

Viking OXEO PR Suppression Systems

Protects Sensitive Areas with Inert Gasses

Presenter: Eileen Sellers Business Development for Special Hazards

Operation of Oxeo system



What are Clean Agents?

NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems:

- 1.4.1.1 (2008) The fire extinguishing agents addressed in this standard shall be electrically nonconducting and leave no residue upon evaporation.

Two types of clean agents

- Synthetic Agents
- Inert Gas



Viking Special Hazards - Overview

Inert Gasses

- Argon, Nitrogen, Blends, Various trade names and Manufactures
- Multiple sources
- GWP Atmospheric Lifetime – ZERO!!
- Does not break down in higher temperatures
- OK for EPA and Snap



What is the “Fire Triangle”

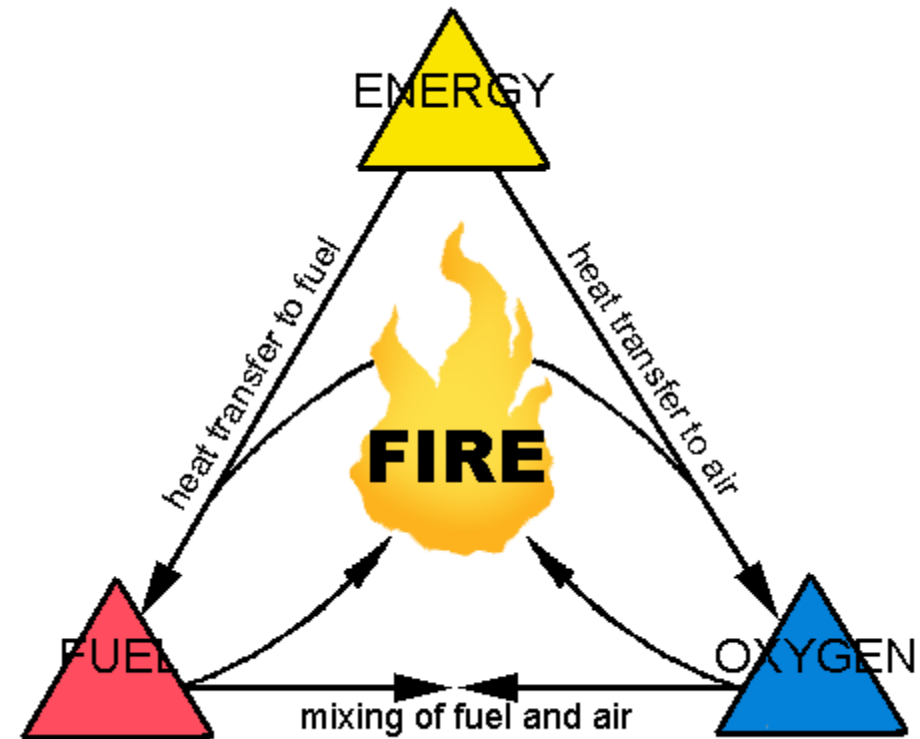
- Oxygen, Fuel, and Heat – with chemical reaction to create fire

Inert Clean Agent Systems:

- Inerts reduce effective Oxygen Level from 21% to less than 11% by volume displacement and cool the room

Synthetic Clean Agent Systems:

- Synthetic Agents reduce heat source through chemical interaction

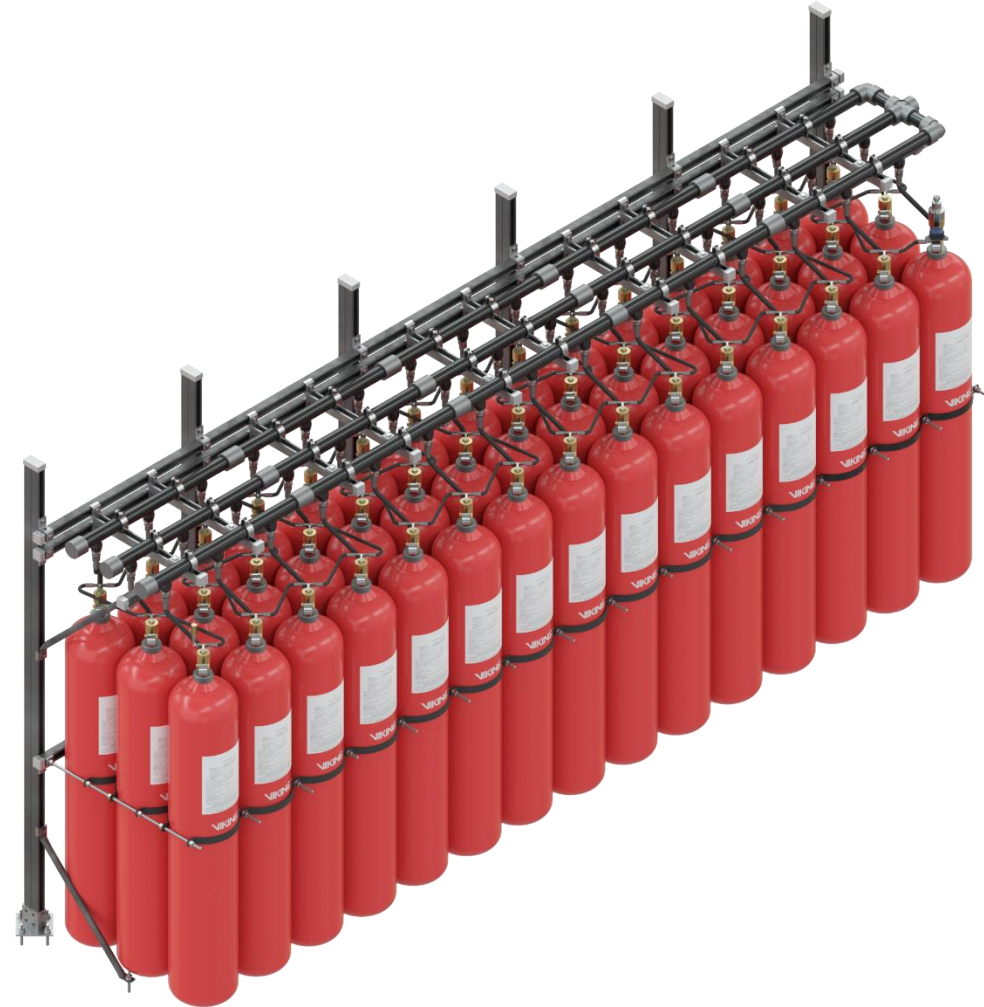


Viking Oxeo Pure Inert Solutions

- Nitrogen 200 & 300 bar
- Argon 200 & 300 bar

Chemical name in NFPA 2001:

- IG 01 – Argon
- IG 100 - Nitrogen



Typical Clean Agent Applications

IT Infrastructure:

- Data Center (Open and Hot/Cold Isle)
- IT Distribution Closets
- Critical IT Pathways

Critical Operational Infrastructure:

- Electrical Infrastructure
- Critical Operational Functions:
 - Control Room
 - Rack Room
 - UPS/Battery Rooms



Typical Special Hazards Applications

Valuable Assets:

- Rare Books/Artifacts
- Archive and Record Storage
- Museums and Art Galleries
- Law Enforcement – Evidence Rooms

Industrial Process Protection:

- Compound Storage - Pharmaceuticals
- Engine Test Cells
- Turbines
- Class D Metals



Class D Applications: (not listed system)

- IG-01
- NFPA 484
- 80% Design Concentration
- 20 minute hold items
- No UL Listing

Examples of install applications

- Lithium Ion Test Cells
- Magnesium Machining
- Aluminum Bag House
- Titanium 3D Printer



Riser view



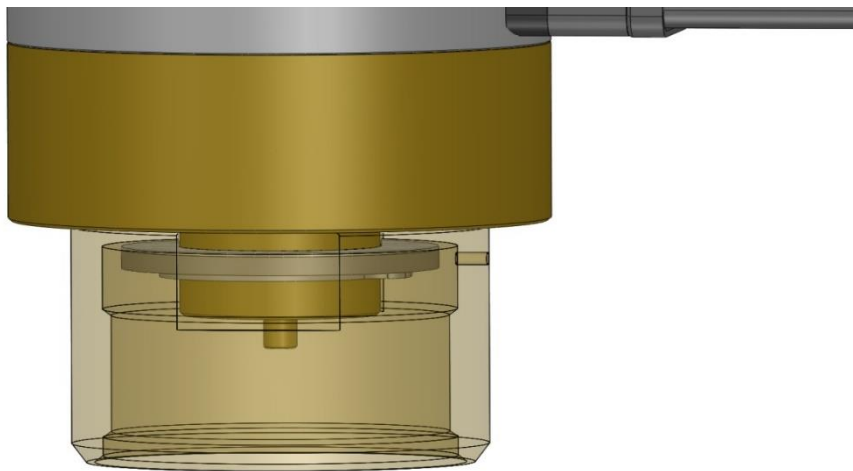
TABLE 1: OXEO EXTINGUISHING SYSTEM COMPONENTS

Item No.	Description		Part No.
1	Contact Pressure Gauge / Low Pressure Switch (N.O. under pressure)	2901 psi (200 bar)	927615
		4351 psi (300 bar)	927617
	Contact Pressure Gauge / Low Pressure Switch (N.C. under pressure)	2901 psi (200 bar)	927612
		4351 psi (300 bar)	927616
2	Hose	14.8 in. (375 mm)	934921D
		23.6 in. (600 mm)	921922D
3	Manifold Assemblies 2" NPT	2 out	25053
		3 out	25054
4	Manifold Pressure Relief Device	2901 psi (200 bar)	885136D
		4351 psi (300 bar)	886281D
5	Manual Release Device		914028
6	Electrical Release Device		914027D
7	Electrical Release Device Monitor		930865D
8	Pilot Hose (Kit available with fittings included)	24" (600 mm)	24467 (25132)
		39" (1,000 mm)	24468 (25133)
		59" (1,500 mm)	24469 (25134)
9	Pilot Hose Adapter		125566
10	Pilot Tee		912487
11	Pilot Coupler		175920
12	Pressure Malfunction Safety Assembly		24498
	Pressure Malfunction Safety Assembly with manual release		24499
13	Reset Tool		934652
14	Unistrut Racking Assembly		Varies
15	Extinguishing Agent Cylinder		Varies

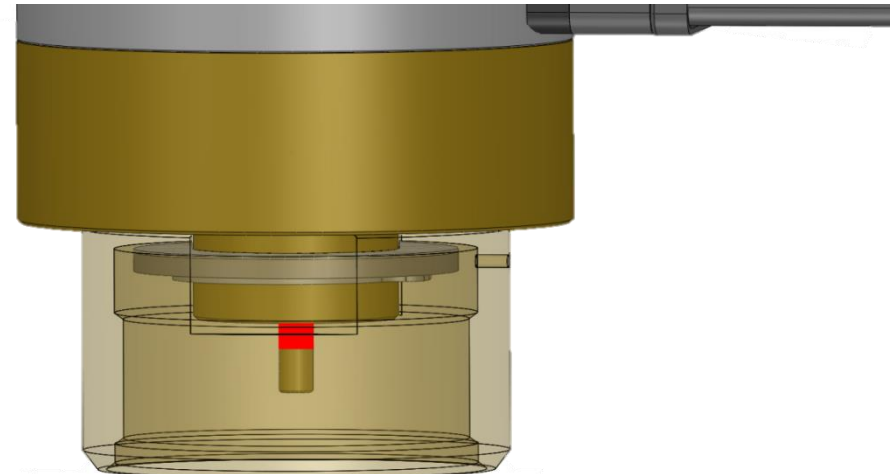
*Special order; contact sales team for lead time

Actuator

- To test the actuator, you remove the actuator from the tank valve, then you activate the actuator through the release control panel by testing the detection. Once the actuator is activated, the stem will protrude from the cylinder exposing the bottom portion of the stem which is red in color.
- The re-set tool threads into the actuator and pushes the step back in place when the actuator is de-energized, (clear release control panel).



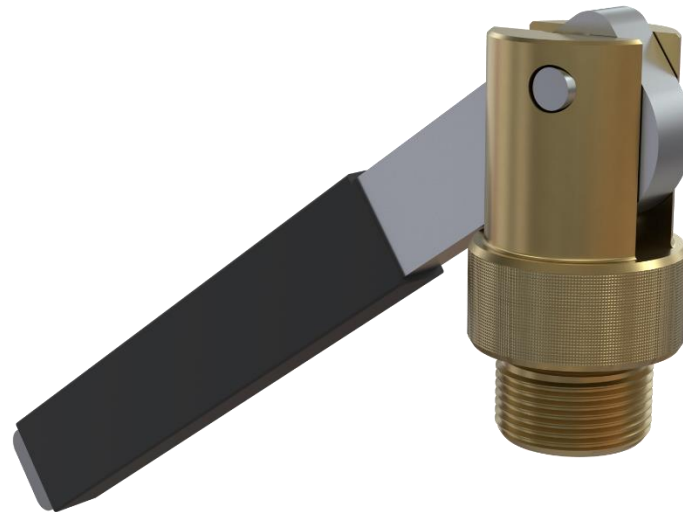
De-Energized Actuator



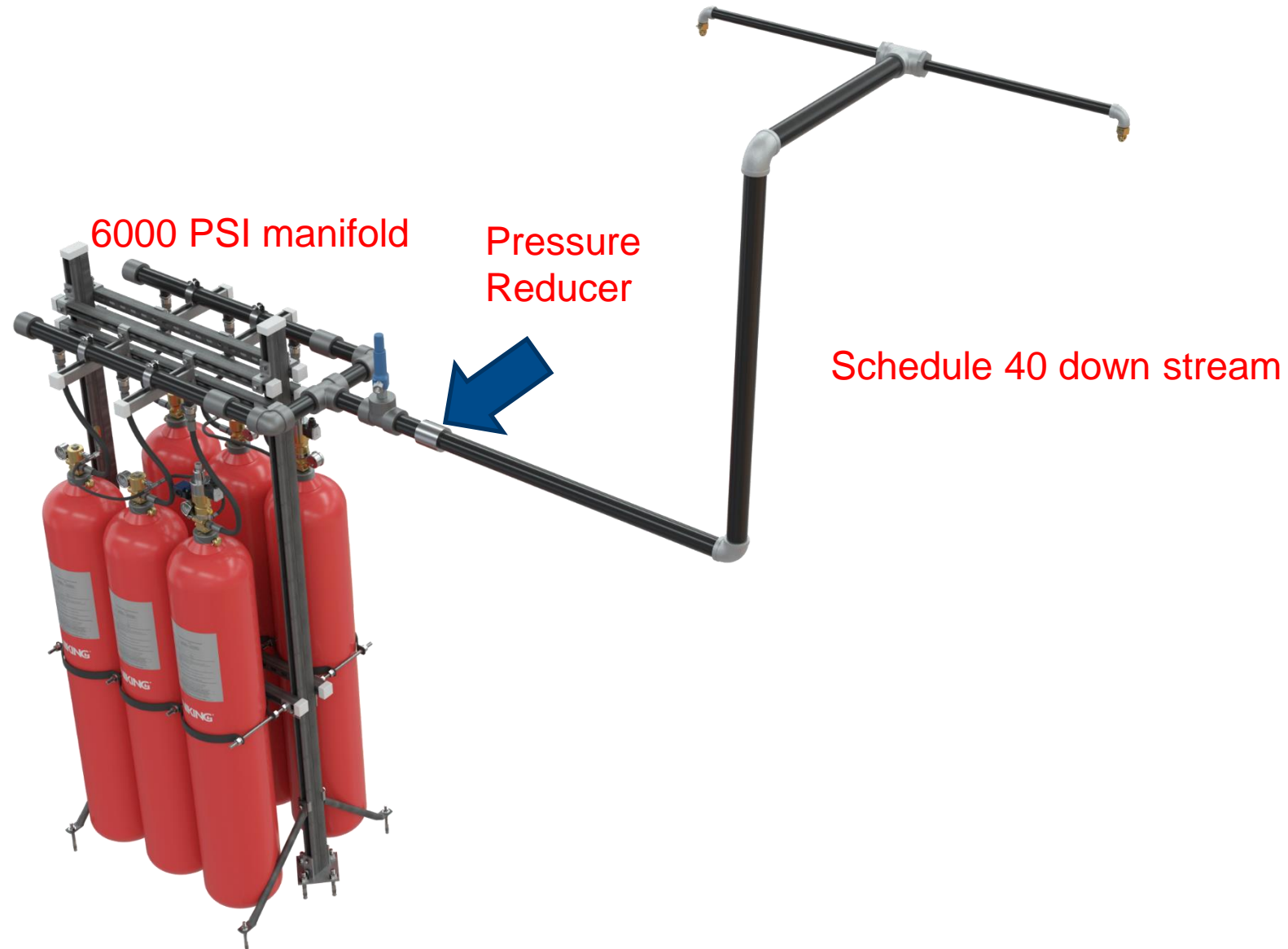
Energized Actuator

Reset Tool - 934652

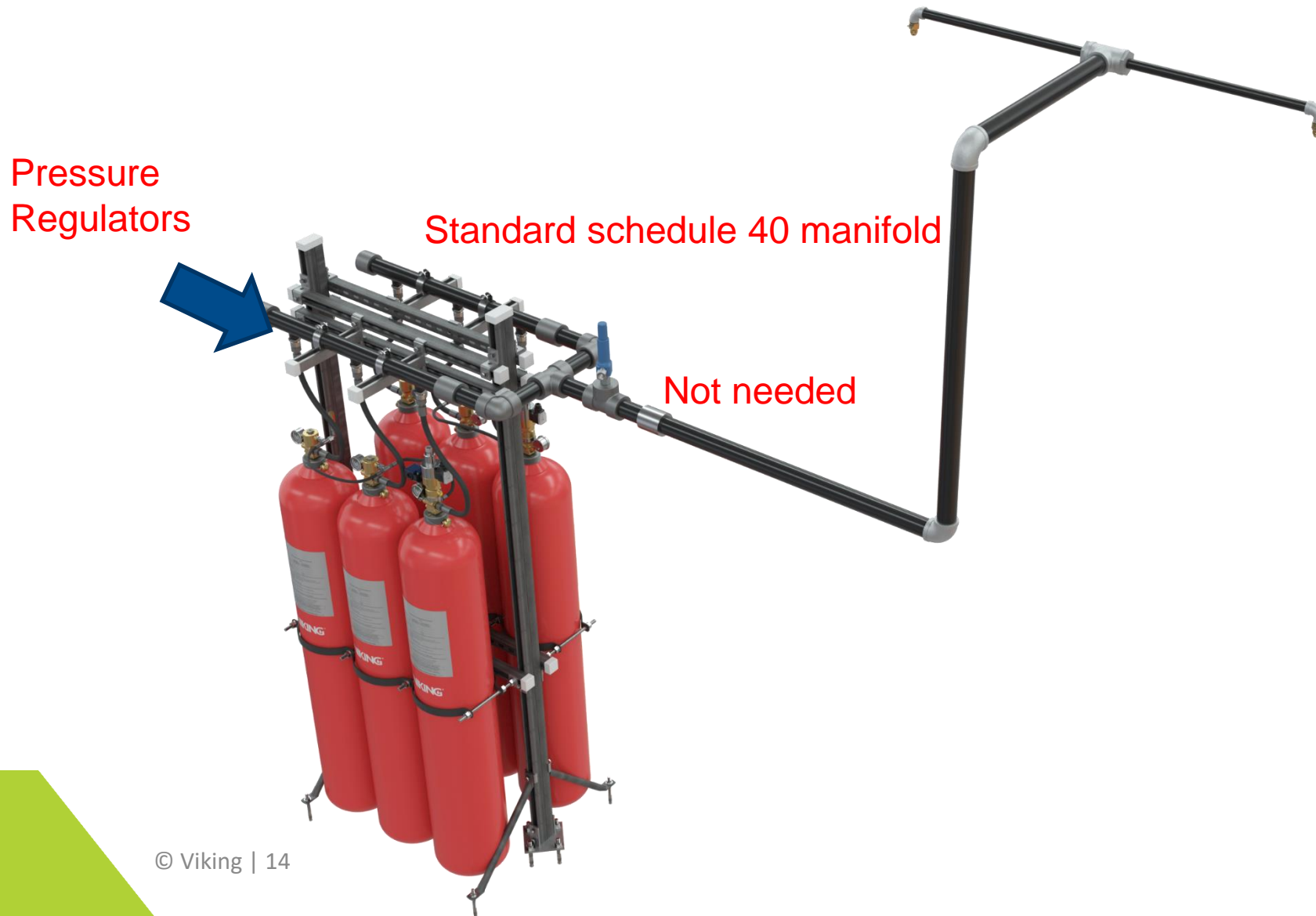
- The re-set tool threads into the actuator and pushes the step back in place when the actuator is de-energized, (clear release control panel).



System Layout – PR System

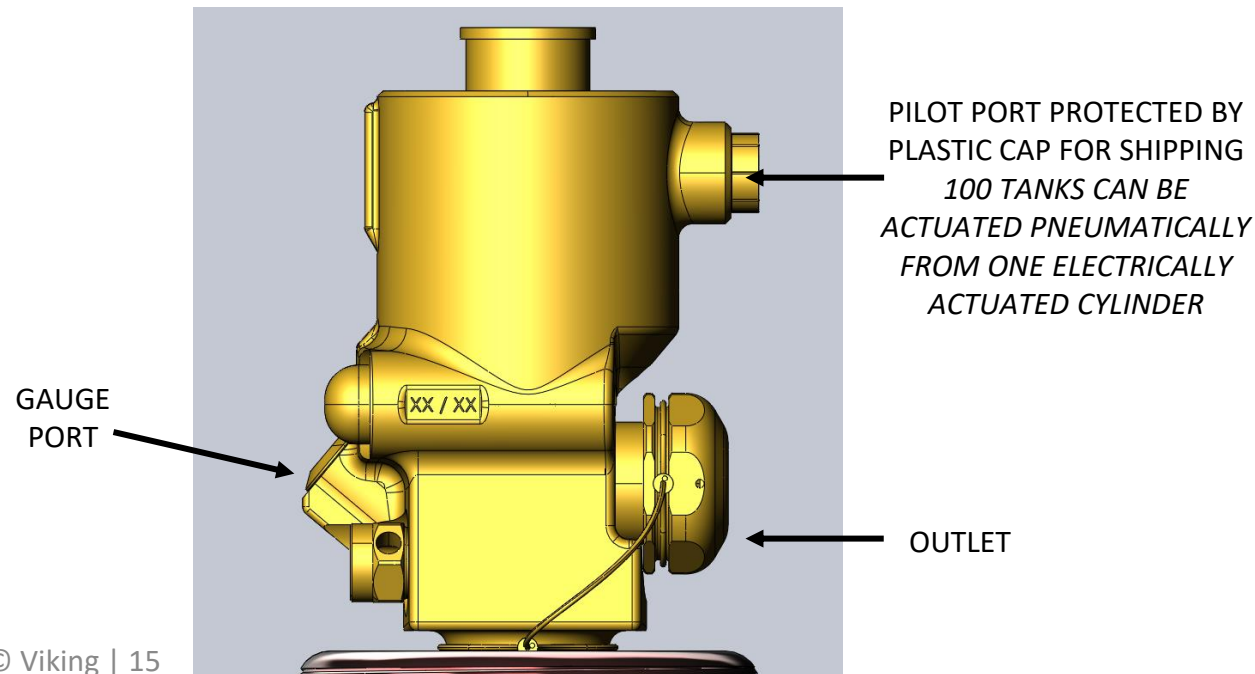


System Layout –CF System



Filled Cylinders

- Cylinders do not include gauges – we tailor order to pressure, agent, and releasing panel model
- Cylinder labels will notate agent and pressure
- All tank valves have a built-in pneumatic actuator
 - Pilot port will only have a plastic plug installed when delivered, a metal plug will need to be ordered separate for single tank systems



PART #	DESCRIPTION
4001044	2901 PSI NITROGEN
4001044C	2901 PSI NITROGEN – CANADA
4001050	4351 PSI NITROGEN
4001050C	4351 PSI NITROGEN – CANADA
4001024	2901 PSI ARGON
4001024C	2901 PSI ARGON – CANADA
4001030	4351 PSI ARGON
4001030C	4351 PSI ARGON – CANADA

Gauges

Gauge Notes:

- For conventional control panels
 - Order normally closed under pressure gauges
- For addressable control panels
 - Order normally open under pressure gauges

Gauge Order Numbers:

PART #	DESCRIPTION
927612	2901 PSI, N.O. UNDER PRESSURE
927615	2901 PSI, N.C. UNDER PRESSURE
927616	4351 PSI, N.O. UNDER PRESSURE
927617	4351 PSI, N.C. UNDER PRESSURE



Filled Cylinder

Designation	Nominal Volume	Part no.
Oxeo Cylinder 2901 psi (Argon IG-01)	80.0 L	4001024
Oxeo Cylinder 2901 psi (Nitrogen IG-100)	80.0 L	4001044
Oxeo Cylinder 4351 psi (Argon IG-01)	80.0 L	4001030
Oxeo Cylinder 4351 psi (Nitrogen IG-100)	80.0 L	4001050
NOTE: To order cylinders in Canada, include the suffix "C" after any of the part numbers listed above (example: 4001024C)		



Hose Notes:

- Both hoses come with gaskets 149890 and 149970 included
 - Gaskets 149890 and 149970 can also be ordered as spare parts
- Hose 934922D can be used without recalculating the pipe network.
 - 934922D is a custom ordered part and will have significant lead times.

Hose Order Numbers:

PART #	DESCRIPTION
934921D	AGENT HOSE, 375MM LONG
934922D	AGENT HOSE, 600MM LONG



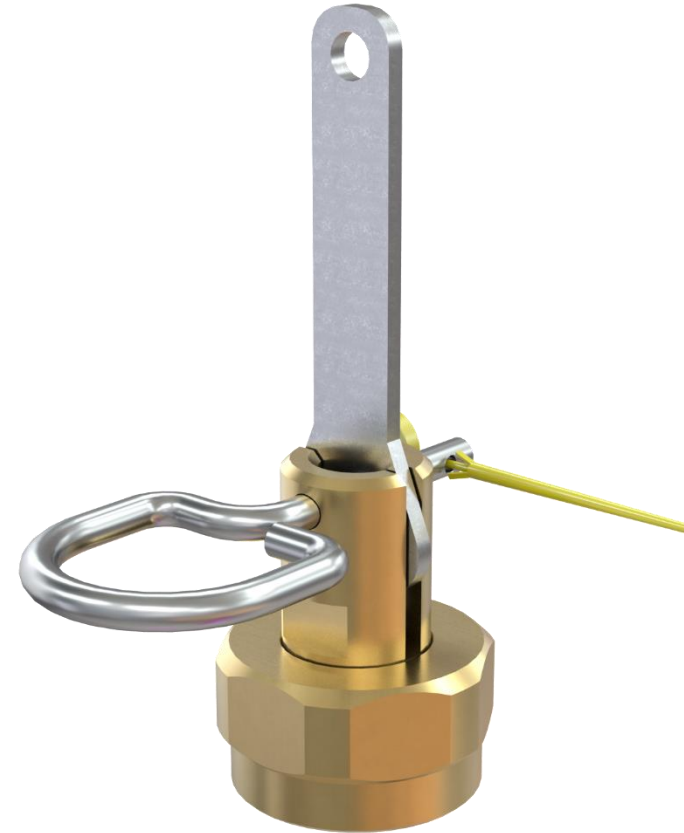
Actuators

Electrical – 914027D



NPT Conduit
Converter Included

Manual - 914028



Monitor Switch

Monitor Switch Kit – 930865D:

- Approved for field wiring, will not come pre-wired
- Will be purchased as an unassembled kit
- Kit contains adapter for NPT conduit



Pressure Reducer

- Available for in 4 different configurations
 - 3/4" BSPT Inlet / 3/4" NPT Outlet (Single Tank Systems Only)
 - 2" NPT Inlet / 2" NPT Outlet
 - 2" NPT Inlet / 2 ½" NPT Outlet
 - 2" NPT Inlet / 3" NPT Outlet
- A protective screen is press fit into the pressure reducer to avoid debris from plugging the hole



Pressure Regulator - CF system

Regulates pressure down from 4350 PSI
And 2901 PSI to below 800

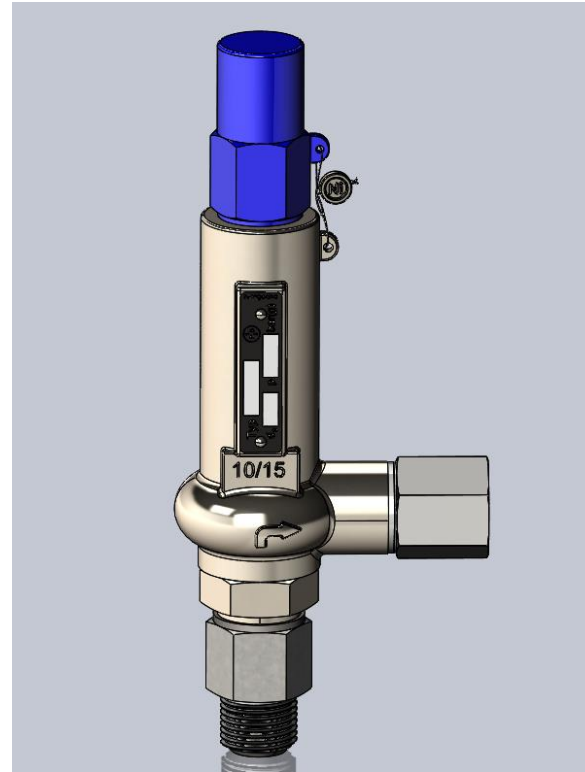


Check Valve - same diameter as the hose and pressure reducer

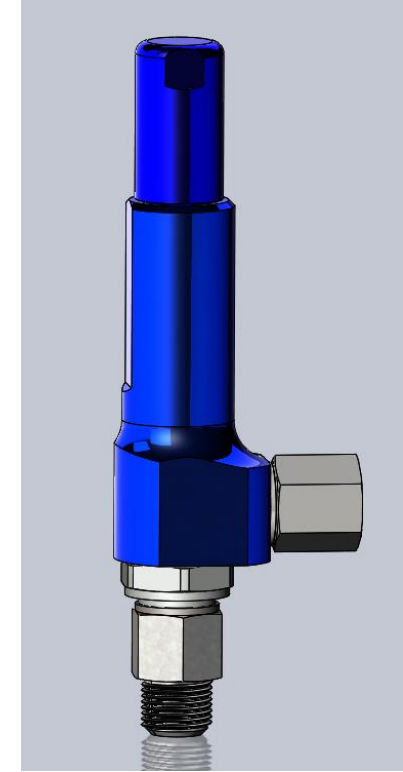


Pressure Safety Valves

- Safety valve ordered will come with G1/2 threads converted to ½" NPT for both inlet and outlet
- Extra G1/2 (BSPP) Sealing Gaskets can be ordered under part number 920804



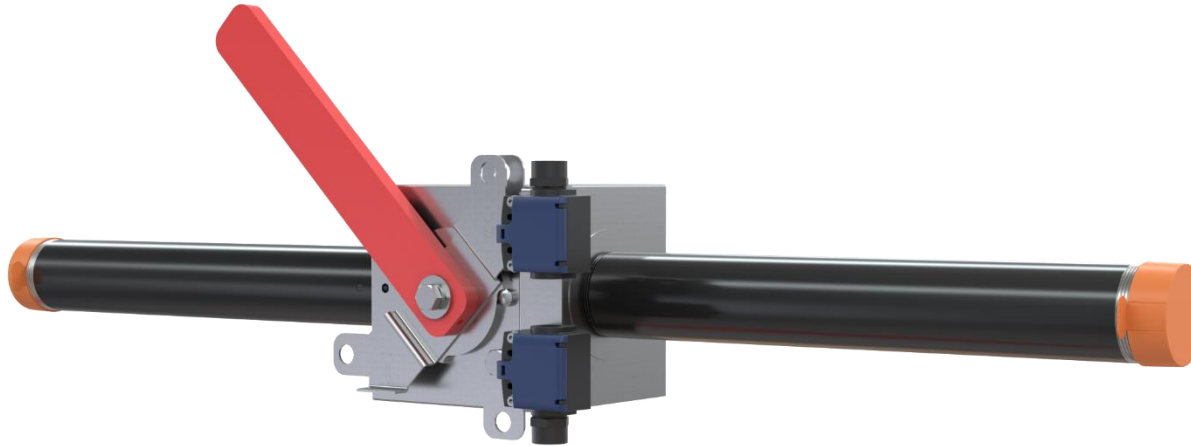
2901 PSI – 885136D



4351 PSI – 886281D

Monitored Blocking Valve Assembly

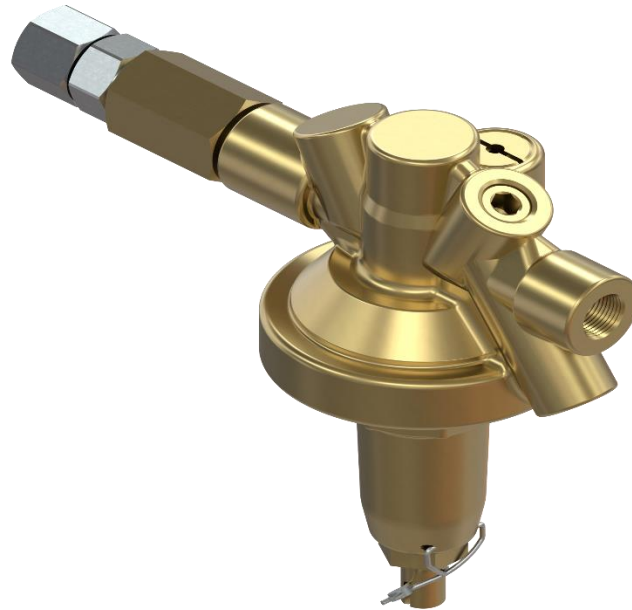
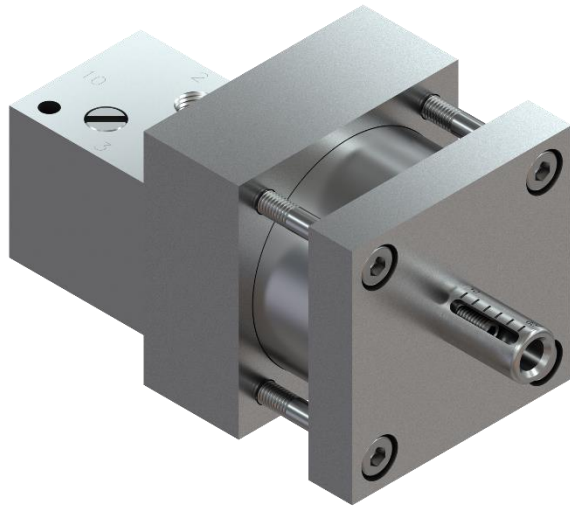
- Pipe nipples installed to convert valve from 2" BSPT to 2" NPT
- Rated for both 2901 and 4351 PSI systems
- Installed before the pressure reduced
- Lock not included



Part Number - 24768

Safety Kit components

Pneumatic time delay
30 seconds



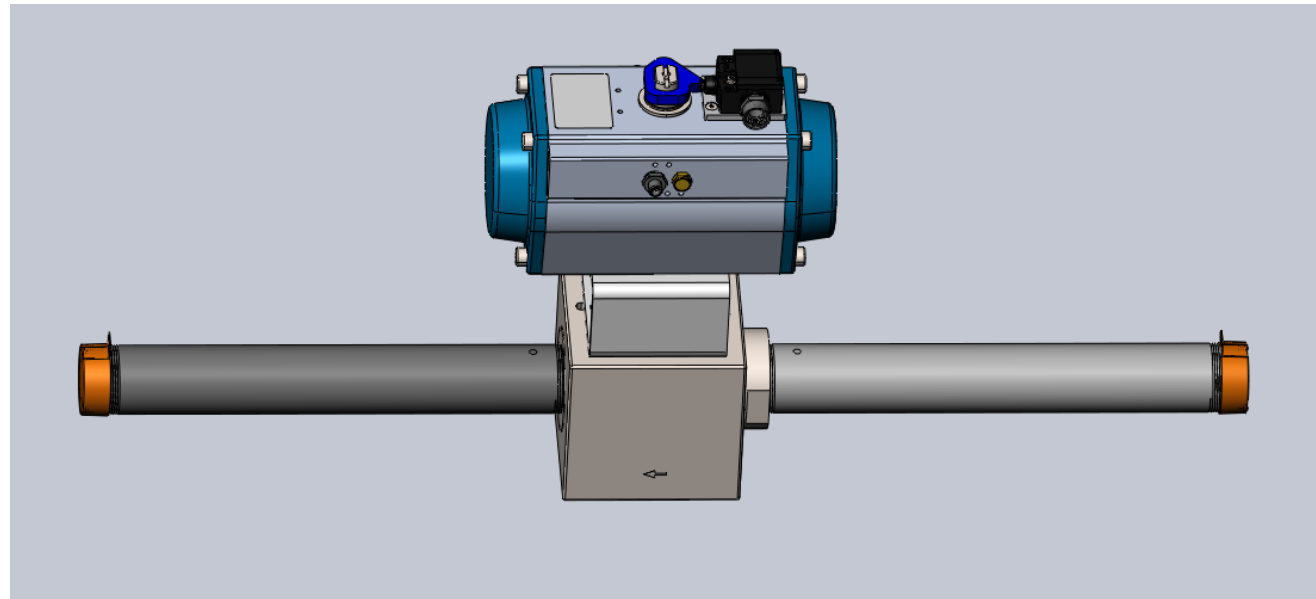
Pressure reducer for pilot cylinder

Makrofon



2" Selector Valve

- Pipe nipples installed to convert valve from 2" BSPT to 2" NPT
- Rated for both 2901 and 4351 PSI systems
- Only available in 2" NPT



Part Number - 24815

VN Nozzles

- Nozzle bodies and orifice plates are sold as a set

Nitrogen (IG-100)	Nozzles VN TFI 360°	Nozzles VN TFI 180°
Nozzle cover surface	8.0 m × 8.0 m (26.3 ft × 26.3 ft)	10.6 m × 10.6 m (34.8 ft × 34.8 ft)
Maximum height	6.25 m (20.51 ft)	6.25 m (20.51 ft)
Minimum height	0.30 m (0.98 ft)	0.30 m (0.98 ft)
Minimum nozzle pressure	26.8 bar (388.7 psi)	27.3 bar (396.0 psi)
Design concentration, class A <small>Acc. to NFPA2001, UL2127, and FM5600</small>	37.98 vol.-%	37.98 vol.-%
Design concentration, class B <small>Acc. to NFPA2001, UL2127, and FM5600</small>	42.38 vol.-%	42.38 vol.-%
Design concentration, class C <small>Acc. to NFPA2001, UL2127, and FM5600</small>	42.73 vol.-%	42.73 vol.-%

Argon (IG-01)	Nozzles VN TFI 360° and VN TFI 180°	
	Nozzle cover surface: 8.0 m × 8.0 m (26.3 ft × 26.3 ft)	Nozzle cover surface: 10.6 m × 10.6 m (34.8 ft × 34.8 ft)
Maximum height	6.25 m (20.51 ft)	6.25 m (20.51 ft)
Minimum height	0.30 m (0.98 ft)	0.30 m (0.98 ft)
Minimum nozzle pressure	29.8 bar (432.2 psi)	31.0 bar (449.6 psi)
Design concentration, class A <small>Acc. to NFPA2001, UL2127, and FM5600</small>	49.31 vol.-%	52.52 vol.-%
Design concentration class B <small>Acc. to NFPA2001, UL2127, and FM5600</small>	57.98 vol.-%	61.75 vol.-%
Design concentration class C <small>Acc. to NFPA2001, UL2127, and FM5600</small>	55.48 vol.-%	59.09 vol.-%



Pilot Cylinder (80L) - 4003404

- 80L Cylinder used for Pilot Cylinder (used for the safety kit)
 - Tank and Valve are the same used on the Agent Cylinders
- Nitrogen used as Pilot Gas with 2901 PSI pressure
- Cylinder contains both Spanish and French labels
- Same pilot cylinder for both Argon and Nitrogen
- Pressure gauge is the same as used on the agent cylinders



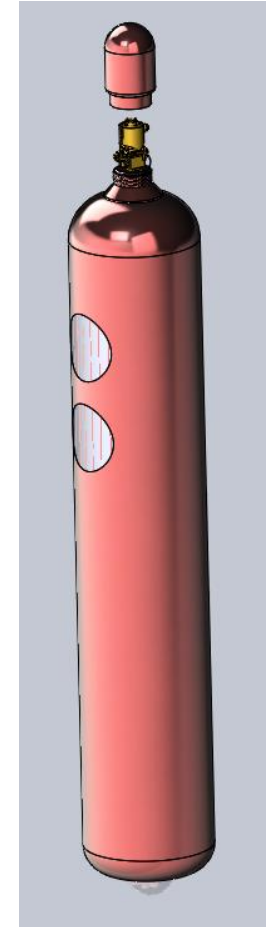
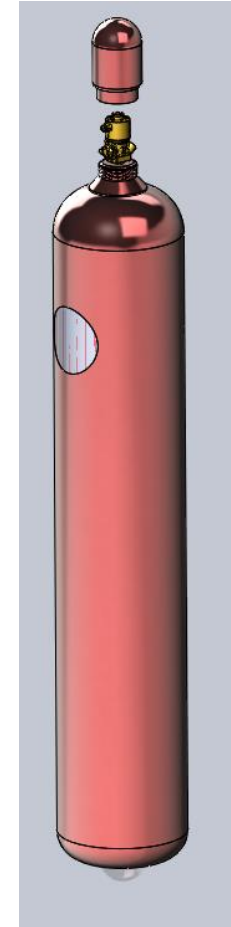
Pilot Line Adapter
125566



Pilot Line Tee
912487



Pilot Line Coupling
125920



Manifolds for PR and CF System

Notes:

- Manifolds will be made by Viking FAB in the USA and check valves will be installed
- 2 and 3 out manifolds will be available for orders with both PR and CF



2" NPT 2 Out Manifold



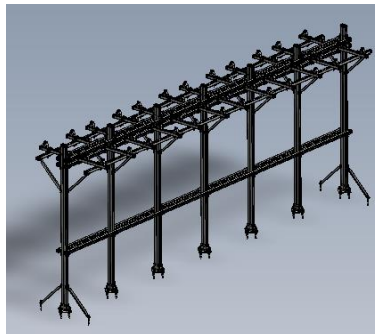
2" NPT 3 Out Manifold

Cylinder Racking - Overview

- Sold in two parts
 - Web assemblies and upright assemblies
- Upright assemblies sold with multiple configurations
 - 1-3 manifolds deep
 - 1-6 web assemblies wide
- All components are orderable as spare parts so that any configurations can be accommodated for
- See Unistrut instruction booklet for further ordering information
 - Unistrut instruction booklet is currently in progress



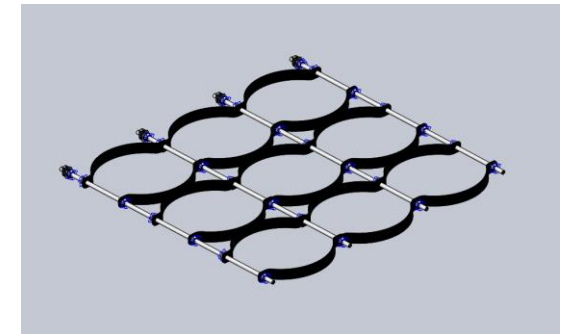
Floor Mount
Upright Assemblies



Back-to-Back Floor
Mount Upright
Assemblies



Wall Mount
Upright Assemblies



Web Assemblies

Floor Mount Racking

- All racks can be customer built
- Parts can be individually ordered

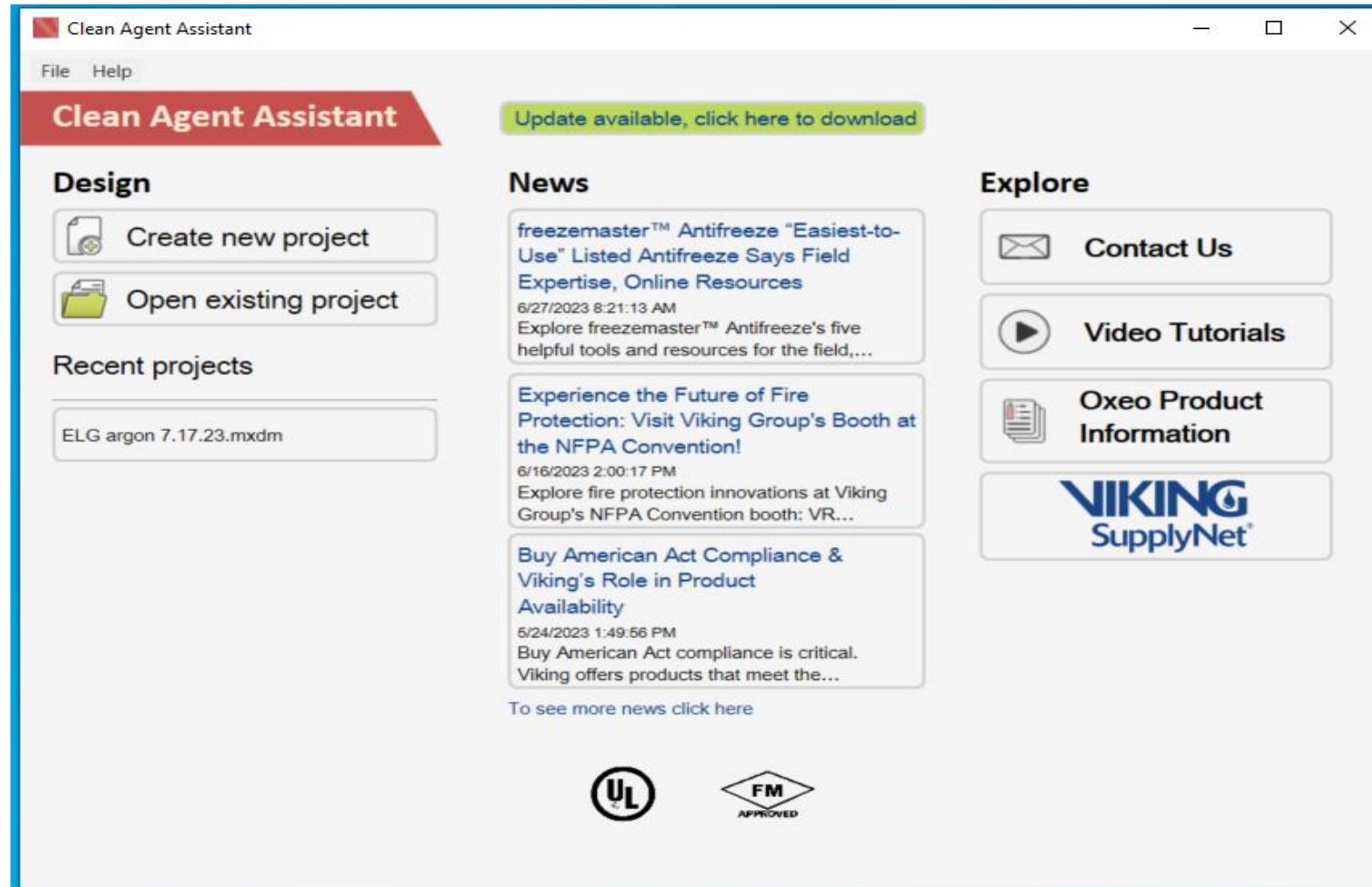


Pressure Relief Vents

Amventco.com



CAA2 Software for Design



General Characteristics of the System: Electrical

- Control Panel (Conventional or Addressable)
- Monitor and Control Modules
- Solenoid Release Interface
- Detection Devices (Spot or Air Sampling)
- Manual Release Station(s)
- Manual Abort Station(s)
- Service/Maintenance Bypass Key-switch
- Notification Devices



For More Information

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