



AVENGER

FIRE SUPPRESSION SYSTEMS

WELCOME TO AVENGER SYSTEMS

Avenger Systems is an independently owned fire detection and suppression company based in the United States and operating in most regions around the world.

Avenger Systems is committed to providing you with cost-effective, high-quality solutions. Our vast industry experience, state-of-the-art technology, and dedication to customer service can't be beat. You can rely on Avenger Systems for all of your fire protection needs.



OUR VISION

Building on Our Past Success

Avenger Systems was founded with the passion, vision, and determination to provide our customers with complete, cost-effective, high-quality fire detection and suppression system solutions. Our mission is a simple one – provide you with the best products, service, and support that consistently exceeds your expectations.



OUR CULTURE

Our Foundation is Our People

Avenger Systems corporate culture fosters creativity, hard work, collaboration and success.



OUR TECHNOLOGY

Searching for the Lowest Percentage of Risk

Building on our past success in the fire and suppression markets we adopted state of the art technologies to enable our customers to compete in all type of projects from small to the very large with easy to learn, configure and use software.

- The Most Reliable & Experienced Solutions for your Next Project -



HFC-227ea Clean Agent and Storage Tanks

DESCRIPTION

Avenger 227™ is an effective fire extinguishing agent that can be used on many types of fires ranging from sensitive electrical equipment to industrial applications using flammable liquids. Avenger 227™ is ideal for applications where clean-up of other medium presents a problem, where an electrically non-conductive medium is needed and where people compatibility is an overriding factor. When environmental impact becomes a consideration, Avenger 227™ is particularly useful. It has Zero ozone-depleting potential, low global warming potential, and short atmospheric lifetime. These characteristics make it suitable not only for new installations using an Avenger total-flooding system, but also for Halon 1301 replacement applications. Avenger 227™ is an odorless, colorless, liquefied compressed gas. It is stored as a liquid and dispensed into the hazard as a colorless, electrically non-conductive vapor that is clear and does not obscure physical vision. It leaves no residue and has acceptable toxicity for use in occupied spaces at design concentration. Avenger 227™ extinguishes a fire by a combination of chemical and physical mechanisms. Avenger 227™ does not displace and therefore is safe for use in occupied spaces without fear of oxygen deprivation.



1540 LB (700 KG) Clean Agent Storage Tank

1540 lb. (700 kg) Avenger HFC-227ea Storage Tanks are offered by Avenger Systems to make it easy for storage and transferring of large quantities of Avenger 227™ agent from one location to another. The storage tank is specially designed for maximum transfer of agent, with transfer valves located at the bottom of the tank. Avenger Systems can also provide Avenger 227™ in an ISO Bulk Tank.

A 20 foot shipping container can carry 21 nos. of the 1540 lb / 700 kg Storage Tank, maximizing ocean freight cost.





Avenger HFC-227ea™ PHYSICAL AND CHEMICAL PROPERTIES	
Chemical Name	Heptafluoropropane (CF ₃ CHFCF ₃)
General	Colorless, Odorless, Liquified gas
Molecular Weight	170.03
Boiling Point	-16.4°C / 2.48°F
Freezing Point	-131°C / -203.8°F
Vapor Pressure @ 21°C/70°F	58.8 psia
Critical Temperature	101.7°C / 215.1°F
Critical Pressure (psia)	422.3 psia
Vapor Density (Air=1)	6.04
Water Reactive	No
Specific Gravity (H ₂ O=1)	1.46
Percent Volatile (by volume)	n/a
Evaporation Rate (Butyl acetate=1)	n/a
Viscosity @ 20°C/68°F	n/a
Water Solubility (V/V @ 20°C/68°F)	260mg/L
Ozone Depletion Potential	0
Estimated Atmospheric Lifetime (years)	31-42

Avenger 227™ fully complies with the standards of ASTM D6064 and NFPA 2001, and has achieved a minimum purity of 99.95 percent and less than 10 ppm of moisture. It has less than 1 ppm acidity as HF. The non-volatile residue is less than 0.05g/100ml.

STORAGE TANK SPECIFICATIONS	
Height (mm)	1912 (75 in)
External Diameter (mm)	762 (30 in)
Water Capacity (L)	600 (22 cu. ft)
Weight (kg)	311 (685 lb)
Design Temperature (°C)	100 (212°F)
Operating Temperature Range (°C)	-19 to 73 (-2.2 to 163°F)
Design Pressure (Bar)	16.5 (240 psi)

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Pre-Engineered Clean Agent Cylinders

DESCRIPTION

Each of the basic sizes can be filled with one pound increments to meet the exact amount of Avenger HFC-227ea clean agent required, within their fill ranges. There are two types of cylinders that are used in the Pre-Engineered Clean Agent System. The 3 lb. through the 18 lb. cylinders are manufactured, tested, and stamped in accordance with UL 299. The 35 lb. through the 520 lb. are manufactured, tested, and stamped in accordance with DOT 4BW500 or DOT 4BA500.

Model:	System Operating Pressure:	Temperature Range:
3 lb. through the 18 lb.	240 psi (16.9 kg _f / cm ²) at 70°F (21.2°C)	32°F (0°C) to 130°F (54.4°C)
35 lb. through the 520 lb.	360 psi (25.3 kg _f / cm ²) at 70°F (21.2°C)	32°F (0°C) to 130°F (54.4°C)

All cylinders are equipped with a brass, high-flow, pressure differential-type valve. The 3 lb. through the 18 lb. cylinders have a 1/2" female NPT outlet. The 35 lb. and 70 lb. cylinders have a 1" female NPT outlet. The 140 lb. and 240 lb. cylinders have a 1-1/2" female NPT outlet. The 360 lb. and 520 lb. cylinders have a 2-1/2" male NPT outlet. The valve is pressure operated and utilizes the pressure from the cylinder to activate the valve, allowing the clean agent to discharge. The cylinders have the following electric solenoids available as an option:

- 12 VDC solenoid
- 24 VDC solenoid
- 120 VAC solenoid with local manual control





Model	Features	Cylinder Size	Max Fill at 70 lb/ft ³	Max Fill at 30 lb/ft ³	Valve Size	Cylinder Diameter	Height to Discharge Outlet	Total Height with Electric Control	Total Height with LMC Head
381A0003B*	Basic Unit	3 LB	3 LB	1 LB	1/2"	3.00	14.805	18.86	N/A
381A0003BL*	Local Manual					3.00		N/A	18.86
381A0006B*	Basic Unit	6 LB	6 LB	3 LB	1/2"	4.170	16.535	20.59	N/A
381A0006BL*	Local Manual					4.170		N/A	20.59
381A00012B*	Basic Unit	12 LB	12 LB	6 LB	1/2"	6.00	15.50	19.50	N/A
381A00012BL*	Local Manual					6.00		N/A	19.50
381A00018B*	Basic Unit	18 LB	18 LB	12 LB	1/2"	6.00	21.00	25.00	N/A
381A00018BL*	Local Manual					6.00		N/A	25.00
381A00035B*	Basic Unit	35 LB	35 LB	16 LB	1"	10.00	16.29	19.18	N/A
381A00035BL*	Local Manual					10.00		N/A	19.18
381A00070B*	Basic Unit	70 LB	70 LB	31 LB	1"	10.00	28.17	31.06	N/A
381A00070BL*	Local Manual					10.00		N/A	31.06
381A00140B**	Basic Unit	140 LB	140 LB	66 LB	1-1/2"	12.75	38.03	43.32	N/A
381A00140BL*	Local Manual					12.75		N/A	43.32
381A00240B**	Basic Unit	240 LB	240 LB	109 LB	1-1/2"	16.00	39.33	44.62	N/A
381A00240BL*	Local Manual					16.00		N/A	44.62
381A00360B**	Basic Unit	360 LB	360 LB	163 LB	2-1/2"	16.00	55.32	62.68	N/A
381A00360BL*	Local Manual					16.00		N/A	62.68
381A00520B**	Basic Unit	520 LB	520 LB	241 LB	2-1/2"	20.00	55.95	61.31	N/A
381A00520BL*	Local Manual					20.00		N/A	61.31

* use with electric solenoid

** use with electric solenoid or piston actuator

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Clean Agent Cylinders

DESCRIPTION

The Clean Agent cylinders are manufactured, tested, and stamped in accordance with DOT 4BW500 or DOT 4BA500. All cylinders are equipped with a back pressure-type valve. A piston in the valve bore is equipped with a rubber seal that keeps the Avenger HFC-227ea™ Clean Agent under pressure within the cylinder. A small hole in the piston allows cylinder pressure to be equalized on both sides of the piston. Since the area at the top of the piston is greater than the area at the bottom of the piston, the net force seals the piston against the valve discharge outlet. When the cylinder pressure on the top of the piston is relieved by means of automatic or manual activation, there is only cylinder pressure acting against the piston seal, and the piston slides to its full open position, allowing cylinder discharge through the distribution piping network.

Attached to the bottom of the cylinder valve is a siphon tube, which is straight and runs from the top of the cylinder to the bottom of the cylinder. The cylinder must be installed in an upright position (valve on top).

There is a 1/8" NPT outlet stamped "P" on the cylinder valve. This outlet transmits cylinder pressure to an optional low pressure supervisory switch, which when used, monitors in the internal pressure of the cylinder. Another 1/8" NPT outlet stamped "M" on the cylinder valve is available for use as a pressure source to drive the piston actuators on a multiple-cylinder system, or to actuate a pressure-operated switch in the event of the cylinder discharge.

Cylinder Dimensions

Part Number	A	B	C
351A0020B	10"	13.507"	18.235"
351A0035B	10"	17.607"	22.336"
351A0070B	10"	28.04"	32.769"
351A00100B-2	12.75"	27.127"	32.706"
351A0150B	12.75"	37.127"	42.706"
351A0250B	16"	39.883"	45.462"
351A0375B	16"	57.16"	65.76"
351A0560B	20"	55.516"	64.116"





Cylinder Models

Avenger 227™ Clean Agent cylinders are available in the following capacities:

Part Number	Cylinder Size	Max Fill at 70 lb/ft ³	Min Fill at 30 lb/ft ³	Valve Size
351A0020B	20 LB	20 LB	9 LB	1" Valve
351A0035B	35 LB	35 LB	16 LB	1" Valve
351A0070B	70 LB	71 LB	31 LB	1" Valve
351A00100B-2	100 LB	101 LB	44 LB	1" Valve
351A0150B	150 LB	152 LB	66 LB	1-1/2" Valve
351A0250B	250 LB	253 LB	109 LB	1-1/2" Valve
351A0375B	375 LB	379 LB	163 LB	2-1/2" Valve
351A0560B	560 LB	561 LB	241 LB	2-1/2" Valve

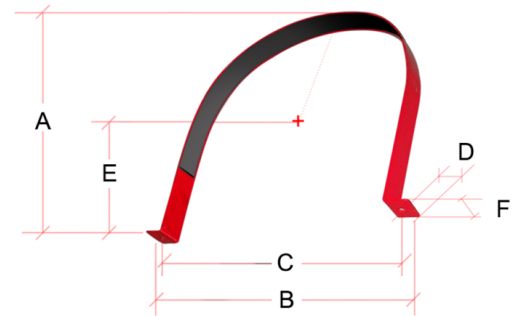
Note: Each of the basic sizes can be filled with one pound increments to meet the exact amount of Avenger HFC-227ea Clean Agent required, with the listed fill ranges.

Temperature Range: 32°F (0°C) to 130°F (54.4°C)

System Operating Pressure: 360 psi at 70°F (25.3 kg_f / cm² at 21.1°C)

Cylinder Bracket

The cylinder bracket is manufactured from galvanized steel band formed to the radius of the cylinder with flanges for bolting to the continuous slot metal framing channel of 12-gauge steel with corrosion-resistant paint or galvanized. The channel must be supplied by the installer. The cylinder bracket must be secured to a surface so that the bracket will withstand a load of up to 5 times the cylinder weight. This precaution is to ensure that the bracket will safely support the weight of the cylinder and the reaction force of the Avenger 227™ Clean Agent when it is discharged.



P/N: 383F005

Part Number	Cylinder O.D.	A	B	C	D	E	F	Bracket Part #
351A0020B	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	383F001
351A0035B	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	383F001
351A0070B	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	383F001
351A00100B-2	12.75"	13"	16.05"	14.65"	1.65"	6.475"	2"	383F002
351A0150B	12.75"	13"	16.05"	14.65"	1.65"	6.475"	2"	383F002
351A0250B	16.00"	16.25"	19.2"	17.7"	1.5"	8.2"	2"	383F003
351A0375B	16.00"	16.25"	19.2"	17.7"	1.5"	8.2"	2"	383F003
351A0560B	20.00"	20.25"	23.2"	21.7"	1.5"	12.2"	2"	383F004

For the 20 lb. to 250 lb. cylinders—one cylinder bracket must be used

For the 375 lb. and 560 lb. cylinders—two cylinder brackets must be used.

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800 lb. and 1000 lb. Clean Agent Cylinder

DESCRIPTION

The 800 lb. and 1000 lb. cylinders are filled with one pound increments in order to provide the exact amount of agent required.

Part Number	Cylinder Size	Max Fill at 70 lb/ft ³	Min Fill at 30 lb/ft ³	Valve Size	Diameter	Total Height	Height to Discharge Outlet
351A1000S	1000 LB	1008 LB	439 LB	4" Valve	30.00"	64.049"	54.381"
351A0800S	800 LB	806 LB	353 LB	4" Valve	30.00"	56.701"	47.023"

By using the *Avenger 227* Flow Calculation Software, the two-phase and the two-component flow of agent and nitrogen through the distribution piping network in quasi-steady state from the initiation of the discharge to the final gas blow-down can be estimated and predicted. The cylinder is equipped with the stainless steel valve that offers excellent flow characteristics for the liquefied gas, allowing for long pipe runs and has a greater coverage area.

Temperature Range: 32°F (0°C) to 130°F (54.4°C)

System Operating Pressure: 360 psi at 70°F (25.3 kg_f / cm² at 21.1°C)

The cylinder is equipped with a stainless steel back pressure-type valve in which a piston installed within the valve is equipped with a rubber seal that keeps the clean agent under pressure within the cylinder. A small hole in the piston allows the pressure within the cylinder to be equalized on both sides of the piston. Since the area at the top of the piston is greater than the area at the bottom of the piston, the net force seals the piston against the valve discharge outlet. When the cylinder pressure on top of the piston is relieved by means of automatic or manual activation, there is only cylinder pressure acting against the piston seal; hence, the piston slides to its full open position, allowing cylinder discharge through the distribution piping network.



P/N: 351A0800S



P/N: 351A1000S





The cylinder must be installed in an upright position (valve on top) in which each cylinder installation shall use a top plug adapter. The available accessories include electric solenoids, pressure gauges, a liquid level indicator, and bracket; these are shown in the table below.

4" Valve Accessories

Description	Purpose
Electric Solenoid available in: <ul style="list-style-type: none">– 24 VDC 15 Watts– 12 VDC 15 Watts	To automatically start and operate the clean agent discharge based on the operating specification requirement
Low Pressure Supervisory Switch	To monitor the internal pressure of the cylinder
Pressure Gauge, 360 psi	For quick visual inspection of the cylinder's internal pressure
Piston Actuator	For use as a pressure-operated switch in the event of the cylinder discharge in a multiple-cylinder installation
Liquid Level Indicator	To measure the weight of the clean agent inside of the cylinder. Highly recommended for ease of maintenance
Cylinder Bracket	To support the weight of the cylinder and the reaction force of the clean agent during discharge



1200 lb. Clean Agent Cylinder

DESCRIPTION

The 351A1200S 1,200 lb. cylinder is filled in one pound increments from a minimum of 519 lbs. to a maximum of 1,211 lbs. to meet the exact amount of agent required. The quantity of agent required for each enclosure can be calculated using *Avenger 227™* software, which contains a sophisticated calculation routine for predicting the two-phase as well as two-component flow of agent and nitrogen through the distribution piping network in quasi-steady state from the initiation of the discharge to final gas blow-down. The cylinder is then super-pressurized with dry nitrogen to 360 psi at 70°F to provide extinguishment on 10 seconds or less. The 4" stainless steel valve offers excellent flow characteristics for the liquefied gas, allows for long pipe runs, and has a greater coverage area. This is the largest Clean Agent cylinder currently manufactured and designed for very large applications. The 1200 lb. cylinder is manufactured, tested, and stamped in accordance with DOT 4BW500.

Temperature Range: 32°F (0°C) to 130°F (54.4°C)

System Operating Pressure: 360 psi at 70°F (25.3 kg_f / cm² at 21.1°C)

The cylinder is equipped with a 4" stainless steel back pressure type valve and a 4" Victaulic male outlet. A piston in the valve bore is equipped with a rubber seal that keeps the Clean Agent under pressure within the cylinder. A small hole in the piston allows cylinder pressure to be equalized on both sides of the piston. Since the area at the top of the piston is greater than the area at the bottom of the piston, the net force seals the piston against the valve discharge outlet. When the cylinder pressure on the top of the piston is relieved by means of automatic or manual activation, there is only cylinder pressure acting against the piston seal, and the piston slides to its full open position, allowing cylinder discharge through the distribution piping network.

Attached to the bottom of the cylinder valve is a siphon tube, which is straight and runs from the top of the cylinder to the bottom of the cylinder. The cylinder must be installed in an upright position (valve on top). Each cylinder installation shall use a top plug or a top plug adapter. The electric solenoid uses either a 24 VDC 15 Watt (383L004) or a 12 VDC 15 Watt (383L010).



P/N: 351A1200S





There is a 1/8" NPT outlet stamped "P" on the cylinder valve. This outlet transmits cylinder pressure to an optional low pressure supervisory switch, which when used, monitors the internal pressure of the cylinder. Another 1/8" NPT outlet stamped "M" on the cylinder valve is available for use as a pressure source to drive the piston actuators on a multiple cylinder system or to actuate a pressure-operated switch in the event of cylinder discharge. In multiple cylinder installations, when manifolded together, a maximum of six (6) 1200 lb. cylinders (also known as slave cylinders) can be operated to discharge using this "M" port through the piston actuator.

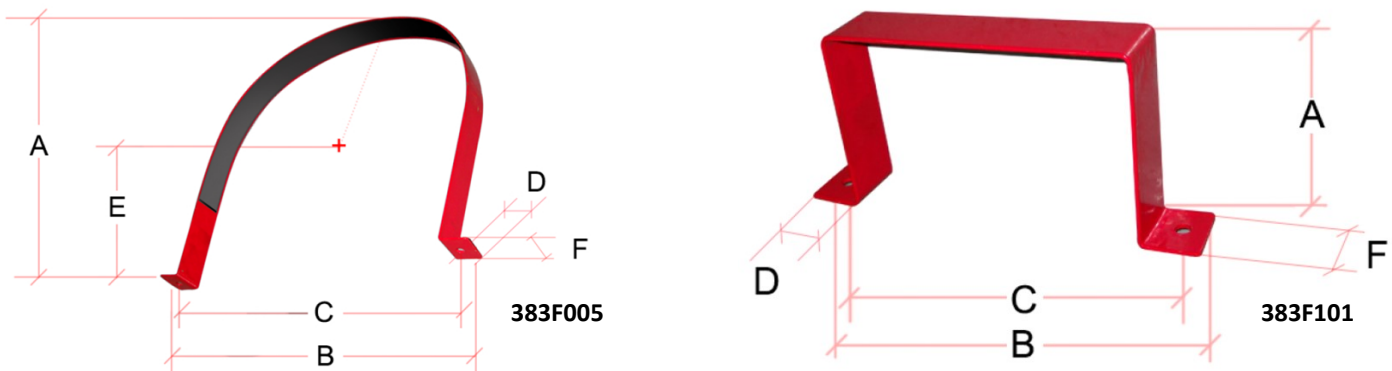
The cylinder is equipped with a 360 psi pressure gauge for quick visual inspection of the cylinder's internal pressure.

Liquid level indicator is available as an option for measurement of weight of the Avenger 227™ Clean Agent in the cylinder and is highly recommended for ease of maintenance.

Part Number	Cylinder Size	Max Fill at 70 lb/ft ³	Min Fill at 30 lb/ft ³	Valve Size	Diameter	Total Height	Height to Discharge Outlet
351A1200S	1200 LB	1211 LB	519 LB	4" Valve	30.00"	71.516"	61.726"

Cylinder Bracket

The cylinder bracket is manufactured from galvanized steel band formed to the radius of the cylinder with flanges for bolting to the continuous slot metal framing channel of 12-gauge steel with corrosion-resistant paint or galvanized. The channel must be supplied by the installer. The cylinder bracket must be secured to a surface so that the bracket will withstand a load of up to 5 times the cylinder weight. This precaution is to ensure that the bracket will safely support the weight of the cylinder and the reaction force of the Avenger™ HFC-227ea Clean Agent when it is discharged.



Part Number	Cylinder O.D.	A	B	C	D	E	F	Mounting
383F005	30.00"	30.225"	35.2"	33.2"	2.5"	15.225"	2"	Wall
383F101	30.00"	5"	11.85"	10.35"	1.5"	N/A	2"	Floor

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Cylinder Valve Assembly

Brass Valves



1" Brass Valve

Brass, ASTM B-16

P/N: 383B010-B



1-1/2" Brass Valve

Brass, ASTM B-16

P/N: 383B015-B



2-1/2" Brass Valve

Brass, ASTM B-16

P/N: 383B025-B





Stainless Steel Valves



1" Stainless Steel Valve

SS, AISI 304/316/316L

P/N: 383B010-S



1-1/2" Stainless Steel Valve

SS, AISI 304/316/316L



2-1/2" Stainless Steel Valve

SS, AISI 304/316/316L

P/N: 383B025-S



4" Stainless Steel Valve

SS, AISI 304/316/316L

P/N: 383B040-S

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Electric Solenoid

DESCRIPTION

The electric solenoid valve is a normally-closed valve that requires electrical energy to open. It is used to vent the pressure from the top of the piston in the cylinder valve, allowing the piston to slide upward and commence cylinder discharge. The electric solenoid valves are available in 24 VDC. The source of the electrical energy will determine the number and rating of the electric solenoid used. The solenoid circuit must be supervised for a break in the wiring, a ground, or a short-circuit.

The cylinder discharge valve that is equipped with a solenoid valve is to be connected to a control panel that is UL listed for releasing devices and is compatible with Avenger Fire Suppression equipment.

Connect solenoid pigtails to actuation circuit wires with wire nuts within a junction box or by a means designated by the authority having jurisdiction.

Whenever an electric solenoid is used as the sole means of actuation, a top plug must be used to seal the top of the cylinder valve.

The electric solenoid is added with a tamper indicator as shown in Figure 2 which uses a zip-tie (part number 383P048) around the valve coil and vent solenoid to secure it mechanically. Unless the zip-tie is cut, the solenoid coil cannot be removed.

NFPA 2001 (2015 Edition) requirements to avoid unwanted system operation or unwanted discharge of an electrically actuated clean agent system are compulsory to follow.

1. A supervised disconnect switch shall be provided.
2. The disconnect switch shall interrupt the releasing circuit to the suppression system.
3. The disconnect switch shall cause a supervisory signal at the releasing control unit.
4. The disconnect switch shall be located inside a lockable fire alarm control panel, inside a lockable enclosure, or require a key for activation of the switch.
5. When the disconnect switch requires a key for activation, the access key shall not be removable while disconnected so the suppression system can be quickly returned to the operational condition in the event of a fire.



Figure 1—Electric Solenoid



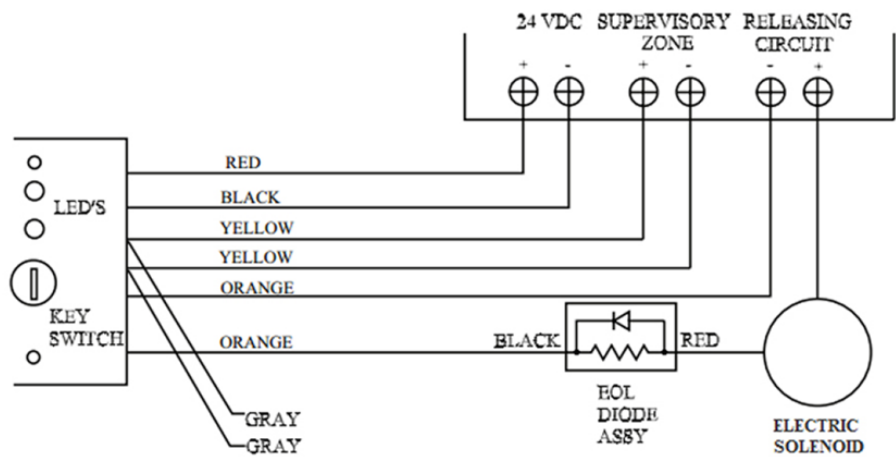
Figure 2—Electric Solenoid Tamper Seal





Part Number	Description	Electrical Rating
383L005	Electric Solenoid	24 VDC, 11 Watts
383L012	Electric Solenoid, Explosion-Proof	24 VDC, 11 Watts
383L004	Electric Solenoid	24 VDC, 15 Watts

Electric Solenoid is coupled to the Releasing Circuit Disable Switch
(part number: 383R133)





Pressure Operated Switch

PRESSURE OPERATED SWITCH (N.C./N.O.) SPDT MANUAL RESET)

Indicates that the Avenger 227™ Fire Suppression Agent is being discharged

Engineering and Architect Specifications

The switch is provided to indicate a system discharge and provides electrical contacts for alarm and auxiliary functions. The switch will have Form C contacts rated at 15 amps, 125/250 VAC. An external manual reset button shall be provided on the pressure switch. After system actuation, the reset button MUST be depressed in order to reset the device. The switch may also be connected to any points of the discharge piping between the cylinder and nozzle.

Electrical Rating:

15 Amps—125/250 VAC

Switch:

SPDT snap action

Contacts:

One: Normally Open (N.O.)

One: Normally Closed (N.C.)



P/N: 383R003





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Pressure Supervisory Switches

DESCRIPTION

Indicates pressure loss in a cylinder

Low Pressure Supervisory Switches

Engineering and Architect Specifications

The switch is used to monitor the pressure within the Clean Agent cylinder. If a cylinder leak occurs and the cylinder pressure drops to below 291 ± 10 psig, the switch contacts will be activated, providing a signal to the release control panel to indicate a loss of pressure. The pressure supervisory switch is wired into a supervised circuit to give a trouble signal upon activation.

Electrical Rating:

120 VAC—5.8FLA, 4.8LRA

240 VAC—2.9FLA, 15LRA

24 VDC—125VA Pilot Duty

28 VDC—2 amps

Temperature Range:

Ambient: -20°F to $+150^{\circ}\text{F}$

Fluid: -65°F to 275°F

Other:

Actuation Pressure: 360 ± 10 psig

Release Pressure: 291 ± 10 psig



P/N: 383K0360-N (N.C.)

P/N: 383K1360-N (N.O.)

Part Number	Description	Operation
383K0240-N	240 psi	Normally Closed
383K1240-N	240 psi	Normally Open
383K0360-N	360 psi	Normally Closed
383K1360-N	360 psi	Normally Open



PN: 383K0240-N

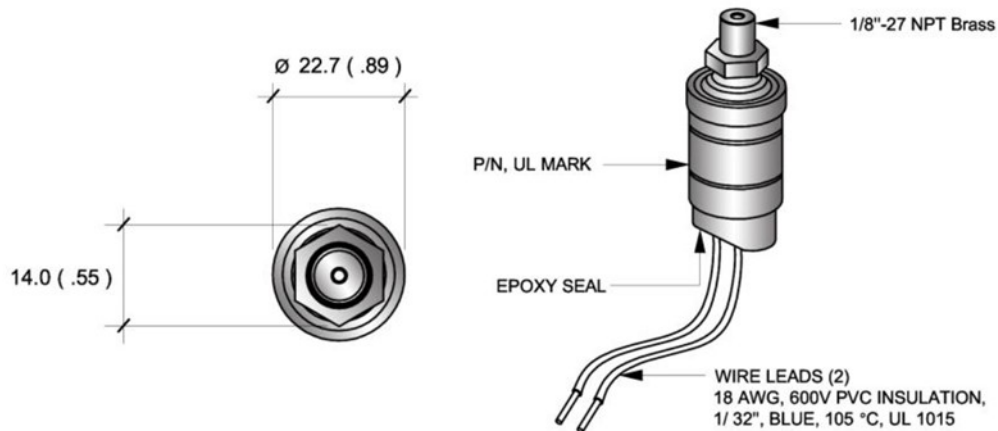
PN: 383K1240-N





Specification

- Auto-Reset Pressure Switch (SPST)
- Proof Pressure: 600 psig
- Burst Pressure: 5000 psig
- Electrical Ratings:
 - 120/240 VAC—375 VA
 - 24 VAC—125 VA
- Cycle Life: 100,000 minimum
- Ambient Temperature: -30 to +70°C
- Fluid Temperature: -54 to 135°C



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Mechanical Controls

Local Manual Control

- Used for manual actuation of cylinder
- Equipped with safety pull-pin to prevent accidental discharge of clean agent
- Self-venting
- Solid brass construction
- Stainless steel operation lock-pin

The Local Manual Control features a local lever-driven push rod that depresses a Schrader check valve, thereby venting the pressure from the top of the piston in the cylinder valve, allowing the piston to slide upward and commence cylinder discharge. The Local Manual Control mounts directly to a top plug adapter, which is located on top of the cylinder valve. Avenger also offers a plunger-type of Local Manual Control (383T002).



P/N: 383T001



P/N: 383T002

Piston Actuator Control

- High-Quality brass construction
- Mounts directly on top of cylinder valves
- Self-venting

The Piston Actuator features a pneumatically-driven piston that depresses a Schrader check valve, thereby venting the pressure from the top of the piston in the cylinder valve, allowing the piston to slide upward and commence cylinder discharge. The pneumatic pressure required to operate the Piston Actuator is obtained from the "M" port of a cylinder, which is designated as the "Master" cylinder that is either mechanically and/or electrically actuated. Multiple cylinders equipped with Piston Actuators can be activated from one master cylinder using 1/4" metal flex hose. The Piston Actuator mounts directly to a top plug adapter, which is located on top of the cylinder valve.



P/N: 383T004





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Liquid Level Indicator

DESCRIPTION

The Liquid Level Indicator is a simple, manually-operated device, which provides a means to determine the Avenger Clean Agent liquid level in vertically-mounted agent storage containers. Once the liquid level is determined, it can be converted into the weight of Clean Agent present in the agent storage container.



OPERATION

A magnet-equipped float moves with the liquid level along the unit stem. Level readout is obtained by simply removing the protective cap and pulling out a calibrated tape until magnetic interlock with the float is felt. With the tape in this position, the reading is obtained at the point where the tape emerges from the unit housing.

When the liquid level is determined, the reading is then referred to a chart in the Engineering Manual and the corresponding weight of Clean Agent is determined. Accurate readings can be obtained over a +40°F to +90°F temperature range.

FEATURES

- Reduced maintenance time—weight in an agent storage container can be determined in a fraction of the time that it would take to remove it and weigh it.
- Continuous fire protection—use of the liquid level indicator does not require removing the cylinder from the system, thus providing uninterrupted fire protection.
- Field installation capability—the indicator can easily be installed in the field using a single wrench, as long as the container is empty and is equipped with a mounting boss.
- Compact—when not in use, the unit requires no more space than that required by the container itself.
- Flexibility—the flexible tape design allows the unit to be used in tight spaces that would otherwise hinder the use of a rigid-type indicator “stick”.
- Availability—units are available for all Avenger containers from 150 lb. through 1200 lb.





Part Number	Description
383E001	Liquid Level Indicator for 150 lb. and 250 lb. Cylinders
383E002	Liquid Level Indicator for 375 lb. and 560 lb. Cylinders
383E005	Liquid Level Indicator for 800 lb. Cylinder
383E004	Liquid Level Indicator for 1000 lb. Cylinder
383E003	Liquid Level Indicator for 1200 lb. Cylinder

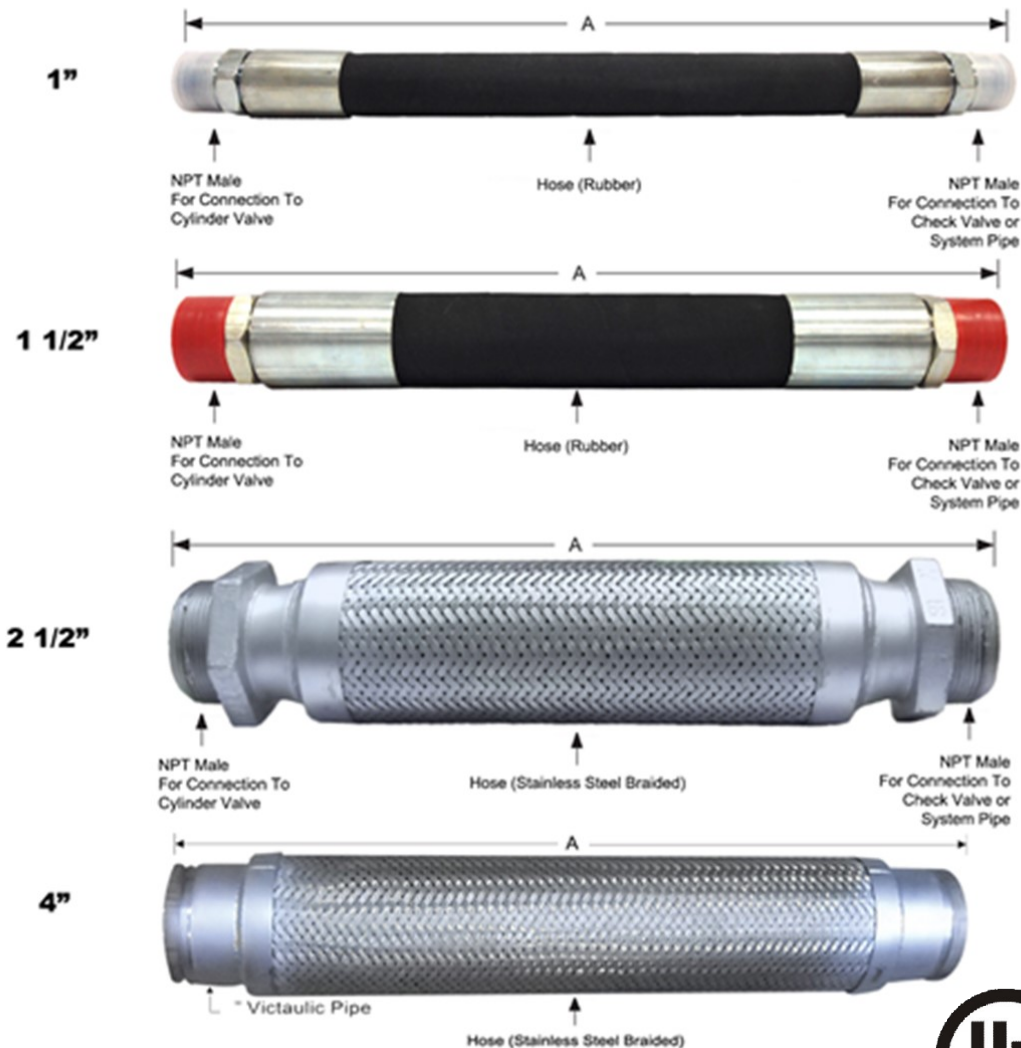


Flexible Hoses

DESCRIPTION

Flexible hoses are used to connect the agent storage containers to the manifold in multiple-cylinder arrangements. Flex hoses are constructed of high-pressure hydraulic rubber in the 1" and 1-1/2" sizes, and a stainless steel corrugated inner core with stainless steel braided in the 2-1/2" and 4" sizes. All hoses are fitted with male NPT thread on both ends.

For the 800 lb., 1000 lb., and 1200 lb. cylinders, the flex hose is 4" in diameter (Part # 383S1040) and is 18" in length. The flex hose is manufactured from a stainless steel corrugated inner core with braided stainless steel. The flex hose has 4" Victaulic fittings on both ends.





Part Number	Diameter	A	Material
383S1010	1"	18"	Rubber
383S1015	1-1/2"	18"	Rubber
383S1025	2-1/2"	18"	Stainless Steel Braided
383SS1040	4"	18"	Stainless Steel Braided



Shuttle and Check Valves

DESCRIPTION

The Check Valves are used when two or more agent storage cylinders are manifolded together with one common discharge piping configuration. Their purpose is to prevent the loss of agent in the event that any of the agent storage cylinders are not connected to the manifold at the time of system discharge and to prevent the back flow of agent into other cylinders attached to the manifold.

All components of the check valves are constructed from brass for durability and protection against corrosion. The metal-to-metal sealing area of the disc and seat is precision lapped, providing a very tight shut-off of both gas and liquid.



4" Check Valve Assembly
P/N: 383S1340



P/N: 383S2025



P/N: 383S2015



P/N: 383S2010

Part Number	Description	Valve Size
383S2010	Check Valve	1"
383S2015	Check Valve	1-1/2"
383S2025	Check Valve	2-1/2"
383S1340	Check Valve Assembly	4"



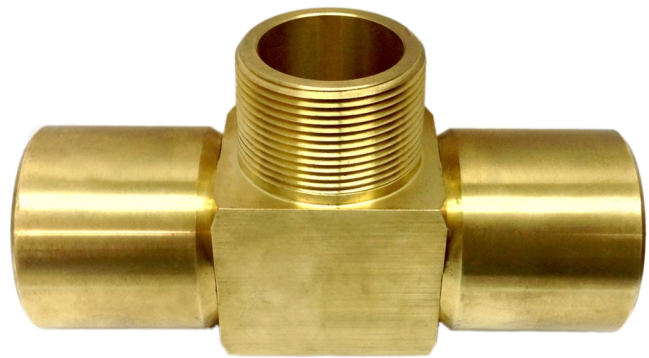


SHUTTLE VALVE

The brass Shuttle Valve is used to connect two cylinders to a common discharge pipe and nozzle(s). All threads are available with 1" or 1-1/2" NPT. The purpose of having a reserve supply is that after the first cylinder (main) is discharged, the second cylinder (reserve) can be manually transferred via a main/reserve switch to restore fire-suppression readiness.

The shuttle valve contains a shuttle check that closes off the piping to the first cylinder (main) when empty. When the second cylinder is discharged, the shuttle check prevents the charge of the second cylinder from flowing into the first empty cylinder (main) which is connected on the same manifold, thus reducing unnecessary Clean Agent loss.

Part Number	Description
383S3010	1" Shuttle Valve
383S3015	1-1/2" Shuttle Valve



P/N: 383S3010



Discharge Nozzles

DESCRIPTION

The function of the Discharge Nozzle in a fire extinguishing system is to distribute the Clean Agent in a uniform, pre-determined pattern and concentration. The nozzles are designed to complete the discharge of Clean Agent in 10 seconds or less when installed within the design limitations as stated in the Avenger installation instruction manual.

Discharge Nozzles are available in sizes of 1/2", 3/4", 1", 1-1/4", 1-1/2", and 2". Each discharge nozzle comes in two configurations; 180 and 360 degree distribution patterns. Deflector plates are available as an option where sensitive ceiling tiles must be protected.



Discharge Nozzles are made of aluminum with female pipe threads. The orifice size of the discharge nozzle is determined by the hydraulic flow calculations. All nozzles are rated for a maximum hazard height of 16 ft. If hazards exceed 16 ft. in height, a second tier of nozzles must be used.

Discharge nozzles are also available in brass and stainless steel materials.

Discharge Nozzles Selection—Sidewall 180°

This nozzle is typically installed adjacent to the center of one wall of one enclosure. Its discharge path will be across the enclosure. At no time shall the area coverage be exceeded.

Discharge Nozzle Selection—Central 360°

This nozzle is typically installed at the center of the enclosure. Its discharge path will be across the enclosure. At no time shall the area coverage be exceeded.

Installation:

Please refer to the Avenger Design, Installation, Operation, and Maintenance manual for discharge nozzle area coverage and application selections.





Part Number Aluminum Nozzle	Part Number Brass Nozzle	Part Number Stainless Steel Nozzle	Description
383S40501A	383S40501B	383S40501S	1/2" (180°) Sidewall Nozzle
383S40502A	383S40502B	383S40502S	1/2" (360°) Central Nozzle
383S40751A	383S40751B	383S40751S	3/4" (180°) Sidewall Nozzle
383S40752A	383S40752B	383S40752S	3/4" (360°) Central Nozzle
383S41001A	383S41001B	383S41001S	1" (180°) Sidewall Nozzle
383S41002A	383S41002B	383S41002S	1" (360°) Central Nozzle
383S41251A	383S41251B	383S41251S	1-1/4" (180°) Sidewall Nozzle
383S41252A	383S41252B	383S41252S	1-1/4" (360°) Central Nozzle
383S41501A	383S41501B	383S41501S	1-1/2" (180°) Sidewall Nozzle
383S41502A	383S41502B	383S41502S	1-1/2" (360°) Central Nozzle
383S42001A	383S42001B	383S42001S	2" (180°) Sidewall Nozzle
383S42002A	383S42002B	383S42002S	2" (360°) Central Nozzle

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