



INTRODUCTION

Competence and innovation driven by consistent market development and customer requirements have shaped the successful development of the SHIELD Brand. The extensive product range of the market leader in the field of fire protection technology contains single, individually integrable system performances. In this way, a customized overall fire protection concept can be planned and realized for every need with optimally synchronized products.

Performance is in international demand, SHIELD is among the highly accredited fire protection companies that meet rigorous British and American standards for all projects from small conventional system to multi-site networks.

Certifications such as UL and FM approvals have earned SHIELD a world-renowned reputation with quality products and powerful solutions.

A strong brand is generally known to be a secure basis for close and lasting customer relationships. In accordance with this, SHIELD uses available potential in order to keep on growing in a dynamic competitive environment. And at the same time, SHIELD stands for innovative and high quality fire protection systems.

We invite you to explore and visit our website www.shieldglobal.com. You can also send us your feedback and inquiry through our user-friendly online forms.

SYSTEM ASSEMBLIES

500 PSI [34.5 BAR]

Designed for use with 3M™ Novec™ 1230 Fire Protection Fluid

DESCRIPTION

Shield Novec 1230 Clean Agent Fire Suppression Systems are highly efficient when combined with a properly designed plumbing network using the Shield version of the VDS Flow Calculation Software.

COMPONENTS

- Cylinders:** cylinders are manufactured in accordance with DOT 4BW500 and TC BWM34* standards. *490L cylinder assemblies are only DOT T4BW500 compliant
- Valve Assembly:** All valves are of the pressure differential design, and will not operate without deliberate actuation. The actuation devices can be removed while under pressure to facilitate functionality testing of the system. It is also equipped with a monitoring Pressure Switch as well as a port to facilitate pneumatic actuation of secondary cylinder assemblies.
- Cylinder Straps:** The cylinder body straps are designed to secure the system assembly during discharge. A single strap is included with all systems up to 103L, while larger systems are equipped with two straps. Systems 490L in size are shipped with two wall mount straps, floor mount straps are available upon request.



TECHNICAL SPECIFICATION

Part Number	Cylinder Size	Maximum Fill	Minimum Fill	Empty Weight
SD000015	38 lb (15 L)	38 lb (17 kg)	10 lb (4.5 kg)	37.6 lb (17.1 kg)
SD000029	75 lb (29 L)	76 lb (34.5 kg)	16 lb (7.5 kg)	54 lb (24.5 kg)
SD000062	160 lb (62 L)	164 lb (74 kg)	33 lb (15 kg)	106.2 lb (48.2 kg)
SD000103	270 lb (103 L)	271 lb (132.5 kg)	55 lb (25 kg)	154.8 lb (70.3 kg)
SD000153	400 lb (153 L)	406 lb (184 kg)	82 lb (37.5 kg)	250 lb (113.4 kg)
SD000227	600 lb (227 L)	601 lb (272.5 kg)	121 lb (55kg)	340 lb (154.3 kg)
SD000368	950 lb (368 L)	964 lb (437 kg)	196 lb (88 kg)	465.5 lb (211.2 kg)
SD000490	1300 lb (490 L)	1297 lb (588 kg)	260 lb (118 kg)	762.5 lb (345.9 kg)

SUPPRESSION AGENT

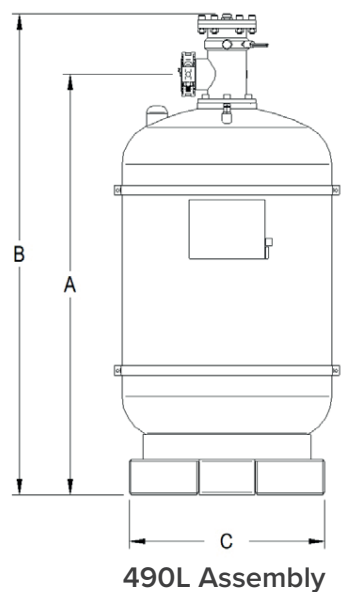
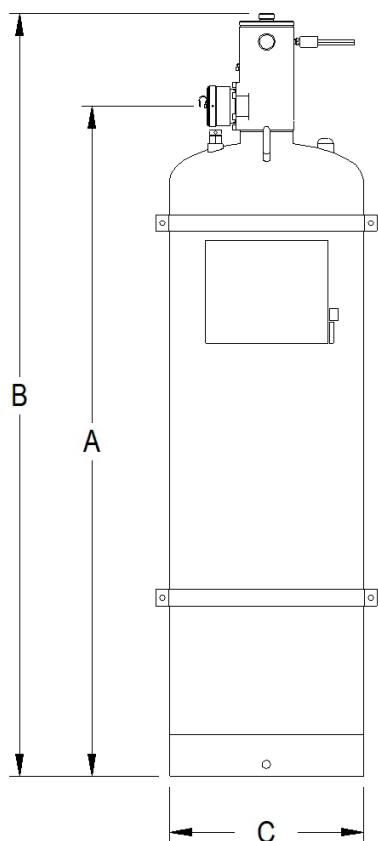
The suppression agent used in Shield Novec 1230 Engineered System Assembly is a Fluoroketone as indicated by the chemical formula $\text{CF}_3\text{CF}_2\text{C}(\text{O})\text{CF}(\text{CF}_3)_2$, more commonly known as 3M™ Novec™ 1230 Fire Protection Fluid. Novec 1230 is a colorless low odor fluid, low in toxicity, electrically non-conductive, leaves no residue, and is an extremely effective fire suppression agent. Novec 1230 is included in NFPA-2001, under the ASHRAE designation of FK-5-1-12, and has been evaluated and approved for use in occupied areas as a Total Flooding agent when used in accordance with this standard.

ENVIRONMENT LIMITATIONS

- Operating Temperature: 32°F [0°C] to 130°F [54.4°C]
- System Operating Pressure: 500 psi at 70°F [34.5 bar at 21.1°C]

TECHNICAL SPECIFICATION

System Assembly Part Number	Cylinder Size (Nominal)	Dimension "A"		Dimension "B"		Dimension "C"	
		Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
SD000015	38 lb (15L)	16.7	426	27.7	705	10.0	254
SD000029	75 lb (29L)	28.7	730	33.9	861	10.0	254
SD000062	160 lb (62L)	37.7	958	43.6	1107	12.7	324
SD000103	270 lb (103L)	38.7	983	44.6	1133	16.0	406
SD000153	400 lb (153L)	55.3	1405	63.6	1615	16.0	406
SD000227	600 lb (227L)	54.0	1372	62.6	1590	20.0	508
SD000368	950 lb (368L)	58.5	1486	66.1	1679	24.0	610
SD000490	1300 lb (490L)	60	1582	68.9	1750	30.0	762

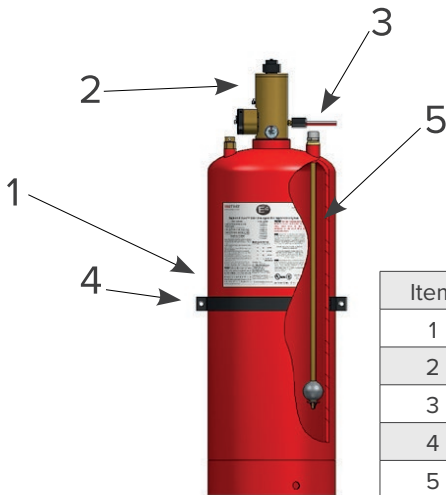
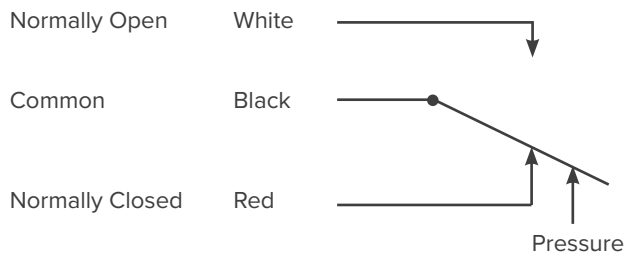


ENGINEERING CONSIDERATIONS

Proper System size and agent fill weight shall be determined using only genuine Shield Flow Calculation Software (P/N: SD901001).

Floor loading varies as a function of the quantity of extinguishing agent in each Cylinder Assembly and the values shown in the General Specifications Table. For further guidance on this topic contact Shield.

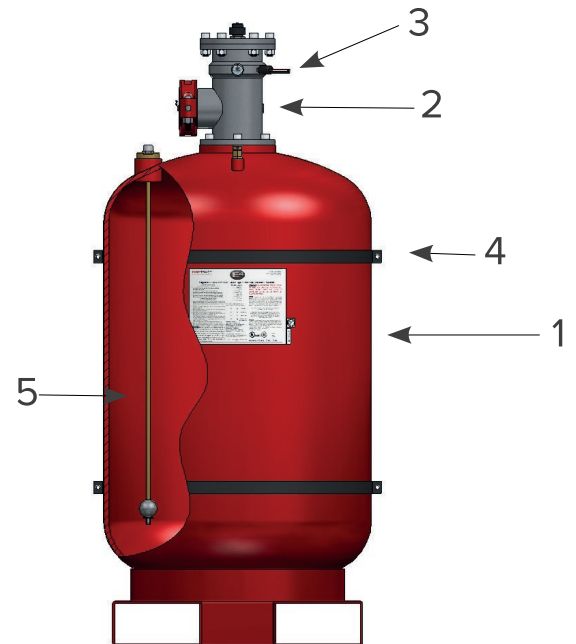
SHOWN AT ATMOSPHERE



Item	Description
1	Cylinder
2	Valve
3	Pressure Supervising Switch
4	Cylinder Strap
5	Liquid Level Indicator Optional

PRESSURE SUPERVISORY SWITCH

Electrical Rating	240 VAC - 3 A, 24 VDS - 3 A
Switch	SPDT snap action
Contacts	NO, NC, and Common
Set Points	486 ± 14 psi [33.5 ± 1.0 bar] Actuation
	414 ± 14 psi [28.5 ± 1.0 bar] Release Pressure
Operational Temperatures	-5 °F to +175 °F [-21 °C to +65 °C]
	-40 °F to +260 °F [-40°C to +135°C]



LIQUID LEVEL INDICATORS: (Optional) System

Assemblies above 62L in volume can be outfitted with a Liquid Level indicator. These can be used to provide an accurate estimate of the agent weight contained within the assembly without weighing the system assembly. These components are optional and must be requested upon ordering.

LISTINGS AND APPROVALS:

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.

PART NUMBER	DESCRIPTION
SD720150	Liquid Level Indicator for 160 lb. [62 L] & 270 lb. [103 L]
SD720375	Liquid Level Indicator for 400 lb. [153 L] through 950lb. (368L)
SD721200	Liquid Level Indicator for 1300 lb. [490 L]

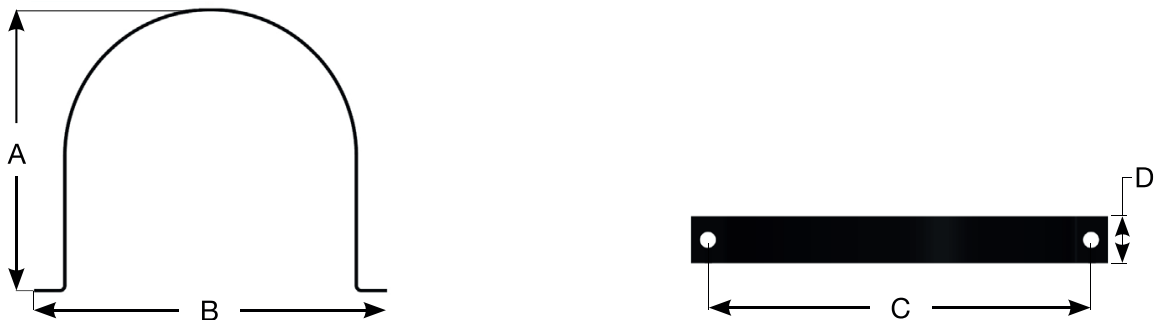


CYLINDER STRAPS DIMENSIONS

Cylinder Size	Quantity per Cylinder	Anchor Point	Dimension "A"		Dimension "B"		Dimension "C"		Dimension "D"	
			Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
38 lb (15 L)	1	Wall	9.8	248	12.3	311	11.3	286	1.4	35
75 lb (29 L)	1	Wall	9.8	248	12.3	311	11.3	286	1.4	35
160 lb (62 L)	1	Wall	12.5	318	15.0	381	14.0	356	1.4	35
270 lb (103 L)	1	Wall	15.8	400	18.3	464	17.3	438	1.4	35
400 lb (153 L)	2	Wall	15.8	400	18.3	464	17.3	438	1.4	35
600 lb (227 L)	2	Wall	19.8	502	22.3	565	21.3	540	1.4	35
950 lb (368 L)	2	Wall	23.8	603	26.3	667	25.3	643	1.4	35
1,300 lb (490 L)	2	Wall	29.0	737	32.3	819	31.3	794	1.4	35
1,300 lb (490 L)	2	Floor	4.5	114	10.5	267	9.5	241	1.4	

*Wall mount straps included in 1300LB assembly. If floor mount is desired, floor mounts straps (SD401201) must be ordered separately.

CYLINDER WALL STRAP



CYLINDER FLOOR STRAP



Service Note: Cylinders Assemblies shall be designed, filled, pressurized and maintained by trained personnel in accordance with Shield Design, Installation, Operation and Maintenance Manuals (SD000003).

MONITORED SYSTEM ACTUATORS

ELECTRIC LINEAR ACTUATOR

The Electric Linear Actuator (SD500125) is a removable device with an internal monitoring switch. The internal monitoring switch complies with NFPA requirements for actuation apparatus monitoring.

The Electric Linear Actuator mounts to the threads on the actuation adapter, located on the top of the cylinder valve. It is permanently installed while the system is in service, but the threaded attachment allows for ease of removal for inspection and maintenance purposes.

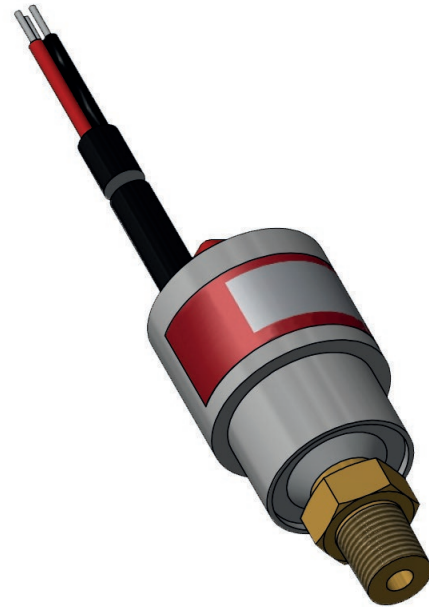
The Electric Linear Actuator houses a pin magnetically held in place while the systems remain in an idle state. Once powered, the pin moves downward, depressing the actuation adapter valve core and releasing pressure from the cylinder valve.

Cylinder valves equipped with the Electric Linear Actuator must be actuated from a listed control panel for releasing device service that is compatible with Shield equipment.

Prior to the installation of the Electric Linear Actuator to the actuation circuit, confirm that the electrical ratings of the solenoid are compatible with the electrical ratings of the actuation circuit.

NOTE: The actuation circuit is rated at 24 VDC, 0.5 Amps. The maximum supervisory current should not exceed 30 mA.

Wiring of the Electric Linear Actuator to the actuation circuit shall comply with wiring methods in accordance with NFPA requirements and the installation instructions provided with the listed control panel for releasing device service. A diagram for proper wiring has been provided below. For more information, refer to the wiring methods found in NFPA 72, Chapter 17.

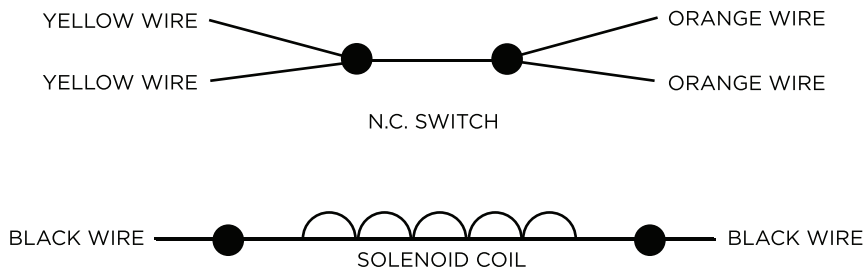


MONITORED SYSTEM ACTUATORS

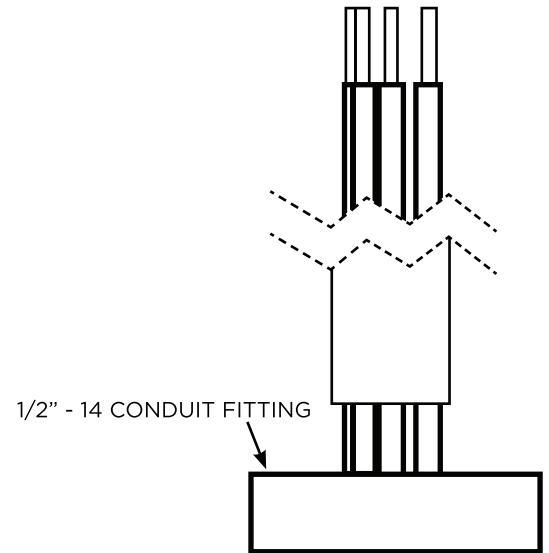
The Electric Linear Actuator shall be installed with listed conduit connectors.

By utilizing flexible metal conduit connectors or liquid-tight conduit connectors, the solenoid coil wires and dual leads for the internal monitoring switch are mechanically protected from damage.

WIRE DIAGRAM



ELECTRIC LINEAR ACTUATOR WIRING DIAGRAM



MANUAL OVERRIDE

The Manual Override (SD500126) features a push button that moves the internal pin downward and manually actuates the Electric Linear Actuator.

The Manual Override mounts to the threads located on the top of the Electric Linear Actuator. The threaded attachment allows for ease of removal for inspection and maintenance purposes.

LISTINGS AND APPROVALS

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.



Service Note: Cylinders Assemblies shall be designed, filled, pressurized and maintained by trained personnel in accordance with Shield Design, Installation, Operation and Maintenance Manuals (SD000003).



PRESSURE OPERATED SWITCH

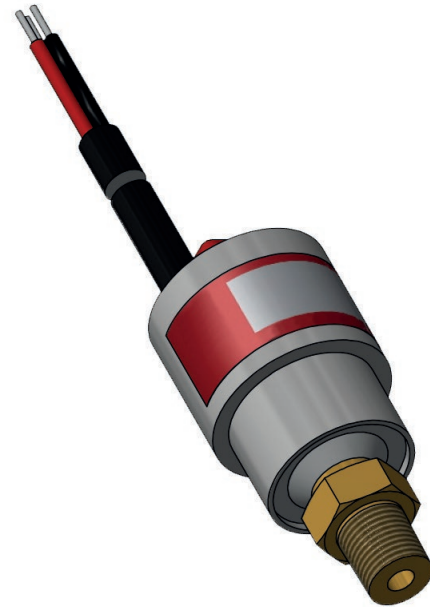
DESCRIPTION

The Pressure Operated Switch (SD503013) is used as a discharge confirmation. If the pressure operated switch detects pressure above the activation set point, the switch contacts will close, providing a signal to the control panel indicating that the system assembly has been activated.

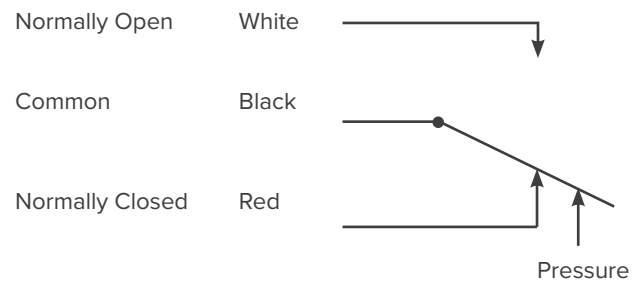
Electrical Rating	240 VAC- 3 A, 24 VDC - 3 A,
Switch	SPDT snap action
Contacts	NO, NC and Common
Set Points	Activation: 20 + 5 psig [1.4 + 0.3 bar]
	Manual Reset: 10 + 6 psig [0.7 + 0.4 bar]
Operation Temperatures	-5 °F to +175 °F [-29 °C to +66 °C]
	-40 °F to +260 °F [-54 °C to +127 °C]

LISTINGS AND APPROVALS:

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.



SHOWN AT ATMOSPHERE



PNEUMATIC COMPONENTS FOR MULTIPLE CYLINDER SYSTEM DESIGNS

PRODUCT OVERVIEW

Shield offers pneumatic elbow, tees and flex hoses to insure that proper connections are made between master and slave cylinders. The SD700021 elbow attaches to the “M” port of the master cylinder valve. The SD700033 elbow is used on the slave cylinder pneumatic actuator, located at the end of a cylinder in a bank. The pneumatic tee, SD700032, is used to attach multiple pneumatic activators to one master cylinder. Refer to the Shield Design, Installation, Operation & Maintenance Manual (SD000003) for more information on the proper design of master and slave cylinder banks.

PNEUMATIC ACTUATOR

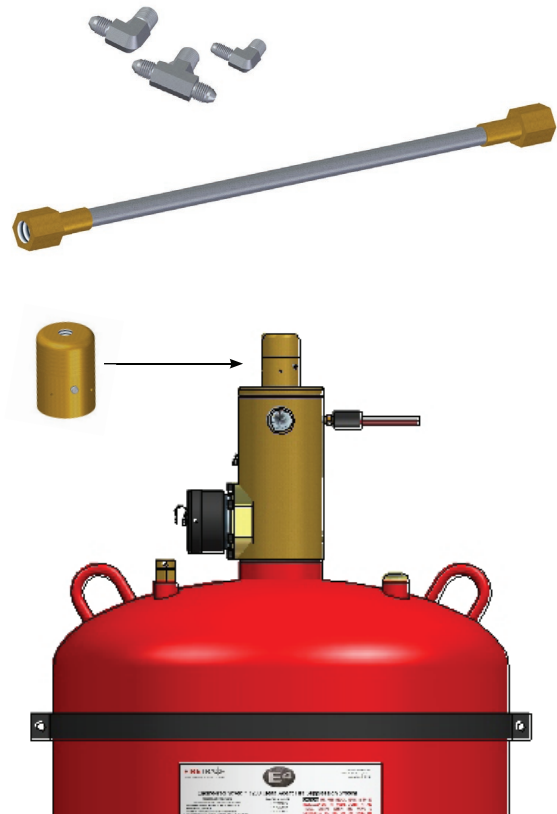
A pneumatic actuator is used in a multiple cylinder configuration. It features a pneumatically driven piston that slides downward, depressing the actuation adapter valve core allowing the cylinder valve to activate.

Multiple cylinders equipped with a Pneumatic Actuator can be activated from one master cylinder using the ex hoses.

The Pneumatic Actuator mounts on the top of the cylinder valve.

LISTINGS AND APPROVALS:

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.



Part Number	Description
SD700021	Pneumatic Elbow (Used at Valve)
SD700033	Pneumatic Elbow (Used at Actuator)
SD700032	Pneumatic Tee
SD700024	Flex Hose-Actuation (24" Length)
SD700025	Flex Hose-Actuation (36" Length)
SD700004	Flex Hose-Actuation (48" Length)
SD700041	Pneumatic Actuator

DISCHARGE NOZZLES

500 PSI [34.5 BAR]

Designed for use with 3M™ Novec™ 1230 Fire Protection Fluid

DESCRIPTION

The function of the Discharge Nozzle is to distribute the Clean Agent in a uniform, pre-determined pattern and concentration. The nozzles are designed to complete the discharge in 10 seconds, or less, when installed within the design limitations of the Shield Design, Installation, Operation, & Maintenance Manual (SD000003).

Discharge Nozzles are available in sizes ranging from ½" to 2½". Each nozzle is available in two configurations: 180 and 360 degree distribution patterns, and is made of aluminum, brass, or stainless steel with female pipe threads. Orifice sizes are determined by hydraulic flow calculations. All nozzles are rated for a maximum hazard height of 14 feet. If hazards exceed 14 feet in height, a second tier of nozzles must be used.



DISCHARGE NOZZLE SELECTION SIDE-WALL 180°

Typically installed adjacent to the center of the wall in the enclosure. Its discharge path will be across the enclosure.

DISCHARGE NOZZLE SELECTION CENTRAL 360°

Typically installed at the center of the ceiling in an enclosure. Its discharge path will be across the enclosure.

*ALUMINUM NOZZLES

Part Number	Description	Part Number	Description
SD661100	½" [13 mm] (360°) Central	SD661200	½" [13 mm] (180°) Sidewall
SD662100	1" [25 mm] (360°) Central	SD662200	1" [25 mm] (180°) Sidewall
SD663100	1½" [38 mm] (360°) Central	SD663200	1½" [38 mm] (180°) Sidewall
SD664100	2" [50 mm] (360°) Central	SD664200	2" [50 mm] (180°) Sidewall
SD665100	2½" [63.5 mm] (360°) Central	SD665200	2½" [63.5 mm] (180°) Sidewall

*Aluminum nozzles are not FM approved

BRASS NOZZLE

Part Number	Description	Part Number	Description
SD661300	½" [13 mm] (360°) Central	SD661400	½" [13 mm] (180°) Sidewall
SD662300	1" [25 mm] (360°) Central	SD662400	1" [25 mm] (180°) Sidewall
SD663300	1½" [38 mm] (360°) Central	SD663400	1½" [38 mm] (180°) Sidewall
SD664300	2" [50 mm] (360°) Central	SD664400	2" [50 mm] (180°) Sidewall
SD665300	2½" [63.5 mm] (360°) Central	SD665400	2½" [63.5 mm] (180°) Sidewall

STAINLESS STEEL NOZZLES

Part Number	Description	Part Number	Description
SD661500	½" [13 mm] (360°) Central	SD661600	½" [13 mm] (180°) Sidewall
SD662500	1" [25 mm] (360°) Central	SD662600	1" [25 mm] (180°) Sidewall
SD663500	1½" [38 mm] (360°) Central	SD663600	1½" [38 mm] (180°) Sidewall
SD664500	2" [50 mm] (360°) Central	SD664600	2" [50 mm] (180°) Sidewall
SD665500	2½" [63.5 mm] (360°) Central	SD665600	2½" [63.5 mm] (180°) Sidewall

LISTINGS AND APPROVALS:

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.



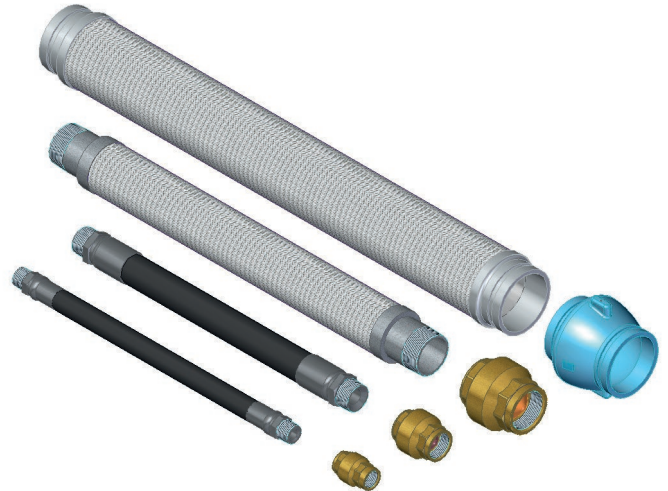
DISCHARGE COMPONENTS

Designed for use with 3M™ Novec™ 1230 Fire Protection Fluid

DESCRIPTION

Flexible discharge hoses are used to connect the cylinders to discharge piping network in either a single or the multiple cylinder installation.

A Check Valve is required for a manifold system to enable two or more agent storage cylinders to share one common discharge piping network. The Check Valve is spring assisted to ensure the valve closes to prevent flow reversal, and may be installed in the vertical or horizontal position.



DISCHARGE HOSES

Part Number	Size	Length	Material	End Connection
SD701005	1" [25 mm]	24" [610 mm]	Rubber	1" MNPT
SD701505 1	1½" [40 mm]	24" [610 mm]	Rubber	1½" MNPT
SD702504	2½" [65 mm]	32" [813 mm]	S.S. Braided	2½" MNPT
SD704005	4" [100 mm]	40" [1016 mm]	S.S. Braided	4" Grooved

CHECK VALVES

Part Number	Body Number	Fitting Style
SD701001	Brass	1" FNPT
SD701501	Brass	1½" FNPT
SD702501	Brass	2½" FNPT
SD704003	Ductile Iron	4" Grooved

LISTINGS AND APPROVALS:

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.



SYSTEM ACCESSORIES

Designed for use with 3M™ Novec™ 1230 Fire Protection Fluid

DESCRIPTION

Shield offers three different hazard signs which are placed near the doors of a hazard to inform the occupants of the installed Shield Clean Agent Fire Suppression System. The signs are red with white lettering and measure 7.5" W x 3.5" H x 0.25" T.

The Shield Main/Reserve Switch allows the user to quickly switch the electrical panel (connection) between a main and reserve system in the event of system maintenance or a discharge. The switch allows for easy and worry free servicing and shorter downtimes in the event of a discharge.



DISCHARGE HOSES

Part Number	Description
SD 710001	Hazard Sign: "Caution: When Alarm Sounds Vacate Room, Fire Suppression System Being Discharged"
SD 710002	Hazard Sign: "Caution: Do Not Enter Room When Alarm Sounds. Fire Suppression System Being Discharged"
SD 710003	Hazard Sign: "Caution: Operation of Manual Station Will Result in Immediate Discharge of Fire Suppression System"
SD 502001	Main/Reserve Switch

LISTINGS AND APPROVALS:

- Complies with UL requirements when used with UL, & ULC listed cylinder assemblies.
- Complies with FM requirements when used with FM listed system assemblies.



CAUTION

WHEN ALARM SOUNDS
VACATE ROOM, FIRE SUPPRESSION
SYSTEM BEING DISCHARGED

CAUTION

DO NOT ENTER ROOM WHEN
ALARM SOUNDS. FIRE SUPPRESSION
SYSTEM BEING DISCHARGED

CAUTION

OPERATION OF MANUAL STATION WILL
RESULT IN IMMEDIATE DISCHARGE
OF FIRE SUPPRESSION SYSTEM

VDS FLOW CALCULATION SOFTWARE

Designed for use with 3M™ Novec™ 1230 Fire Protection Fluid

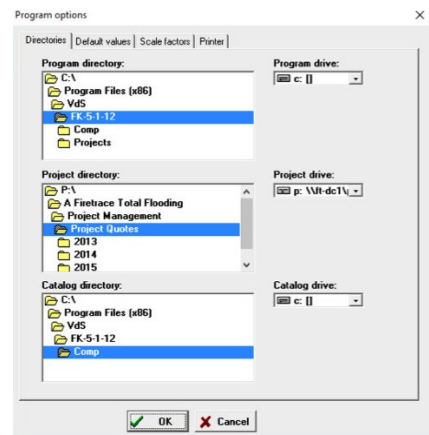
DESCRIPTION

Shield Novec™ systems use a customized version of VDS's FK-5-1-12 Flow Calculation Software. This software has been designed to accurately represent Shield Systems and Components during the flow calculation. Licenses and software can be purchased directly through Shield to enable distributors to perform flow calculations.

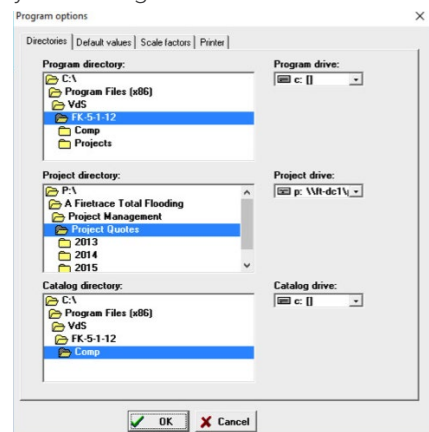
VDS SOFTWARE INSTALLATION:

Installing the VDS Software is a multiple step procedure that includes copying the program files to your desktop, installing the VDS and Codemeter programs, and then establishing your default settings. To accomplish these tasks you must:

1. Copy the **VDS.zip** File onto the installation computer's desktop.
2. Right Click on the **VDS.zip** file and choose "Extract All" from the drop down menu.
3. You will now see a regular folder titled "**VDS**", open it.
4. Contained within this file you will now see an additional folder titled "**FK-5-1-12Normal**", open this folder.
5. You should now see will see a file entitled "**Setup_FK-5-1-12_7.5.exe**", click on this file and follow the instructions on the screen.
6. Now that the VDS program is installed you will need to upload the Shield Licensing information to the program files. To do this you will need to:
 - A.) Copy the **lst_.chk** file
 - Go to the VDS folder on your desktop and open it
 - Click on the **FK-5-1-12 Normal** folder and open it
 - Highlight the **lst_.chk** file and copy it
 7. Next, to copy component files into your program directory you will need to:
 - A.) Open the **VDS** folder on your desktop
 - B.) Copy the following Shield Component files:
 - **FT Components 1.0.0.arm**
 - **FT Nozzles - 1.0.2.nox**
 - **FT Pipe - Schedule 40 - 1.0.0.rkl**
 - C.) Paste them into the program files in the catalogue folder by:
 - Go to your C drive
 - Click on **Program Files (x86)**
 - Click on **VDS**
 - Click on **FK-5-1-12**
 - Open the **Comp** folder, and paste the three files here
8. Once these steps have been performed it is now time to install the **Codemeter** runtime software. To install this you will need to:
 - A.) Open the VDS folder on your desktop
 - B.) Find the **Codemeter** folder and open it
 - C.) Select the file named "**CodeMeterRuntime - ime_5.0.exe**"
 - D.) Follow the prompts on the screen.
9. Now to verify that everything set up properly plug in the silver VdS USB dongle and open the program.
10. Once the program is open Select the "Files" Option at the top of the screen
11. From the drop down menu choose the "Options" selection.
12. A window will open up with several tabs, choose the "Directories" tab.
13. At the bottom of this window you will see a dialogue box, verify that the settings are all as shown in the illustration below:



14. Now click on the "Default Values" tab and ensure your settings are as follows:



15. Once this final step is complete you are now ready to begin operating the program.