

SUPREME-X

CLEAN AGENT FIRE EXTINGUISHING SYSTEM



LIFECO-HFC227ea





LIFECO HFC227ea Suppression Agent

Our robust LIFECO-HFC227ea Engineered Fire Suppression system is Underwriters Laboratories Inc. UL listed and FM Approved. Designed for total flooding, our system is built in full compliance with the NFPA 2001 "Standard on Clean Agent Fire Extinguishing Systems" and UL 2166 Standard for Halocarbon Clean Agent Extinguishing System Units.

LIFECO-HFC227ea Agent is:

- ▶ Listed under National Fire Protection Agency (NFPA) 2001, Standard on Clean AgentFire Extinguishing Systems
- ▶ Listed under Underwriters Laboratories (UL)
- ► Factory Mutual (FM) approved

Cylinder Assembly

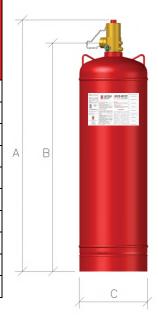
LIFECO-HFC227ea cylinder assembly consists of a cylinder factory fitted with a valve and syphon tube. Available in various sizes, the cylinder is filled with LIFECO-HFC227ea and super-pressurised with dry nitrogen to 25 bar @ 21°C (360 psi @ 70°F).

All cylinders are manufactured, tested, and labelled in accordance with DOT 4BW500.

LIFECO-HFC227 CYLINDER ASSEMBLY

DOT Cylinders Dimensions & Fill Range

Size (L)	Part Number	Valve Size (in)	Height (mm), A	Height (mm), B	Cylinder Diameter (mm), C	Min Fill (kg)	Max Fill (kg)	Nominal Tare Weight (kg)
16.7	LF-16HFCD-25	1	653 (25.7")	564 (22.2")	228.6 (9")	8.4	16.7	17.3
28.3	LF-28HFCD-25	1	954 (37.6")	865 (34")	228.6 (9")	14.2	28.3	24.9
52	LF-52HFCD-25	2	721 (28.4")	597 (23.5")	406 (16")	26.1	52	52.4
106	LF-106HFCD-25	2	1159 (45.6")	1029 (40.5")	406 (16")	53.1	106	78.6
147	LF-147HFCD-25	2	1494 (58.8")	1364 (53.7")	406 (16")	73.6	147	100.1
180	LF-180HFCD-25	2	1774 (69.8")	1644 (64.7")	406 (16")	90.1	180	116.3
240	LF-240HFCD-25	2	1860 (73.2")	1729 (68.1")	462 (18.2")	120.1	240	156.5
270	LF-270HFCD-25	3	1390(54.7")	1227 (48.3")	610 (24")	135.1	270	200.9
369	LF-369HFCD-25	3	1734 (68.3")	1569 (61.8")	610 (24")	184.6	369	241.3
453	LF-453HFCD-25	3	1595(62.8")	1437 (56.6")	762 (30")	226.6	453	323.9



Note: Cylinders sizes 240L, 270L, and 453L are UL listed (FM approval is under process)



Valve Assembly

These three types of valves operate (1 inch, 2 inch and 3 inch) by means of pressure differential piston. The valves incorporated with the features to enable it to be connected with removable electrical, manual and pneumatic actuator for actuation purpose.



Valve Assembly

Description	Valve Size			
Size	25mm (1 inch)	50mm (2 inch)	80mm (3 inch)	
Part Number	LF -VA 25	LF -VA 50	LF -VA 80	
Outlet	1 inch BSPP	2 inch BSPP	3.5 inch - 12UN-2A	
Material	Brass	Brass		
Safety Disc Pressure	53.4 bar (774psi)			
Working Pressure	33.4 bar (484 psi)			
Gauge Port	1/8 inch NPT 1/8 inch NPT 1/8 inch NPT			
Equivalent Length	6.10 m	10.6 7 m	25.91 m	
Weight	3.3 kg	7.8kg	16.8kg	



Pressure Gauge

There are two types of pressure gauge to be used in the LIFECO-HFC227 system namely:

1) Pressure gauge complete with Contact Switch (Part Number: LF-PGLPS2),

Pressure gauges with contact switch will give signal if pressure drops below 19.9 Bar (290psi).



Pressure Gauge Complete With Contact Switch

Pressure Gauge complete with Contact Switch Technical Information

Description	Specification
Part Number	LF-PGLPS2
Body	Stainless Steel Case
Mechanical	Stainless Steel Spiral Wound
Gauge Materials	Bourdon Tube
Gauge Size	41 mm (1.6 inch)
Pressure Range	0 – 48.3 Bar (0 – 700 psi)
Std Output	18 AWG type SXL wire
Cable	
Std Connection	1/8 inch NPT
Approval	UL

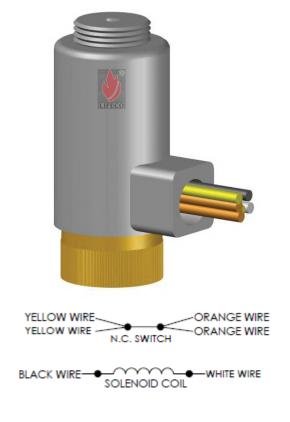


Supervised Latching Solenoid Actuator

This device is functioned the same as the electrical actuator complete with supervision switch and with the additional feature to be connected with conduit.

Solenoid Actuator Technical Information

Description	Specification		
Part Number	LF-EASV-LS		
Body Material	Mild Steel, Electroless Nickel Plated		
Actuation Pin	Stainless Steel		
Base nut	Brass CZ121		
Actuation Type	Latching		
Reset Method	Via Reset Tool Supplied		
Connection	1" BSPP (Brass End Fitting)		
Nominal Voltage	24 Volts DC		
Min Actuation Voltage	65% of nominal voltage		
IP Rating	Tested to meet IP54		
Nominal Current	0.5 A		
Max Monitoring Current	<30 mA		
Manual Actuation Force	50N (11.24 lbf)		
Nominal Pin Travel	6.36 mm (0.25 inch)		
Electrical Connection	1/2" NPT Female Conduit with		
	inbuilt bridge rectifier		
Back EMF Protection	Bridge Rectifier		
Approval	EN12094-4, UL Recognized		
	Component		
Size	124.2mm (L) x 88mm (W)		
	4.89 inch(L) x 3.46 inch(W)		
Weight	1.0kg		

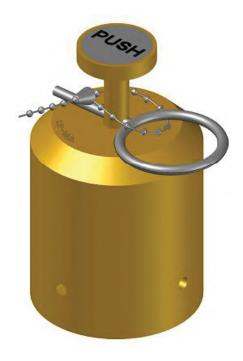


Electrical Actuator Complete with Supervision Switch & Wiring Diagram



Manual Actuator

The manual actuator features a push button that used to depress the valve core and releases pressure from the cylinder discharge valve. This hardware is designed to be fitted on the top of the cylinder valve assembly or electrical actuator by hand tight only.



Manual Actuator

Manual Actuator Technical Information

Description	Specification		
Part Number	LF-MA		
Body	Brass C3604BD		
Push Button	Brass C3604BD		
Safety Pin	Stainless Steel		
Piston Rod	Brass C3604BD		
Overall Size	69 mm (L) x 41mm (Diameter)		
	2.72 inch (L) x 1.61 inch (Diameter)		
Min Actuation Force	40 N (8.99 lbf)		
Working temperature range	0°C to 50°C (0° F to 122° F)		
Weight	0.42 kg		



1 Inch and 2 Inch Discharge Hose

The discharge hose is equipped with a female swivel fitting at the inlet and enable to connect the cylinders to the manifold in multiple cylinder arrangements. This facility has enables cylinder to be disconnected during maintenance without any effort to remove other manifold connection and pipework.

1 inch Discharge Hose Technical Information

Description	Specification		
Part Number	LF-DH25		
Hose Material	Single braided high tensile steel wire oil resistant		
	synthetic rubber core to EN 853 Type 1SN		
Connection	1 inch NPT Male (Carbon steel)		
	1 inch BSPP Female 90° Swivel (Carbon steel)		
Min Bend Radius	140mm (5.5 inch)		
Max Working Pressure	90 Bar (1300 psi)		
Temperature Range	-40°C to + 100°C (-40° F to 212° F)		
Overall Size	405mm (L) x 92mm (W)		
	15.9 inch (L) x 3.6 inch (W)		
Equivalent Length	3.14 m		
Weight	1.25 kg		



1 inch Discharge Hose

2 inch Discharge Hose Technical Information

Description	Specification		
Part Number	LF-DH50		
Hose Material	Double braided high tensile steel wire oil resistant synthetic rubber core to EN 853 Type 2SN		
Connection	2 inch NPT Male (Carbon steel) 2 inch BSPP Female 90° Swivel (Carbon steel)		
Min Bend Radius	600mm (23.6 inch)		
Max Working Pressure	90 Bar (1300 psi)		
Temperature Range	-40°C to + 100°C (-40° F to 212° F)		
Overall Size	530mm (L) x 155mm (W)		
	20.9 inch (L) x 6.1 inch (W)		
Equivalent Length	5.36 m		
Weight	5.05 kg		



2 inch Discharge Hose



3 Inch Discharge Hose

The discharge hose is used to connect the 3 inch cylinder discharge valve outlet and manifold



3 inch Discharge Hose

3 inch Discharge Hose Technical Information

Description	Specification
Part Number	LF-DH80
Hose Material	Double braid 304 stainless steel
	corrugated hoses
Connection	3 inch NPT Male
	3 inch BSPP Female 90° Tube Bend
Min Bend Radius	750 mm (29.5 inch)
Max Working Pressure	35 Bar (508 psi)
Overall Size	530 mm (L) x 280 mm (W)
	20.9 inch (L) x 11 inch (W)
Equivalent Length	15.85 m
Weight	6.0 kg



Pneumatic Actuator

The pneumatic actuator features a pneumatically driven piston that used to depress the valve core and releases pressure from the cylinder discharge valve. This hardware is designed to be fitted on the top of the cylinder valve assembly by hand tight only. The pressure from the master cylinder is used to actuate the cylinder discharge valve of slave cylinder via flexible hose.

Pneumatic Actuator Technical Information

Description	Specification		
Part Number	LF-PA		
Body	Brass C3604BD		
Actuation Pin	Brass C3604BD		
Pneumatic Connection	1/4 inch NPT Female		
Overall Size	48mm (L) x 41mm (Diameter)		
	1.89 inch (L) x 1.61 inch (Diameter)		
Min Actuation Pressure	0.7 Bar (10.15 psi)		
Working temperature range	0°C to 50°C (0° F to 122° F)		
Weight	0.38 kg		



Pneumatic Actuator

Flexible Hose

The flexible hose is used to connect between the master cylinder valve port and slave cylinder pneumatic actuator and slave to slave cylinder pneumatic actuator. This flexible hose is act as a pressure connector.

Flexible Hose Technical Information

Description	Specification
Part Number	LF-FH710
Hose Material	Single braided high tensile steel wire oil resistant
	synthetic rubber core to EN 853 Type 1SN
Connection	1/4 inch BSPP Female Swivel
Min Bend Radius	38 mm (1-1/2 inch)
Max Working Pressure	225bar (3250psi)
Min. Burst Pressure	900 Bar (13000 psi)
Length	710 mm (28 inch)
Diameter	6.3 mm (1/4" inch)
Weight	0.25 kg





Actuation Components

The following fittings are used for the actuation system and not limit to other acceptable fittings

Picture			
Part Number	LF-025N	LF-025T	LF-025E
Description	1/4" Nipple -Connect flexible hose (LF-FH710) to discharge valve assembly.	1/4" Tee -Connect flexible hose (LF-FH710) to pneumatic actuator (LFPA)	1/4" Elbow -Connect flexible hose (LF-FH710) to pneumatic actuator (LFPA)
Technical	Material: Steel zinc passivated	Material: Steel zinc passivated	Material: Steel zinc passivated
Information	Connection: 1/4" BSP x 1/4" BSP	Connection: 1/4" BSP x 1/4" BSP x 1/4" NPT	Connection: 1/4" BSP x 1/4" NPT
	Max. Working Pressure: 350Bar	Max. Working Pressure: 350Bar	Max. Working Pressure: 350Bar



Valve Outlet Adapter

Valve outlet adaptor is available in various size and thread to connect cylinder valve outlet to the distribution pipe.





Valve Outlet Adapter

Description	Specification				
	1" NPT	2" NPT	3" NPT	3" BSP	3" Groove
Part Number	LF-1ADNPT	LF-2ADNPT	LF-3ADNPT	LF-3ADBSP	LF-3ADG
Material	Bra	iss	Mild steel		
Connection	1"BSP X 1"	2"BSP X 2"	3.5 inch – 12UN	3.5 inch – 12UN	3.5 inch – 12UN
Connection	NPT	NPT	X 3" NPT	X 3" BSP	X 3" Groove
	68mm (L) x	79mm (L) x			
	45mm (W)	76mm (W)	108mm (L) x 118mm (W) 4.25 inch (L) x 4.65 inch (W)		
Overall Size					
	2.67 inch (L) x	3.11 inch (L)			
	1.77 inch (W)	x 3 inch (W)			



Check Valves

Check Valves are hardware specially designed to be used when two or more cylinders are manifolded together with one common discharge piping configuration. The purpose of the check valve is to prevent loss of agent through manifold when any of the cylinder are not connected at the time of system discharge.







1 inch Check Valve

2 inch Check Valve

3 inch Check Valve

1 inch, 2 inch & 3 inch Check Valve Technical Information

Specification			
25mm (1 inch)	50mm (2 inch)	80mm (3 inch)	
LF-CV25	LF-CV50	LF-CV80	
Brass C3604BD			
Stainless Steel 304			
Stainless Steel 304			
O- Ring (NBR) Teflon		on	
Brass C3604 BD			
73mm (L) x 55mm (W)	92mm (L) x 76mm (W)	150mm(L) x 112mm(W)	
2.9 inch (L) x 2.2 inch (W)	3.6 inch (L) x 3 inch (W)	5.9inch(L) x 4.4inch(W)	
1 inch NPT Female	2 inch NPT Female	3 inch NPT Female	
1-1/2 inch NPT / BSPT	2 in ah NDT / DCDT Mala	2 inch NDT Mole	
Male	2 inch NPT / BSPT Male	3 inch NPT Male	
0.4 m	6.7 m	15.85m	
0.72 kg	1.00 kg	4.80 kg	
	O- Ring (NBR) 73mm (L) x 55mm (W) 2.9 inch (L) x 2.2 inch (W) 1 inch NPT Female 1-1/2 inch NPT / BSPT Male 0.4 m	25mm (1 inch) 50mm (2 inch) LF-CV 25 LF-CV 50 Brass C3604BD Stainless Steel 304 Stainless Steel 304 Stainless Steel 304 O- Ring (NBR) Tefl Brass C3604 BD Brass C3604 BD 73mm (L) x 55mm (W) 92mm (L) x 76mm (W) 2.9 inch (L) x 2.2 inch (W) 3.6 inch (L) x 3 inch (W) 1 inch NPT Female 2 inch NPT Female 1-1/2 inch NPT / BSPT Male 2 inch NPT / BSPT Male Male 6.7 m	



Discharge Nozzles

Nozzles are devices through which the agent is discharged within the protected enclosure. Nozzles are made of brass with female threads.

Nozzles are available in 180° or 360° and available in size $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, $\frac{1}{4}$ inch, $\frac{1}{2}$ inch and $\frac{2}{4}$ inch. The nozzle can be installed either pendent or upright.



Discharge Nozzle Technical Information

Nozzle Size	Part Number	Nozzle	Port	Nozzle	Type of	Drill Size Range
		Туре		Material	Thread	
15 mm (½ inch)	LF-180H-15	180°	7	Brass	NPT / BSPT	2.4 mm – 5.3 mm
20 mm (¾ inch)	LF-180H-20	180°	7	Brass	NPT / BSPT	3.1 mm – 7.0 mm
25 mm (1 inch)	LF-180H-25	180°	7	Brass	NPT / BSPT	3.9 mm – 9.0 mm
32 mm (1 ¼ inch)	LF-180H-32	180°	7	Brass	NPT / BSPT	5.2 mm – 11.8 mm
40 mm (1 ½ inch)	LF-180H-40	180°	7	Brass	NPT / BSPT	6.0 mm – 13.8 mm
50 mm (2 inch)	LF-180H-50	180°	7	Brass	NPT / BSPT	7.7 mm – 17.7 mm
15 mm (½ inch)	LF-360H-15	360°	8	Brass	NPT / BSPT	2.2 mm – 4.9 mm
20 mm (¾ inch)	LF-360H-20	360°	8	Brass	NPT / BSPT	2.9 mm – 6.6 mm
25 mm (1 inch)	LF-360H-25	360°	8	Brass	NPT / BSPT	3.7 mm – 8.5 mm
32 mm (1 ¼ inch)	LF-360H-32	360°	8	Brass	NPT / BSPT	4.8 mm – 11.0 mm
40 mm (1 ½ inch)	LF-360H-40	360°	8	Brass	NPT / BSPT	5.6 mm – 12.9 mm
50 mm (2 inch)	LF-360H-50	360°	8	Brass	NPT / BSPT	7.2 mm – 16.6 mm



LIFECO-HFC227ea

Cylinder Label

The cylinder label consists of cylinder part number, cylinder serial number, filling date, tare weight, charge weight, gross weight, fill density and fill location

HFC-227ea Label – UL / FM (Part No: LF-CL2)

RECYCLING PROTECTS THE ENVIRONMENT DO NOT DISPOSE DISCHARGE ONLY IN CASE OF FIRE.

IF CONTAINER CONTENTS MUST BE FOR MAINTENANCE OR DISMANTLING OF MAINTENANCE OR DISMANTLING OF THE CLEAN AGENT SYSTEM PRIOR TO REMOVAL, CONTACT YOUR LOCAL INSTALLER OR MANUFACTURER OR INSTRUCTIONS ON HANDLING EQUIPMENT AND RECLAIMING OR RECYCLING CLEAN AGENT





CLEAN AGENT EXTINGUISHING SYSTEM UNIT

Perform the following steps prior to removing cylinder assembly from system piping:

- Remove Electrical Actuator
 Disconnect discharge pipe from cylinder valve's outlet.
 Attach valve outlet safety cap.



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LIFECO-HFC227

HFC-227ea Clean Agent

Fire Extinguishing System

Inspection and Maintenance

- Piping and nozzle shall be examined to determine that they are unobstructed.
- Cylinder shall be inspected at least semiannually or more
- Cyninder shall be inspected at gest sethialmounty of mode frequently when circumstance required. Check agent quantity and pressure in cylinder. Refull and replace the cylinder when agent weight less 5% or loss of pressure of more than 10 percent (refer to Gross Weight), contact system supplier. Please refer to manual for detailed instructions on correct system handling usage and maintenance.

Additional Information

- · Refer to Design, Installation, Operation and Maintenance Manual, (P/N: LF227MAL-0001) and Standard on Clean Agent Fire Extinguishing System, NFPA 2001 for detailed instructions for correct System handling usage and
- maintenance.

 Contents: 1, 1, 1, 2, 3, 3, 3-Heptafluoropropane, HFC-227ea
- HFC-22/6a.

 YLINDERS SHALL BE TRANSPORTED AND STORED
 IN THE VERTICAL POSITION.
 YLINDER IS FILLED WITH HFC-227ea AND IS SUPER
 PRESSURIZED TO 25 BAR AT 21°C (360 PSI AT 70°F)
 WITH DRY NITROGEN.
- WITH DRY NITROGEN.

 **DOT WELDED CYLINDERS TESTED TWO TIMES DOT SERVICE PRESSURE STAMPED ON THE CYLINDER, SEAMLESS, WELDED CYLINDERS AND TPED WELDED CYLINDERS FACTORY TESTED TO TEST PRESSURE STAMPED ON THE CYLINDER.
- OPERATING TEMPERATURE CYLINDER/STORAGE

RANGE 0°C TO 50°C (32°F TO 122°F). DO NOT COVER, REMOVE, OR DEFACE THIS LABEL

Hazardous Material Information System (HMIS) HFC-227ea. Health : 1 Flammability : 0 Reactivity : 0 MSDS No : LF-MSDS-HFC227

CAUTION:

Pressurized Cylinder, Capable of violent discharge

- Extremely hazardous and can cause severe injury or death
- Do not remove valve from cylinder.
- Do not incinerate cylinder.

 Valve outlet safety cap must be securely attached during transportation and only remove when cylinder is ready for connection to system's discharge pipe.

⚠ WARNING:

THE DISCHARGE OF CLEAN AGENT SYSTEMS TO EXTINGUISH A FIRE CAN RESULT IN A POTENTIAL HAZARD TO POTENTIAL ΤO PERSONNEL FROM THE NATURAL FORM OF THE CLEAN AGENT OR FROM THE PRODUCTS COMBUSTION THAT RESULT FROM EXPOSURE OF THE AGENT TO THE FIRE OR HOT SURFACES. UNNECESSARY EXPOSURE OF PERSONNEL EITHER TO THE NATURAL AGENT OR TO THE PRODUCTS OF DECOMPOSITION SHALL BE AVOIDED.

CYLINDER	PART NO:
CILINDER	TAKI NO.
CYLINDER S	ERIAL NO:
AGENT W	EIGHT:
TARE WI	EIGHT:
GROSS W	EIGHT:
FILLING PRES	SURE/TEMP:
Bar	
FILLING LC	OCATION:
CHARGE	DATE:
4.4.25.62	
Label Part N	o: LF-CL2

Cylinder Label

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Cylinder Bracket

The cylinder bracket assembly is made of mild steel. It consists of one Unistrut channel, M10 stud, wing nuts and half strap bracket. It is used to hold the cylinder securely in position against the reaction force of the LIFECO-HFC227 cylinder discharge. The cylinder must be mounted vertically and resting firmly on the floor. Cylinder required two set of bracket assemblies for this safety purpose.



Cylinder Bracket

Cylinder Bracket Technical Information

Description	Specification	
Material	Mild Steel	
Paint	Epoxy Powder Coating (Black)	
Mounting	Unistrut Channel	

Part Number	Cylinder Size
LF - CB1	16.6L, 16.7 L, 28.3L
LF - CB2	52L, 106L, 147L, 150L, 180 L
LF - CB4	270L, 369L
LF - CB6	52L (TPED)
LF - CB3	180L (TPED), 240L
LF - CB5	453L



Liquid Level Indicator

Liquid level indicator is used to measure the level of the HFC-227ea fluid in 106L, 147L, 180L and 369L cylinders. The liquid level can be found by lifting the measuring tape from the tube and slowly pulled the tape until a magnetic interlock with the float is felt. The tape will remain in the lock position which it can read the measurement from the top of the housing. Weight of the HFC-227ea fluid in the cylinders then can be determined by converting the level measurement to the weight measurement by referring to the liquid level indicator chart (Appendix D). Cylinder with liquid level indicator can be easily determine the fluid weight without removing the cylinder from the fire suppression system. Optional item as per request.



Liquid level indicator

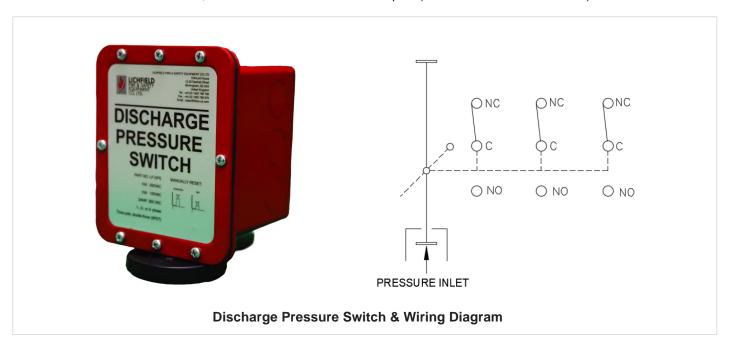
Liquid level indicator Technical Information

Description	Specification		
Part Number	LF-LLI1	LF-LLI2	
Thread	1.3125 – 12UN		
Material	Stainless Steel		
Length	885mm (34.85 inch)	1155mm (45.47 inch)	
Working Temperature	0°C - 50°C		
Cylinder size	106L	147L, 180L, 369L	



Discharge Pressure Switch

The discharge pressure switch function by sending signal to a control panel during a system discharged. It activates by the agent pressure during discharged and can be reset manually by pushing the top stem after activation. To connect with actuation line hose, use a 1/4" BSP x 1/2" NPT adaptor (Part Number: LF-05ADNPT).



Discharge Pressure Switch Technical Information

Description	Specification	
Part Number	LF-DPS	
Body Material	Brass	
Cover Plate	Mild Steel	
Connection	1/2" NPT	
Switch	3PDT, Three Pole Double Throw	
Configuration		
Minimum	4 bar (58psi)	
Actuation Pressure		
Maximum	60 bar (870psi)	
Operating Pressure		
Electrical Rating	10A 250VAC	
	15A 125VAC	
	3/4HP, 250VAC	
	1,2, or 3 phase	
Overall Size	100 mm (L) x 92mm (W) x 123mm(H)	
	3.94 inch(L) x 3.62 inch(W) x 4.84 inch(H)	



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