

# BRISTOL Atum227™

## Fire Suppression System

HFC-227ea

Prior to the Montreal Protocol in the late 1980s, Halon was considered the best agent for extinguishing fires. However, great concern was expressed regarding the effects of Chlorofluorocarbon (CFCs) and Halons on the ozone layer. This influenced the decision that Halon should be replaced and, at time, eliminated. Search and investigation for new and effective means of extinguishant resulted in the appearance of **Bristol Atum227™**.

**Bristol Atum227™** is an engineered extinguishing system which utilized HFC-227ea chemically known as Heptafluoropropane (CF<sub>3</sub>CHFCF<sub>3</sub>) as an extinguishant which in accordance with international standards designed to provide a gaseous extinguishing system for the extinction of fire.

**Atum227™** is suitable for the protection of major risks because HFC-227ea is electrically non-conductive (as well as being colorless and odorless) it is effective for electrical equipment. It is also suitable for both Class A fires which involve solid materials where glowing embers may be form, and Class B fire where liquids or liquefiable solids are present. It extinguished primarily by absorbing heat from a fire. Once discharged, it suppress fire rapidly (within 10 seconds) thus minimizing damage to property and valuable equipment, and also providing personnel with immediate protection from risk.

### SYSTEM COMPONENTS

The system and components are tested for total flooding system agency witnessed in accordance with international standards. System was arranged to discharge HFC-227ea into an enclosed spaced to achieve a minimum design concentration of 6.5% but not to exceed 9.0% for normally occupied spaces. System discharges within 10 seconds, to ensure that design concentration and timing will be achieve, room integrity should be verify.

### HFC-227ea Storage Cylinder

The agent storage cylinder is fitted with appropriate valve and dip tube. Filled with HFC-227ea superpressurized with dry nitrogen to 360 psi (25 bar) at 70°F (21°C). Storage Cylinders are available in various capacities to apt hazard requirement, provided with nameplate for handling, operation and maintenance instructions, identify agent weight, tare weight and gross weight.

### Technical Information

Application Standard:

EN13322-1:2003 and Directive 1999/36/EC for 30L to 150L

EN14208:2004 and Directive 1999/36/EC for 180L

Paint Color: RAL 3002  
Pneumatic Pressure Test: 61 Bar  
Leakage Test Pressure: 25 Bar  
Burst Test Pressure: 25 Bar  
Ambient Temperature: -20~50°C

Capacity	Minimum Fill		Maximum Fill	
	Kg	Lbs	Kg	Lbs
15L	9.00	19.84	17.00	37.48
30L	16.82	37.08	33.63	74.14
50L	28.03	61.80	56.05	123.57
80L	44.85	98.88	89.69	197.73
100L	56.06	123.59	112.11	247.16
120L	67.27	148.30	134.53	296.59
150L	84.08	185.36	168.16	370.73
180L	100.90	222.45	201.80	444.89

Cylinder	Dia. (mm)	Height (mm)	Thread	Empty Weight (Kg)
15L	254	402	2.5"	17.80
30L	254	722	2.5"	25.4
50L	305	747	2.5"	45.1
80L	305	1137	2.5"	61.3
100L	406	1020	2.5"	64.0
120L	406	1104	2.5"	86.0
150L	406	1350	3.0"	100.0
180L	462	1257	3.0"	130.0



Storage Cylinder with Dip Tube

### Cylinder Valve Assembly

A valve is fitted in storage cylinder to regulate, direct or control the flow of HFC-227ea by opening various passageways. The valve has an integrated electrical release mechanism that controls valve opening by electrical signals from control panel.



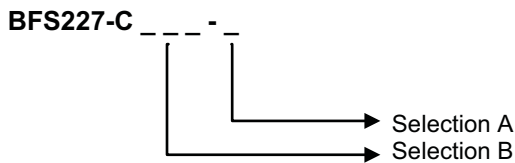
Cylinder Valve with Integrated Release

**Technical Information**

Max. Working Pressure:	140 Bar
Temperature Range:	-20°C +60°C
Seat Orifice Size:	33mm Ø and 49mm Ø
Valve Body:	Brass
Inlet Connection:	2.5" (33mm) 3.0" (49mm)
Burst Disc:	73 Bar

**Cylinder Assembly  
(Welded Cylinder, Valve and Dip Tube)**

Ordering Information:



- Selection A:  
 M – Master / Single Cylinder  
 S – Slave / Secondary Cylinder

- Selection B:  
 015 – 15L cylinder  
 030 – 30L cylinder  
 050 – 50L cylinder  
 080 – 80L cylinder  
 100 – 100L cylinder  
 120 – 120L cylinder  
 150 – 150L cylinder  
 180 – 180L cylinder

i.e.:  
 BFS227-C180-M denotes 180L Cylinder c/w Valve with Integrated Release and Dip Tube.  
 BFS227-C180-S denotes 180L Cylinder c/w Valve and Dip Tube (for slave operation).

**Manual Release Device (BFS227-MRD)**

A manual release device is placed on top of valve assembly for manual actuation. A safety pin prevents accidental operation of the device.



BFS227-MRD Manual Release Device

**Technical Information**

Connection:	M42 x 1.5"
Material Body:	Brass
Manual Lever:	Aluminum
Safety Pin:	Zinc Plated Mild Steel

**Manual-Pneumatic Release Device (BFS227-MPRD)**

A manual-pneumatic release device is placed on top of valve assembly for manual actuation and pneumatic (application of pressurized gas to produce mechanical motion) for secondary cylinder valve. A safety pin prevents accidental operation of the device.

**Technical Information**

Connection:	M42 x 1.5"
Material Body:	Brass
Manual Lever:	Aluminum
Safety Pin:	Zinc Plated Mild Steel
Pneumatic Connection:	G 1/8"
Min. Working Pressure:	10 Bar
Max. Working Pressure:	150 Bar



BFS227-MPRD Manual-Pneumatic Release Device

**Pneumatic Release Device (BFS227-PRD)**

A pneumatic release device is placed on top of valve assembly for pneumatic (application of pressurized gas to produce mechanical motion) actuation.



BFS227-PRD Pneumatic Release Device

**Technical Information**

Connection:	M42 x 1.5"
Material Body:	Brass
Pneumatic Connection:	G 1/8"
Min. Working Pressure:	5/10 Bar
Max. Working Pressure:	150 Bar

**Bleeder Valve (BFS227-BV)**

The bleeder valve insures that slight leakage at the seat of the valve will not build up in the pneumatic release device and cause an unintended operation.



BFS227-BV Bleeder Valve

**Technical Information**

Material Body: Brass  
 Thread Connection: G1/8"  
 Flow Measurement: 0.60 Bar →  
 Flow = min. 6 l/min  
 Closing Pressure: 0.7 ~ 1.5 Bar  
 Max. Working Pressure: 360 bar

**Flexible Discharge Hose (33mm / 49mm)**

Discharge hose is attached from the valve assembly to manifold or directly coupled to distribution system.



BFS227 Flexible Discharge Hose

Discharge Hose Ø33mm 90°Elbow L=500mm	BFS227-DH33
Discharge Hose Ø49mm 90°Elbow L=500mm	BFS227-DH49
Pilot Hose ¼" 1*90° Fitting L=500mm	BFS227-PHL5
Pilot Hose ¼" L=700mm	BFS227-PHL7

**Technical Information**

- 40mm (15L, 30L, 50L, 80L, 100L and 120L)
- 50mm (150L and 180L)

Working Pressure: 53 Bar  
 Burst Pressure: 159 Bar  
 Fittings: Galvanized/Zinc Plated  
 Valve Connection: 40mm – 1 7/8"  
 50mm – 2 1/2"  
 Min. Bend Radius: 40mm – 510mm  
 50mm – 640mm  
 Max. Bend from 20° Angle

**Pressure Gauge with Integrated Pressure Switch (BFS227-PGS)**

A pressure gauge assembly constantly monitors the cylinder pressure when filled with HFC-227ea and superpressurized up to 360 psi (25 Bar) at 70°F (21°C). An integrated pressure switch is supplied as part of the pressure gauge assembly to transmit alarm signal if the pressure drops below the adequate level.

**Technical Information**

Nominal Size: 50mm  
 Precision Class: 1.6  
 Temperature Range: -40° to 60°C,  
 measuring material max. 60°C

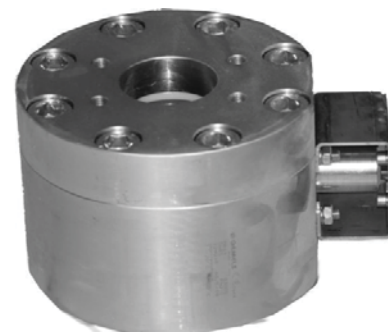
Body Housing: Cr Ni steel,  
 crimping construction  
 Restrictor: Sintered Metal Insert  
 Receiving Element,  
 Pointer Mechanism: Copper Alloy  
 Max. Working Pressure at 50°C: 35 Bar  
 Nominal Pressure: 25 Bar  
 Switch Point: 22.5 Bar NO  
 Mechanical Precision Class: ±1.6%  
 Switch Point Precision Class: ± 0.9 Bar  
**Dial**  
 Material: Aluminum, White  
 Lettering: Black  
 Complete Indication Range: 0 to 40 Bar  
 Red Range: 0 to 22.5 Bar  
 Green Range: 22.5 – 35 Bar  
**Electrical Connection**  
 Cable output with screwed connection  
 Protection Class: IP65  
 Switch Voltage: 4.5 to 24 VDC / AC  
 Switch Current: 5 mA to 100 mA  
 Current Load: max. 3W  
 Cable: 2 wires  
 Length: 1000 mm



BFS227-PGS Pressure Gauge with Integrated Pressure Switch

**Directional Valve (BFS227-DV Series)**

Directional valves are installed in the discharge piping downstream of the HFC-227ea storage cylinders to direct the flow of agent to appropriate hazard enclosure. It isolates individual protection zones within a multi-zone system and permits one zone to actuate without actuating all the zones.



BFS227-DV Series Directional Valves

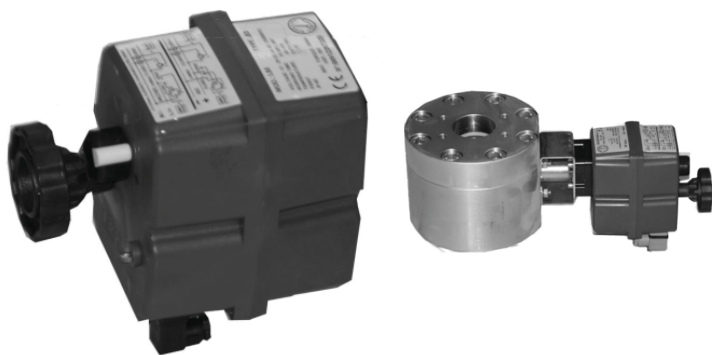
### Technical Information

Antistatic Device  
 Max. Working Pressure: 100 Bar  
 Valve Material: Carbon Steel  
 Type: Ball Valve 2-way  
 Weight: 1" 3.45 Kg  
 1 1/2" 8.07 Kg  
 2" 10.15 Kg

Directional Valve, 1" (25mm)	BFS227-DV25
Directional Valve, 1 1/2" (40mm)	BFS227-DV40
Directional Valve, 2" (50mm)	BFS227-DV50
Directional Valve, 2 1/2" (65mm)	BFS227-DV65
Directional Valve, 3" (80mm)	BFS227-DV80
Flange Kit, 2 1/2" (65mm)	BFS227-DVFK65
Flange Kit, 3" (80mm)	BFS227-DVFK80

### Electrical Actuator for Directional Valve (BFS227-DVDM Series)

Used with directional valves to actuate the system within a specific protection zone either electronically or manually.



BFS227-DVDM Series Electrical Actuator

### Technical Information

- Permits both electronic (solenoid) and manual (push knob) actuation with position indicator
- Equipped with Electronic over-torque and valve jam protection

Voltage: 12-24 VDC / AC  
 Current: 12 VDC / 2.90 A  
 24 VDC / 1.35 A  
 Max. Operating Torque: 35 Nm  
 Working Angle: 90°  
 Status Indicator: LED  
 Output: 2 micro switches  
 IP Rating: IP65

Drive Motor for Directional Valve (1", 1 1/2" & 2")	BFS227-DVDM2550
Drive Motor for Directional Valve (1", 1 1/2" & 2")	BFS227-DVDM6580
Bracket for Motor	BFS227-DVDMB

### Check Valve (33mm / 49mm)

A check valve is used between the cylinder valve discharge outlet flexible connection and the discharge manifold.

The check valve prevents back flow from the manifold in the event that the system is discharged when one or more cylinders are disconnected, such as for weighing or general servicing. A check valve is not required on single cylinder systems.



BFS227 Check Valve

### Technical Information

Material Body: Brass  
 Working Pressure: 53 Bar  
 Temperature Range: -20°C +50°C  
 Inlet: 2" NPT (49 mm)  
 1 1/2" NPT (33mm)  
 Flow Direction: ↑↑↑ Flow

Check Valve, Ø33mm	BFS227-MCV33
Check Valve, Ø49mm	BFS227-MCV49

### Relief Device (BFS227-MFLDRD)

Pressure could build-up and trapped in closed sections of pipe, a pressure relief device should also be installed to avoid over pressurization.



BFS227-MFLDRD Relief Device

### Technical Information

Material Body: Brass  
 Pressure Setting: 25 Bar  
 Temperature Range: -20°C +50°C  
 Orifice Size: 1/4" NPT

### Pressure Operating Switch (BFS227-POS)

A discharge pressure switch can be installed in pipe section that provides electrical contacts that actuates pneumatically for remote indication of release.

### Technical Information

Max. Working Pressure: 200 Bar  
 Temperature Range: -10°C +80°C  
 Contact Ratings: DC13 10A / 24 VDC  
 AC15 3A / 400V  
 IP Rating: IP65



BFS227-POS Pressure Operating Switch

### Discharge Nozzles (BFS227-RNB Series)

Nozzles are designed to control the direction or characteristics of HFC-227ea flow (especially to increase velocity) as it exits (or enters) an enclosed chamber or pipe via an orifice.

Nozzles are of varying cross sectional area used to control the rate of flow, speed, direction, mass, and pressure of HFC-227ea to ensure discharged within 10 seconds and distributed to protected area.

### Technical Information

Material: Brass  
 Max. Working Pressure: 150 Bar  
 Number of Ports: 8  
 Orifice Size: Software-defined



BFS227-RNB Series Discharge Nozzles

Radial Nozzle, Brass, 1/2" (15mm)	BFS227-RNB15
Radial Nozzle, Brass, 3/4" (20mm)	BFS227-RNB20
Radial Nozzle, Brass, 1" (25mm)	BFS227-RNB25
Radial Nozzle, Brass, 1 1/4" (32mm)	BFS227-RNB32
Radial Nozzle, Brass, 1 1/2" (40mm)	BFS227-RNB40
Radial Nozzle, Brass, 2" (50mm)	BFS227-RNB50

### Related Parts

#### Cylinder Straps

BFS227-CS015	15L cylinder strap
BFS227-CS030	30L cylinder strap
BFS227-CS050	50L cylinder strap
BFS227-CS080	80L cylinder strap
BFS227-CS100	100L cylinder strap
BFS227-CS120	120L cylinder strap
BFS227-CS150	150L cylinder strap
BFS227-CS180	180L cylinder strap

#### Cylinder Manifold

BFS227-MDN25	Manifold DN25 Zinc Coated
BFS227-MDN40	Manifold DN40 Zinc Coated
BFS227-MDN50	Manifold DN50 Zinc Coated
BFS227-MDN65	Manifold DN65 Zinc Coated
BFS227-MDN80	Manifold DN80 Zinc Coated

### HFC-227ea Extinguishing Agent

HFC-227ea is a colorless and odorless liquefied gas chemically known as Heptafluoropropane. An efficient agent for extinguishing fires which leaves no residue.

Ozone Depleting Potential	0
Extinguish Concentration (Cup)	6.5%
NOAEL (v/v)	9%
LOAEL (v/v)	10.5%

NOAEL – No Observable Adverse Effect Level

LOAEL – Lowest Observable Adverse Effect Level

For more information, contact:

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