



**BRISTOL**

**Fire Engineering**

Since 1974



***Atum227<sup>TM</sup>* HFC-227ea Fire Suppression**

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# BRISTOL Atum227™

## HFC-227ea Fire Suppression System



### 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

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 a pre-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.

Capacity	Minimum Fill		Maximum Fill	
	Kg	Lbs	Kg	Lbs
15L	7.0	15.4	16.0	35.3
30L	14.0	30.9	33.0	72.8
50L	24.0	52.9	56.0	123.5
80L	38.0	83.8	89.0	196.2
106L	50.0	110.2	118.0	260.1
120L	57.0	125.7	134.0	295.4
150L	72.0	158.7	168.0	370.4
180L	86.0	189.6	201.0	443.1

Cylinder	Dia. (mm)	Height (mm)	Thread	Cylinder Valve
15L	254	581	2.5"	Ø33mm
30L	254	901	2.5"	Ø33mm
50L	305	963	2.5"	Ø33mm
80L	305	1377	3.0"	Ø49mm
106L	406	1235	3.0"	Ø49mm
120L	406	1350	3.0"	Ø49mm
150L	406	1596	3.0"	Ø49mm
180L	462	1492	3.0"	Ø49mm

**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.



**Technical Information**

Max. Working Pressure: 140 Bar  
 Temperature Range: -20°C +60°C  
 Seat Orifice Size: Ø33mm and Ø49mm  
 Valve Body: Brass  
 Inlet Connection: 2.5" (Ø33mm)  
 3.0" (Ø49mm)  
 Burst Disc: 73 Bar

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

Ordering Information:

**BFS227-C** \_ \_ \_ \_ - \_



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**

A manual release device is placed on top of valve assembly for manual actuation. 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

**Manual-Pneumatic Release Device**

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

**Pneumatic Release Device**

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



**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**

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.


**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 (Ø33mm / Ø49mm)**

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

**Technical Information**

- Ø33mm (15L, 30L, 50L and 80L)
  - Ø49mm (80L, 106L, 120L, 150L and 180L)
- |                          |                                |
|--------------------------|--------------------------------|
| Working Pressure:        | 53 Bar                         |
| Burst Pressure:          | 159 Bar                        |
| Fittings:                | Galvanized/Zinc Plated         |
| Valve Connection:        | 40mm – 1 7/8"<br>50mm – 2 1/2" |
| Min. Bend Radius:        | 40mm – 510mm<br>50mm – 640mm   |
| Max. Bend from 20° Angle |                                |

**Pressure Gauge with Integrated Pressure Switch**

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

**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.

**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

**Relief Device**

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

**Technical Information**

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

**Discharge Pressure Switch**

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

**Discharge Nozzles**

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

**HFC-227ea Agent (UL listed and FM approved)**

An optimal substitute for Halon 1301 as a fire suppression agent. It is particularly useful in computer rooms, libraries, semiconductor manufacturing facilities, data processing centers, industrial process control rooms, petrochemical facilities, chemical storage and so on.

**Characteristic**

- Chemical name: 1,1,1,2,3,3,3-heptafluoropropane
- Colorless and inodorous
- Clean and insulative
- Good efficient and no residue
- No depleting ozone layer in atmosphere
- Safe for people and animal

**RELATED EQUIPMENT AND DEVICES**

**Extinguishant Control Panel**

**BF-ECP3DCSM**

Designed and manufactured to the highest standards in a quality controlled environment and with European EN-12094-1 approvals, the BF-ECP Series extinguishant releasing panel offers outstanding value and performance for small to medium fixed fire fighting installations.

With three detection zones as standard, extinguishant release can be configured to activate from any combination of detection zone inputs to allow (among other combinations) any two from three type activations such as would be required for detection in ceiling void, room and floor void applications.



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**Optional Accessories**

- BF-ECPFMC** Flush mount collar
- BF-ESI6L-MKS** 6 Lamp Status Unit with Mode Select Keyswitch, Surface Mount
- BF-ESI6L-MKF** 6 Lamp Status Unit with Mode Select Keyswitch, Flush Mount
- BF-ESI6L-MRS** 6 Lamp Status Unit with Manual Release, Surface Mount
- BF-ESI6L-MRF** 6 Lamp Status Unit with Manual Release, Flush Mount
- BF-ESI6L-MKMRS** 6 Lamp Status Unit with Mode Select Keyswitch and Manual Release, Surface Mount
- BF-ESI6L-MKMRF** 6 Lamp Status Unit with Mode Select Keyswitch and Manual Release, Flush Mount

**Photoelectric Smoke Detector**

**BF-S-0111-2 (2-wire)**

**BF-S-0111-3 (3-wire, remote LED output)**

Advanced technology enables this detector to increase its precision in fire detection, improve signals to avoid noise interference and thus reduce unwanted false alarm. Special chamber design has greatly decreased dust levels improved detection accuracy. Dual LED for 360° visibility. Low current consumption that allows more detectors to be used with each control panel. Dual contacts on the base which enhance the connecting stability between sensor and base.

Cont...



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**Optional Accessory:**

**BF-RLED-1313** Remote LED Indicator

**Extinguishant Hold-off Switch**

**BF-EHOSR**

Hold-off switch is a manually-activated, electric device designed to suspend the release of clean agent of the fixed fire protection system.



The fire suppression system shall include an hold-off switch to help guard against accidental discharge of fire suppression agent.

**Fire Alarm Bell**

**BF-AB-0418**

High efficiency low current consumption. Sound output of 93dB @ 1 meter. Simple installation via multi-fixing base plate for all types of location. Fitted with two series diodes for fault monitoring.



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**Electronic Sounder and Beacon**

**BF-SB-02127**

**BF-SD-02127 (sounder only)**

This electronic sounder is designed for use with fire alarm systems, security systems and industrial signaling systems. Combined sounder and beacon provides an audio-visual warning which is suitable for places high sound output and visual indication is required.



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**ORDERING INFORMATION**

Part No.	Description
BF227-Cxxx-x	HFC-227ea Cylinder Assembly
BFS227-MRD	Manual Release Device
BFS227-MPRD	Manual-Pneumatic Release Device
BFS227-PRD	Pneumatic Release Device
BFS227-BV	Bleeder Valve
BFS227-DH33	Discharge Hose, Ø33mm
BFS227-DH49	Discharge Hose, Ø49mm
BFS227-PHL5	Pilot Hose ¼", 1x90° L=500mm
BFS227-PHL7	Pilot Hose ¼", L=700mm
BFS227-PGS	Pressure Gauge with Switch
BF227-POS	Pressure Operating Switch
BFS227-RNB15	Discharge Nozzle, Brass, ½"
BFS227-RNB20	Discharge Nozzle, Brass, ¾"
BFS227-RNB25	Discharge Nozzle, Brass, 1"
BFS227-RNB32	Discharge Nozzle, Brass, 1 ¼"
BFS227-RNB40	Discharge Nozzle, Brass, 1 ½"
BFS227-RNB50	Discharge Nozzle, Brass, 2"
BFS227-CS015	15L Cylinder Strap
BFS227-CS030	30L Cylinder Strap
BFS227-CS050	50L Cylinder Strap
BFS227-CS080	80L Cylinder Strap
BFS227-CS106	106L Cylinder Strap
BFS227-CS120	120L Cylinder Strap
BFS227-CS150	150L Cylinder Strap
BFS227-CS180	180L Cylinder Strap
BFS227-EWS	Warning Sign
BFS227-MCV33	Ø33mm Check Valve
BFS227-MCV49	Ø49mm Check Valve