



Technical Data Sheet for
Carbon Dioxide
FIRE EXTINGUISHING SYSTEM



المصنع السعودي لأجهزة الإطفاء
SAUDI FACTORY FOR FIRE EQUIPMENT

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Carbondioxide

Fire Extinguishing System



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CO₂ AGENT SPECIFICATION

DESCRIPTION

Carbon Dioxide is an odorless, colorless, electrically non-conductive, non-corrosive, and non-deteriorating inert suppression agent. Carbon Dioxide is approximately 50% heavier than air, and is normally present in the atmosphere at about 0.03% by volume. Carbon Dioxide is instrumental in controlling respiration and other vital responses in animals and humans, but it WILL NOT support life.

Carbon Dioxide is a standard commercial product commonly used for carbonating beverages, fastfreezing food products, purging pipes and tanks, medical purposes, and a multitude of additional tasks. It is also used for fire fighting purposes: i.e. hose reels, portable hand extinguishers, and engineered fixed pipe systems.

Carbon Dioxide is available in most large cities and seaports throughout the world. Carbon Dioxide extinguishes fire by reducing the oxygen content of the protected space and/or local flame front to a point where it will not support combustion. Oxygen reduction below 16% by volume will extinguish most fires. Surface or "flash" type fires (oils, paints, etc.) are quickly extinguished. Deepseated or "smoldering" type fires (paper, baled cotton, clothing, etc.) are extinguished by the prolonged action of a high concentration of Carbon Dioxide. Retaining the agent within the protected space reduces the fire's ability to re-ignite. In addition, Carbon Dioxide has a cooling effect on the surrounding atmosphere that has been found to be a benefit to fire extinguishment.

SPECIFICATION

Chemical Name	: Carbon Dioxide
Chemical Formula	: CO ₂
Molecular Weight	: 44.01
Critical Temperature	: 31.0OC
Boiling Point	: -109.3OF
Vapor Pressure @ 68OF	: 832 PSIG
Vapor Density @ 68OF	: 1.53
Solubility in Water @ 68OF	: 87.8% by Volume
Appearance and Odor	: Colorless Gas, Slight Pungent Odor

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HIGH PRESSURE CO₂ CYLINDERS

DESCRIPTION

CO₂ cylinders are factory filled to capacity; partial fills are not allowed. The cylinders may be utilized in single or multiple cylinder applications as needed.

Carbondioxide cylinders must be floor mounted, with the discharge valve in the vertical (up) position. Horizontal mounting of cylinders is not allowed. The cylinders may be used in single or multiple cylinder applications as needed.

Cylinders are shipped from the factory with a protective shipping cap in place. Filled cylinders shall be secured during transport and while in storage in accordance with DOT and OSHA requirements. Upon installation, all cylinders shall be secured by cylinder straps or in a suitable racking arrangement. Once secured by a strap or cylinder rack, the safety/shipping cap is removed. The caps should then be stored in a suitable and nearby area for future use.

The high pressure seamless steel CO₂ cylinders has concave base and manufactured in accordance with 84/525 EEC.

MATERIAL

Cylinder: Chrome Molybdenum Steel
Head Valve: Brass

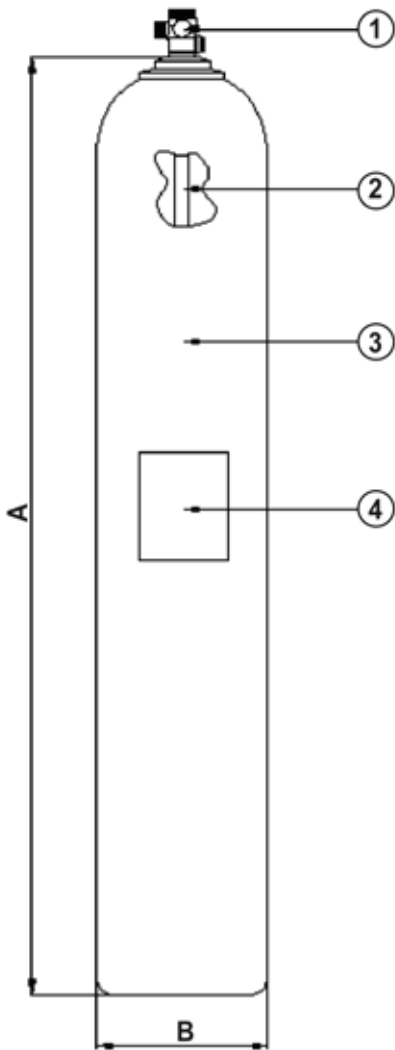
HYDRAULIC TEST PRESSURE

Test Pressure 250 Bar

FINISH

Primed and painted in accordance with BS 4800 : 04 E 53

1. Discharge Valve Assembly (1" NPT)
2. Siphon Tube
3. Cylinder
4. Identification Label



Size : A=1515mm, B= 266mm
Model : SFC-45
Capacity : 45 Kgs

Important Note:

All CO₂ System to be provided with efficient detection system to assure that discharge of gas to be in case of fire only.

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SINGLE CYLINDER MOUNTING STRAP

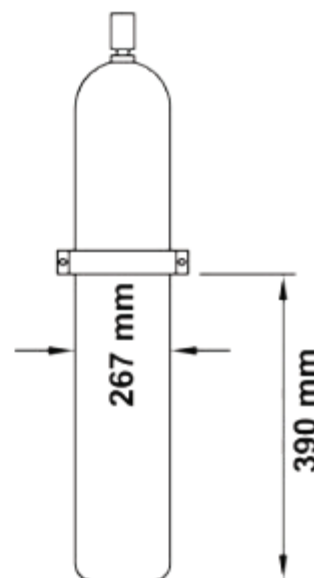
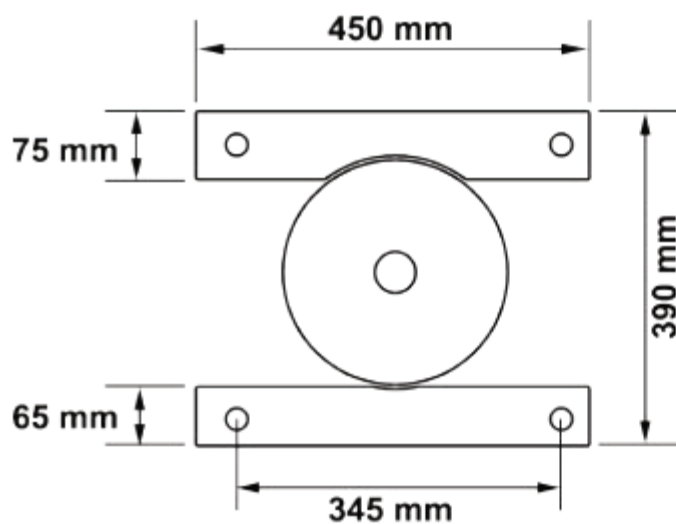
APPLICATION

Cylinder straps are used to secure the cylinder in place, on a single cylinder system, in accordance with NFPA 12 requirements. The straps may be secured to any structurally solid surface. Anchoring into plaster or any other facing material is not acceptable.

DESCRIPTION

Cylinder Straps are made of steel, primed and painted red with a baked enamel finish for corrosion resistance. All mounting hardware is supplied by the system installer.

MATERIALS: Carbon Steel
Paint - Red Gloss Enamel



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CO₂ CYLINDER HEAD VALVE

VALVE FOR FIXED INSTALLATION

SFFECO Carbon Dioxide cylinders are equipped with a cylinder valve designed to hold the Carbon Dioxide agent in the cylinder until actuated, either automatically or manually. The conversion is completed by installing an emergency manual lever actuator.

The cylinder valve assembly has a forged brass body. The pressure necessary to open the valve is 100-110 psig (689-758 kPa) at 70°F. (21.1°C.). All cylinder valves are equipped with a Safety Relief Disc that will rupture to relieve excess pressure should it reach a level in excess of 2,650 psi (18,248 kPa) in accordance with NFPA 12, Section 1-8.5.2.



P/N: F2021002

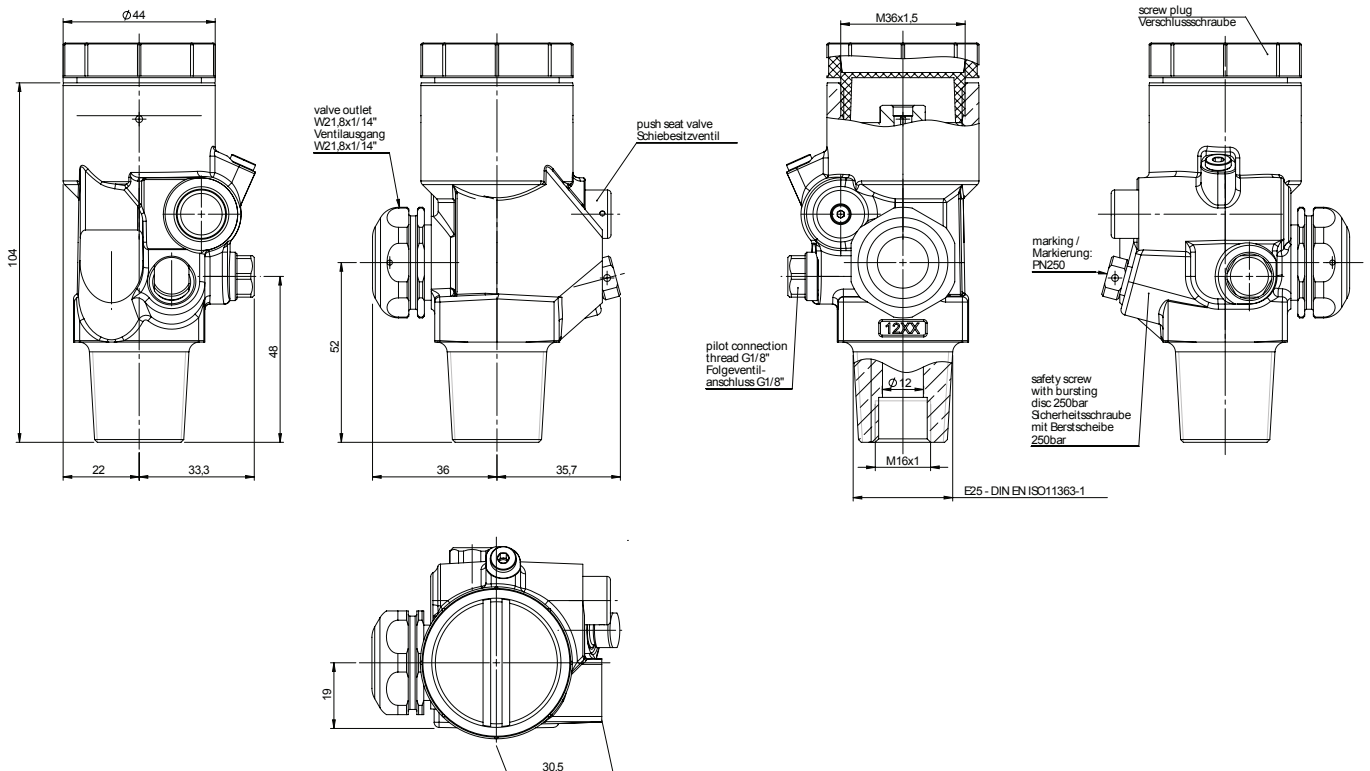
Material : Brass

Thread : 25E - W2 1, 8x 1/14"

Test Pressure : 360 Bar

Can be used in Combination with any one of the

- P/N: XF11280
- P/N: F1120016
- P/N: F1120015



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CONTROL HEAD VALVE

ELECTRICAL AND PRESSURE OPERATED CONTROL HEAD VALVE

This type of control head valve operates the system cylinder electrically through electrical solenoid actuator after receiving an electronic initiating signal from the control panel. Also this type of control head valve operates the system cylinder through electrical principle, which allows the CO2 pressure to open the valve piston in order to discharge the gas in the protected area.



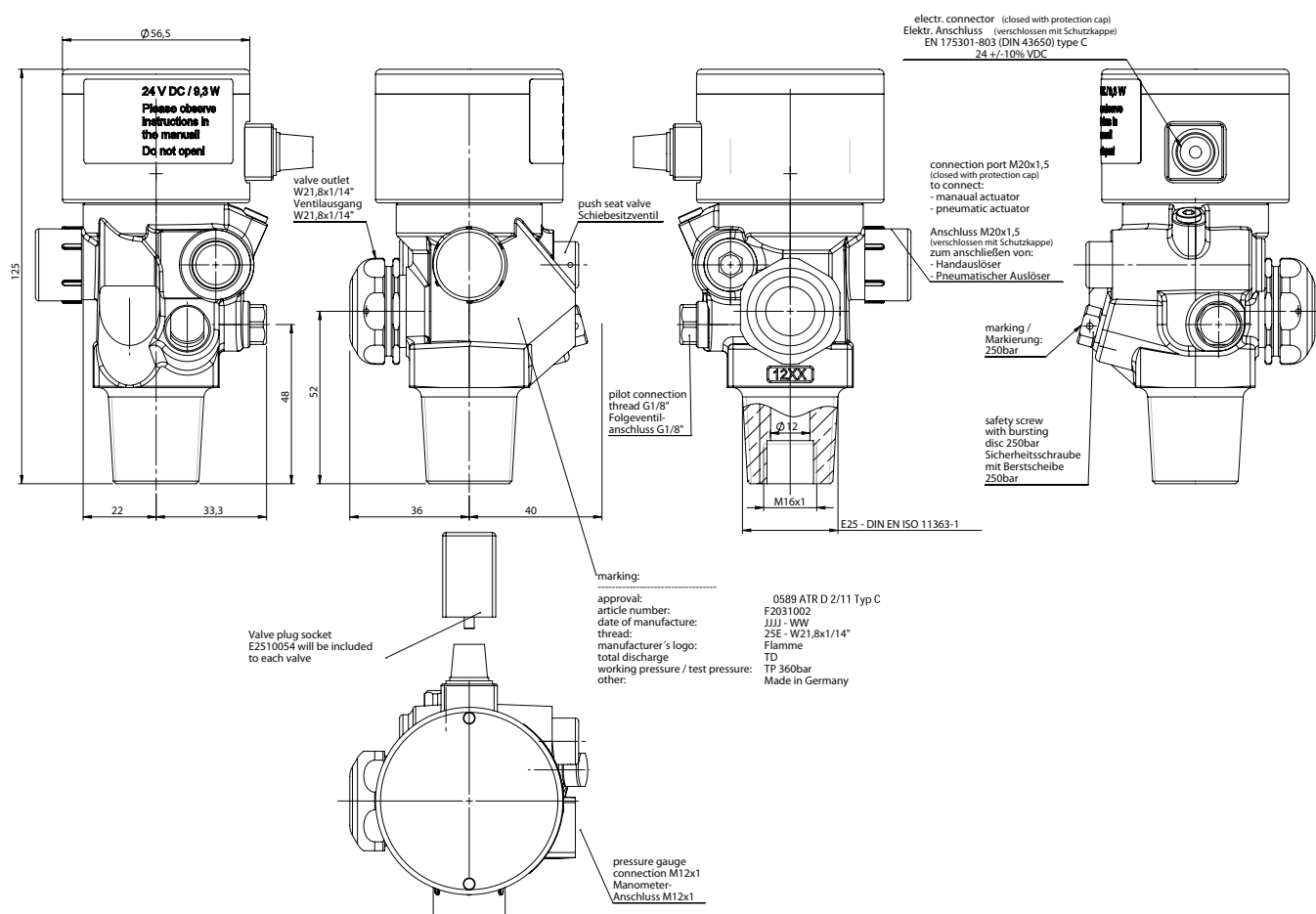
P/N: F2031002

Material : Brass

Thread : 25E - W2 1,8x 1/14"

Test Pressure : 360 Bar

Can be used in Combination with P/N: F1120017



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Carbondioxide

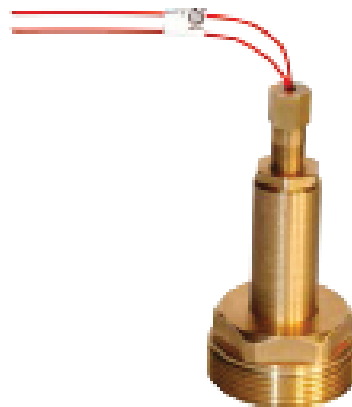
Fire Extinguishing System

CONTROL HEAD VALVE

ELECTRIC ACTUATED CONTROL HEAD VALVE

This type of control head valve operates the system cylinder electrically through electrical pin type pyrotechnic actuators.

Can be used in Combination with F2021002



P/N: XF11280

CONTROL HEAD VALVE

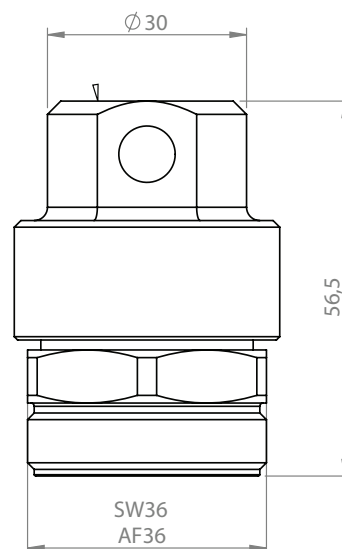
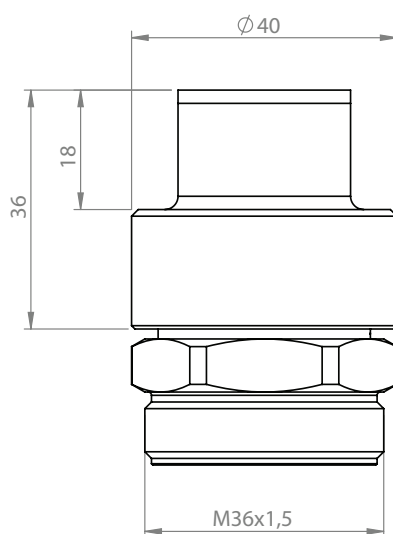
PNEUMATIC RELEASE DEVICE

This type of control head valve operates the system cylinder through pneumatic principle, which allows the CO₂ pressure to open the valve piston in order to discharge the gas in the protected area.

Material : Brass
Pilot Pressure min : P_{min} = 20 bar for P_I=300bar
Pilot Pressure max : P_{max} = 360 bar
Torque : 25Nm ±2
Can be used in Combination with F2021002



P/N: F1120016



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CONTROL HEAD VALVE



PNEUMATIC - MANUAL RELEASE DEVICE

This type of control head valve operates the system cylinder through pneumatic principle, which allows the CO₂ pressure to open the valve piston in order to discharge the gas in the protected area. The provision of the lever allows the manual operation too.

P/N: F1120015

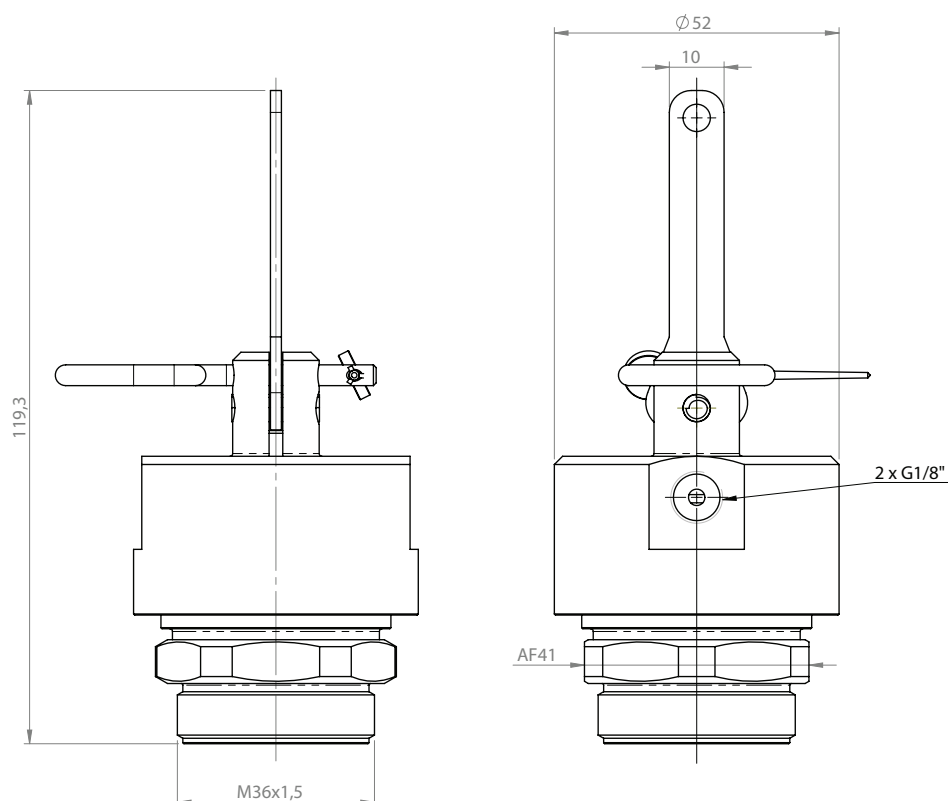
Material : Brass

Pilot Pressure min : $P_{min} = 8 \text{ bar}$ for $P_1 = 300 \text{ bar}$

Pilot Pressure max : $P_{max} = 300 \text{ bar}$

Torque : $25 \text{ Nm} \pm 2$

Can be used in Combination with F2021002



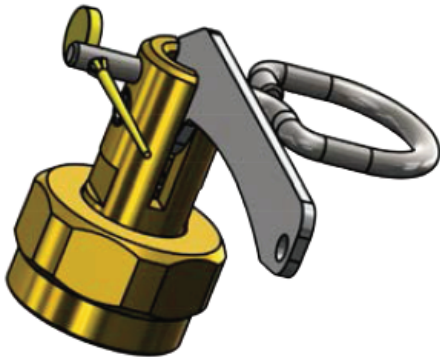
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CONTROL HEAD VALVE

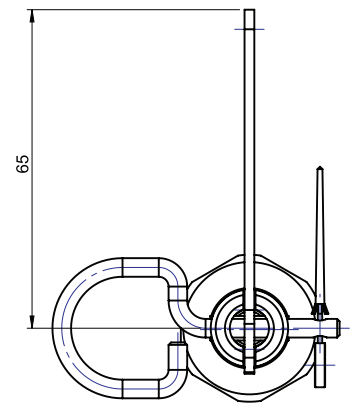
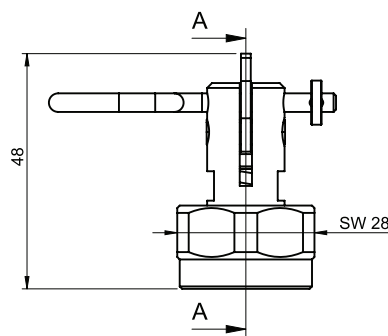
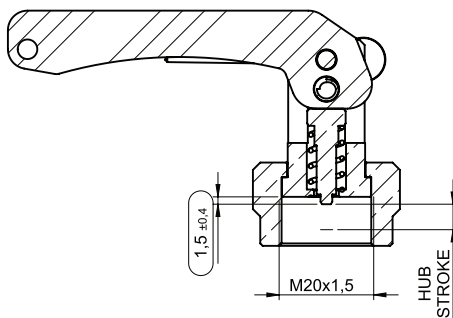


MANUAL ACTUATOR FOR F203 VALVES

This type of control head valve operates the system cylinder through pneumatic principle, which allows the CO₂ pressure to open the valve piston in order to discharge the gas in the protected area.

Can be used in Combination with F2031002

P/N: F1120017



Assembly Instruction:

Assemble the manual actuator only in inactivated state!

(Retracted pin, lever secured with safety pin!)

Screw teh manual actuator on the corresponding connection port of valve F203

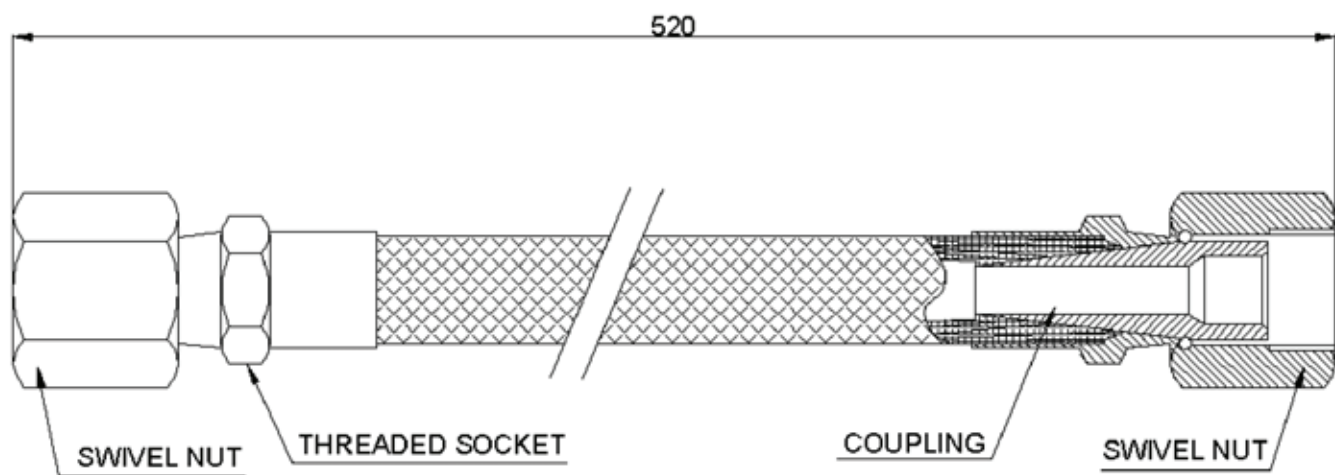
(Torque: 15 +_1Nm), the alignment of the lever can be orientated in any position

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DISCHARGE FLEXIBLE HOSE

DESCRIPTION
CO2 discharge flexible hose is used to convey the CO2 gas from the outlet of the cylinder to the discharge manifold. This made of reinforced flexible rubber tested at 480 bar to withstand high pressure with stainless steel of brass coupling and swivel joint.



P/N: SCO-006		MATERIAL	
DIMENSION		Hose	: Rubber
Connection	: 21.7 x 1.814	Couplings	: Steel S 300 Cadmied
Nominal Diameter	: 10 mm.		
		PRESSURE RATING	
		Service Pressure	: 240 Bar
		Test Pressure	: 400 Bar
		Bursting Pressure	: 960 Bar

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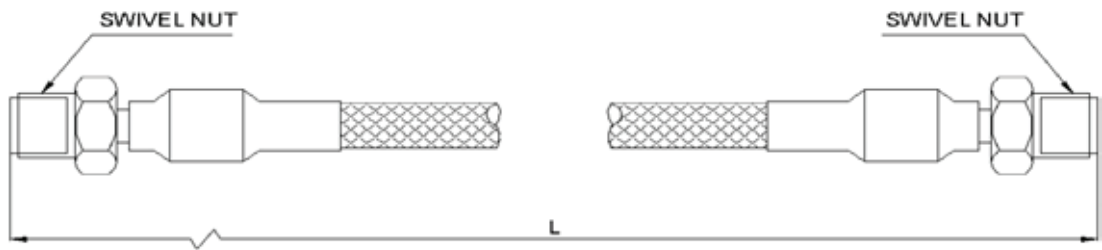
Fire Extinguishing System

PNEUMATIC FLEXIBLE HOSE

DESCRIPTION

The pneumatic flexible hose is used when two or more cylinders are in use for one system. The first cylinder is actuated through electric actuator while the rest of cylinders will be pneumatically operated through the pneumatic hose.

Hose are interconnected on the ports of the pressure actuators. The CO2 gas pressure applied on the actuators opens the cylinder valves simultaneously.



P/N: SCO-007

MATERIAL

Hose : Rubber
Couplings : Steel S 300 Cadmied

PRESSURE RATING

Service Pressure : 240 Bar
Test Pressure : 400 Bar
Bursting Pressure : 960 Bar

DIMENSION

Connection : 1/8" BSP

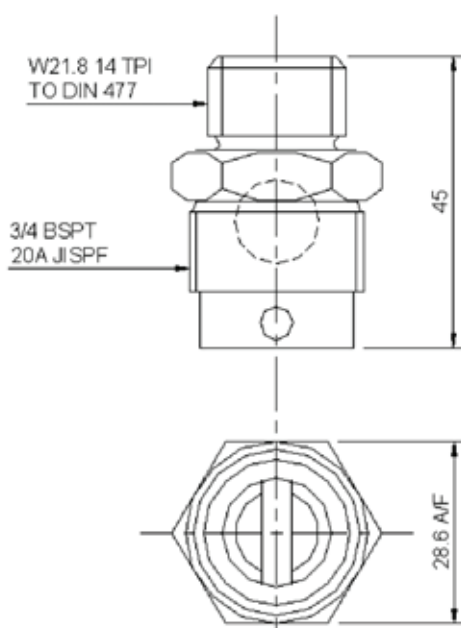
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Fire Extinguishing System

NON RETURN VALVE

DESCRIPTION

The Check Valve is used to isolate the "Main and Reserve" supplies in a SFFECO Carbon Dioxide system. The Check Valve prevents pressurization of the "Reserve Bank" of Carbon Dioxide cylinders by blocking the flow of agent from the "Main" system discharge piping. This allows a common discharge manifold and nozzle piping network to be used on "Main and Reserve" system installations.



P/N: SCO-008

MATERIAL

Valve Body	: Brass
Ball	: Carbon Steel
Maximum Pressure	: 250 Bar

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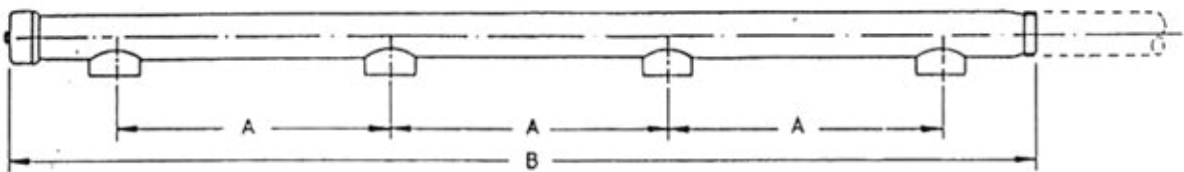
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DISCHARGE MANIFOLD

DESCRIPTION

The Check Valve is used to isolate the "Main and Reserve" supplies in a SFFECO Carbon Dioxide system. The Check Valve prevents pressurization of the "Reserve Bank" of Carbon Dioxide cylinders by blocking the flow of agent from the "Main" system discharge piping. This allows a common discharge manifold and nozzle piping network to be used on "Main and Reserve" system installations.



CYLINDER SIZE	DIM. "A" (MM)	DIM. "B" (MM)				
		2 CYL.	3 CYL.	4 CYL.	5 CYL.	6 CYL.
100 lbs.	305	625	930	1235	1540	1845

SPECIFICATION

- Manifold and discharge piping sizes are calculated by computer to comply with NFPA Standards and are dependent on the pipe work configuration.
- All manifolds are supplied with end mounted discharge outlets.
- The integral non-return valve is a fold away flap type to ensure minimum orifice restriction.
- Material to B.S. 5306 Part 5 Section 10.3.3. Proof Test 90 Bar.

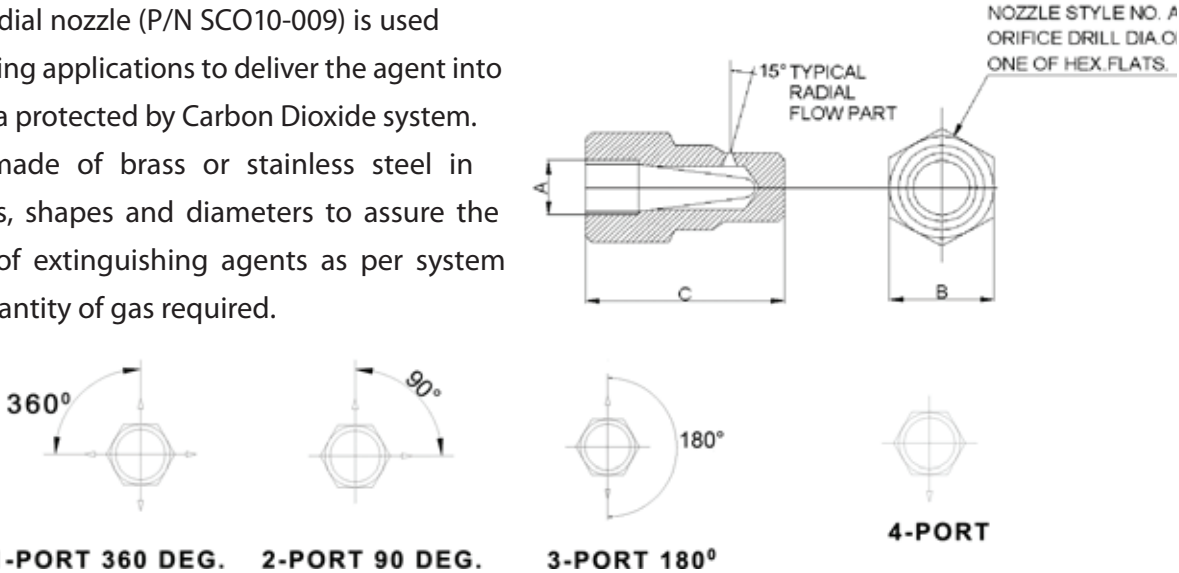
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RADIAL NOZZLE

DESCRIPTION

The SFFECO radial nozzle (P/N SCO10-009) is used for Total Flooding applications to deliver the agent into the hazard area protected by Carbon Dioxide system. Nozzles are made of brass or stainless steel in different types, shapes and diameters to assure the effectiveness of extinguishing agents as per system design and quantity of gas required.



NOZZLE SIZE			PURCHASE CODE
A	B	C	
1/6"	7/8"	1 23/32"	0678
3/8"	1"	1 27/32"	0679
1/2"	1 1/8"	2 1/16"	0680
3/4"	1 3/8"	2 5/16"	0681
1"	1 5/8"	2 11/16"	0682
1 1/4"	2	3 1/16"	0683
1 1/2"	2 1/4"	3 7/16"	0684
2"	3"	3 15/16"	0685

P/N: SCO10-009

NOTE
While placing order, please refer to the flow calculations and mention nozzle size and drill properly

'S' TYPE DISCHARGE NOZZLE

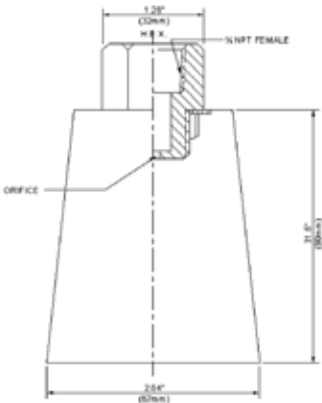
DESCRIPTION

The SFFECO 'S' type discharge nozzle (P/N SCO-010) is used for Local and Total Flooding applications to deliver the agent into the hazard area protected by Carbon Dioxide system. Nozzles are made of brass in different types, shapes and diameters to assure the effectiveness of extinguishing agents as per system design and quantity of gas required.

MATERIAL

Body: Brass, Finish : Red Paint

P/N: SCO-010



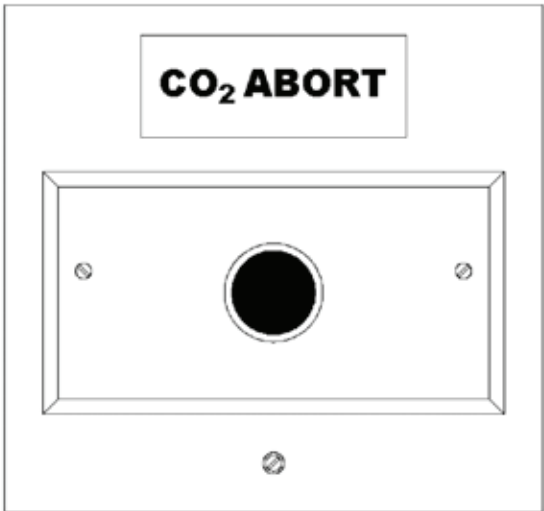
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ABORT SWITCH (Optional)



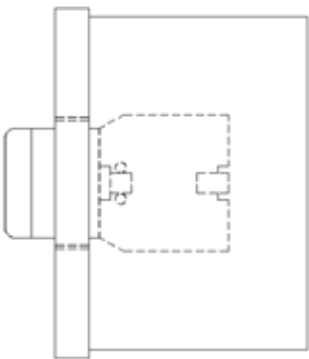
P/N: SCO-014

DESCRIPTION

The System Abort Switch is designed to be in conjunction with other system equipment. It provides a temporary means, by which the system actuation circuit may be interrupted, when operated prior to the circuit actuation. The unit employs a non-latching contact push button switch. While depressed, the switch causes the agent release circuit to be manually delayed. Upon release of the Abort Switch, the release circuit will follow the specific configuration of the system control panel.

DIMENSIONS	
Width	87 mm
Height	87 mm
Depth	52 mm

MAIN – RESERVE SWITCH (Optional)



DESCRIPTION

The “Main” to “Reserve” switch is used with systems that incorporate main and reserve (back-up) agent storage. The switch may utilize 1 or 2 Form “C” Contact blocks which will provide an electrical path to either the “Main” or “Reserve” releasing modules.

Following a system discharge, reset any field devices. Once all devices are in a stand-by status the Main-Reserve Switch may be moved to the “Reserve” position. The Control Panel may then be reset to a normal mode for uninterrupted SFFECO protection. The empty “main” containers can be removed for recharge. After the containers in the “Main” system have been recharged, the switch may be returned to the “Main” position.

The switch may be mounted to a standard 4” electrical box or others.

DIMENSIONS	
Width	105 mm
Height	105 mm
Depth	75 mm

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WARNING SIGNS

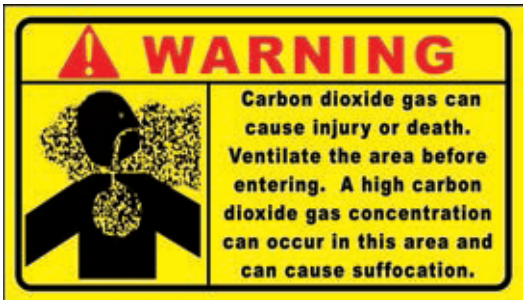
Application
Instructional signs are provided to inform personnel of any potential hazards they face when operation certain devices or working within areas protected by CO2 systems.



Optional: Sign in every nearby space where carbon dioxide could accumulate to hazardous levels.



Sign in Every Protected Space.



Optional: Sign outside each entrance to carbon dioxide storage room



Sign at Every Entrance to Protected Space

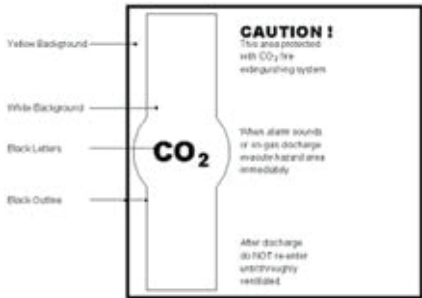
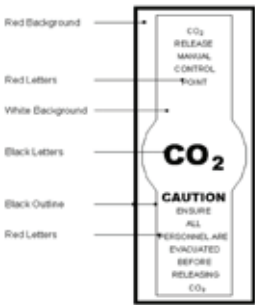


Optional: Sign at every entrance to protected space for systems provided with a wintergreen odrizer.



Sign at Every Manual Actuation Station

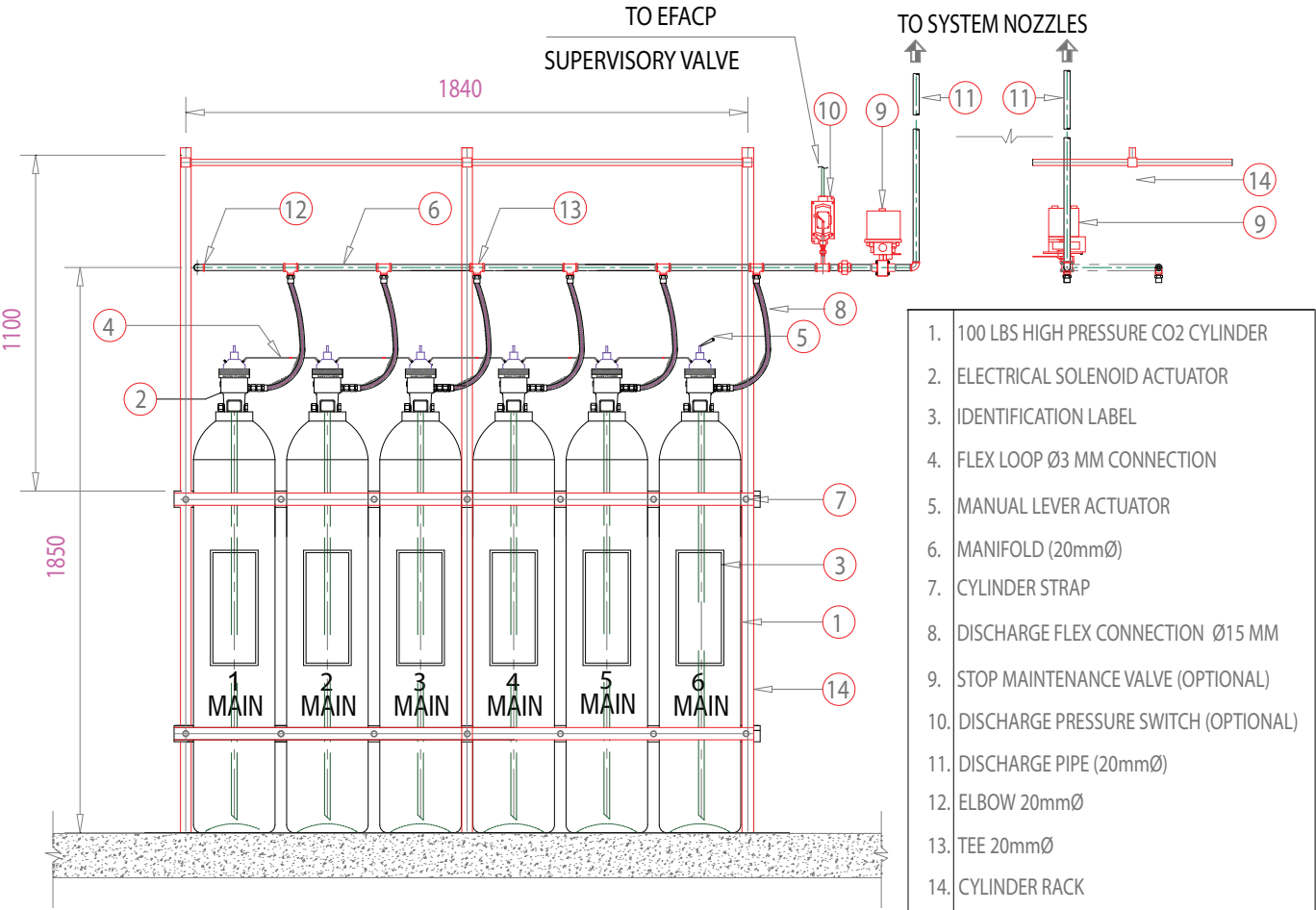
This type of warning signs are as per latest NFPA editions, before they wre like



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TYPICAL ARRANGEMENT



Optional:

- Rack Assembly
- Directional Valve

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SAVE

In line with our policy of continuous product improvement; we reserve the right to modify the specifications without prior notice.

