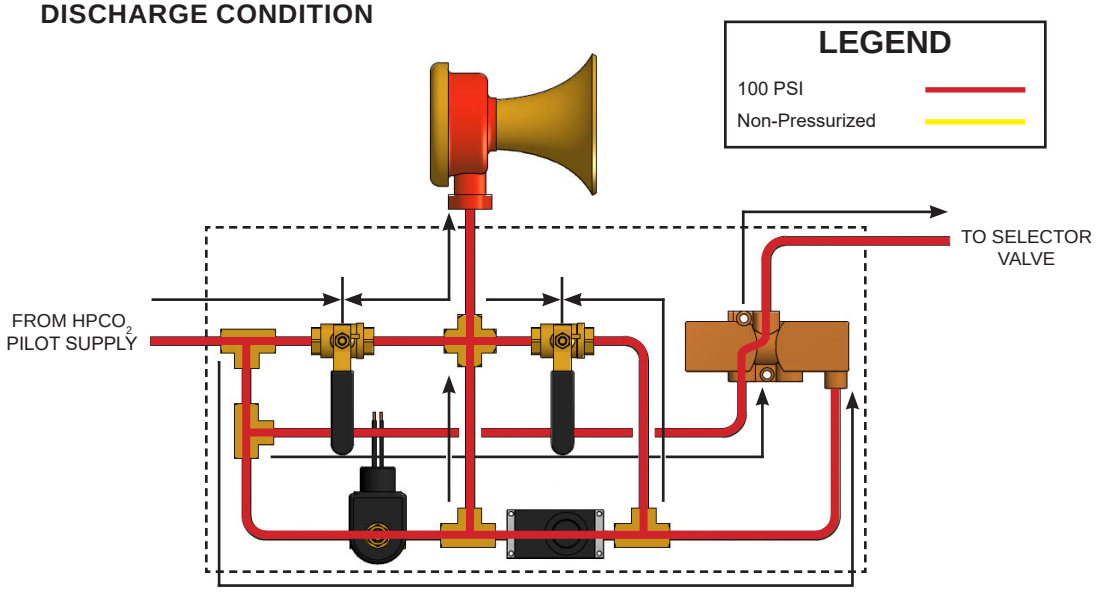
Selector Pilot Cabinet P&ID (Pressurized Standby)

SELECTOR PILOT CABINET IN PRE-DISCHARGE CONDITION



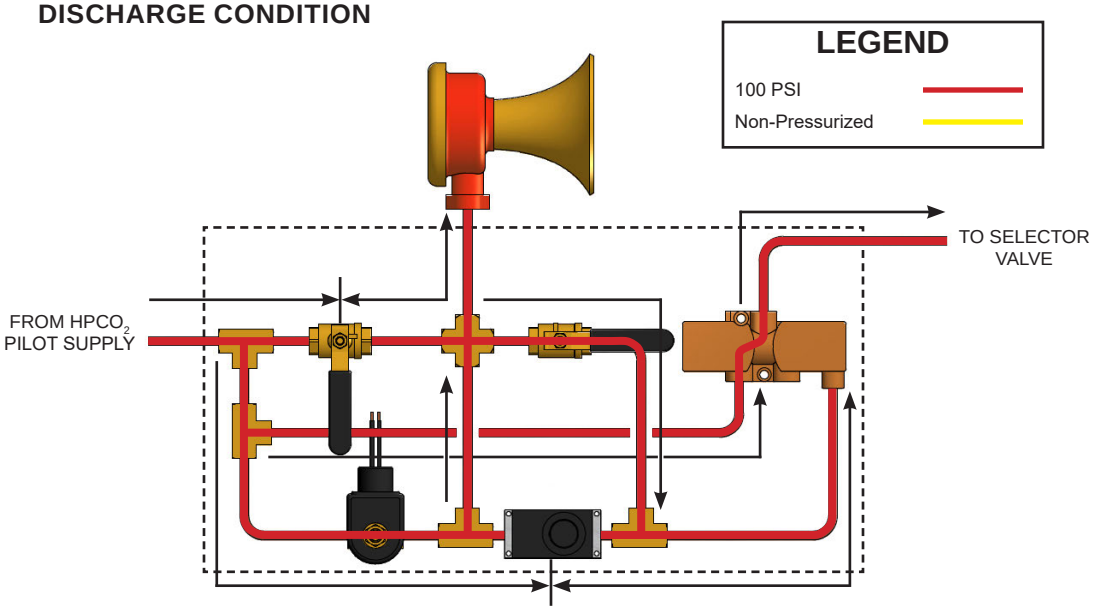
Electrically Actuated Cabinet (Pre-Discharge)

SELECTOR PILOT CABINET IN DISCHARGE CONDITION



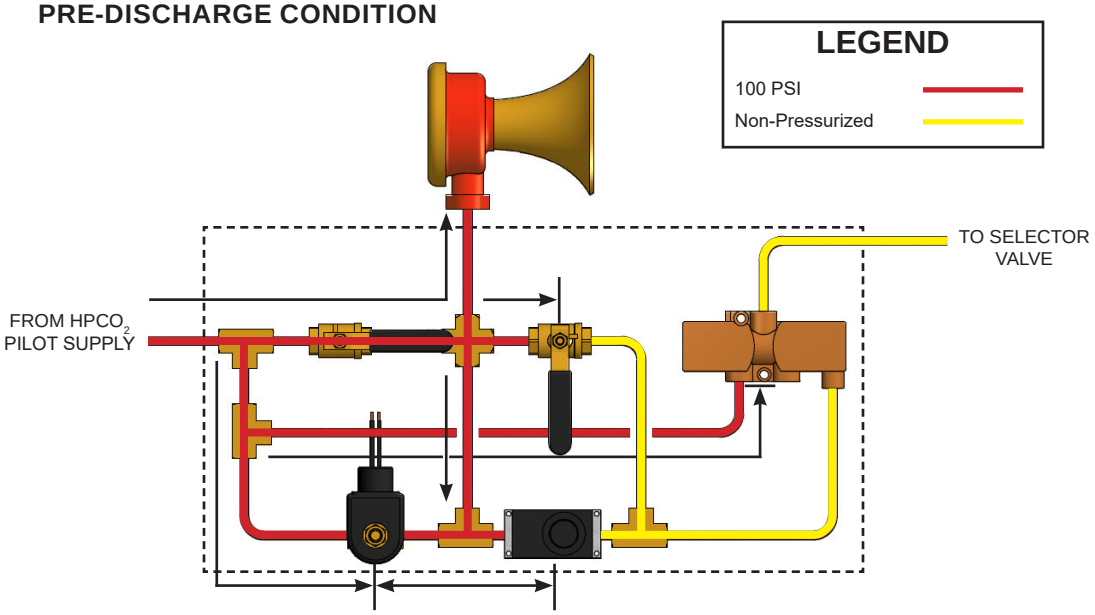
Electrically Actuated Cabinet (Discharge)

SELECTOR PILOT CABINET IN DISCHARGE CONDITION



Electrically Actuated Cabinet (Timer Bypass)

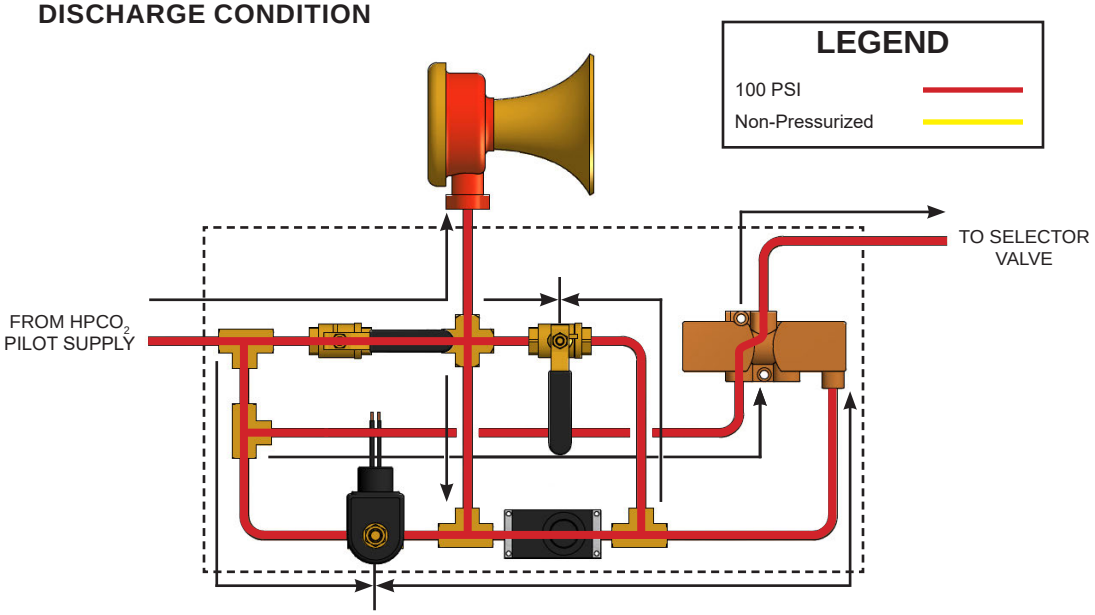
SELECTOR PILOT CABINET IN PRE-DISCHARGE CONDITION



Manually Actuated Cabinet (Pre-Discharge)

Note: The $HPCO_2$ primary cylinder manual actuators operate independently of the pilot cabinet. Actuation must occur at both locations to manually actuate the system.

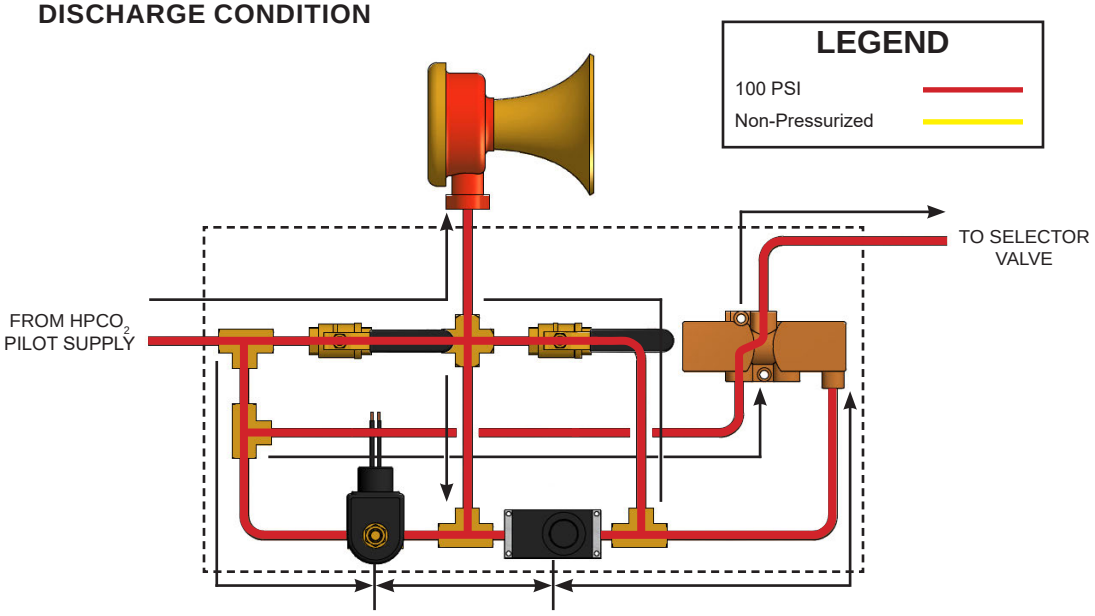
SELECTOR PILOT CABINET IN DISCHARGE CONDITION



Manually Actuated Cabinet (Discharge)

Note: The $HPCO_2$ primary cylinder manual actuators operate independently of the pilot cabinet. Actuation must occur at both locations to manually actuate the system.

SELECTOR PILOT CABINET IN DISCHARGE CONDITION

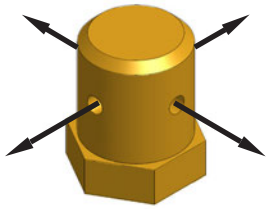


Manually Actuated Cabinet (Timer Bypass)

Note: The $HPCO_2$ primary cylinder manual actuators operate independently of the pilot cabinet. Actuation must occur at both locations to manually actuate the system.

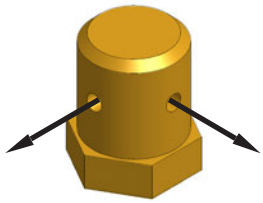
DISCHARGE NOZZLES

Various nozzle options are available depending on the application and hazard requirements.



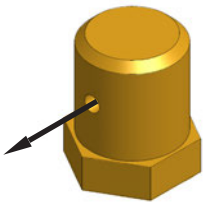
360° Radial Nozzle (4 Port)

360° radial nozzles are used for total flooding application. These nozzles are placed in the middle of a hazard space and discharge CO_2 agent in four directions allowing for a 360° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



180° Sidewall Nozzle (2 Port)

180° sidewall nozzles are used for total flooding application. These nozzles are placed against the wall or edge of a hazard space and oriented to discharge CO_2 agent in two directions allowing for a 180° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



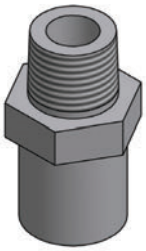
90° Corner Nozzle (1 Port)

90° corner nozzles are used for total flooding application. These nozzles are placed in the corner of a hazard space and oriented to discharge CO_2 agent in one direction allowing for a 90° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.

Nozzle Orientation Part Number						Nominal Pipe Size
Brass			Stainless Steel			
360°	180°	90°	360°	180°	90°	
18508	18501	18494	18797	18790	18783	1/2 in (15 mm)
18509	18502	18495	18798	18791	18784	3/4 in (20 mm)
18510	18503	18496	18799	18792	18785	1 in (25 mm)
18511	18504	18497	18800	18793	18786	1-1/4 in (32 mm)
18512	18505	18498	18801	18794	18787	1-1/2 in (40 mm)
18513	18506	18499	18802	18795	18788	2 in (50 mm)

Ordering Instructions: Specify the Nozzle P/N followed by a dash and the three digits representative of the drill code as provided by the Janus Design Suite software.

Example: 18508-XXX = Nozzle: 360°, 1/2” (15 mm), Brass (with drill code as specified)



Orifice Nozzle



Orifice Nozzle with Check

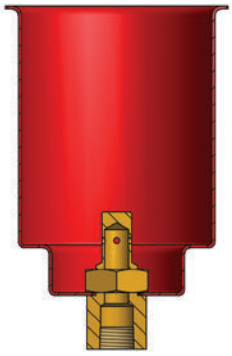
Orifice Nozzles

Stainless steel orifice nozzles are used for total flooding application. These nozzles are used for smaller hazard areas where a small flow rate is required. Orifice nozzles with protective checks are also available to protect against particulates in protected space entering or clogging pipe. Nozzles with protective check have a metal-to-metal seat for extreme temperature ranges [-320°F to 400°F (-195.6°C to 204.4°C)] or a Buna N seat for bubble tight installation [-65°F to 250°F (-53.9°C to 121.1°C)].

P/N	Type	Pipe Connections
19372	Orifice Nozzle, No Check	1/2 in (15 mm) MNPT x 1/2 in (15 mm) FNPT
97991	Orifice w/ Check, Metal-to-Metal Seat	1/2 in (15 mm) FNPT Inlet, 3/4 in (20 mm) MNPT Outlet
97578	Orifice w/ Check, Buna N Seat	1/2 in (15 mm) FNPT Inlet, 3/4 in (20 mm) MNPT Outlet

Ordering Instructions: Specify the Nozzle P/N followed by a dash and the three digits representative of the drill code as provided by the Janus Design Suite software.

Example: 97991-XXX = Nozzle, Orifice w/ Protective Check, Metal-to-Metal Seat (with drill code as specified)



JLA Nozzles

Janus Local Application (JLA) nozzles may be used for total flooding application, but are the only nozzle suited for local application. For local application, JLA nozzles are place a specific distance from the protected hazard to discharge directly onto that hazard. Nozzles are available with painted cones and brass jet tip nozzles or with stainless steel cones and stainless steel jet tips. 1/2” (15 mm) or 3/4” (20 mm) pipe sizes are available.

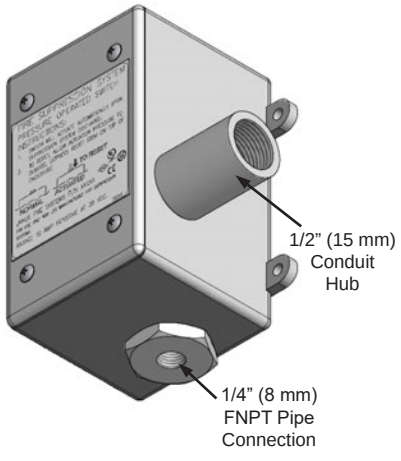
P/N		Nominal Pipe Size	Nominal Cone Size
Painted	SST		
19382	19650	1/2 in (15 mm)	4 in (100 mm)
19383	19651	3/4 in (20 mm)	4 in (100 mm)
19384	19652	1/2 in (15 mm)	6 in (150 mm)
19385	19653	3/4 in (20 mm)	6 in (150 mm)

Ordering Instructions: Specify the Nozzle P/N followed by a dash and the three digits representative of the drill code as provided by the Janus Design Suite software.

Example: 18382-XXX = Nozzle, JLA, 4”, 1/2" NPT, Painted (with drill code as specified)

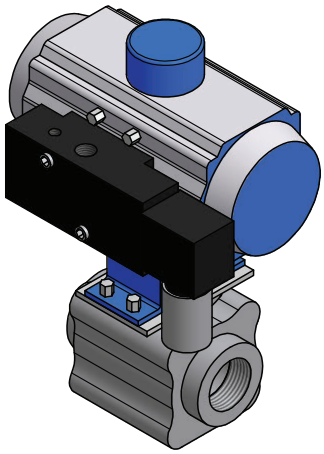
SUPPLEMENTAL COMPONENTS

Supplemental components complete various system arrangements.



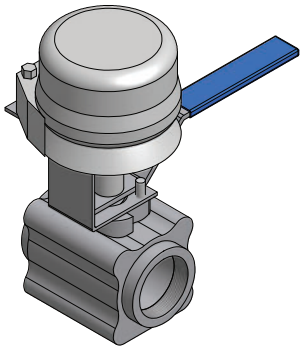
Discharge Pressure Switch (P/N 18773)

The discharge pressure switch is used in the system to provide positive indication of agent discharge and to initiate the shut down of equipment that may deplete agent concentration. The pressure switch is a single pole, double throw (SPDT) switch with contacts rated 10 Amps resistive at 30 VDC.



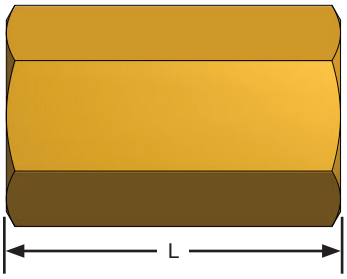
Selector Valve

Selector valves are used in specific cylinder arrangements to allow the protection of multiple hazards or hazard zones by one set of $HPCO_2$ cylinders or where a time delay is required. Janus Fire Systems® $HPCO_2$ selector valves are available as various sized (1/2 in, 3/4 in, 1 in, 1-1/2 in, 2 in) pneumatically actuated ball valves or a 3 in (80 mm) pneumatically actuated wafer valve. Optional solenoid is available. Refer to DS1093 for part numbers, specifications, and ordering information.



Lockout Valve

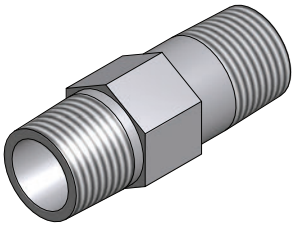
Lockout valves are used in specific cylinder arrangements where manual isolation of pipe is required. Janus Fire Systems® $HPCO_2$ lockout valves are available as various sized (1/2 in, 3/4 in, 1 in, 1-1/2 in, 2 in) manually actuated ball valves or a 3 in (80 mm) manually actuated wafer valve. Optional stem extension and explosion-proof limit switch are available. Refer to DS1092 for part numbers, specifications, and ordering information.



Inline Check Valve (P/N See Chart)

In a main / reserve or initial / extended arrangement that shares a common manifold, inline check valves are required. These check valves have a maximum pressure of 3000 psig @ 70°F (206 bar @ 21°C). Inline check valves are available in five different sizes and are made of either brass or stainless steel.

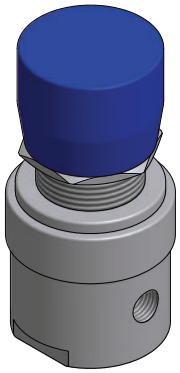
Inline Check Valves							
P/N		Valve Size (FNPT)		Length (L)		Weight	
Brass	Stainless Steel	in	mm	in	mm	lbs	kg
19501	19507	1/2	15	2.71	69	0.6	0.3
19502	19508	3/4	20	2.94	75	0.7	0.3
19503	19509	1	25	3.64	92	1.4	0.6
19504	19510	1-1/2	40	4.37	111	3.9	1.8
19505	19511	2	50	5.85	149	5.8	2.6
19506	19512	3	80	6.25	159	16.4	7.4



Inline Check Valve (P/N See Chart)

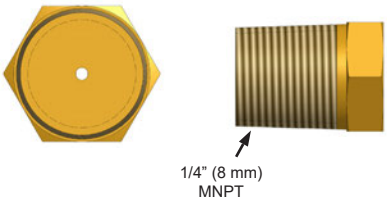
These check valves have a maximum pressure of 3000 psig @ 70°F (206 bar @ 21°C) and are available in two different sizes and made of brass or stainless steel.

Inline Check Valves							
P/N		Valve Size (MNPT)		Length		Weight	
Brass	Stainless Steel	in	mm	in	mm	lbs	kg
19475	19476	1/4	8	1.62	41	0.4	0.2
19477	19375	1/2	15	2.28	58	0.6	0.3



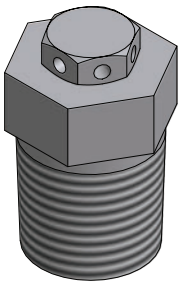
Regulator (P/N 19599)

A 316L stainless steel self-relieving pressure regulator with Teflon seat is utilized to regulate pressure to the pneumatic pilot cabinet or pneumatic actuation ports of selector valves. It has a 1/4 in (8 mm) FNPT inlet and outlet with a maximum operating inlet pressure of 3600 psig (248 bar) and an outlet range of 0 to 250 psig (0 to 17.2 bar). It is normally set to 100 psi (6.89 bar). The regulator has a standalone ambient temperature range of -40° to 500°F (-40° to 260°C) and a Cv of 0.5. A standalone pressure gauge (P/N 19171) can be installed immediately downstream of the regulator to verify pressure settings.



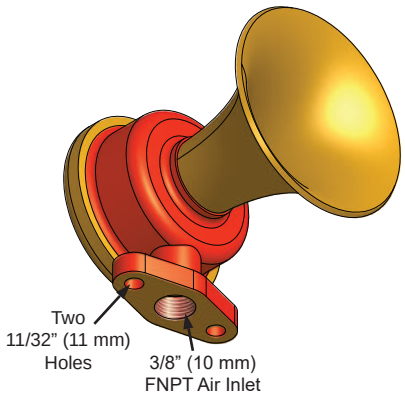
Vent Check (P/N 10173)

Vent checks are used in the manifolds of main/reserve systems as well as in the manifolds of systems that have selector valves. When one bank of cylinders discharges, the vent check vents any accidental check valve leakage that could discharge the other bank or banks of cylinders. The vent check is normally open with a ball seal that closes when manifold pressure reaches approximately 20 psi (1.4 bar) to prevent loss of CO2 under normal discharge conditions. The pipe connection is 1/4 in (8 mm) MNPT.



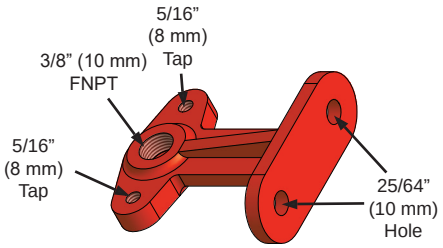
Manifold Header Safety (P/N 19598)

This pressure relief device is installed in sections of closed piping such as between selector valves or lockout valves and the cylinder manifold. It is a frangible disc assembly designed to rupture if trapped CO2 expands and the line pressure exceeds 2,650 to 3,000 psi (182.7 to 206.8 bar). The body is made of brass and the pipe connection is 1/2 inch (15 mm) MNPT.



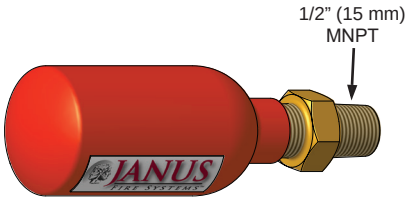
Pneumatic Siren (P/N 19224)

A pneumatic siren is installed downstream of each pneumatic pilot cabinet so that it is sounded during the predischarge period as required by NFPA 12. Each siren has a solid cast bronze bell with a stainless steel diaphragm and reaches a sound level of 119 ± 1DBA @ 100 psi at 10 ft (3.05 m). Each siren uses 1.3 lbs/minute (0.49 kg/minute) and has a C_v of .25. The sirens have an operating pressure of 50 to 150 psi (3 to 10 bar) and a standalone ambient temperature range of -4° to 400°F (-20° to 204°C).



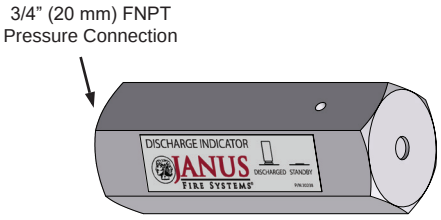
Pneumatic Siren Bracket (P/N 19225)

A pneumatic siren bracket affixes to the base of each pneumatic siren to allow the siren to be fastened to an outside surface.



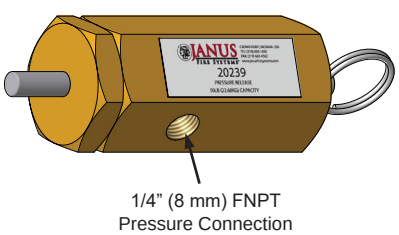
Odorizer Assembly (P/N 99703)

The odorizer assembly is installed into system piping to provide an olfactory indication of system actuation. During system discharge, a frangible disc inside the odorizer assembly ruptures, allowing wintergreen contained in the odorizer body to mix with the discharging agent. This causes the normally odorless carbon dioxide agent released into the protected hazard to possess a distinct wintergreen smell. The odorizer assembly is non-refillable.



Discharge Indicator (P/N 20238)

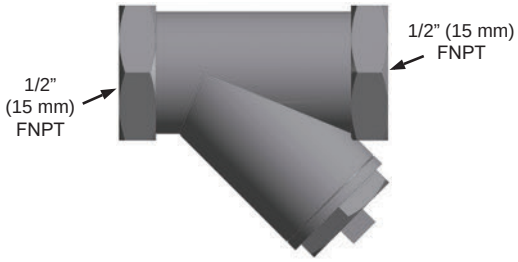
The discharge indicator acts as a nonelectrical visual indicator of system actuation. It is actuated through discharge pressure and remains in the upright (discharged) position until manually reset.



Pressure Trip Release (P/N 20239)

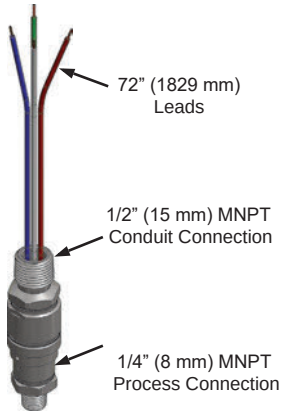
The pressure release trip can be used to release dampers, close fire doors, windows, louvres, fuel supply valves, to open dump valves, etc., automatically when the system discharges. The equipment to be operated must be weight or spring loaded, or be pivoted off center. The release trip is connected to the carbon dioxide discharge piping for operation when the system discharges. A cable from the equipment to be controlled is looped over the pressure release operating stem. When the trip is operated, the stem retracts and the cable is released. The maximum load that can be hung on the piston stem is 35 lbs (15.88 kg).

High-Pressure Y Strainer (P/N 98656)



A strainer is used upstream of the pressure regulator to prevent damaging contaminants from entering the regulator and pilot line. The “Y” pattern design and generous screen area function to minimize initial pressure drop while maximizing time between cleaning. The strainers are A351-CF8M stainless steel and are provided with a 40 mesh lining. The connections are FNPT for each respective size. Strainer rating is ASME class 1500. Drain/blow off connection is furnished with a plug.

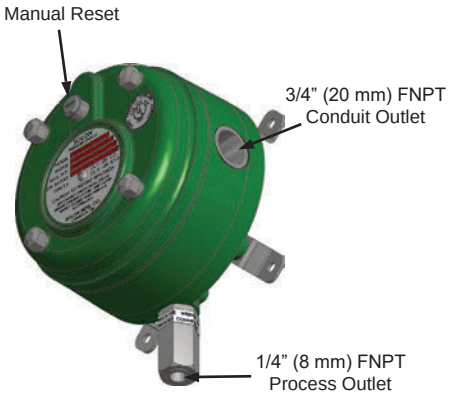
Explosion-Proof Pressure Switch, Self-Restoring (P/N 97430)



A NEMA 4X, 7, 9 and IP 67 Explosion-Proof Discharge Pressure Switch can be used in potentially explosive atmospheres to send indication of agent discharge to a releasing panel and/or initiate the shut down of equipment that may deplete agent concentration. It is a self-restoring double pole, double throw (DPDT) switch with contacts rated 5 Amps at 125/250 VAC and 28 VDC resistive. It is factory set at 50 psig (3.44 bar) rise.

Explosion-Proof Ratings:
Class I Div 1 Groups A, B, C, & D
Class II Div 1 Groups E, F, & G
T5 or T6
II 2GD
Ex d IIC T6/T5 Gb
Ex tb IIIC T85°C/100°C Db
T5 or T6

Explosion-Proof Pressure Switch, Manual Reset (P/N 97429)

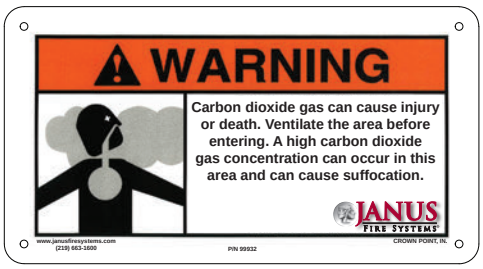


A NEMA 7 and 9 Explosion-Proof Discharge Pressure Switch can be used in potentially explosive atmospheres where manual reset is required to send indication of agent discharge to a releasing panel and/or initiate the shut down of equipment that may deplete agent concentration. It has two tandem double pole, double throw (DPDT) switches operating in parallel with contacts rated 15 Amps at 125/250/480 VAC and 0.5 Amps at 125 VDC. It is factory set at 50 psig (3.44 bar) rise.

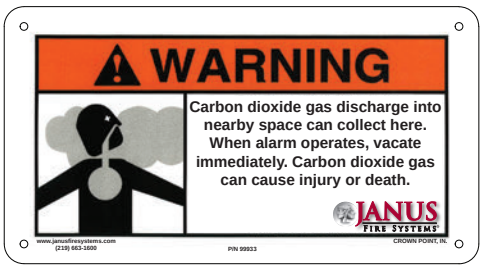
Explosion-Proof Ratings:
Class I Groups C & D
Class II Groups E, F, & G

WARNING SIGNS

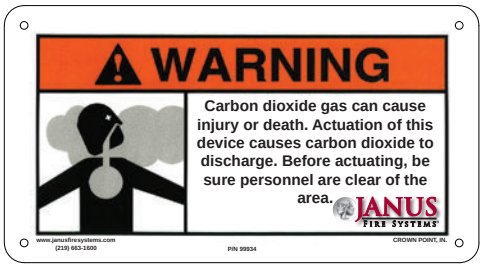
NFPA 12 mandates the placement of specifically designed warning signs in and around areas protected by CO_2 fire extinguishing systems. Each sign is 6-1/2 in x 12 in (165 mm x 305 mm).



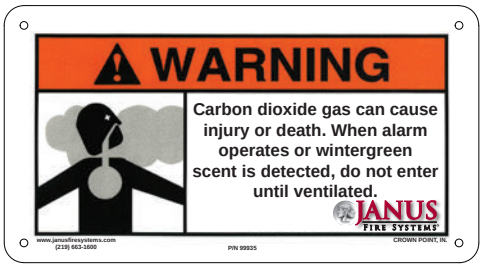
Warning – Storage –P/N 99932
Post sign outside each entrance to carbon dioxide storage rooms.



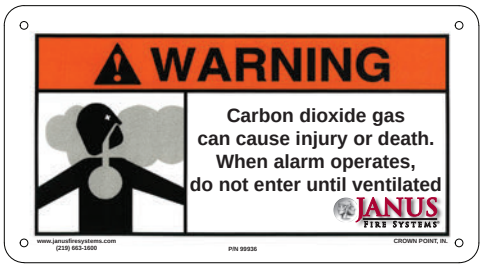
Warning – Nearby – P/N 99933
Post sign in every nearby space where carbon dioxide can accumulate to hazardous levels.



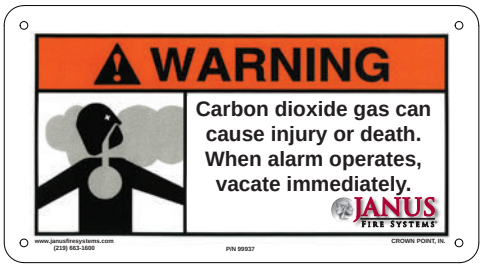
Warning – Manual Actuation – P/N 99934
Post sign at each manual actuation station.



Warning – Wintergreen – P/N 99935
Post sign at every entrance to protected space for systems provided with wintergreen odorizer.



Warning – Entrance – P/N 99936
Post sign in every protected space.



Warning – Exit – P/N 99937
Post sign at every entrance to protected space.

CO_2 CHEMICAL PROPERTIES

CO_2 is a naturally occurring gas found readily in the atmosphere formed from oxygen and carbon molecules. Under normal conditions, CO_2 is an odorless, colorless gas with a density about 50 percent greater than the density of air. The primary extinguishing mechanism of CO_2 is oxygen depletion.

CO_2 leaves no residue and is electrically non-conductive.

SAFETY CONSIDERATIONS

NFPA 12 generally does not permit total flooding CO_2 systems in areas that are normally occupied. Section 4.1 of NFPA 12 should be referred to for exceptions to this.

Inhaling large concentrations of CO_2 causes rapid circulatory insufficiency leading to coma and death. Asphyxiation is likely to occur before the effects of carbon dioxide overexposure. Chronic, harmful effects are not known from repeated inhalation of low concentrations. Low concentrations of carbon dioxide can cause increased respiration and headache.

CO_2 may cause frostbite-like symptoms if liquid discharge or escaping vapor contacts the skin.

The CO_2 Material Safety Data Sheet (MSDS) should be read and understood prior to working with the agent.

A cylinder containing CO_2 should be handled carefully. **The anti-recoil safety plugs must be in place at all times when the cylinder is not connected to the discharge piping.**

Order Review List		
P/N	**Description**	**Nominal Ship Wt. lb (kg)**
19561	Cylinder Assembly, HPCO2, 50 lb	146 (66.2)
19560	Cylinder Assembly, HPCO2, 75 lb	235 (106.6)
19559	Cylinder Assembly, HPCO2, 100 lb	310 (140.6)
19589	Actuator, Manual Valve, HPCO2 (primary cylinder)	1.1 (0.5)
19585	Valve Kit, Solenoid, 24VDC, HPCO2 (primary cylinder)	4.1 (1.9)
99733	Valve Kit, Solenoid, 24VDC, XP, HPCO2 (primary cylinder)	4.1 (1.9)
99706	Hose, Flex, Discharge w/ Outlet Check Valve	3.6 (1.6)
99707	Hose, Flex, Discharge w/ Discharge Outlet Adapter	3.4 (1.5)
18773	Switch, Discharge Pressure	1.4 (0.6)
19501	Valve, Check, 1/2" FNPT, Brass *Inline Check Valve*	0.6 (0.3)
19507	Valve, Check, 1/2" FNPT, SST *Inline Check Valve*	0.6 (0.3)
19502	Valve, Check, 3/4" FNPT, Brass *Inline Check Valve*	0.9 (0.4)
19508	Valve, Check, 3/4" FNPT, SST *Inline Check Valve*	0.9 (0.4)
19503	Valve, Check, 1" FNPT, Brass *Inline Check Valve*	1.5 (0.7)
19509	Valve, Check, 1" FNPT, SST *Inline Check Valve*	1.5 (0.7)
19504	Valve, Check, 1-1/2" FNPT, Brass *Inline Check Valve*	4.1 (1.9)
19510	Valve, Check, 1-1/2" FNPT. SST *Inline Check Valve*	4.1 (1.9)
19505	Valve, Check, 2" FNPT, Brass *Inline Check Valve*	6.0 (2.7)
19511	Valve, Check, 2" FNPT, SST *Inline Check Valve*	6.0 (2.7)
19506	Valve, Check, 3" FNPT, Brass *Inline Check Valve*	16.6 (7.5)
19512	Valve, Check, 3" FNPT, SST *Inline Check Valve*	16.6 (7.5)
19475	Valve, Check, 1/4" MNPT, Brass *Inline Check Valve*	0.4 (0.2)
19476	Valve, Check, 1/4" MNPT, SST *Inline Check Valve*	0.4 (0.2)
19477	Valve, Check, 1/2" MNPT, Brass *Inline Check Valve*	0.6 (0.3)
19375	Valve, Check, 1/2" MNPT, SST *Inline Check Valve*	0.6 (0.3)
10173	Vent Check	0.2 (0.1)
19599	Regulator	1.9 (0.9)
19171	Gauge, Pressure, 1/4 Inch (8 mm) MNPT, 0-160 PSIG, 2-1/2 Inch Dial	0.4 (0.2)
98656	Strainer, 1/2 Inch (15 mm) FNPT, Y, 40 Mesh, SST, Class 1500#	2.4 (1.1)
19598	Device, Header Safety, 1/2" MNPT *Manifold Header Safety*	0.8 (0.4)
18846	Station, Main/Reserve Transfer, MRS-1, Indoor	1.2 (0.5)
19224	Siren, CO2, 3/8" FNPT	3.1 (1.4)
19225	Bracket, T, CO2, Siren	0.9 (0.4)
99703	Odorizer Assembly	3.1 (1.4)
20238	Indicator, Pressure, Discharge	2.0 (0.9)
20239	Trip, Pressure Release *(Pressure Trip Release Mounting Bracket Kit P/N 99702)*	2.0 (0.9)
Various	Nozzles — *VARIOUS TYPES*	Various
Various	Sign, Warning, CO2 — *VARIOUS TYPES*	0.2 (0.1)

Note: Refer to DS1092 and DS1093 for selector and lockout valve ordering information.

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller's sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

1102 Rupcich Drive
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Crown Point, IN 46307
TEL: (219) 663-1600 FAX: (219) 663-4562
e-mail: info@janusfiresystems.com
www.janusfiresystems.com

$LPCO_2$ System

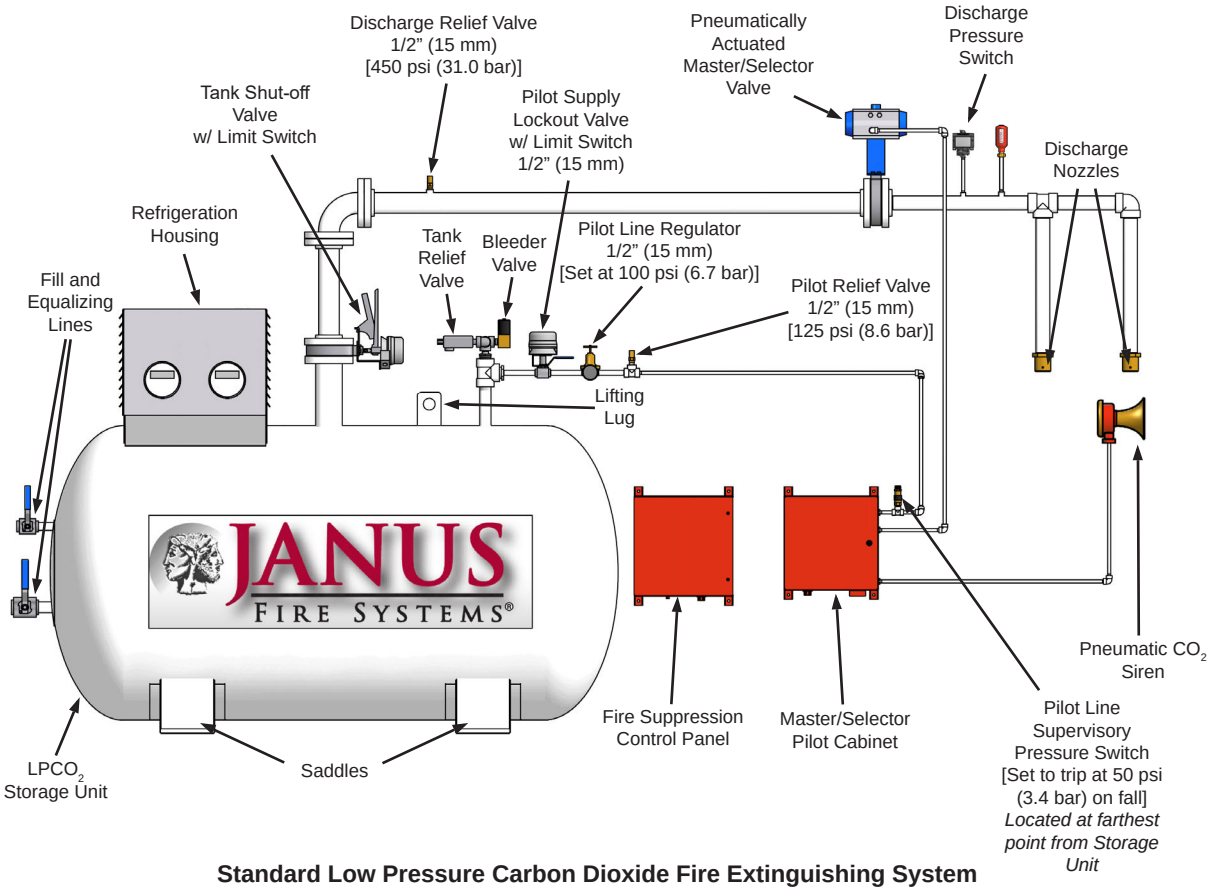
Master/Selector Pilot Cabinet

w/ Pneumatic Time Delay

The Janus Fire Systems® Master/Selector Pilot Cabinet is an essential part of the Janus Fire Systems® Low Pressure Carbon Dioxide Fire Extinguishing System. It functions to pneumatically open and close the master/selector valve upon receipt of a signal from the fire suppression control panel, allowing the CO_2 agent to enter the protected volume and begin suppression. It may also be manually operated using the manual actuation valve located within the pilot cabinet.

NFPA 12 mandates a pneumatic pre-discharge alarm sound prior to agent release into normally occupied and occupiable enclosures for total flood applications. The Janus Fire Systems® Master/Selector Pilot Cabinet is designed with a pneumatic timer to allow for a variably set pre-discharge period during which time a siren is pneumatically sounded.

A pilot supply lock-out valve is fitted just downstream of the CO_2 storage unit as required by NFPA 12. The Janus Fire Systems® Master/Selector Pilot Cabinet also has a manual actuation valve to allow for emergency manual actuation of the pilot cabinet as well as a timer bypass valve to forgo the pre-discharge period.



Standard Low Pressure Carbon Dioxide Fire Extinguishing System

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SEQUENCE OF OPERATION

When the system is in standby condition, pilot pressure enters the cabinet and is stopped at the closed manual actuation valve, solenoid valve, and the inlet port of the pneumatic pilot valve.

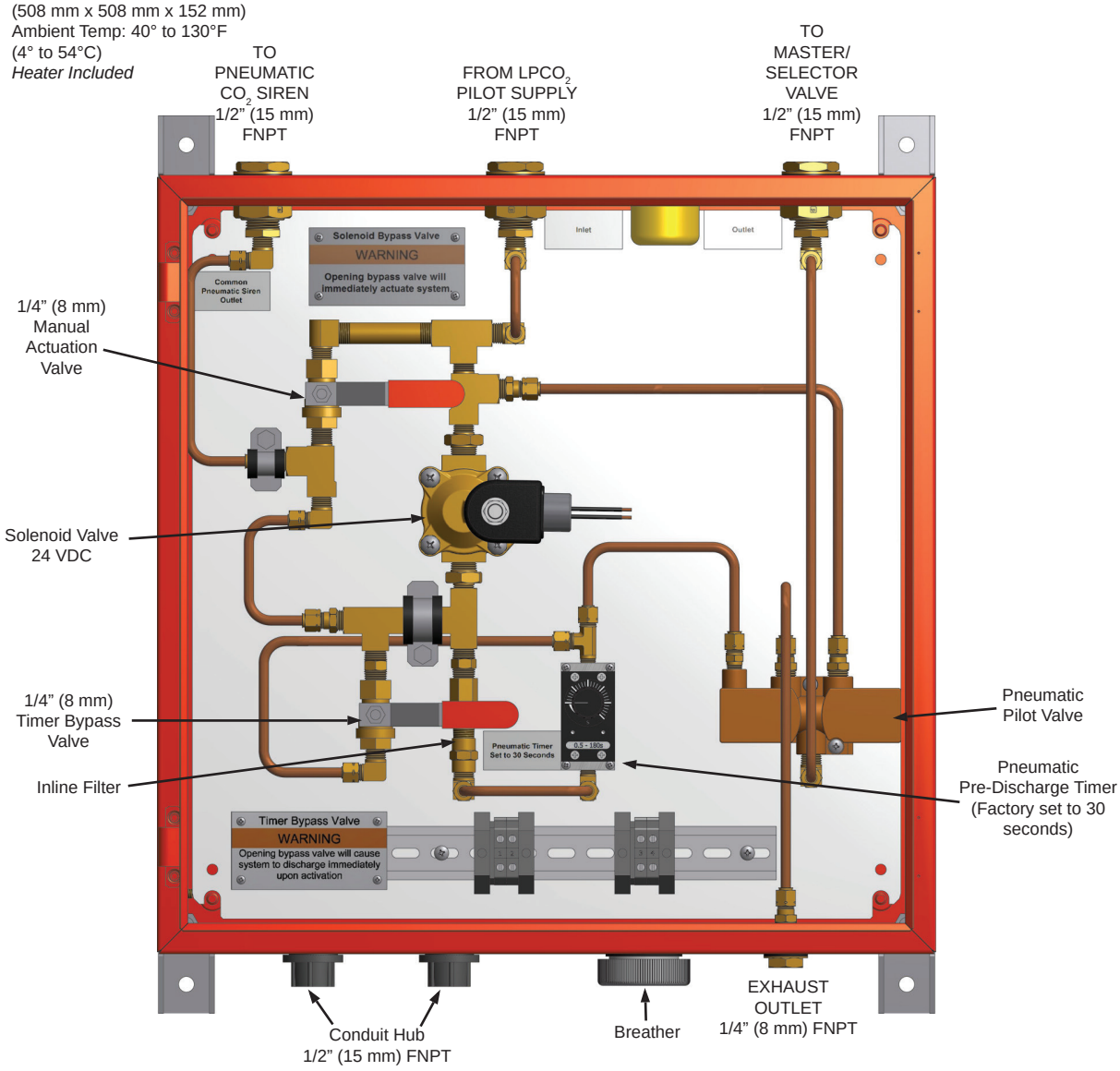
Upon receipt of an actuation signal from the fire suppression control panel, the solenoid valve opens sending pilot pressure to the pneumatic siren, pneumatic timer, and timer bypass valve. Alternately, the manual actuation valve may be opened by hand.

During this pre-discharge period, the pilot pressure is stopped at the closed timer bypass valve and closed pneumatic pre-discharge timer. Once the predetermined time period has passed, the pneumatic timer opens sending pilot pressure into the pilot port of the pneumatic pilot valve. If the timer bypass valve is open, pilot pressure circumvents the timer and is sent to the pneumatic pilot valve as soon as the solenoid or manual actuation valve is opened.

Upon receiving pressure in its pilot port, the pneumatic pilot valve opens and sends pilot pressure to the pneumatic actuator of the master/selector valve. The Stages of Operation section illustrates each of these conditions.

Enclosure
NEMA 4 & 12 (IP66)
Dimensions: 20” x 20” x 6”
(508 mm x 508 mm x 152 mm)
Ambient Temp: 40° to 130°F
(4° to 54°C)
Heater Included

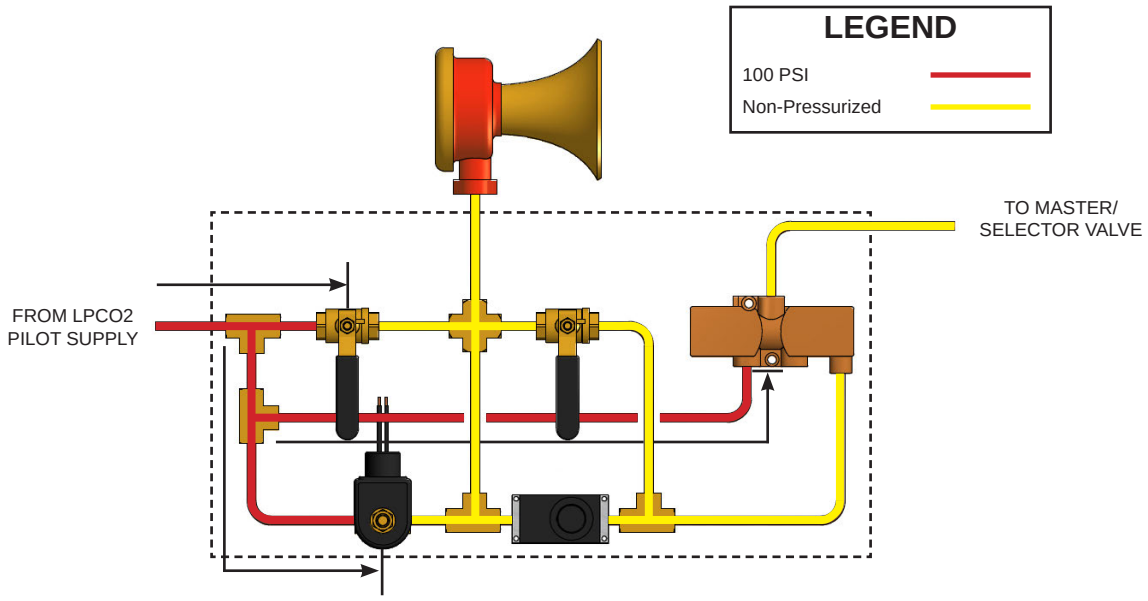
***NOTE**: NEMA 4X Stainless Steel Enclosure also available*



Standard Master/Selector Pilot Arrangement

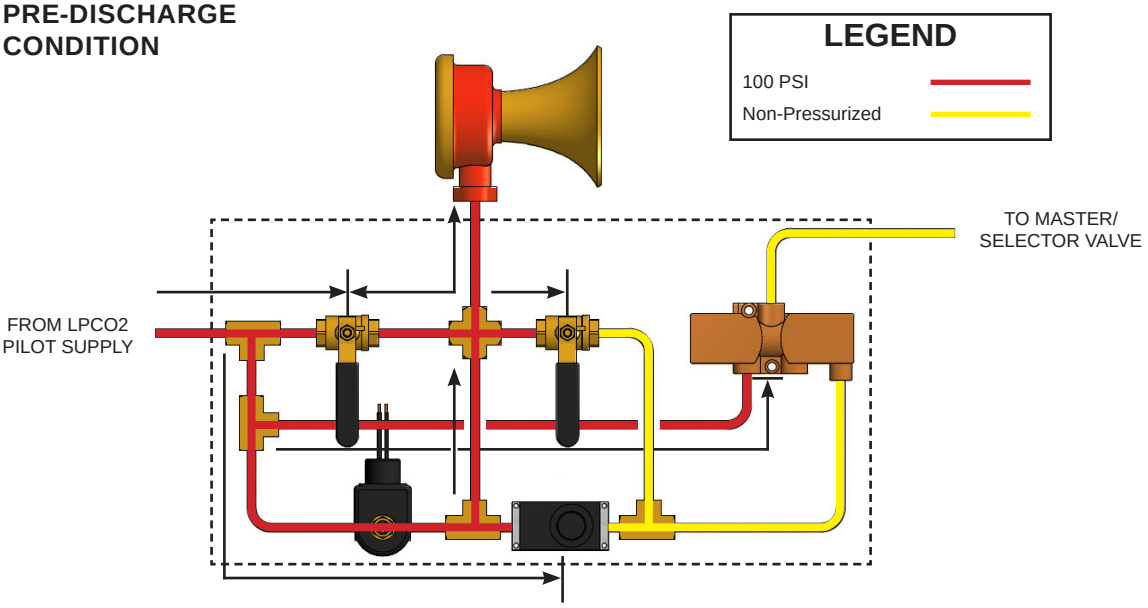
STAGES OF OPERATION

CABINET IN STANDBY CONDITION



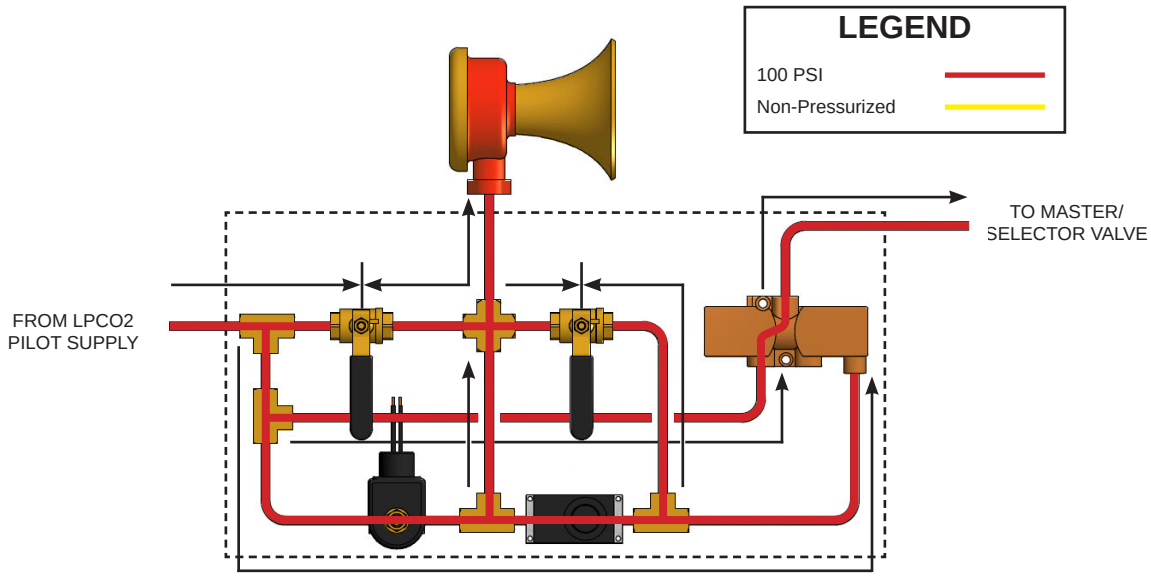
Piping and Instrumentation Diagram

CABINET IN PRE-DISCHARGE CONDITION



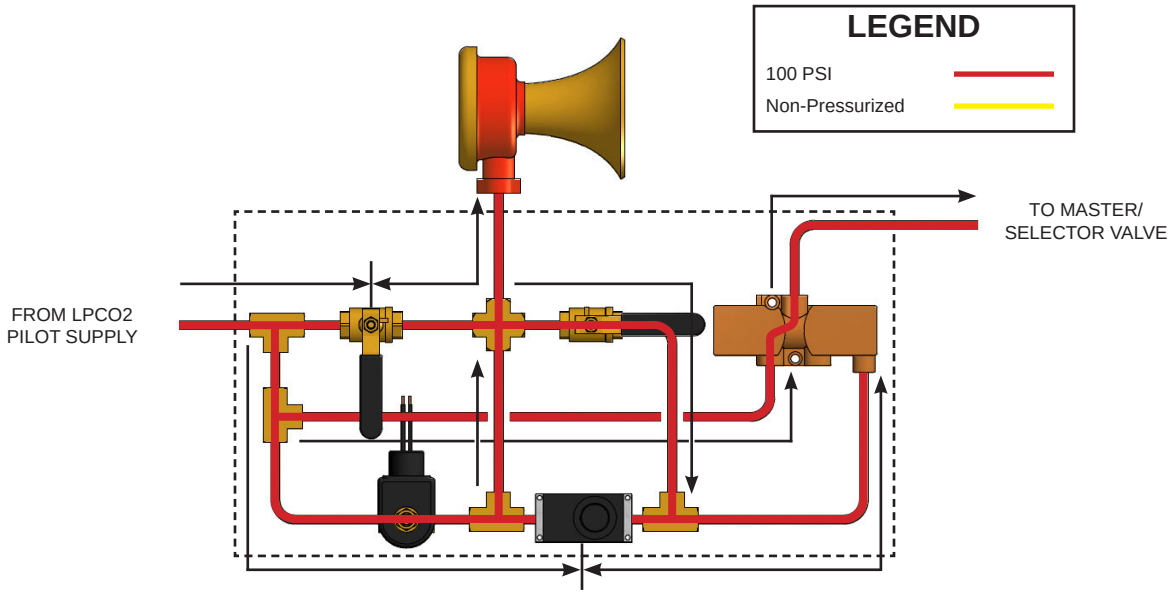
Electrically Actuated Cabinet

CABINET IN DISCHARGE CONDITION



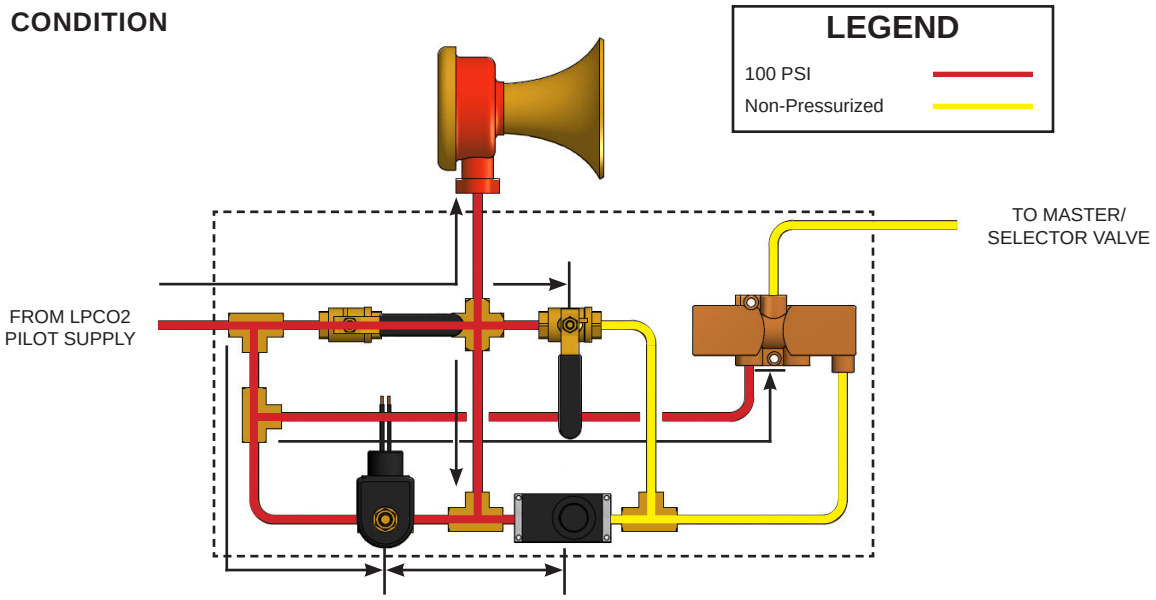
Electrically Actuated Cabinet

CABINET IN TIMER BYPASS DISCHARGE CONDITION



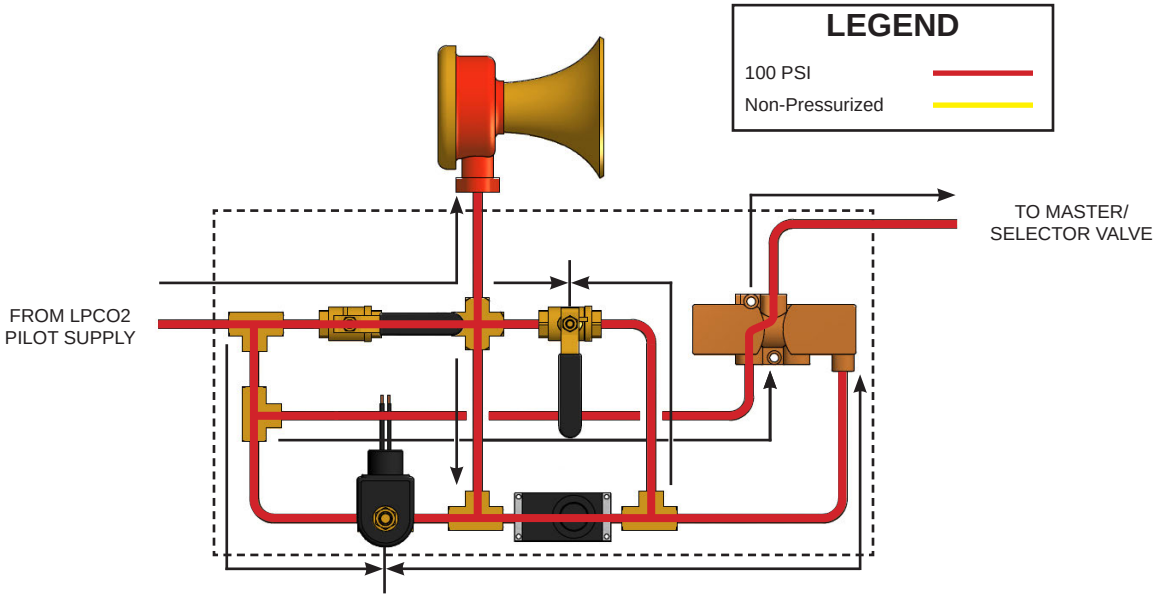
Electrically Actuated Cabinet

CABINET IN PRE-DISCHARGE CONDITION



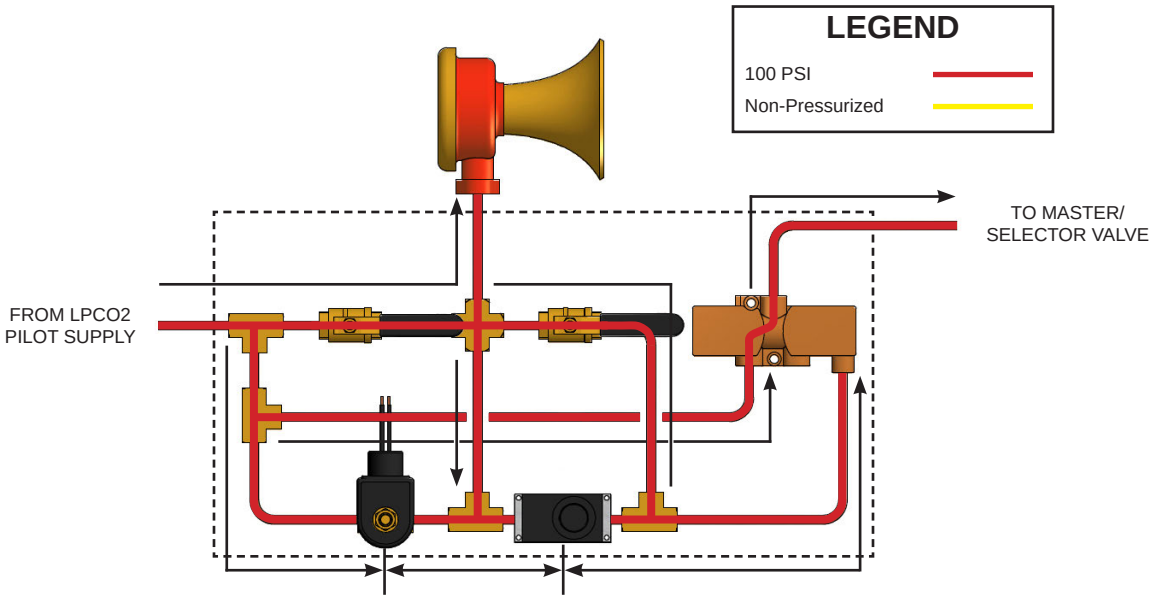
Manually Actuated Cabinet

CABINET IN DISCHARGE CONDITION



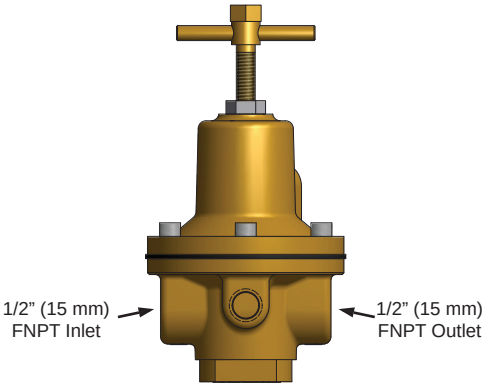
Manually Actuated Cabinet

CABINET IN
TIMER BYPASS
DISCHARGE CONDITION



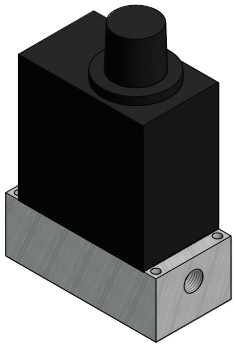
Manually Actuated Cabinet

EQUIPMENT DESCRIPTION



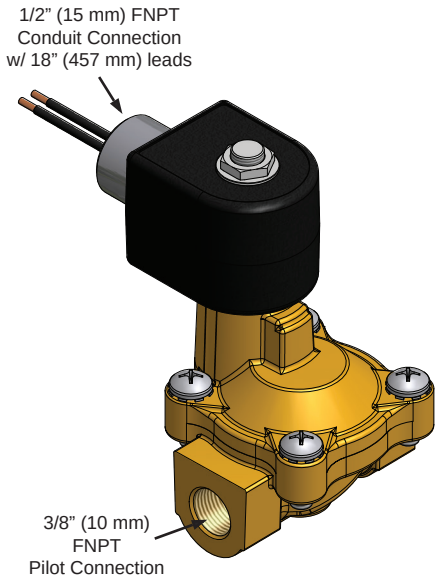
Pilot Line Regulator (P/N 19170)

A polyamide and aluminum gas regulator is placed at the $LPCO_2$ tank vapor supply outlet to regulate the pressure into the pilot cabinet. It has a 1/2 in (15 mm) FNPT inlet and outlet with a maximum inlet pressure of 450 psig (31 bar) and an outlet range of 50 to 135 psig (3.4 to 9.3 bar). It is normally set to 100 psi (6.89 bar). The regulator has a standalone ambient temperature range of -20° to 130°F (-29° to 54°C) and a C_v of 3.6. A pressure gauge (0-160 psig P/N 19171) is attached to the regulator to allow visual monitoring of outlet pressure.



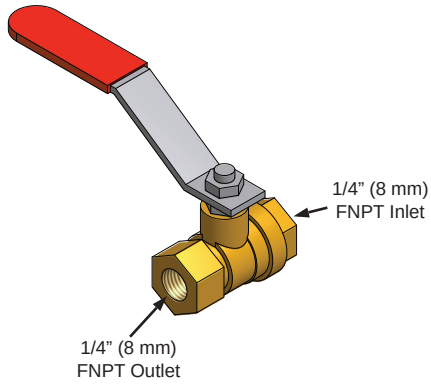
Pneumatic Timer (P/N 19172)

The pneumatic timer is placed downstream of the solenoid and manual actuation valve. It acts to create a predischarge delay between system actuation and system discharge to allow for notification of personnel via the pneumatic siren as mandated by NFPA 12. The timer can be set for a 1 to 180 second delay. It has a 1/8 in (6 mm) NPT inlet and outlet port and a 3-way internal exhaust. The standalone ambient temperature range for the timer is 40° to 130°F (4° to 54°C).



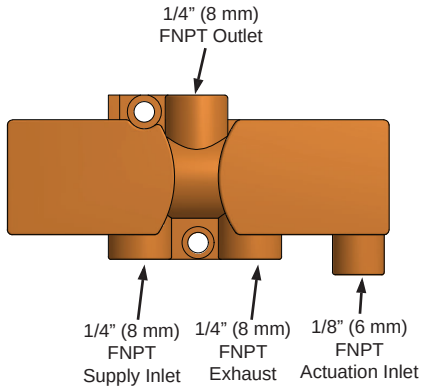
Solenoid Valve (P/N 19309)

A solenoid valve is installed inside the pilot cabinet upstream of the pneumatic siren, timer bypass valve, and pneumatic timer. It operates at 24 VDC, 10 Watts and has a NEMA 4X enclosure with an ambient temperature range of -20° to 150°F (-29° to 66°C). Upon receiving a signal from the releasing panel, the valve opens sending pilot pressure to the pneumatic siren and pneumatic timer.



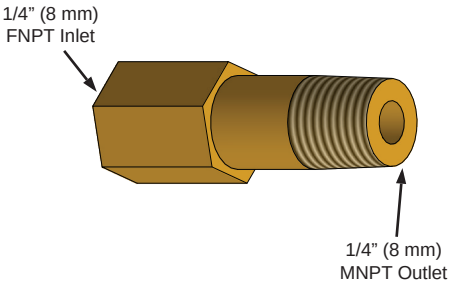
Manual Actuation/Timer Bypass Valve (P/N 19173)

The manual actuation valve is placed upstream of the pneumatic timer and acts as means to manually begin the pre-discharge process by sending actuation pressure to the pneumatic siren and pneumatic timer. The timer bypass valve is placed downstream of the solenoid and manual actuation valves. When open, it bypasses the pneumatic timer and immediately begins the discharge process upon electric or manual actuation of the cabinet by sending pilot pressure to the pneumatic pilot valve. Both the manual actuation and timer bypass valves are manually actuated full port ball valves made of forged brass with reinforced PTFE seats and seals and have 1/4 in (8 mm) FNPT connections. The standalone ambient temperature range for both valves is -20° to 130°F (-29° to 54°C).



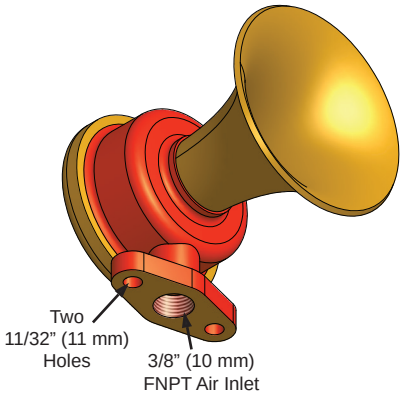
Pneumatic Pilot Valve (P/N 19174)

A pneumatic pilot valve is placed in the pilot cabinet upstream of the cabinet outlet port. It has a brass body with buna seal and has four ports: a supply inlet, an actuation inlet, an outlet, and an exhaust. Upon receiving pressure to its actuation inlet, the valve opens sending pilot pressure from its supply inlet to the pneumatic actuator of the master/selector valve, which causes the master/selector valve to open, releasing the CO_2 agent. It has a standalone ambient temperature range of -20° to 150°F (-29° to 66°C).



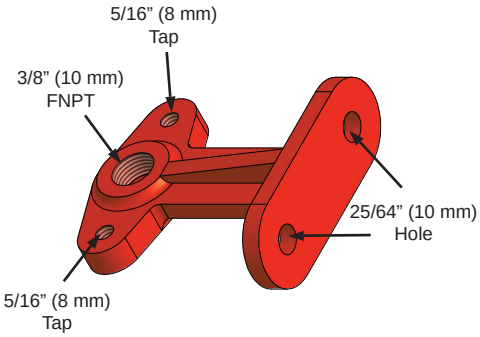
Inline Filter (P/N 99109)

A 20 micron inline filter is installed immediately upstream of the pneumatic timer to protect the timer from debris. It has a brass body with a sintered bronze filter element. The filter has a 1/4 in (8 mm) FNPT inlet and a 1/4 in (8 mm) MNPT outlet.



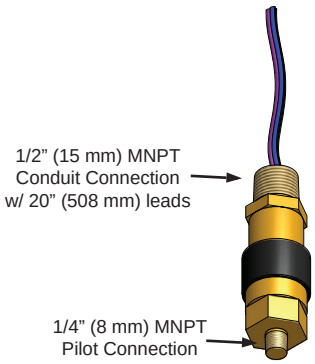
Pneumatic Siren (P/N 19224)

A pneumatic siren is installed immediately downstream of both the solenoid valve and manual actuation valve but upstream of the pneumatic timer so that it is sounded during the pre-discharge period as required by NFPA 12. It has a solid cast bronze bell with a stainless steel diaphragm and reaches a sound level of 119 ± 1DBA @ 100 psi at 10 ft (3.05 m). The siren uses 1.3 lbs/minute (0.49 kg/minute) and has a C_v of .25. It has an operating pressure of 50 to 150 psi (3 to 10 bar) and an ambient temperature range of -4° to 400°F (-20° to 204°C).



Pneumatic Siren Bracket (P/N 19225)

The pneumatic siren bracket affixes to the base of the pneumatic siren to allow the siren to be fastened to an outside surface.

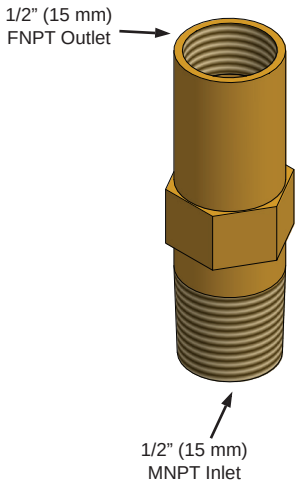


Pilot Line Supervisory Pressure Switch (P/N 19307)

The pilot line supervisory pressure switch is installed downstream of the pilot line regulator immediately outside the master/selector pilot cabinet furthest from the regulator. It has a NEMA 4 enclosure for outdoor use and a standalone ambient temperature range of -20° to 180°F (-29° to 82°C). When pressure drops below 50 psi (3.4 bar), the switch sends an abnormal signal to the fire suppression control panel. The switch is single pole double throw with contacts rated 5 Amps resistive at 24 VDC or 125/250 VAC and 5 Amps inductive at 125/250 VAC or 3 Amps inductive at 30 VDC.

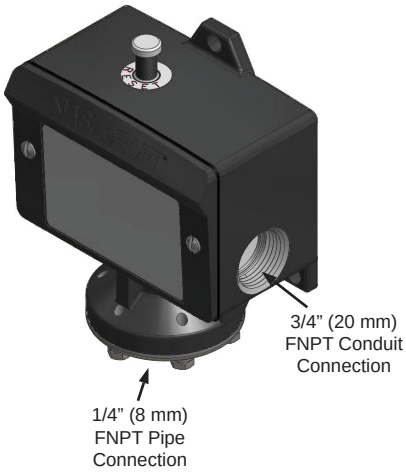
Pilot Relief Valve (P/N 19316)

The pilot relief valve is installed just downstream of the pilot line regulator. It has a 0.062 in² (40 mm²) orifice area and is set to open should line pressure exceed 125 psi (8.6 bar). The relief valve has a brass body with a stainless steel spring and a standalone ambient temperature range of -320°F to 165°F (-196°C to 74°C). A pipe-away adapter (P/N 19318) is available to convert the outlet to a 1/2” (15 mm) FNPT connection.



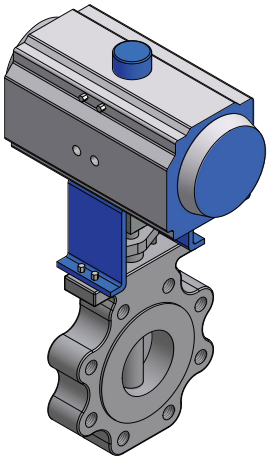
Discharge Relief Valve (P/N 19317)

The discharge relief valve is installed upstream of the master/selector valve and downstream of the tank shutoff valve. It has a 0.062 in² (40 mm²) orifice area and is set to open should line pressure exceed 450 psi (31.0 bar). The relief valve has a brass body with a stainless steel spring and a standalone ambient temperature range of -320°F to 165°F (-196°C to 74°C). A pipe-away adapter (P/N 19318) is available to convert the outlet to a 1/2” (15 mm) FNPT connection.



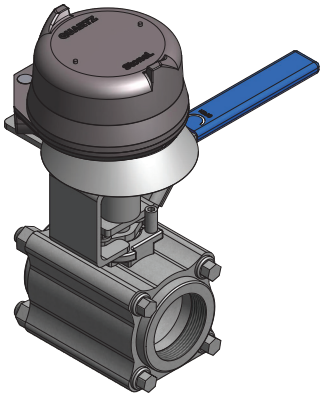
Discharge Pressure Switch (P/N 97428)

The discharge pressure switch is used in the system to provide positive indication of agent discharge and to initiate the shut down of equipment that may deplete agent concentration. The pressure switch is a single pole, double throw (SPDT) switch with contacts rated 15 Amps at 125/250/480 VAC and 0.5 Amps at 125 VDC. It has a NEMA 4X enclosure.



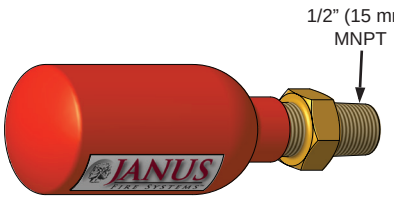
Master/Selector Valves

The master/selector valve allows the protection of a single or multiple hazards or hazard zones by the $LPCO_2$ system. Janus Fire Systems® $LPCO_2$ master/selector valves are available as 1/2 in (15 mm), 3/4 in (20 mm), 1 in (25 mm), 1-1/2 in (40 mm), and 2 in (50 mm) pneumatically actuated ball valves or 3 in (80 mm), 4 in (100 mm), 6 in (150 mm), and 8 in (200 mm) pneumatically actuated wafer valves. Optional solenoid is available. Refer to DS1093 for part numbers, specifications, and ordering information.



Lockout/Bypass Valve

Lockout valves are installed where manual isolation of pipe is required. Janus Fire Systems® $LPCO_2$ lockout valves are available as 1/2 in (15 mm), 3/4 in (20 mm), 1 in (25 mm), 1-1/2 in (40 mm), and 2 in (50 mm) manually actuated ball valves or 3 in (80 mm), 4 in (100 mm), 6 in (150 mm), and 8 in (200 mm) manually actuated wafer valve. Optional stem extension and explosion-proof limit switch are available. Refer to DS1092 for part numbers, specifications, and ordering information.

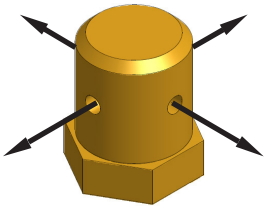


Odorizer Assembly (P/N 99703)

The odorizer assembly is installed into system piping to provide an olfactory indication of system actuation. During system discharge, a frangible disc inside the odorizer assembly ruptures, allowing wintergreen contained in the odorizer body to mix with the discharging agent. This causes the normally odorless carbon dioxide agent released into the protected hazard to possess a distinct wintergreen smell. The odorizer assembly is non-refillable.

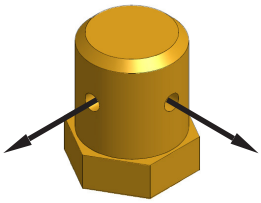
DISCHARGE NOZZLES

Various nozzle options are available depending on the application and hazard requirements.



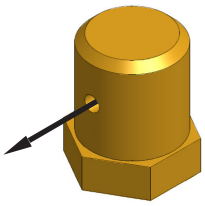
360° Radial Nozzle (4 Port)

360° radial nozzles are used for total flooding application. These nozzles are placed in the middle of a hazard space and discharge CO_2 agent in four directions allowing for a 360° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



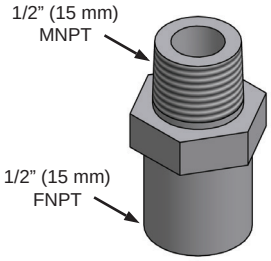
180° Sidewall Nozzle (2 Port)

180° sidewall nozzles are used for total flooding application. These nozzles are placed against the wall or edge of a hazard space and oriented to discharge CO_2 agent in two directions allowing for a 180° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



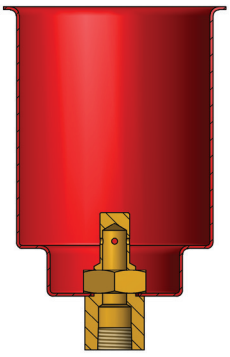
90° Corner Nozzle (1 Port)

90° corner nozzles are used for total flooding application. These nozzles are placed in the corner of a hazard space and oriented to discharge CO_2 agent in one direction allowing for a 90° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



Orifice Nozzles

Orifice nozzles are used for total flooding application. These nozzles are used for smaller hazard areas where a small flow rate is required. Nozzles are stainless steel and 1/2 in (15 mm) NPT.

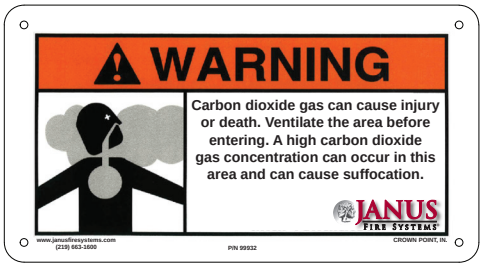


JLA Nozzles

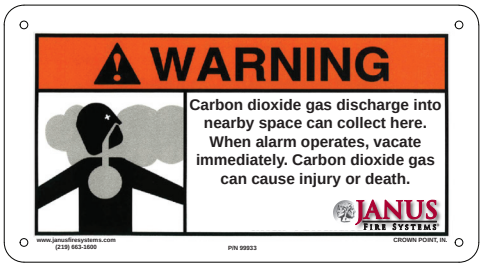
Janus Local Aplication (JLA) nozzles may be used for total flooding application, but are the only nozzle suited for local application. For local application, JLA nozzles are place a specific distance from the protected hazard to discharge directly onto that hazard. Nozzles are available with painted cones and brass jet tip nozzles or with stainless steel cones and stainless steel jet tips. 1/2” (15 mm) or 3/4” (20 mm) pipe sizes are available.

WARNING SIGNS

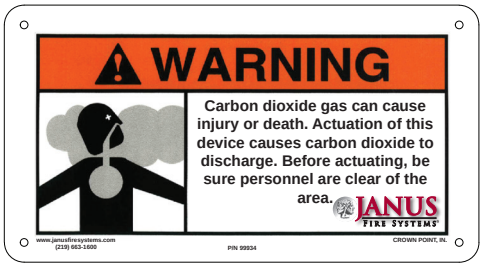
NFPA 12 mandates the placement of specifically designed warning signs in and around areas protected by CO_2 fire extinguishing systems. Each sign is 6-1/2 in x 12 in (165 mm x 305 mm).



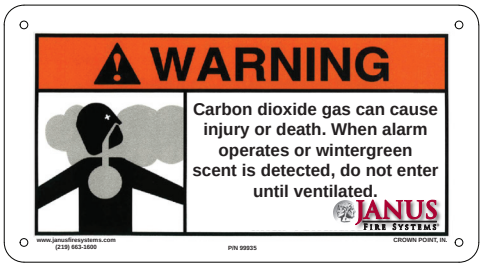
Caution – Storage – P/N 99932
Post sign outside each entrance to carbon dioxide storage rooms.



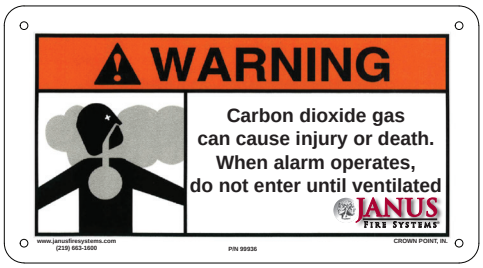
Caution – Nearby –P/N 99933
Post sign in every nearby space where carbon dioxide can accumulate to hazardous levels.



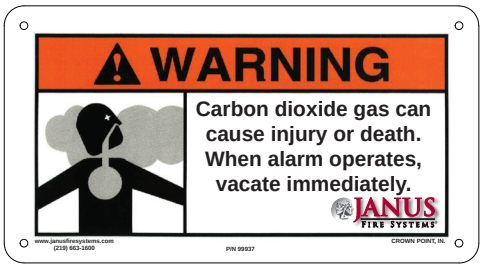
Warning – Manual Actuation – P/N 99934
Post sign at each manual actuation station.



Warning – Wintergreen – P/N 99935
Post sign at every entrance to protected space for systems provided with wintergreen odorizer.



Warning – Entrance – P/N 99936
Post sign in every protected space.



Warning – Exit – P/N 99937
Post sign at every entrance to protected space.

Ordering Information	
P/N	**Description**
99728	Cabinet, Pilot, Master/Selector, NEMA-4, 24 VDC (w/ Heater)
98334	Cabinet, Pilot, Master/Selector, NEMA-4X, 24 VDC, SST Enclosure (w/ Heater)

Spare Part List	
P/N	**Description**
19170	Pilot Line Regulator
19172	Pneumatic Timer
19174	Pneumatic Pilot Valve
19173	Manually Actuated Ball Valve – *Manual Actuation / Timer Bypass Valve*
19307	Pilot Line Supervisory Pressure Switch
19316	Pilot Relief Valve
19317	Discharge Relief Valve
19318	Pipe-Away Adapter
19224	Pneumatic Siren
19225	Pneumatic Siren Bracket
19309	Solenoid Valve
99109	Inline Filter
97428	Discharge Pressure Switch
99703	Odorizer Assembly
99932	Sign, Caution, CO2, Storage Areas
99933	Sign, Caution, CO2, Nearby Spaces
99934	Sign, Warning, CO2, Manual Stations
99935	Sign, Warning, CO2, Entrance w/ Odorizer
99936	Sign, Warning, CO2, Entrance
99937	Sign, Warning, CO2, Exit

Note: Refer to DS1092 and DS1093 for master/selector and lockout valve ordering information.

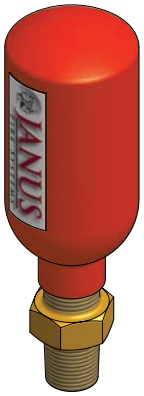
The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller's sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

JANUS FIRE SYSTEMS®

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e-mail: info@janusfiresystems.com
www.janusfiresystems.com

Carbon Dioxide

Odorizer Assembly



P/N: 99703

Standard Features

- For High Pressure or Low Pressure CO2 Systems
- Frangible rupture disc burst pressure 78 psi (5.4 bar)
- Contains 1.69 oz (50 cc) of Wintergreen (methyl salicylate)
- 1/2 in (15 mm) MNPT Pipe Connection
- Maximum assembly test pressure of 5,000 psi (344 bar)
- Installed with pipe connection outlet facing down
- Cylinder is DOT listed 3E-1800

UL LISTED FM APPROVED

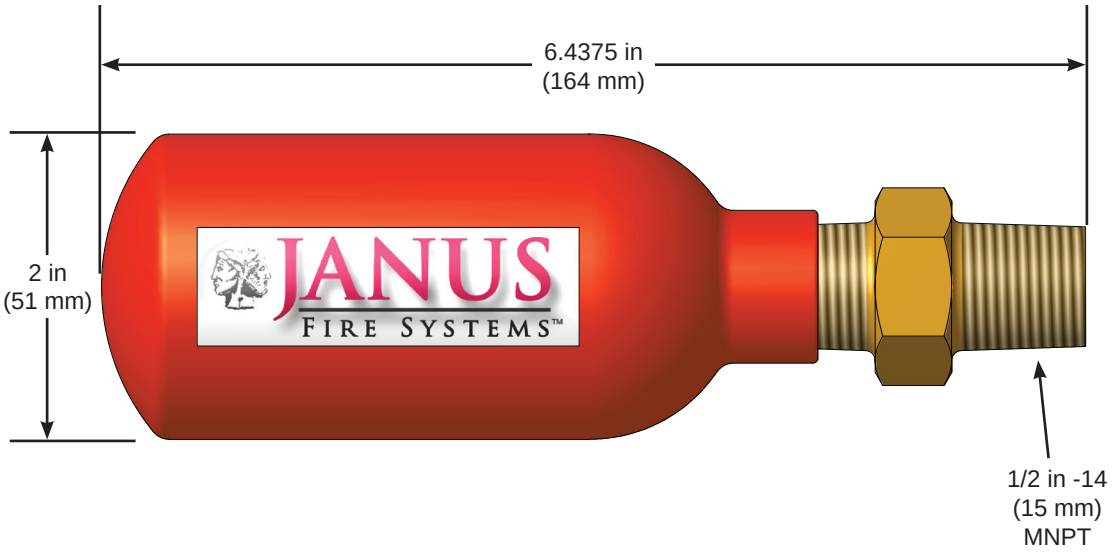
Description

The Janus Fire Systems® Odorizer Assembly is used in both Janus Fire Systems® Low-Pressure and High-Pressure Carbon Dioxide Fire Suppression Systems to provide an olfactory indication of carbon dioxide discharge within a hazard space. Coupled with an appropriate warning sign, this scent serves to alert personnel that a space contains an unsafe amount of carbon dioxide.

Operation

The odorizer assembly is installed in system discharge piping with its outlet facing down to allow gravity to aid in the release of the Wintergreen fluid. During system discharge, a frangible disc within the odorizer assembly ruptures when pressure in the piping reaches 78 psi (5.4 bar) releasing Wintergreen into the discharge piping. This instills the normally odorless carbon dioxide gas with a distinctive Wintergreen scent. The odorizer assembly is nonrefillable and must be replaced following system discharge.

Dimensions



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Safety Considerations

The odorizer assembly contains 1.9 oz (50 cc) of methyl salicylate (commonly known as wintergreen). Methyl salicylate has a health hazard of 2, a flammability hazard of 1, and a reactivity hazard of 0. For more information, refer to the Wintergreen Material Safety Datasheet (MSDS) found on the downloads section of the Janus Fire Systems website (www.janusfiresystems.com).

Ordering Information

P/N	Description	Ship Wt. lb (kg)
99703	Odorizer Assembly, Wintergreen	3.1 (0.2)
Suggested Warning Signs		
99935	Sign, Warning, CO2, Wintergreen, English *Dimensions: 6.5" x 12" (165 mm x 305 mm)*	0.2 (0.1)
98833	Sign, Warning, CO2, Wintergreen, Spanish *Dimensions: 6.5" x 12" (165 mm x 305 mm)*	0.2 (0.1)
98942	Sign, Warning, CO2, Wintergreen, English/Arabic *Dimensions: 12" x 12" (305 mm x 305 mm)*	0.2 (0.1)

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller's sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

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$LPCO_2$ System

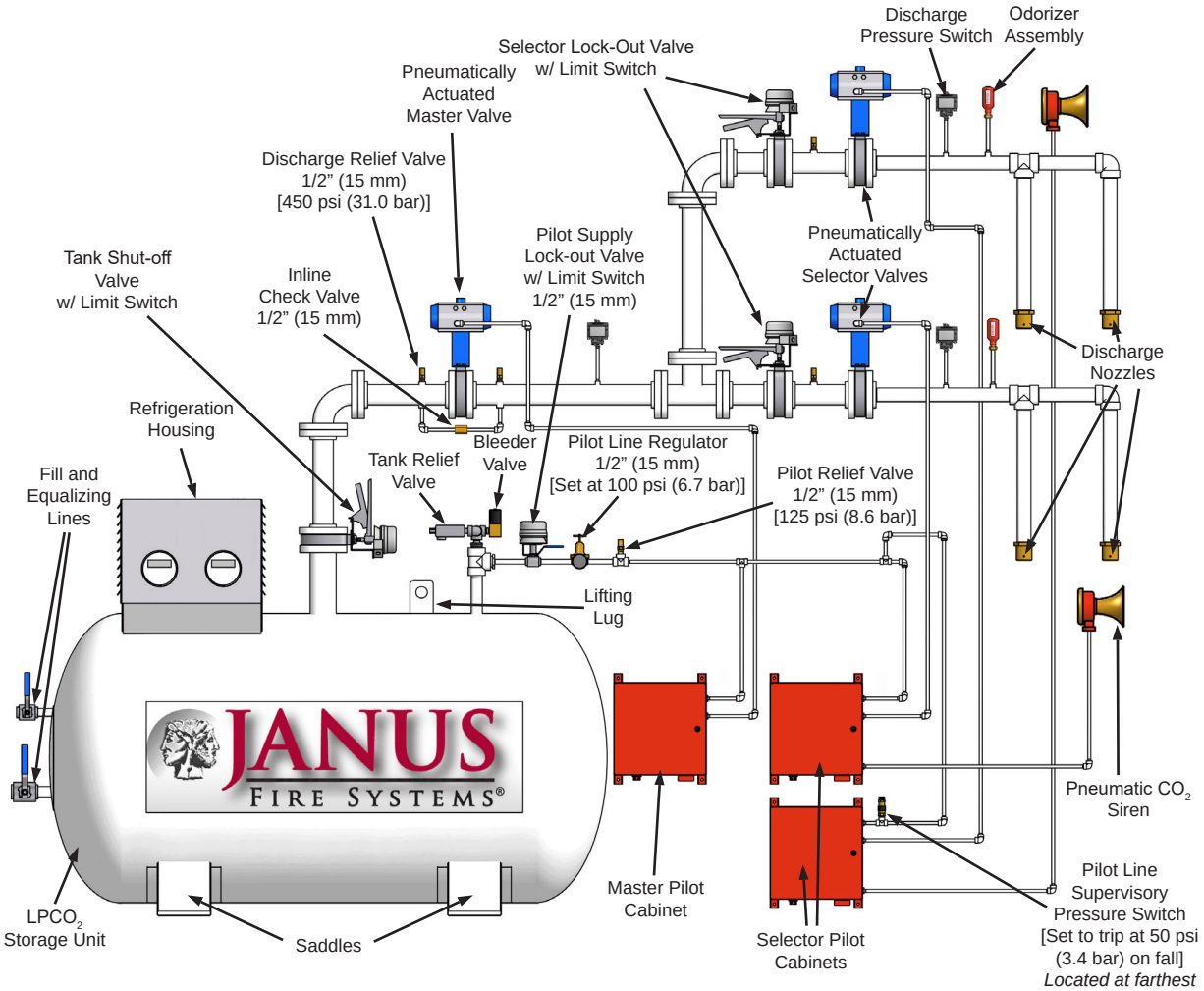
Master & Selector Pilot Cabinets

w/ Pneumatic Time Delay and NDE Master Cabinet

Janus Fire Systems® Master & Selector Pilot Cabinets are essential pieces of the Janus Fire Systems® Low Pressure Carbon Dioxide Fire Extinguishing System. They function to pneumatically open and close the master valve and appropriate selector valve(s) upon receipt of a signal from the fire suppression control panel, allowing the CO_2 agent to enter the protected volume and begin suppression. They may also be manually operated using the manual actuation valve located within the cabinets.

NFPA 12 mandates a pneumatic pre-discharge alarm sound prior to agent release into normally occupied and occupiable enclosures for total flood applications. Janus Fire Systems® Master & Selector Pilot Cabinets are designed with a pneumatic timer in each selector cabinet to allow for a variably set pre-discharge period during which time a siren is pneumatically sounded.

A pilot supply lock-out valve is fitted just downstream of the CO_2 storage unit as required by NFPA 12. The master and selector pilot cabinets are fitted with manual bypass valves to manually actuate the system. The selector cabinet also contains a timer bypass valves to forgo the pre-discharge period.



Standard Low Pressure Carbon Dioxide Fire Extinguishing System

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SEQUENCE OF OPERATION (Master Pilot Cabinet)

When the system is in standby condition, pilot pressure enters the master cabinet and is stopped at the closed master solenoid valve and inlet port of the pneumatic pilot valve.

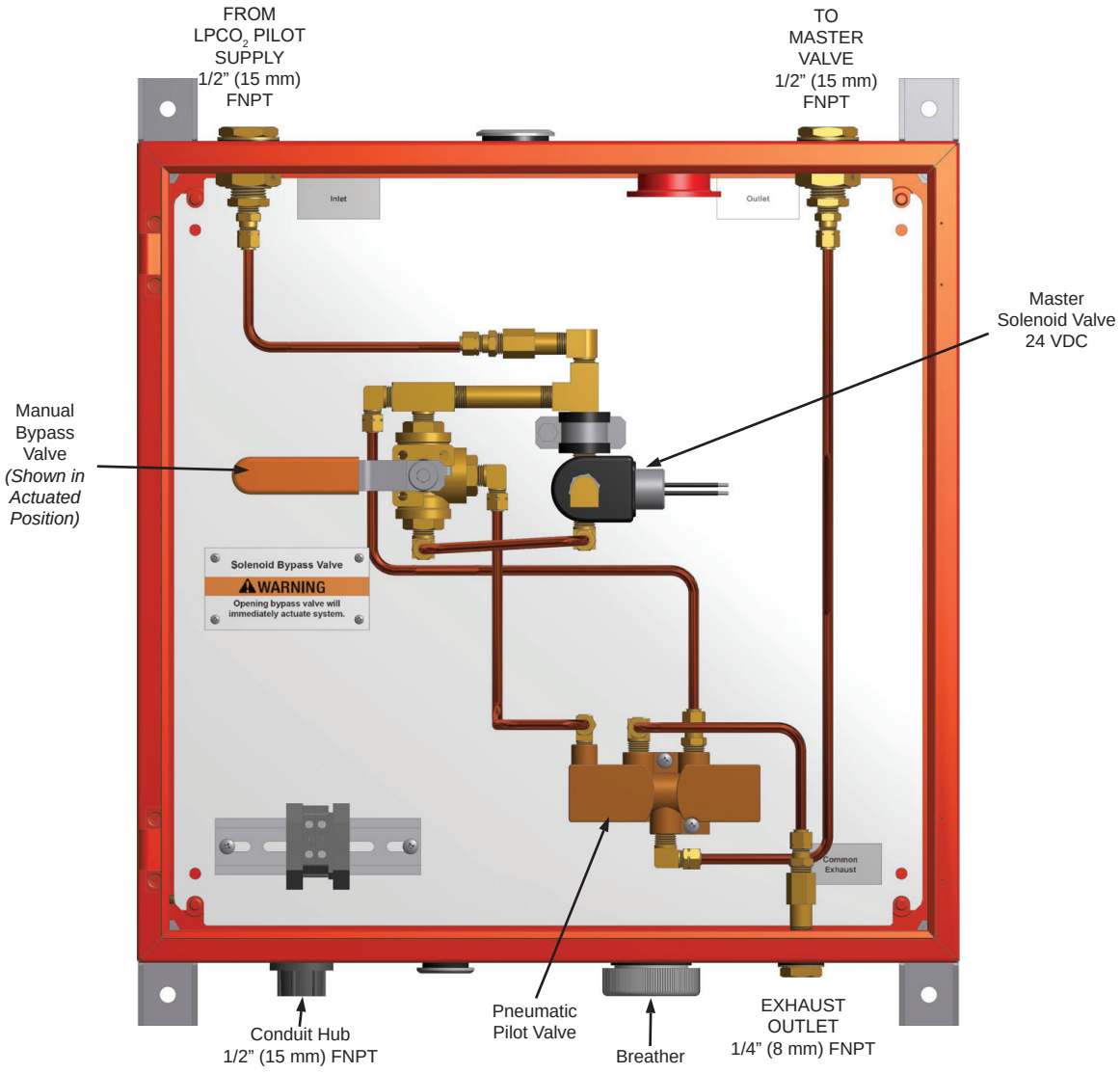
In standby condition, the master solenoid valve is de-energized and closed. The solenoid is energized when the selector actuation pressure switch contacts in the selector pilot cabinet open. This causes the solenoid valve to open and send pilot pressure to the pilot port of the pneumatic pilot valve. Alternately, the master pilot cabinet may be actuated manually by moving the lever of the manual actuation valve located within the master pilot cabinet to the “open” position.

Upon receiving pressure in its pilot port, the pneumatic pilot valve opens and sends pressure received at its inlet to the pneumatic actuator of the master valve. The Stages of Operation section illustrates each of the above described conditions.

Once the master valve is pneumatically actuated, it opens and carbon dioxide passes through the master valve to any and all selector valves.

Enclosure
NEMA 4 & 12 (IP66)
Dimensions:
20” x 20” x 6”
(508 mm x 508 mm x 152 mm)
Ambient Temp: -20° to 130°F (-29° to 54°C)

***NOTE**: NEMA 4X Stainless Steel Enclosure also available*



Standard Master Pilot Arrangement

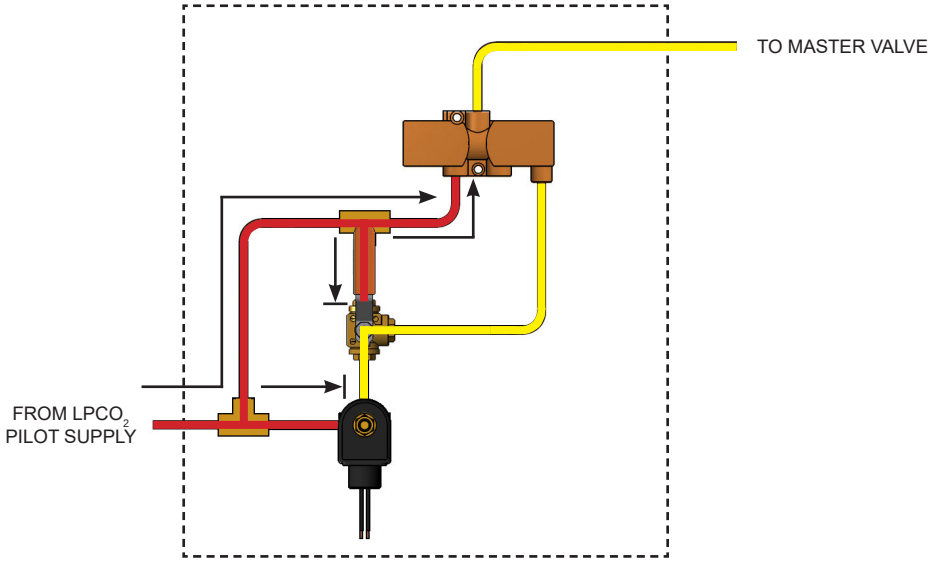
STAGES OF OPERATION (Master Pilot Cabinet)

MASTER CABINET IN STANDBY CONDITION

LEGEND

100 PSI

Non-Pressurized



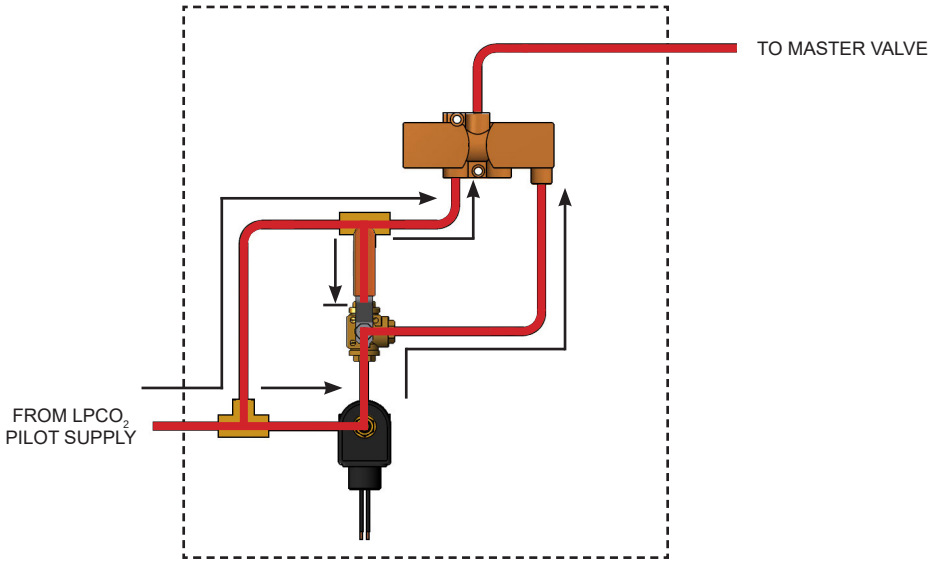
Cabinet Piping and Instrumentation Diagram

MASTER CABINET IN DISCHARGE CONDITION

LEGEND

100 PSI

Non-Pressurized



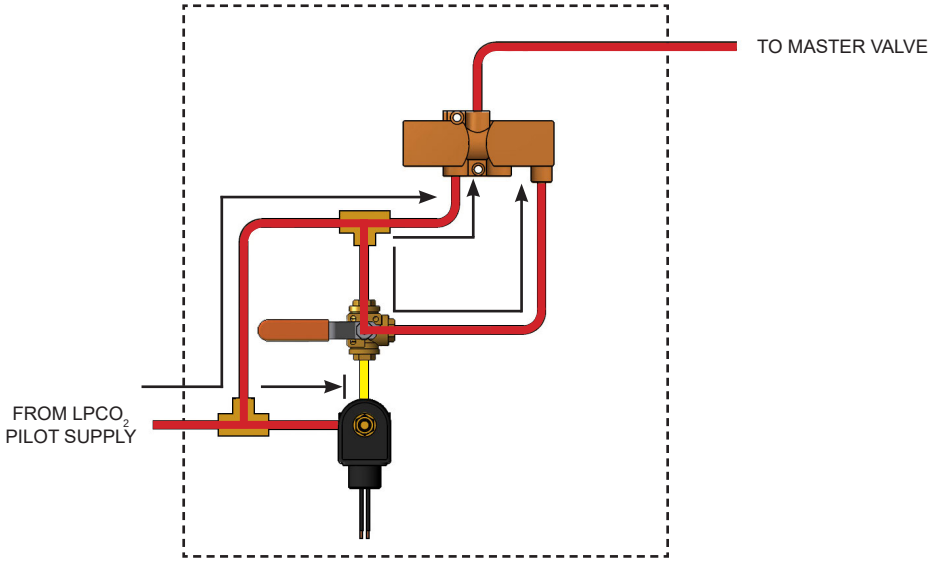
Electrically Actuated Cabinet

MASTER CABINET IN DISCHARGE CONDITION

LEGEND

100 PSI

Non-Pressurized



Manually Actuated Cabinet

SEQUENCE OF OPERATION (Selector Pilot Cabinet)

When the system is in standby condition, pilot pressure enters each selector cabinet and is stopped at the closed manual actuation valve, solenoid valve, and the inlet port of the pneumatic pilot valve.

Upon receipt of an actuation signal from the fire suppression control panel, the solenoid valve opens sending pilot pressure to the pneumatic siren, pneumatic timer, and timer bypass valve. Alternately, the manual actuation valve may be opened by hand. This pilot pressure also trips the selector actuation pressure switch, which opens causing the master solenoid valve located in the master pilot cabinet to energize and open.

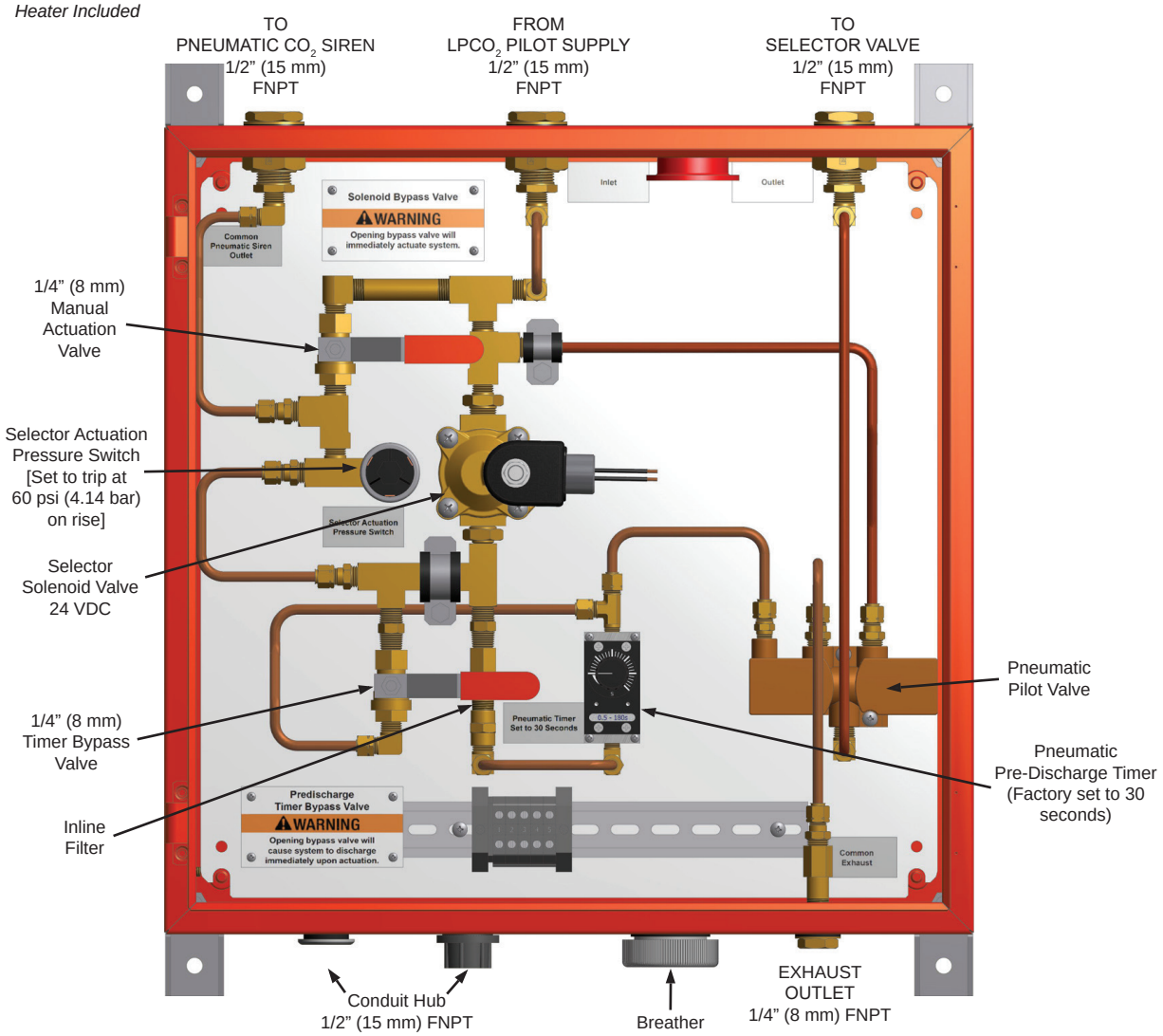
During this pre-discharge period, the pilot pressure is stopped at the closed timer bypass valve and closed pneumatic pre-discharge timer. Once the predetermined time period has passed, the pneumatic timer opens sending pilot pressure into the pilot port of the pneumatic pilot valve. If the timer bypass valve is open, pilot pressure circumvents the timer and is sent to the pneumatic pilot valve as soon as the solenoid or manual actuation valve is opened.

Upon receiving pressure in its pilot port, the pneumatic pilot valve opens and sends pressure received at its inlet to the pneumatic actuator of the selector valve. The Stages of Operation section illustrates each of the above described conditions.

Once a selector valve has been pneumatically actuated, it opens and allow any carbon dioxide from the open master valve to pass through to the nozzles and discharge into the protected hazard.

Enclosure
NEMA 4 & 12 (IP66)
Dimensions: 20" x 20" x 6" (508 mm x 508 mm x 152 mm)
Ambient Temp: 40° to 130°F (4° to 54°C)
Heater Included

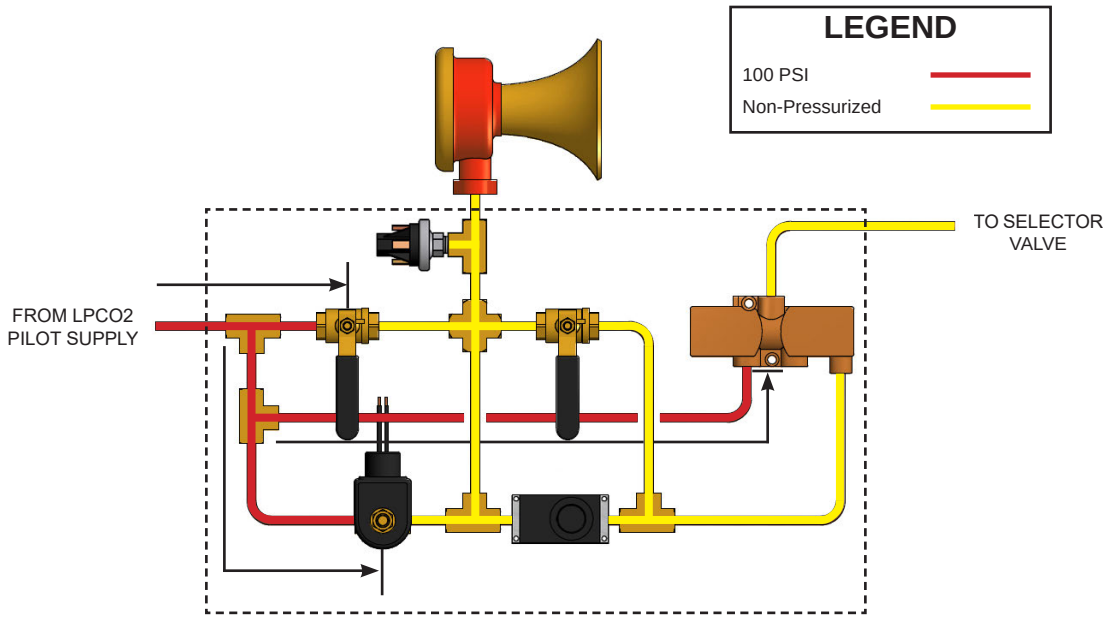
***NOTE**: NEMA 4X Stainless Steel Enclosure also available*



Standard Selector Pilot Arrangement

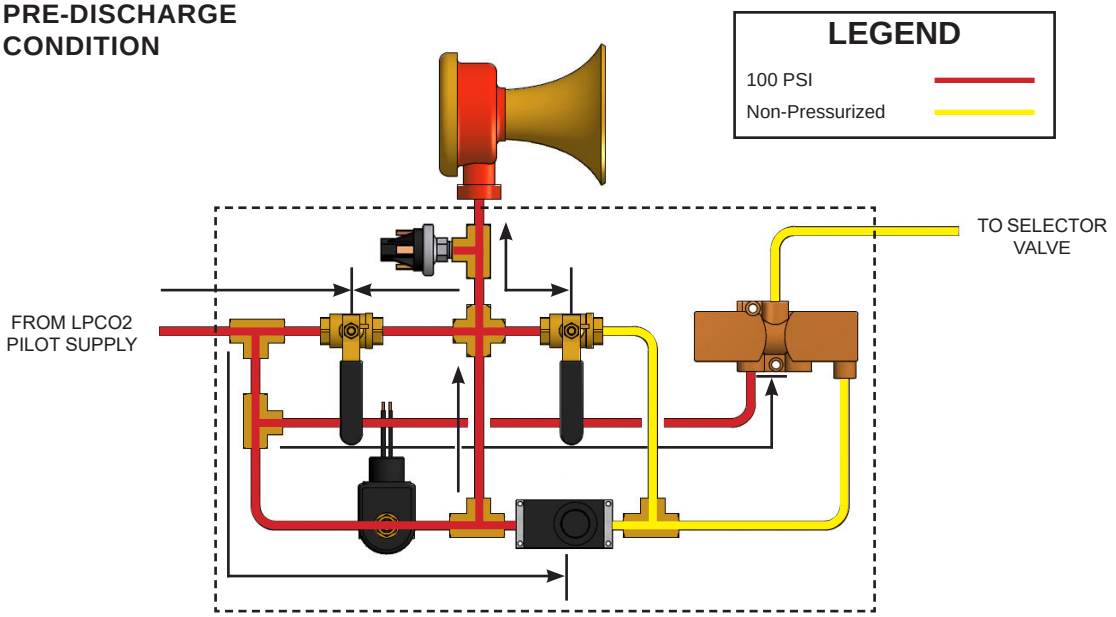
STAGES OF OPERATION (Selector Pilot Cabinet)

SELECTOR CABINET IN STANDBY CONDITION



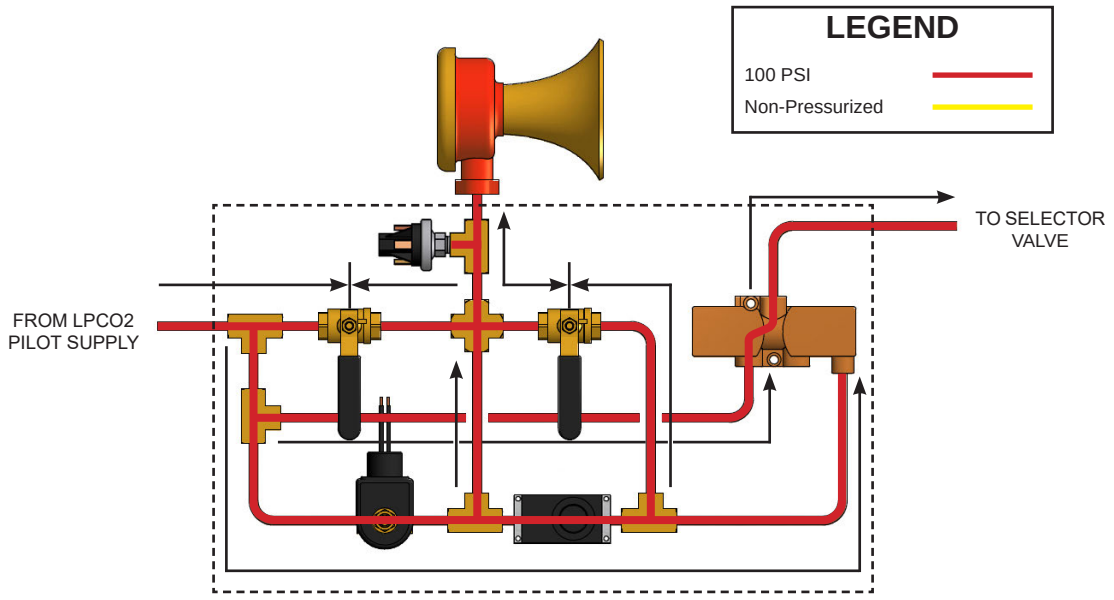
Piping and Instrumentation Diagram

SELECTOR CABINET IN PRE-DISCHARGE CONDITION



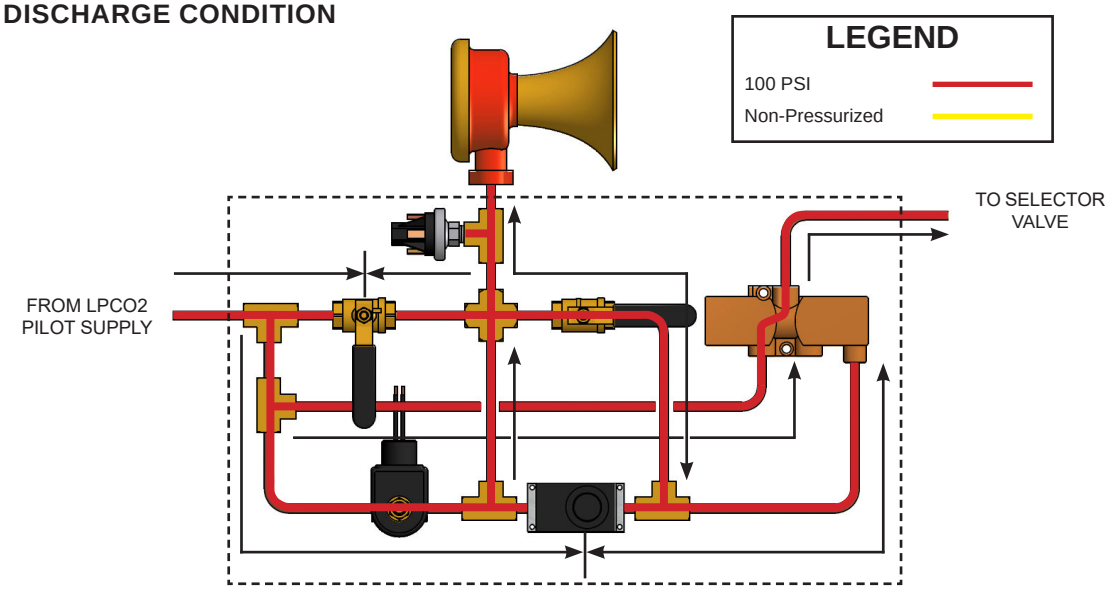
Electrically Actuated Cabinet

SELECTOR CABINET IN DISCHARGE CONDITION



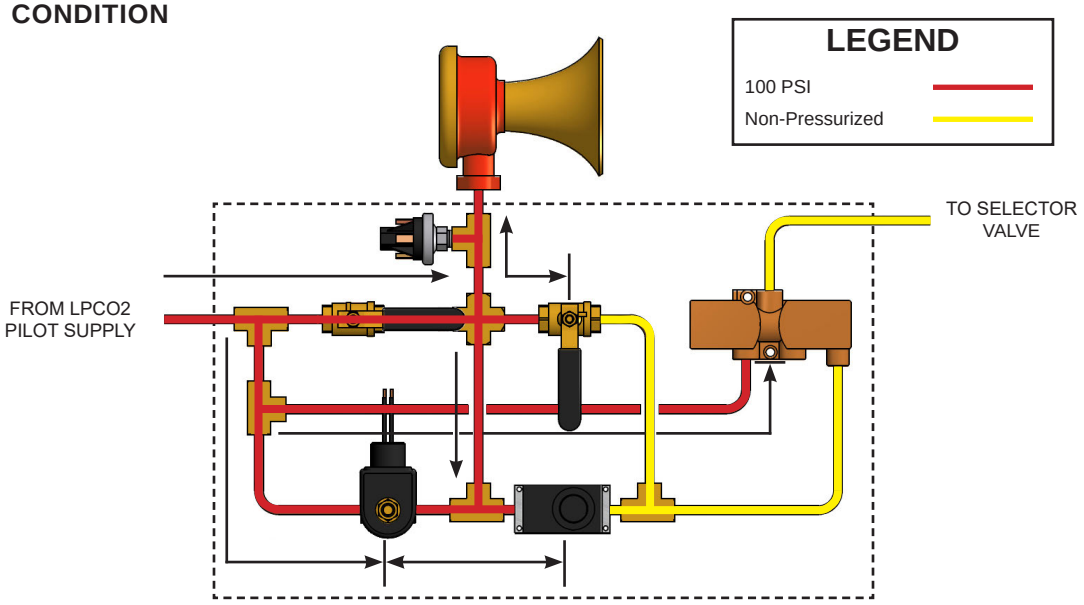
Electrically Actuated Cabinet

SELECTOR CABINET IN TIMER BYPASS DISCHARGE CONDITION



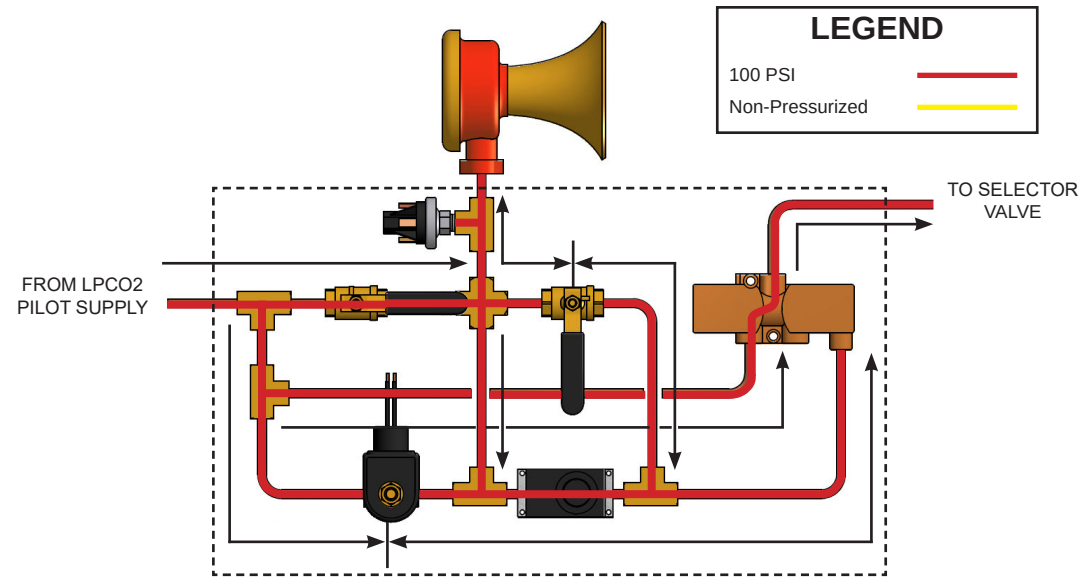
Electrically Actuated Cabinet

SELECTOR CABINET IN PRE-DISCHARGE CONDITION



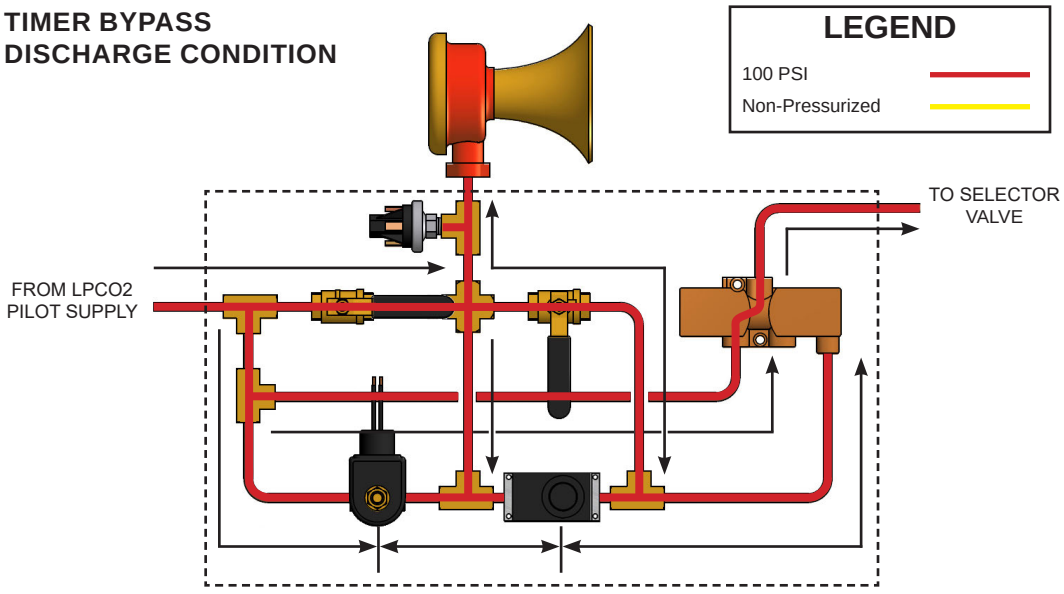
Manually Actuated Cabinet

SELECTOR CABINET IN DISCHARGE CONDITION



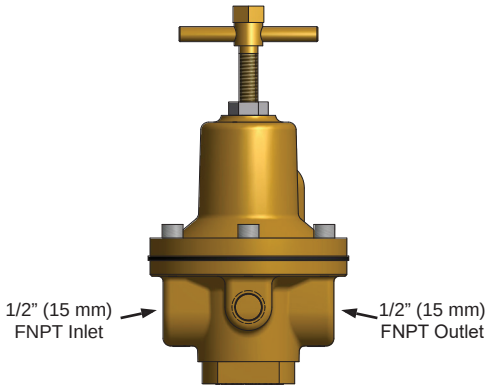
Manually Actuated Cabinet

SELECTOR CABINET IN TIMER BYPASS DISCHARGE CONDITION



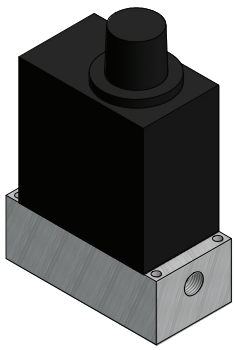
Manually Actuated Cabinet

EQUIPMENT DESCRIPTION



Pilot Line Regulator (P/N 19170)

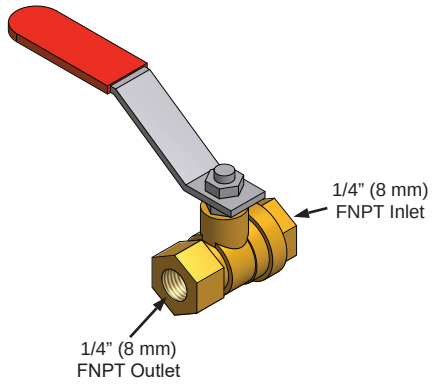
A polyamide and aluminum gas regulator is placed at the $LPCO_2$ tank vapor supply outlet to regulate the pressure into the master and selector pilot cabinets. It has a 1/2 in (15 mm) FNPT inlet and outlet with a maximum inlet pressure of 450 psig (31 bar) and an outlet range of 50 to 135 psig (3.4 to 9.3 bar). It is normally set to 100 psi (6.89 bar). The regulator has a standalone ambient temperature range of -20° to 130°F (-29° to 54°C) and a C_v of 3.6. A pressure gauge (0-160 psig P/N 19171) is attached to the regulator to allow visual monitoring of outlet pressure.



Pneumatic Timer (P/N 19172)

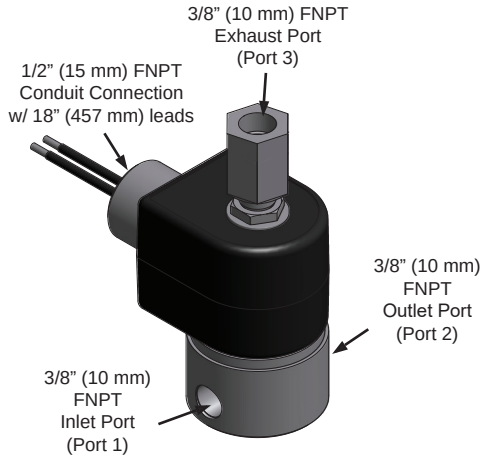
The pneumatic timer is placed in the selector pilot cabinet downstream of the solenoid and manual actuation valves. It acts to create a pre-discharge delay between system actuation and system discharge to allow for notification of personnel via the pneumatic siren as mandated by NFPA 12. The timer can be set for a 1 to 180 second delay. It has a 1/8 in (6 mm) NPT inlet and outlet port and a 3-way internal exhaust. The standalone ambient temperature range for the timer is 40° to 130°F (4° to 54°C).

Manual Actuation/Timer Bypass Valve (P/N 19173)



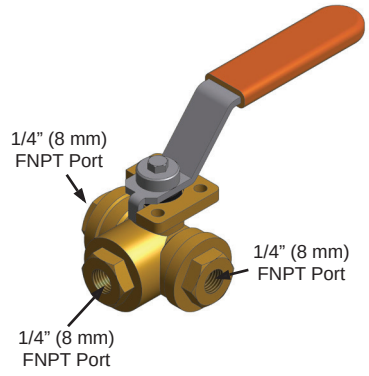
The manual actuation valve is placed in the selector pilot cabinet upstream of the pneumatic timer and acts as a means to manually begin the pre-discharge process in the selector pilot cabinet by sending actuation pressure to the pneumatic siren and pneumatic timer. The timer bypass valve is placed in the selector pilot cabinet downstream of the solenoid and manual actuation valves. When open, it bypasses the pneumatic timer and immediately begins the discharge process upon electric or manual actuation of the cabinet by sending pilot pressure to the pneumatic pilot valve. Both the manual actuation and timer bypass valves are manually actuated full port ball valves made of forged brass with reinforced PTFE seats and seals and have 1/4 in (8 mm) FNPT connections. The standalone ambient temperature range for both valves is -20° to 130°F (-29° to 54°C).

Master Solenoid Valve (P/N 99446)



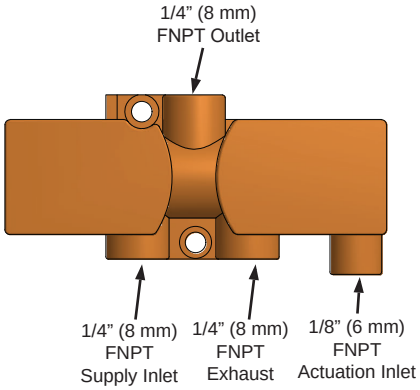
A three-way solenoid valve is installed inside the master pilot cabinet so that it is normally de-energized. This valve operates at 24 VDC, 10 Watts and has a NEMA 4X enclosure with an ambient temperature range of -20° to 150°F (-29° to 66°C). Upon being energized through the actuation of the selector actuation pressure switch, the solenoid valve opens sending pilot pressure to the inlet port of the master pilot cabinet pneumatic pilot valve.

Master Manual Actuation Valve (P/N 99410)



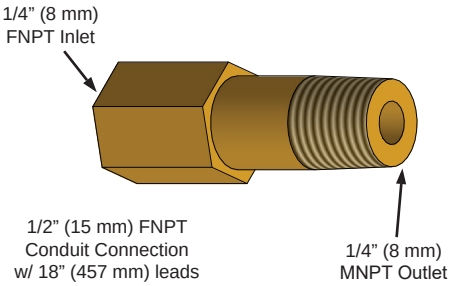
A three-way manual actuator valve is utilized as a means to manually actuate the master cabinet. When placed in the actuated position, it sends actuation pressure to the actuation port of the master pneumatic pilot valve, bypassing the master solenoid valve. This will cause the master valve to open. The selector cabinet(s) must be actuated separately to begin the discharge process. The master cabinet manual actuation valve is a manually actuated full port three-way valves made of brass with reinforced PTFE seats and seals and has 1/4 in (8 mm) FNPT connections. The standalone ambient temperature range for the valve is -20° to 130°F (-29° to 54°C).

Pneumatic Pilot Valve (P/N 19174)



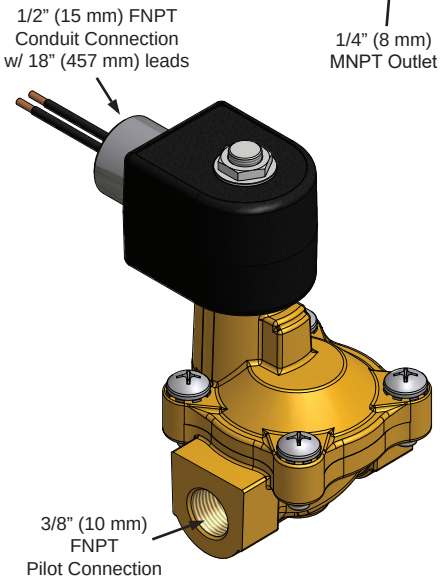
A pneumatic pilot valve is placed in both the master pilot cabinet and each selector pilot cabinet upstream of the cabinet outlet port. It has a brass body with buna seal and has four ports: a supply inlet, an actuation inlet, an outlet, and an exhaust. Upon receiving pressure to its actuation inlet, the valve opens sending pilot pressure from its supply inlet to the pneumatic actuator of the master or selector valve, which causes the valve to open. It has a standalone ambient temperature range of -20° to 150°F (-29° to 66°C).

Inline Filter (P/N 99109)



A 20 micron inline filter is installed in the selector cabinet immediately upstream of the pneumatic timer to protect the timer from debris. It has a brass body with a sintered bronze filter element. The filter has a 1/4 in (8 mm) FNPT inlet and a 1/4 in (8 mm) MNPT outlet.

Selector Solenoid Valve (P/N 19309)

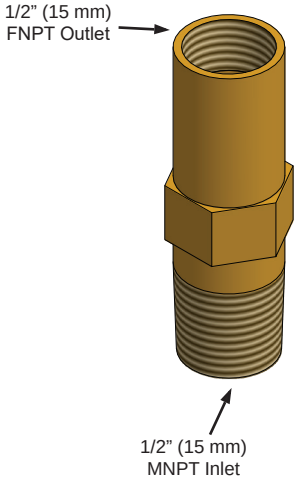


A normally closed solenoid valve is installed inside the selector pilot cabinet upstream of the pneumatic siren, timer bypass valve, and pneumatic timer. It operates at 24 VDC, 10 Watts and has a NEMA 4X enclosure with a standalone ambient temperature range of -20° to 150°F (-29° to 66°C). Upon receiving a signal from the releasing panel, the solenoid valve opens sending pilot pressure to the pneumatic siren and pneumatic timer in the selector pilot cabinet.

Pilot Relief Valve (P/N 19316)

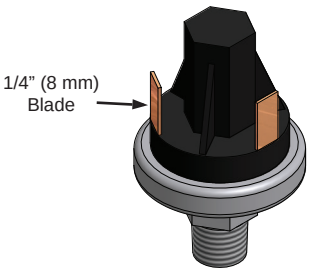
The pilot relief valve must be installed just downstream of the pilot line regulator. It has a 0.062 in² (40 mm²) orifice area and is set to open should line pressure exceed 125 psi (8.6 bar). The relief valve has a brass body with a stainless steel spring and a standalone ambient temperature range of -320°F to 165°F (-196°C to 74°C). A pipe-away adapter (P/N 19318) is available to convert the outlet to a 1/2” (15 mm) FNPT connection.

Discharge Relief Valve (P/N 19317)



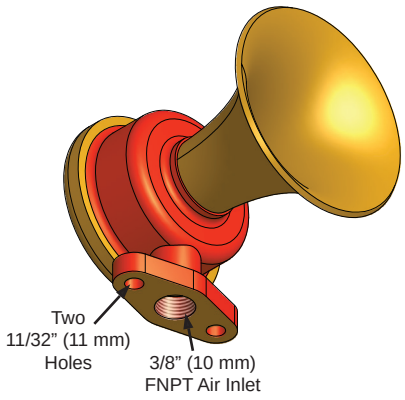
A discharge relief valve must be installed in the discharge piping at any point where pipe may be closed off between a lock-out/shut-off valve and a master or selector valve. Each relief valve has a 0.062 in² (40 mm²) orifice area and is set to open should line pressure exceed 450 psi (31.0 bar). Each relief valve has a brass body with a stainless steel spring and a standalone ambient temperature range of -320°F to 165°F (-196°C to 74°C). A pipe-away adapter (P/N 19318) is available to convert the outlet to a 1/2” (15 mm) FNPT connection.

Selector Actuation Pressure Switch (P/N 99877)



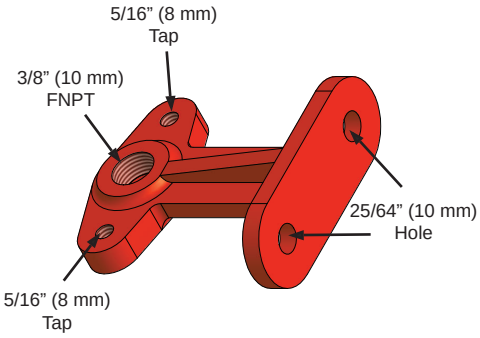
A selector actuation pressure switch is placed in each selector cabinet immediately downstream of the manual actuation and solenoid valves. Once pressure to the switch reaches 60 psi (4.14 bar) on the rise, the switch contacts open causing the master solenoid valve located in the master pilot cabinet to be energized, actuating the master pilot cabinet. The switch is single pole double throw with contacts rated at 4 Amps resistive at 24 VDC/120 VAC or 1 Amp inductive at 24 VDC and 0.5 Amp inductive at 240 VAC. It has a standalone ambient temperature range of -20° to 130°F (-29° to 54°C).

Pneumatic Siren (P/N 19224)



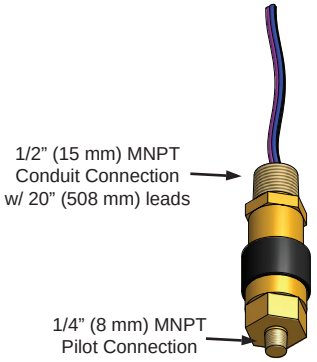
A pneumatic siren is installed outside of each selector pilot cabinet immediately downstream of both the solenoid valve and manual actuation valves but upstream of the pneumatic timer so that it is sounded during the pre-discharge period as required by NFPA 12. Each siren has a solid cast bronze bell with a stainless steel diaphragm and reaches a sound level of 119 ± 1DBA @ 100 psi at 10 ft (3.05 m). Each siren uses 1.3 lbs/minute (0.49 kg/minute) and has a C_v of .25. The sirens have an operating pressure of 50 to 150 psi (3 to 10 bar) and a standalone ambient temperature range of -4° to 400°F (-20° to 204°C).

Pneumatic Siren Bracket (P/N 19225)



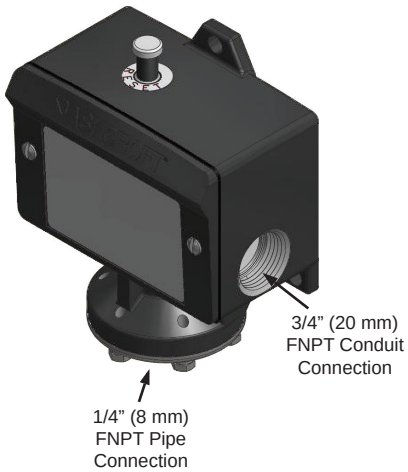
A pneumatic siren bracket affixes to the base of each pneumatic siren to allow the siren to be fastened to an outside surface.

Pilot Line Supervisory Pressure Switch (P/N 19307)



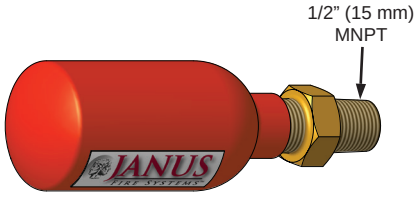
The pilot line supervisory pressure switch is installed downstream of the pilot line regulator immediately outside of the master or selector pilot cabinet furthest from the regulator. It has a NEMA 4 enclosure for outdoor use and a standalone ambient temperature range of -20° to 180°F (-29° to 82°C). When pressure drops below 50 psi (3.4 bar), the switch sends an abnormal signal to the fire suppression control panel. The switch is single pole double throw with contacts rated 5 Amps resistive at 24 VDC or 125/250 VAC and 5 Amps inductive at 125/250 VAC or 3 Amps inductive at 30 VDC.

Discharge Pressure Switch (P/N 97428)



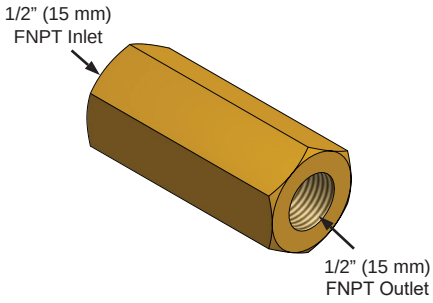
The discharge pressure switch is used in the system to provide positive indication of agent discharge and to initiate the shut down of equipment that may deplete agent concentration. The pressure switch is a single pole, double throw (SPDT) switch with contacts rated 15 Amps at 125/250/480 VAC and 0.5 Amps at 125 VDC. It has a NEMA 4X enclosure.

Odorizer Assembly (P/N 99703)



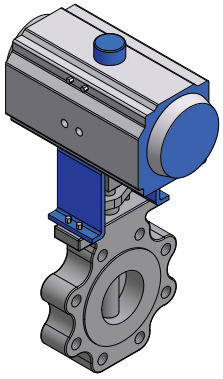
The odorizer assembly is installed into system piping to provide an olfactory indication of system actuation. During system discharge, a frangible disc inside the odorizer assembly ruptures, allowing wintergreen contained in the odorizer body to mix with the discharging agent. This causes the normally odorless carbon dioxide agent released into the protected hazard to possess a distinct wintergreen smell. The odorizer assembly is non-refillable.

Inline Check Valve (P/N 19501 Brass/19507 SST)



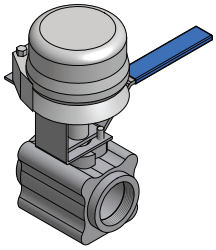
A 1/2 in (15 mm) inline check valve is installed in the discharge piping with direction-of-flow away from the selector valve(s) so that any agent that becomes trapped between the master valve and selector valve(s) when an open master valve closes has a path of flow to return to the storage unit.

Master and Selector Valves



Master and selector valves allow the protection of multiple hazards or hazard zones by the $LPCO_2$ system. Janus Fire Systems® $LPCO_2$ master and selector valves are available as 1/2 in (15 mm), 3/4 in (20 mm), 1 in (25 mm), 1-1/2 in (40 mm), and 2 in (50 mm) pneumatically actuated ball valves or 3 in (80 mm), 4 in (100 mm), 6 in (150 mm), and 8 in (200 mm) pneumatically actuated wafer valves. Optional solenoid is available. Refer to DS1093 for part numbers, specifications, and ordering information.

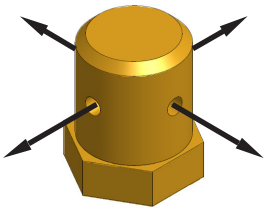
Lockout/Bypass Valve



Lockout valves are installed where manual isolation of pipe is required. Janus Fire Systems® $LPCO_2$ lockout valves are available as 1/2 in (15 mm), 3/4 in (20 mm), 1 in (25 mm), 1-1/2 in (40 mm), and 2 in (50 mm) manually actuated ball valves or 3 in (80 mm), 4 in (100 mm), 6 in (150 mm), and 8 in (200 mm) manually actuated wafer valve. Optional stem extension and explosion-proof limit switch are available. Refer to DS1092 for part numbers, specifications, and ordering information.

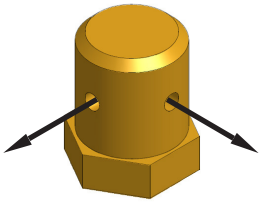
DISCHARGE NOZZLES

Various nozzle options are available depending on the application and hazard requirements.



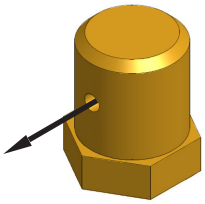
360° Radial Nozzle (4 Port)

360° radial nozzles are used for total flooding application. These nozzles are placed in the middle of a hazard space and discharge CO_2 agent in four directions allowing for a 360° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



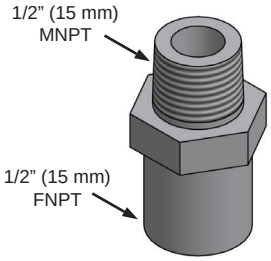
180° Sidewall Nozzle (2 Port)

180° sidewall nozzles are used for total flooding application. These nozzles are placed against the wall or edge of a hazard space and oriented to discharge CO_2 agent in two directions allowing for a 180° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



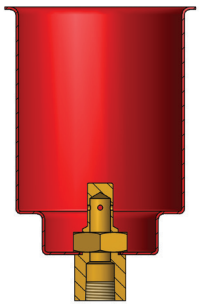
90° Corner Nozzle (1 Port)

90° corner nozzles are used for total flooding application. These nozzles are placed in the corner of a hazard space and oriented to discharge CO_2 agent in one direction allowing for a 90° coverage area. Nozzles are available in brass or stainless steel with seven different pipe sizes.



Orifice Nozzles

Orifice nozzles are used for total flooding application. These nozzles are used for smaller hazard areas where a small flow rate is required. Nozzles are stainless steel and 1/2 in (15 mm) NPT.

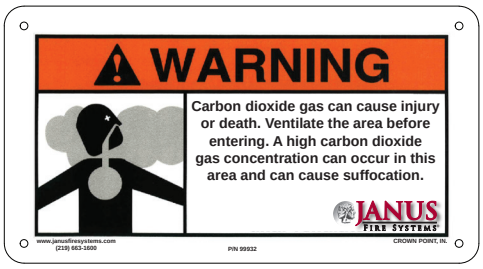


JLA Nozzles

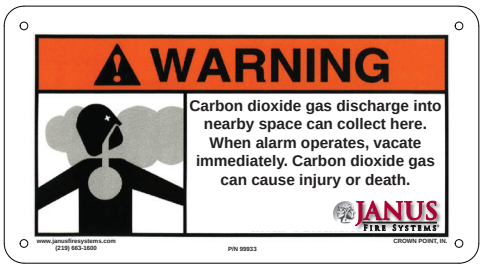
Janus Local Aplication (JLA) nozzles may be used for total flooding application, but are the only nozzle suited for local application. For local application, JLA nozzles are place a specific distance from the protected hazard to discharge directly onto that hazard. Nozzles are available with painted cones and brass jet tip nozzles or with stainless steel cones and stainless steel jet tips. 1/2” (15 mm) or 3/4” (20 mm) pipe sizes are available.

WARNING SIGNS

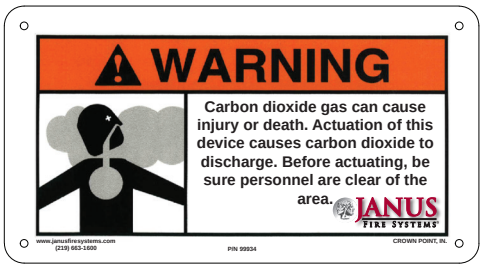
NFPA 12 mandates the placement of specifically designed warning signs in and around areas protected by CO_2 fire extinguishing systems. Each sign is 6-1/2 in x 12 in (165 mm x 305 mm).



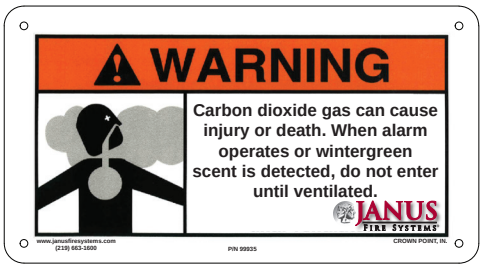
Caution – Storage – P/N 99932
Post sign outside each entrance to carbon dioxide storage rooms.



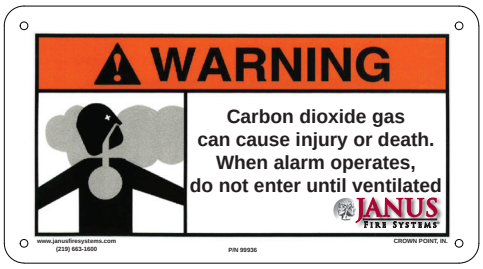
Caution – Nearby –P/N 99933
Post sign in every nearby space where carbon dioxide can accumulate to hazardous levels.



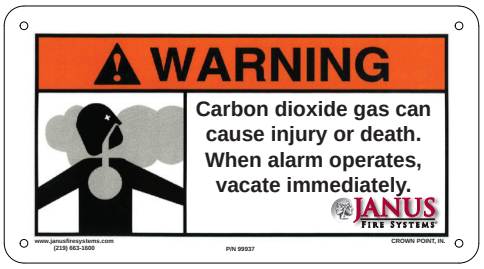
Warning – Manual Actuation – P/N 99934
Post sign at each manual actuation station.



Warning – Wintergreen – P/N 99935
Post sign at every entrance to protected space for systems provided with wintergreen odorizer.



Warning – Entrance – P/N 99936
Post sign in every protected space.



Warning – Exit – P/N 99937
Post sign at every entrance to protected space.

Ordering Information	
P/N	**Description**
98344	Cabinet, Pilot, Master, NEMA-4, 24 VDC, NDE, w/o Supervision
98413	Cabinet, Pilot, Selector, NEMA-4, 24 VDC, w/ Timer, w/o Supervision
98348	Cabinet, Pilot, Master, NEMA-4X, 24 VDC, NDE, w/o Supervision, SST Enclosure
98338	Cabinet, Pilot, Selector, NEMA-4X, 24 VDC, w/ Timer, w/o Supervision, SST Enclosure

Master Pilot Cabinet Spare Part List	
P/N	**Description**
99410	Three-Way Ball Valve – *Manual Actuation Valve*
99446	Master Solenoid Valve
19174	Pneumatic Pilot Valve

Selector Pilot Cabinet Spare Part List	
P/N	**Description**
19172	Pneumatic Timer
19174	Pneumatic Pilot Valve
19173	Manually Actuated Ball Valve – *Manual Actuation / Timer Bypass Valve*
19224	Pneumatic Siren
19225	Pneumatic Siren Bracket
19309	Selector Solenoid Valve
99109	Inline Filter
99877	Selector Actuation Pressure Switch

Common Component Spare Part List	
P/N	**Description**
19170	Pilot Line Regulator
19307	Pilot Line Supervisory Pressure Switch
19316	Pilot Relief Valve
19317	Discharge Relief Valve
19318	Pipe-Away Adapter
97428	Discharge Pressure Switch
99703	Odorizer Assembly

Note: Refer to DS1092 and DS1093 for master, selector, and lockout valve ordering information.

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller's sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.

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