



# DRY CHEMICAL

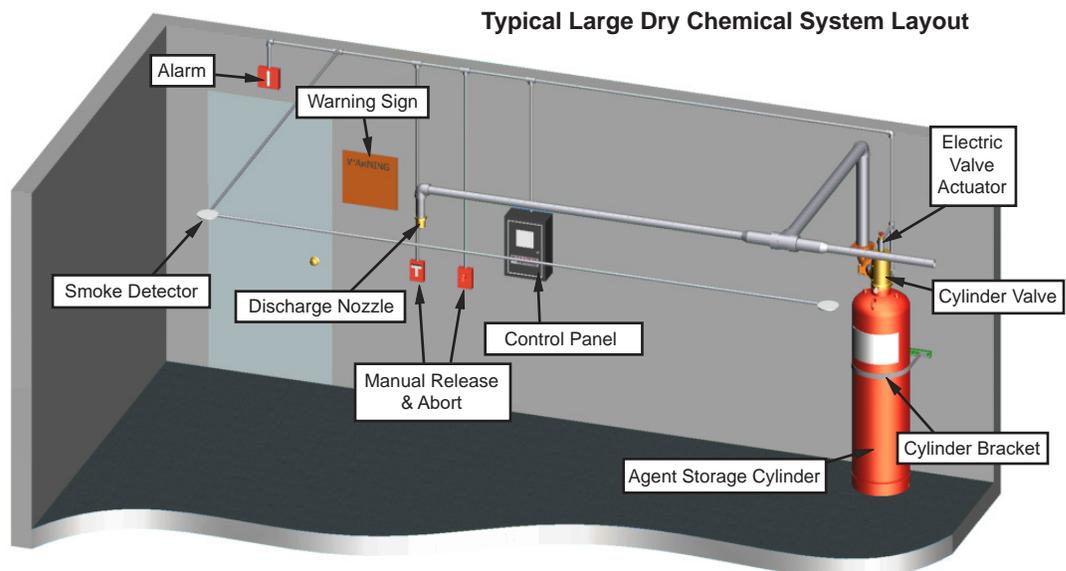
## ENGINEERED FIRE SUPPRESSION SYSTEM

The Janus Fire Systems® Engineered Dry Chemical Fire Suppression System utilizes ABC dry chemical as the extinguishing medium. ABC or Multi-Purpose dry chemical is a specially fluidized and siliconized mono-ammonium phosphate. It chemically insulates Class A fires by melting at approximately 350°F and coating surfaces to which it is applied. It smothers and breaks the chain reaction of Class B fire and will not conduct electricity. Each system consists of the following components and their associated accessories:

1. **Agent Storage Components** - Storage components consist of the cylinder assembly(s), which contains the ABC dry chemical and the cylinder bracket(s), which holds the cylinder assembly securely in place.
2. **Agent Distribution Components** - Distribution components consist of the discharge nozzles used to introduce the ABC dry chemical 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 suppression system and consist of connection fittings, pressure gauge, low-pressure supervisory switch, electric valve actuator, and manual valve actuator.
4. **Multi-Cylinder Arrangement Components** - Multi-cylinder arrangement components consist of the pneumatic valve actuator(s), remote nitrogen actuation cylinder, vent check, actuation hose, and fittings required for a multiple cylinder arrangement.
5. **Supplemental Components** - Supplemental components include the discharge pressure switch and manifold check valve. They supplement the core equipment or complete a specific multi-cylinder configuration.
6. **Control Panel** - This device monitors the condition of the electric actuator, detectors, warning devices, cylinder pressure, and any manual release and abort stations. All electric or electronic devices must connect to the control panel in order to function.
7. **Detection and Alarm Devices** - Detection devices coupled with manual release and abort stations maximize system efficiency while audible and visual alarm devices alert staff of alarm conditions.



Typical Large Dry Chemical System Layout



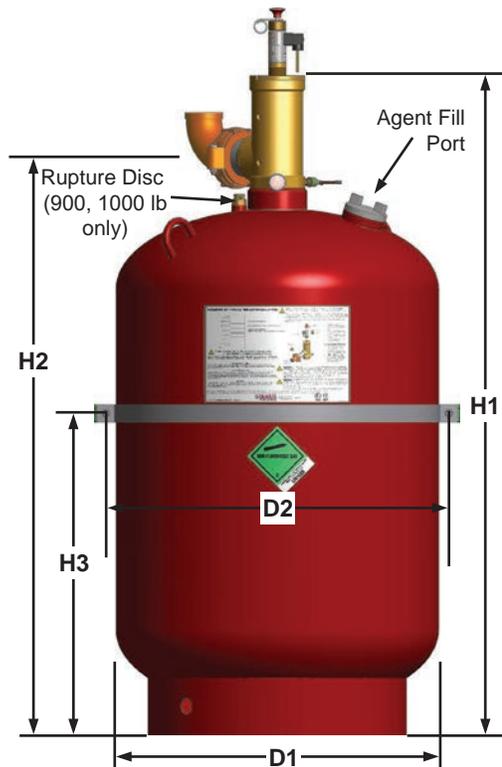


## EQUIPMENT DESCRIPTION

The ABC dry chemical is stored in cylinder assemblies designed specifically for the application. To ensure optimal performance, each cylinder is superpressurized with dry nitrogen to 500 psi (34.48 bar) at 70°F (21°C). An identification label is affixed to the cylinder body indicating the fill quantity of ABC dry chemical, charging pressure, date of fill, and fill station.

The cylinder assembly is composed of a cylinder, dip tube, cylinder valve, pressure vent port, agent fill port, and (in the 900 & 1000 lb cylinder) a rupture disc. Cylinders are available in three capacities and are filled in 45 pound (20.4 kg) increments in the fill ranges as indicated below.

Nominal Cylinder Capacity	P/N	Fill Range (lbs)	H1		H2		H3		D1		D2		Empty Weight	
			in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
100 lb	26300	45 - 90	28.7	729	22.4	570	12.3	311	16.0	406	17.9	454	120	54.4
250 lb	26301	135 - 180	46.3	1175	40.0	1015	19.8	503	16.0	406	17.9	454	213	96.6
600 lb	25147	270 - 450	50.8	1290	44.5	1130	21.5	546	24.0	610	25.9	658	346	157.0
900 lb	26302	360 - 720	69.8	1773	62.2	1579	38.0	965	24.0	610	25.9	658	471	213.6
1000 lb	25148	450 - 855	61.4	1559	53.7	1365	30.0	762	30.0	762	31.9	810	766	347.4



**Cylinder Valve:** The automatic release of ABC dry chemical is controlled by a forged brass, differential pressure operated cylinder valve connected to the neck of the cylinder. The valve assembly is shipped with an anti-recoil safety device installed in the discharge outlet and chained to the cylinder valve.

**Dip Tube:** A threaded, rigid dip tube extends from the cylinder neck down to its bottom.

**Cylinder:** The light walled, welded seam cylinder is manufactured according to the requirements of the U.S. Department of Transportation (USDOT) for compressed gas for compressed gas. Internal neck threads allow connection of the cylinder valve. The cylinder is designed for mounting in a vertical position only.

**Pressure Vent Port:** The pressure vent port is located on the cylinder body. It is used to release nitrogen from a filled cylinder in the event the agent fill port must be opened.

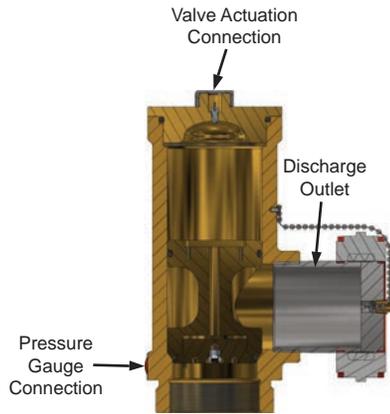
**Agent Fill Port:** The agent fill port is located at the top of the cylinder. It is used to fill the cylinder with ABC dry chemical agent.

**Rupture Disc (900 and 1000 lb Cylinder Only):** A frangible rupture disc is fitted to the cylinder body. It functions as an emergency relief device in the event of excessive pressure within the cylinder. Its rupture point is between 850 psi (58.6 bar) and 1000 psi (68.9 bar).

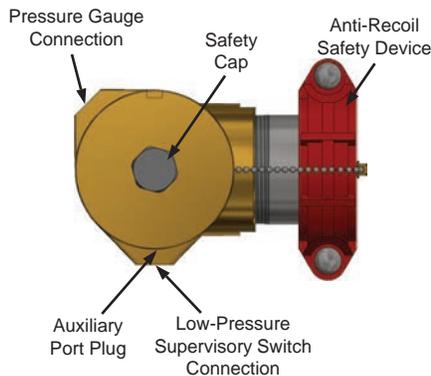
Cylinder Capacity	Bracket P/N
100 lb / 250 lb	18535
600 lb / 900 lb	18536
1000 lb	18537

### Wall Mount Cylinder Bracket Assembly (P/N See Chart)

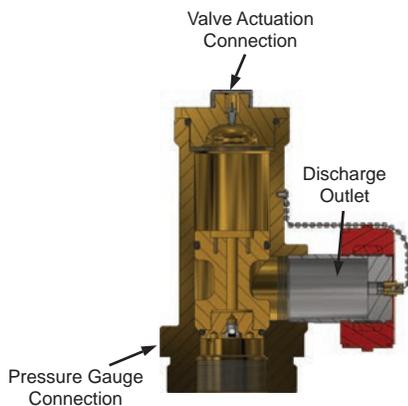
Cylinder stability is ensured by the cylinder bracket assembly, consisting of one strap and rail with accompanying bolts, nuts, and washers. The rail is slotted for ease of mounting with fasteners provided by the installer.



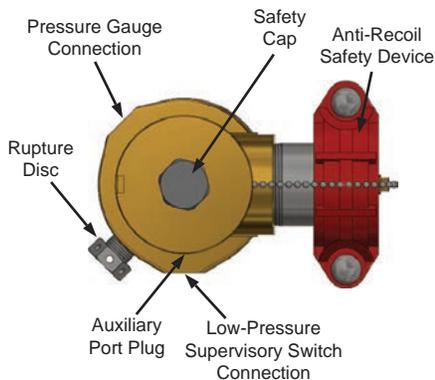
**900, 1000 lb Valve - Cutaway View**



**900, 1000 lb Valve - Top View**



**100, 250, 600 lb Valve - Cutaway View**



**100, 250, 600 lb Valve - Top View**

Each cylinder valve has the following features:

**Valve Actuation Connection:** A threaded connection located on top of the cylinder valve serves as the attachment point for the electric (single cylinder) or pneumatic (multiple cylinder) valve actuator.

**Pressure Gauge Connection:** A female connection serves as the attachment point for the pressure gauge. It is fitted with an internal check valve to allow removal of the gauge while the cylinder is pressurized.

**Low-Pressure Supervisory Switch Connection:** A female connection serves as the attachment point for the low-pressure supervisory switch. An internal check valve allows for removal of the pressure switch while the cylinder is pressurized.

**Discharge Outlet (900 and 1000 lb only):** A 3 in (80 mm) grooved connection serves as the attachment point for discharge piping.

**Discharge Outlet (100, 250, 600 lb only):** A 2 in (50 mm) grooved connection serves as the connection point for discharge piping.

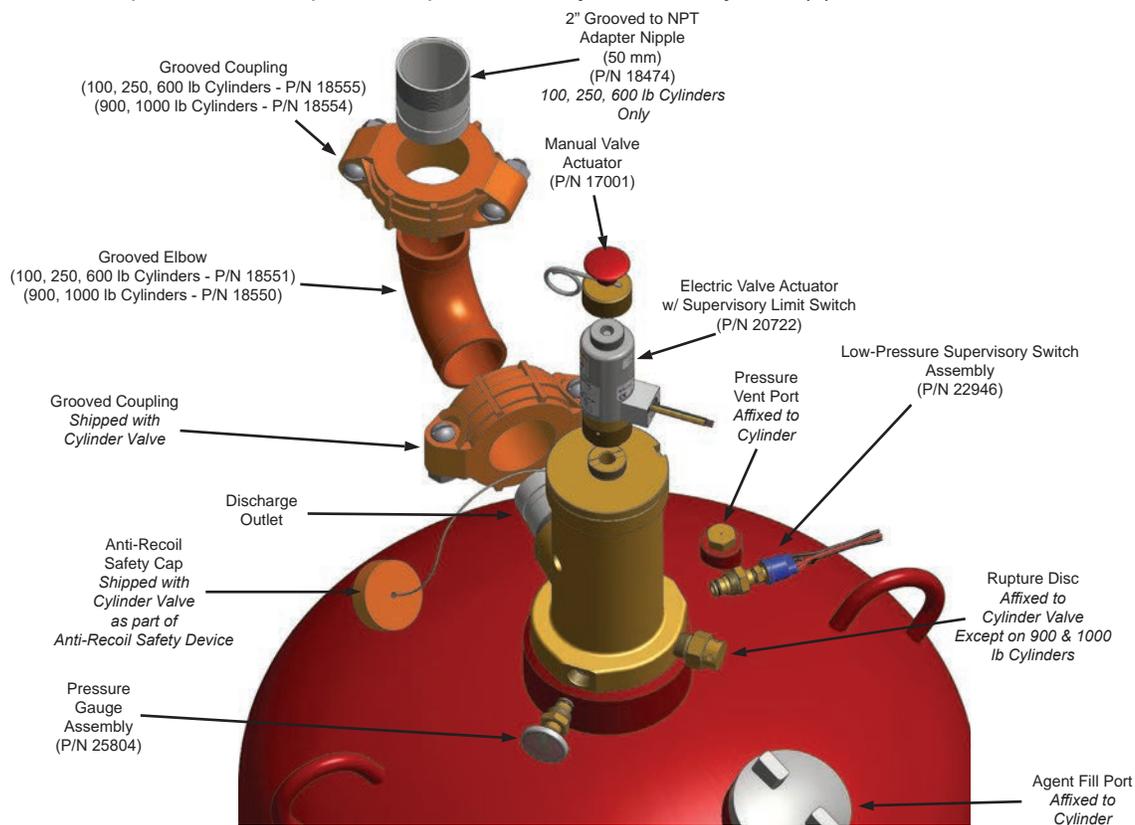
**Auxiliary Port:** A 1/4 in (8 mm) FNPT port on the side of the valve (shipped with a pipe plug) is not currently utilized in the dry chemical system. The pipe plug shall remain in place at all times. **DO NOT REMOVE THE PIPE PLUG.**

**Rupture Disc (100, 250, 600 lb only):** A frangible rupture disc is fitted to the cylinder valve body. It functions as an emergency relief device in the event of excessive pressure within the cylinder. Its rupture point is between 850 psi (58.6 bar) and 1000 psi (68.9 bar).



## TRIM COMPONENTS

Trim components are required to operate the dry chemical cylinder(s).

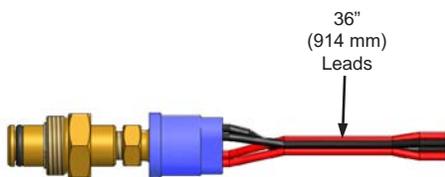


### Discharge Connection Fitting

A 2 in (50 mm) grooved elbow and NPT adaptor connects to the grooved cylinder outlet adapter for 100, 250, and 600 lb capacity valves utilizing the coupling factory installed to retain the anti-recoil safety device. A 3 in (80 mm) grooved elbow is used for the 900 and 1000 lb valve. All other pipe and fittings beyond the 3 in (80 mm) and 2 in (50 mm) elbow are to be supplied by the installer.

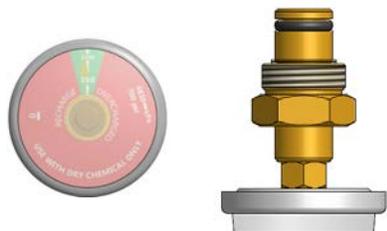
### Low-Pressure Supervisory Switch Assembly (P/N 22946)

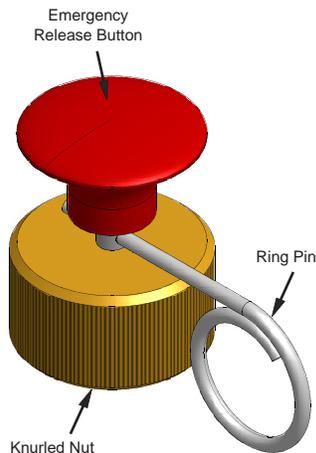
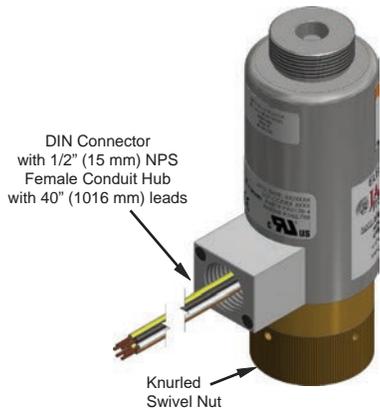
The low-pressure supervisory switch continuously monitors the pressure of the cylinder. The contact configuration is single pole, single throw (SPST) with contacts rated 1.5 Amps at 24 VDC. Should the cylinder pressure drop to approximately 440 psi (30.34 bar), the switch contacts will close transmitting an abnormal signal to the system control panel.



### Pressure Gauge Assembly (P/N 25804)

A pressure gauge for each cylinder allow for visually monitoring the internal pressure condition of the cylinder assembly.





## Electric Valve Actuator w/ Supervisory Limit Switch (P/N 20722)

The electric valve actuator attaches to a single cylinder valve or to the Remote Pneumatic Actuation/Bracket Kit in multi-cylinder systems at the actuation connection and is utilized to automatically open the cylinder valve upon receipt of a signal from the control panel or other source. It operates between 17 and 30 VDC and consumes 500 mA (.5 Amps) at 24 VDC nominal with a maximum supervisory current of 30 mA (0.03 Amps).

The electric valve actuator body is steel construction with a brass knurled swivel nut and a stainless steel actuation pin that depresses the valve core when energized. The switch contacts are normally closed when the actuator is not installed onto the cylinder valve and open when the actuator is fully installed onto the valve actuation connection at the top of the cylinder valve.

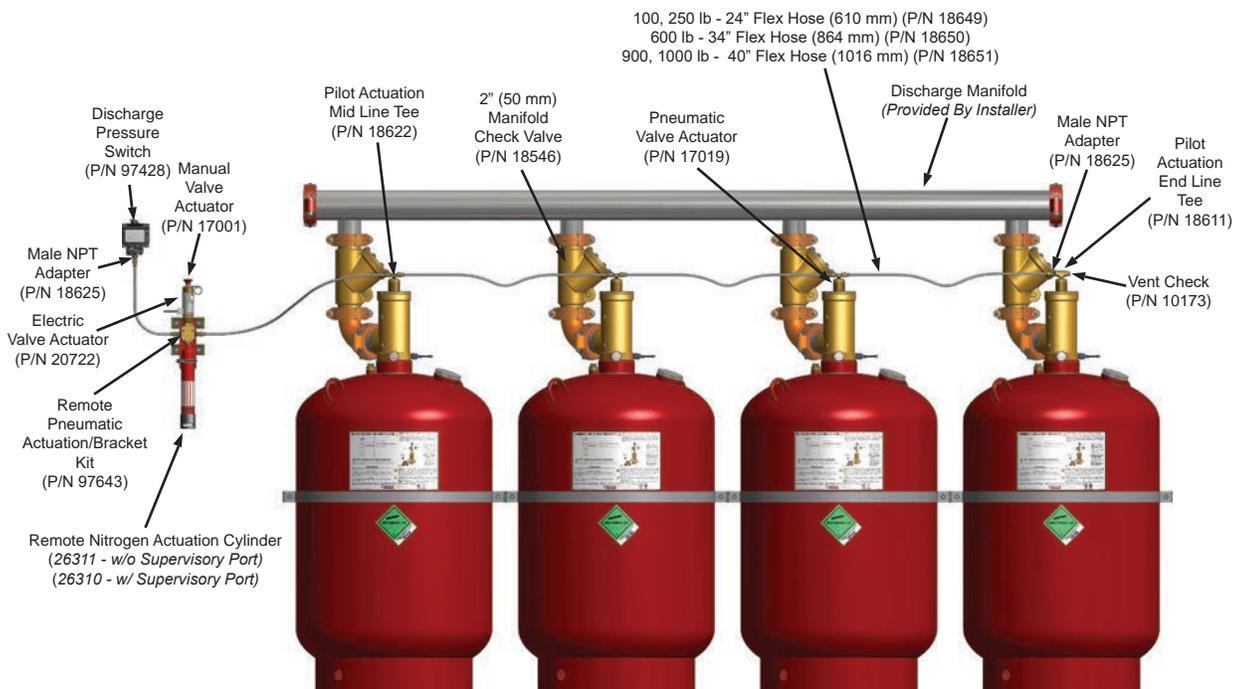
## Manual Valve Actuator (P/N 17001)

A manual valve actuator attaches to the top of the electric valve actuator and provides a means to manually open the cylinder valve. The manual valve actuator consists of a brass body, stainless steel actuation pin, and steel safety ring pin.

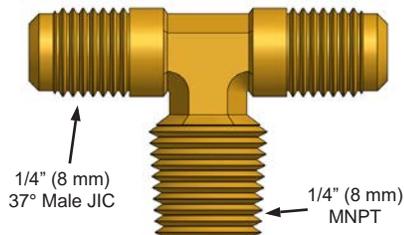
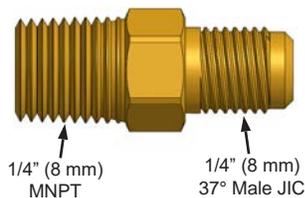
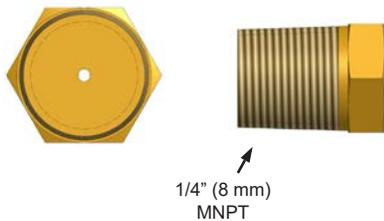
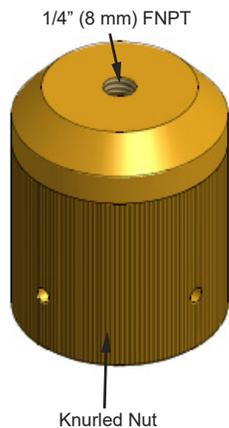
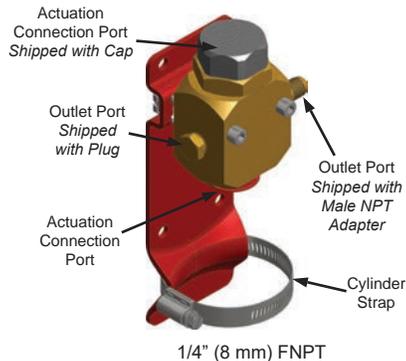
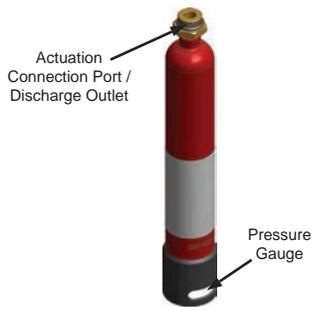
To discharge the primary cylinder manually, the ring pin is removed and the emergency release button is depressed forcing the pin in the electric valve actuator to depress the valve core of the cylinder valve. All other connected cylinders will be opened pneumatically.

## MULTI-CYLINDER ARRANGEMENT COMPONENTS

Up to 16 cylinders may be installed in a single arrangement, piloted from a remote nitrogen actuation cylinder with a maximum length of 160 ft (48.76 m) of pilot actuation hose or tubing extending from the primary cylinder in either direction. A typical arrangement is shown below.



Typical Manifolded Cylinder Arrangement



## Remote Nitrogen Actuation Cylinder (P/N 26311)

The remote nitrogen actuation cylinder (RNAC) is pressurized with nitrogen to 500 psi (34.47 bar)\*. A pressure gauge is permanently affixed to the base of the cylinder. The actuation port of the cylinder is fitted with an internal Schrader valve that is upset when the remote pneumatic actuation/bracket kit is actuated, causing the cylinder to open. An optional model (P/N 26310) can be fitted with a supervisory pressure switch.

## Remote Pneumatic Actuation/Bracket Kit (P/N 97643)

A remote pneumatic actuation/bracket kit is installed with the remote nitrogen actuation cylinder to both support the cylinder and to allow the actuation of the RNAC through the electric or manual pneumatic actuators. The remote pneumatic actuation/bracket kit includes back channel for installing the assembly.

## Pneumatic Valve Actuator (P/N 17019)

On multiple cylinder systems the electric valve actuator will actuate the remote nitrogen actuation cylinder and then, in a rapidly occurring sequence, the pneumatic valve actuator(s) will open all other cylinders using pressure from the nitrogen cylinder.

A pneumatic valve actuator attaches to the valve actuation connection of each manifolded cylinder\*. It receives pressure from the remote nitrogen cylinder via the outlet port of the remote pneumatic actuation/bracket kit. It is brass with a brass piston and pin.

## Vent Check (P/N 10173)

The vent check is a safety device with 1/4 in (8 mm) MNPT threads that is to be installed in the pilot actuation line downstream of the final cylinder. It is used to bleed off pressure that may accumulate in the pilot actuation hose or piping minimizing the chance of inadvertent pressurization of the pneumatic actuators or discharge pressure switch.

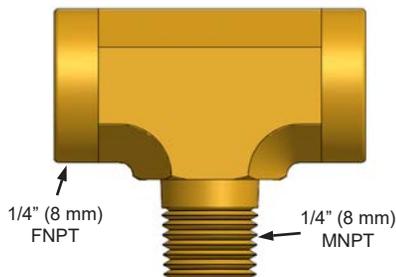
## Male NPT Adapter (P/N 18625)

A 1/4 in (8 mm) 37° male JIC by MNPT adapter fits into the pilot actuation end line tee of the final secondary cylinder to facilitate the attachment of the pilot actuation line. It also may be utilized to allow the attachment of flex hose to the discharge pressure switch.

## Pilot Actuation Mid Line Tee (P/N 18622)

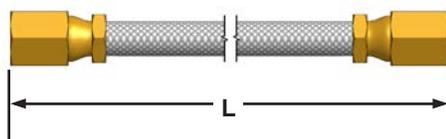
A 1/4 in (8 mm) 37° male JIC by MNPT brass branch tee is utilized to attach the pilot actuation line to the pneumatic valve actuator.

*\*The use of the RNAC eliminates the need for a pilot or primary cylinder. All cylinders attached to the manifold are considered secondary cylinders*



### Pilot Actuation End Line Tee (P/N 18611)

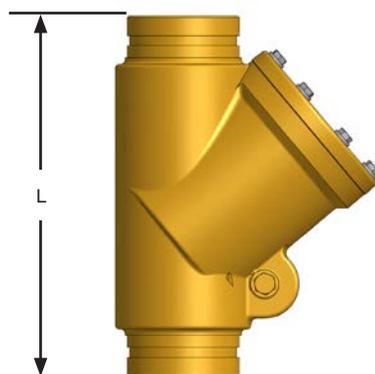
A 1/4 in (8 mm) FNPT by MNPT brass branch tee mounts to the final pneumatic valve actuator to facilitate attachment of the vent check to the pilot actuation line.



### Flex Hose (P/N See Chart)

Flex hoses are 3/16 in (7 mm) Teflon® lined stainless steel wire braided hoses of varying lengths with 1/4 in (8 mm) 37° female JIC flare fittings. They are utilized to interconnect cylinders when a secondary arrangement is required. A 1/4 in (8 mm) 37° male JIC flare x male JIC flare adapter (P/N 18777) is available to connect lengths of flex hose together.

P/N	Hose Length (L)
18648	16 in (406 mm)
18649	24 in (610 mm)
18650	34 in (864 mm)
18651	40 in (1016 mm)



### Manifold Check Valve (P/N See Chart)

In a multiple cylinder arrangement where the secondary and primary cylinders share a common manifold or in a main / reserve arrangement, a manifold check valve must be placed between the discharge outlet of each cylinder and the discharge manifold to prevent back flow from the manifold should the system be inadvertently discharged when one or more cylinders are disconnected for maintenance. The check valve required are indicated in the chart below.

Cylinder Size	Manifold Check Valve P/N	Length (L)	Check Valve Outlet Size
100 lb, 250 lb, 600 lb	18546	5.625 in (143 mm)	2 in NPT
900 lb, 1000 lb	18538	11.5 in (292 mm)	3 in Grooved

## GENERAL PURPOSE AND INDUSTRIAL HAZARDS

**Total Flooding:** This system is used to fill a volume with agent to protect any hazard within that volume. Typical applications include hazardous storage containers and warehouses. Total flooding systems require a fixed enclosure to be present around the hazard area to allow the system to build up the proper concentration of agent within the hazard area. It uses the JSH Nozzles.

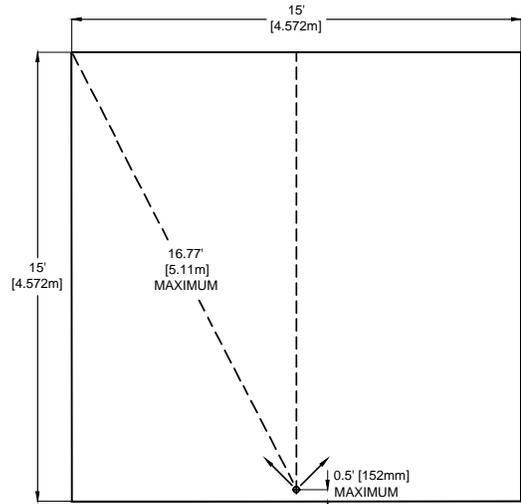


## Total Flood - JSH Nozzles

The JSH-360 and JSH-180 Discharge Nozzles are Total Flooding nozzles with orifice sizes as determined by the Janus Design Suite® Flow Calculation Software. JSH-360 nozzles are designed for 360° (8 port) radial or center room placement. JSH-180 are designed for 180° (6 port) sidewall placement. Both are available in Brass or Stainless Steel. The nozzles are designed for Total Flooding Application of Dry Chemical Agent into an enclosure with no more than 2.25% total unclosable openings. Each nozzle is stamped with the nozzle part number and orifice diameter. Blow-Off Cap MUST be ordered separately (see chart). The maximum height for a single tier of nozzles is 18 ft 4 in (5.588 m) from floor to ceiling. NOTE: JSH-360 and JSH-180 Discharge Nozzles have not been evaluated for use in Vehicle Paint Spray Booth or Open Front Spray Booth applications.



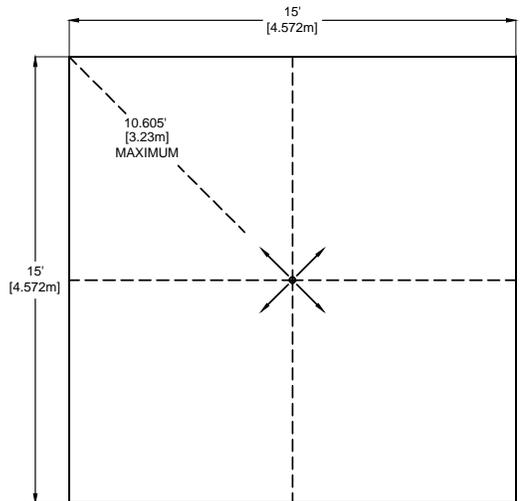
180° Sidewall Nozzle (6 Port)



180° Sidewall Nozzle Maximum Coverage Area (Single Nozzle)



360° Center Room Nozzle (8 Port)



360° Center Room Nozzle Maximum Coverage Area

JSH Discharge Nozzles					
Nozzle Part Number				Nominal Pipe Size	Blow-Off Cap Part Number
Brass		Stainless Steel			
360°	180°	360°	180°		
19529	19522	20445	20438	3/8 in (10mm)	97146
19530	19523	20446	20439	1/2 in (15 mm)	97145
19531	19524	20447	20440	3/4 in (20 mm)	97144
19532	19525	20448	20441	1 in (25 mm)	97143
19533	19526	20449	20442	1 1/4 in (32 mm)	97142
19534	19527	20450	20443	1 1/2 in (40 mm)	97141
19535	19528	20451	20444	2 in (50 mm)	97140



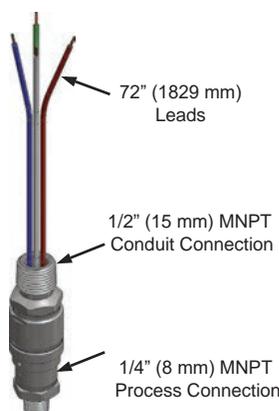
## SUPPLEMENTAL COMPONENTS

Supplemental components complete various system arrangements.



### Discharge Pressure Switch (P/N 97428)

A discharge pressure switch is used in the system to send a signal confirming agent discharge to the control panel or to initiate the shut down of equipment that may deplete agent concentration. It 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.



### XP Discharge Pressure Switch (P/N 97430)

A self-restoring 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

## CHEMICAL PROPERTIES OF ABC DRY CHEMICAL AGENT

ABC or Multi-Purpose dry chemical is a specially fluidized and siliconized mono-ammonium phosphate. It chemically insulates Class A fires by melting at approximately 350°F and coating surfaces to which it is applied. It smothers and breaks the chain reaction of Class B fire and will not conduct electricity.

## SAFETY CONSIDERATIONS

The discharge of dry chemical into a hazard may reduce visibility for a brief period.

The discharge of dry chemical systems to extinguish a fire can result in a potential hazard to personnel from the natural form of the powder or from the products of combustion that result from exposure of the agent to the fire or hot surfaces. Unnecessary exposure of personnel either to the natural agent or to the products of decomposition shall be avoided.

The Safety Data Sheet (SDS) on ABC Dry Chemical should be read and understood prior to working with the agent.

A cylinder containing ABC Dry Chemical should be handled carefully. **The anti-recoil safety device must be in place at all times when the cylinder is not connected to the discharge piping and restrained.**



Order Review List	
P/N	Description
26300	Cylinder Assembly, Dry Chemical 100lb Agent Capacity, 500 PSI
26301	Cylinder Assembly, Dry Chemical 250lb Agent Capacity, 500 PSI
25147	Cylinder Assembly, Dry Chemical 600lb Agent Capacity, 500 PSI
26302	Cylinder Assembly, Dry Chemical 900lb Agent Capacity, 500 PSI
25148	Cylinder Assembly, Dry Chemical 1000lb Agent Capacity, 500 PSI
18535	Bracket Assembly, Cylinder (100 / 250 lb cylinder)
18536	Bracket Assembly, Cylinder (600 / 900 lb cylinder)
18537	Bracket Assembly, Cylinder (1000 lb cylinder)
20722	Electric Valve Actuator w/ Supervisory Limit Switch
17001	Manual Valve Actuator
25804	Gauge Assembly, Pressure, Dry Chemical
22946	Switch Assembly, Low-Pressure Supervisory (recommended all cylinders)
18554	Coupling, Grooved, 3" (80 mm) - 900, 1000 lb Cylinders Only
18550	Elbow, Grooved, 3" (80 mm) - 900, 1000 lb Cylinders Only
18555	Coupling, Grooved, 2" (50 mm) - 100, 250, 600 lb Cylinders Only
18551	Elbow, Grooved, 2" (50 mm) - 100, 250, 600 lb Cylinders Only
18474	Nipple, Grooved x MNPT, 2" (50 mm) - 100, 250, 600 lb Cylinders Only
26311	Cylinder, Remote Nitrogen Actuation
26310	Cylinder, Remote Nitrogen Actuation, w Supervisory Switch Port
97643	Remote Pneumatic Actuation/Bracket Kit
17019	Pneumatic Valve Actuator (secondary cylinder)
18622	Tee, 1/4" JIC Male x 1/4" MNPT, Brass <i>Pilot Actuation Mid Line Tee</i>
10173	Vent Check (connects to Pilot Actuation End Line Tee)
18625	Adapter, 1/4" MNPT x 1/4" JIC Male, Brass <i>Male NPT Adapter (connects to Pilot Actuation End Line Tee)</i>
18611	Tee, 1/4" FNPT x 1/4" MNPT, Brass <i>Pilot Actuation End Line Tee</i>
97428	Switch, Discharge Pressure
97430	Switch, Discharge Pressure, XP
18538	Manifold Check Valve, 3" (80 mm) - 900, 1000 lb Cylinders Only
18546	Manifold Check Valve, 2" (50 mm) - 100, 250, 600 lb Cylinders Only
18648	Hose, Flex, 3/16", 1/4" JIC Female, 16" long
18649	Hose, Flex, 3/16", 1/4" JIC Female, 24" long
18650	Hose, Flex, 3/16", 1/4" JIC Female, 34" long
18651	Hose, Flex, 3/16", 1/4" JIC Female, 40" long
18777	Adapter, 1/4" JIC Male x 1/4" JIC Male, Brass <i>Flex Hose Adapter</i>
VARIABLE	Total Flood Nozzle, JSH

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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