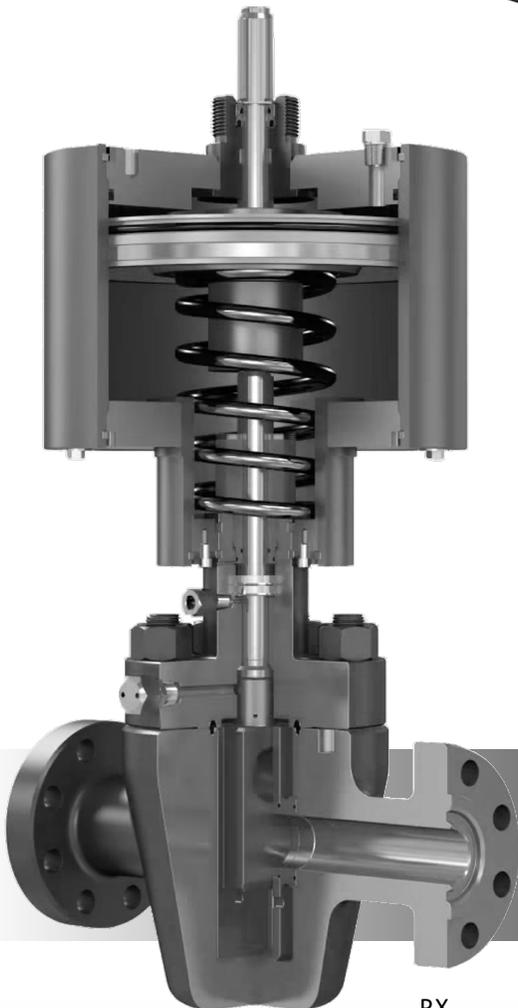


PNEUMATIC PISTON



# Model PX

## Pneumatic Piston Actuators

For surface safety and other energy production, distribution and storage applications.

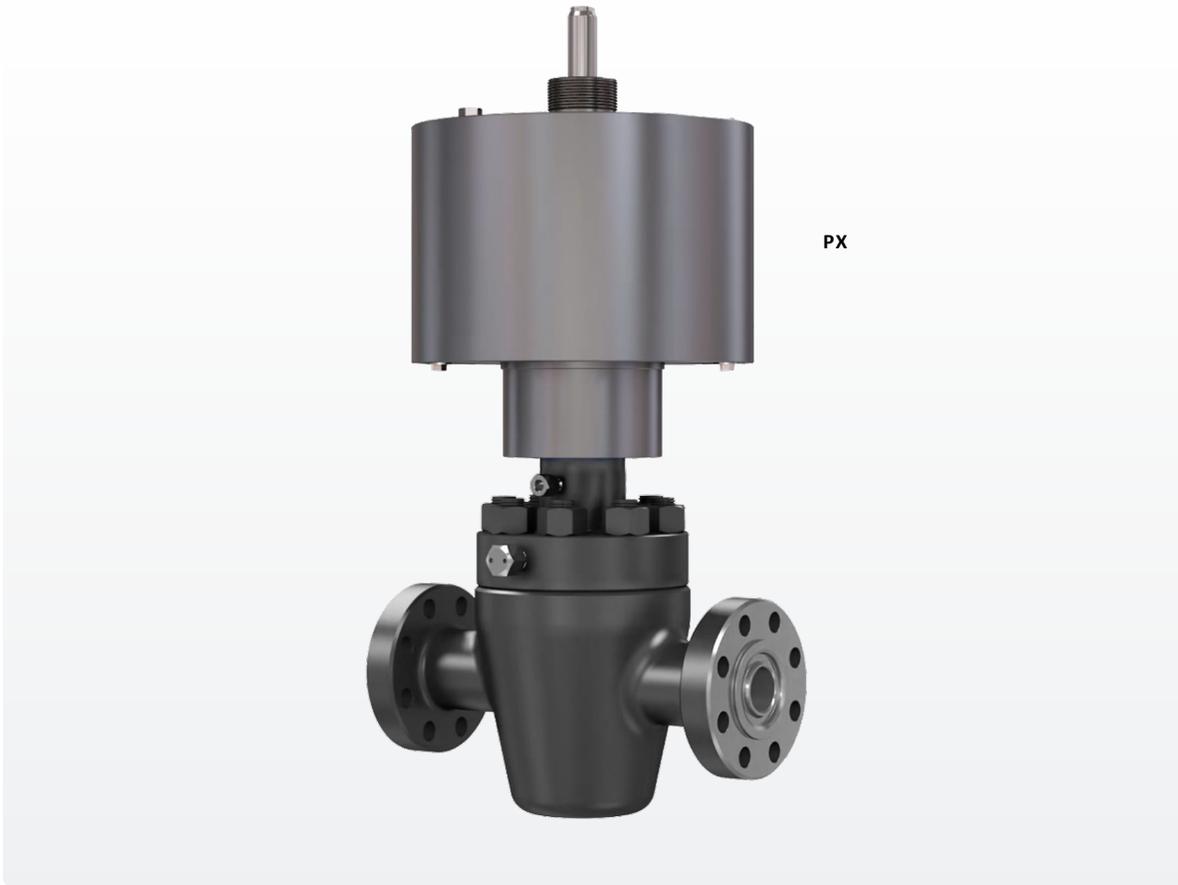
- API 6A Monogrammed
- Highest Quality
- Delivered to Exact Customer Specifications
- Engineered for Years of Trouble Free Service

# Model PX - Piston Pneumatic Actuator

Model PX actuators are designed to operate surface safety or shutdown valves on oil & gas wellhead, transmission, storage, manifold or other applications where fail-safe capability is required. Omni provides **API Monogrammed** surface safety valve assemblies, or actuator/bonnet assemblies ready to mount on valves from other manufactures.

## Model PX Features

- Can be used for land or offshore installations
- Can be adapted to operate valves from any manufacturer
- Engineered to provide reliable service in a variety of operating conditions
- All non-metallic seals and other parts are easily replaceable



## Flexibility

Model PX actuators can be adapted to operate valves from any manufacturer (interface information is required) and can be delivered with alternate materials of construction if required by field conditions.

## Over-Pressure Protection

The PX come equipped with pressure relief devices to protect personnel and guard against damage to the actuator in case of an over pressure condition. The pressure relief device is easily inspected and is field-replaceable.

## Corrosion Protection

Model PX's are internally and externally coated to prevent corrosion due to environmental conditions. All internal components are either stainless steel or are coated to prevent corrosion due to any contamination that might be present in the control pressure source.

## Backseat & Packing Integrity

Omni safety valves with PX actuators have bonnet assemblies that incorporate integrated metal-to-metal backseats and bonnet vent fittings that can be used to relieve any pressure that might be trapped between the backseat and stem packing after the back-seat operation.

## Available Sizes

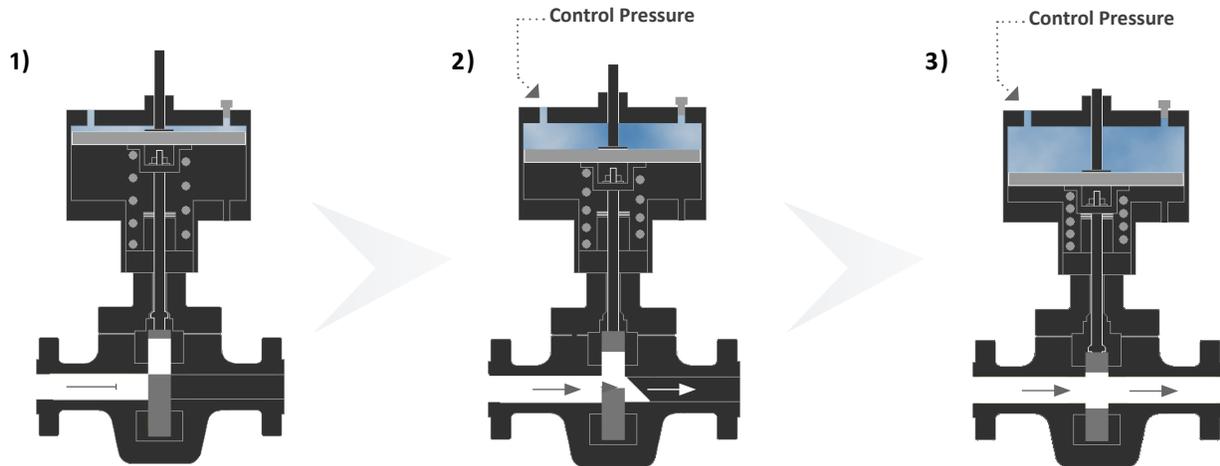
Model	Size
PX-13	13"
PX-15	15"
PX-18	18"
PX-20	20"

# Model PX Actuator Operation



Fail “**CLOSED**” operation is depicted. Fail “**OPEN**” operation is available upon request.

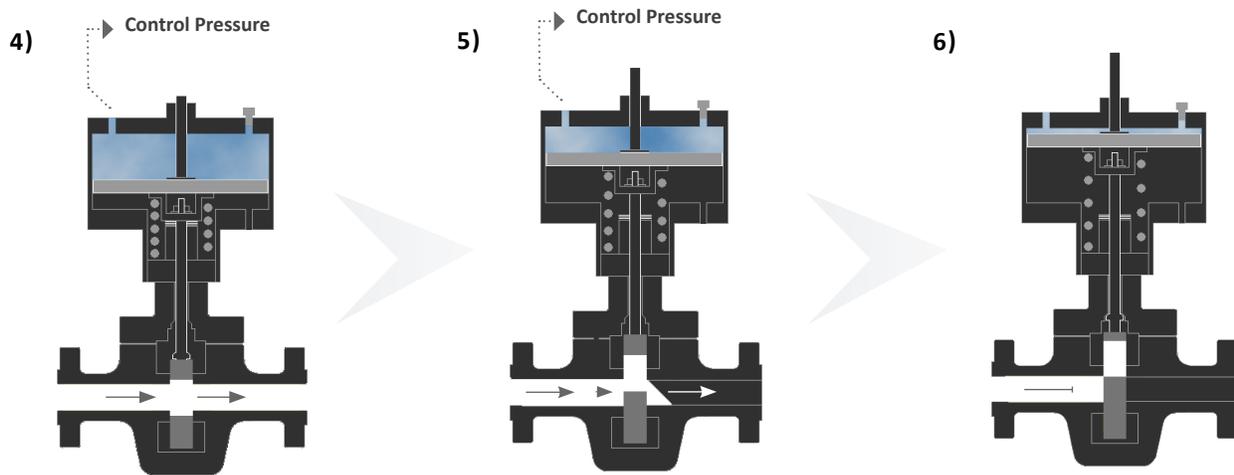
Open and Close lines Dependent upon configuration



When no control pressure is applied to actuator, valve is in closed position (Gate all the way up)

Upon application of adequate control pressure to the actuator port, valve begins to open (Gate moves up)

With continued application of adequate control pressure, valve moves to the **FULLY OPEN** position (Gate all the way down)



Valve remains in **FULLY OPEN** position as long as adequate control pressure is present (gate all the way down)

Upon loss of control pressure, valve begins **CLOSING** (Gate moving up)

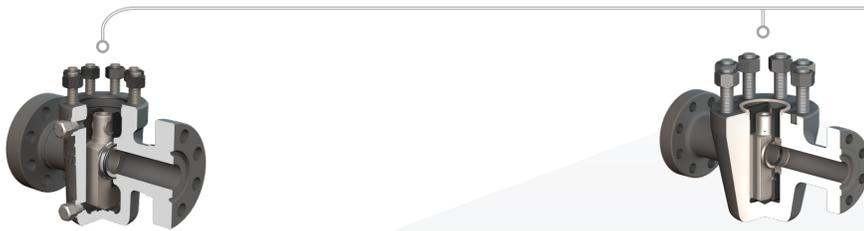
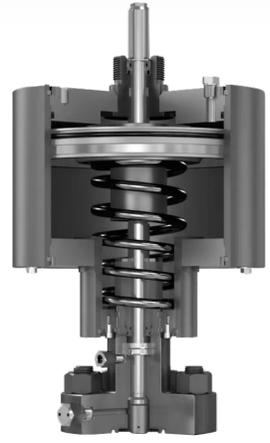
Valve **FULLY CLOSES** & remains closed until application of control pressure to the actuator (Gate all the way up)

Standard Actuator Specifications		
Maximum Operating Pressure	Up to 250 psi (Based on Valve size and Pressure)	Up to 250 PSI (Based on Actuator Maximum Operating Pressure)
API Material Class	BB	Not appropriate if control source contains H <sub>2</sub> S (is sour)
API Temperature Rating	P (0 F to 180 F) (-18 C to 82 C)	(-18 C to 82 C)

# Model PX with FS-R or CS-R Gate Valves

## Valve Characteristics

- » The Omni Model CS-R is a surface safety valve used for low pressure (2,000 / 3,000 / 5,000 psi) applications. It has single-piece floating seat design with o-ring seat seals. This arrangement provides excellent sealing integrity (even at extremely low bore pressures) and allows for variation in seal material based on the specific attributes of the bore media.
- » The Omni Model FS-R is a surface safety valve used for both low pressure (3,000 / 5,000 psi) and higher pressure (10,000 / 15,000 psi) applications. It has a two-piece seat and bushing design that can accommodate a variety of seal designs and materials. This arrangement makes the FS-R an extremely reliable solution for high pressure, critical service deployments in a variety of services.
- » **Both the CS-R and FS-R:**
  - Are API 6A monogrammed equipment
  - Are available in standard PR-2 or PR-2F (API 6A Annex F) configurations
  - Have been qualified for API 6AV1 Class I (Standard Service) and Class II (Sandy Service)
  - Can be certified SSV for use in Federal Offshore Waters (when provided in PR-2F Configuration)



Model CS-R			
Bore Size	Pressure (psi)	API Ring #	Available PSL
2 1/16"	2,000	R23	PSL-1, 2
	3,000 / 5,000	R24	PSL-1, 2, 3, 3G
2 9/16"	2,000	R26	PSL-1, 2
	3,000 / 5,000	R27	PSL-1, 2, 3, 3G
3 1/8"	2,000 / 3,000	R31	PSL-1, 2
	5,000	R35	PSL-1, 2, 3, 3G
4 1/16"	2,000 / 3,000	R37	PSL-1, 2
	5,000	R39	PSL-1, 2, 3, 3G
5 1/8"	2,000 / 3,000	R41	PSL-1, 2
	5,000	R44	PSL-1, 2
7 1/8"	2,000 / 3,000	R45	PSL-1, 2
	5,000	R46	PSL-1, 2

Model FS-R (HIGH Pressure)			
Bore Size	Pressure (psi)	API Ring #	Available PSL
1 13/16"	10,000	BX151	PSL-2, 3, 3G
	15,000		PSL-3, 3G
2 1/16"	10,000	BX152	PSL-2, 3, 3G
	15,000		PSL-3, 3G
2 9/16"	10,000	BX153	PSL-2, 3, 3G
	15,000		PSL-3, 3G
3 1/16"	10,000	BX154	PSL-2, 3, 3G
	15,000		PSL-3, 3G
4 1/16"	10,000	BX155	PSL-2, 3, 3G

Model FS-R (LOW Pressure)			
Bore Size	Pressure (psi)	API Ring #	Available PSL
2 1/16"	3,000 / 5,000	R24	PSL-1, 2, 3, 3G
2 9/16"		R27	
3 1/8"	5,000	R35	
4 1/16"	5,000	R39	

## API Material Classes, Materials, & Temperature Ratings

General Service Trims / Materials		See Notes 1,2,3		Available Temp Ratings	
Material Class (Notes)	NACE	Body / Bonnet	Internals	Low	High
AA	(1 / 2 / 3)	No	Carbon or Low Alloy Steel	L (-50°F / -46°C)	X (350°F / 177°C)
BB		No	Carbon or Low Alloy Steel Steel		
CC		No	SS or CRA (*)		

Sour Service Trims / Materials		See Notes 1,2,3,4		Available Temp Ratings	
Material Class (Notes)	NACE	Body / Bonnet	Internals	Low	High
DD	(1 / 2 / 3 / 4)	Carbon or Low Alloy Steel	Stainless Steel or CRA	L (-50°F / -46°C)	X (350°F / 177°C)
EE-0,5					
EE-1,5					
EE-360		Stainless Steel or CRA		P (-20°F / -29°C)	
EE					
FF-0,5					
FF-1,5					
FF-360					
FF					

## Technical Notes

1	Nitriding is the standard surface treatment for both NACE and NON-NACE trims. Hardfacing or other treatments are also available.
2	CRA: Corrosion Resistant Alloy per NACE MR0175 / ISO 15156.
3	Some valves with high temp ratings (X) might be subject to de-rated working pressure. Consult Omni for a specific size and pressure.
4	NACE trims are required to have qualifiers indicating acceptable partial pressure of hydrogen sulfide. Common qualifiers are 0,5 / 1,5 / 360. NACE trims listed without qualifiers (DD / EE / FF) are assumed to have no limit (NL) to hydrogen sulfide exposure.

# Model PX - with Model PCX Pneumatic Control System

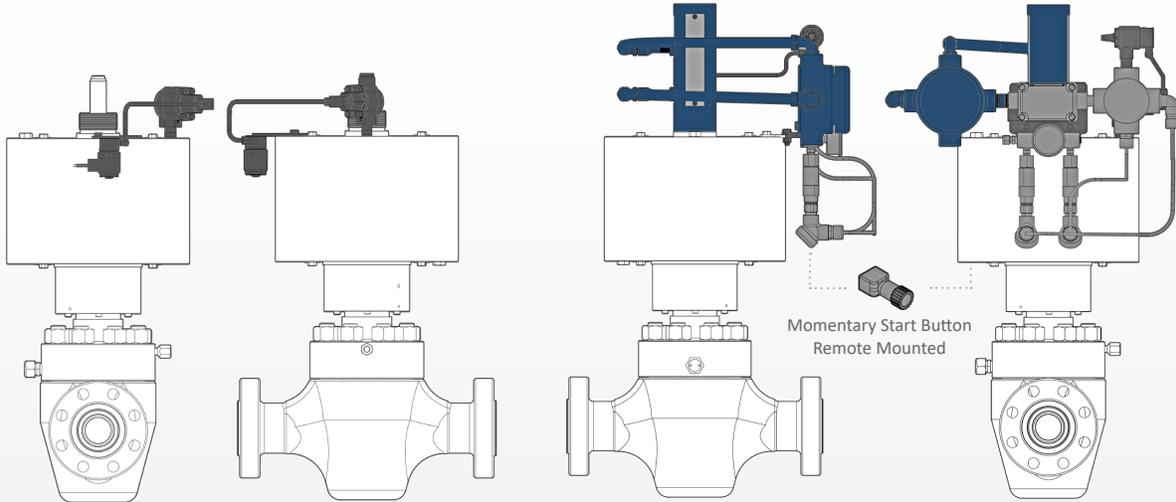


## Model PX with Model PCX Pneumatic Control System

The Omni Model PCX is an actuator control system designed to enhance the functionality of surface safety valves with pneumatic actuators. It can be used to automate emergency shutdown (ESD) logic, implement remote valve control features, and provide valve position feedback information to wellsite data acquisition (SCADA) systems.

The Model PCX system has a modular design consisting of a required "Base" ESD Module and optional modules that provide additional features. The feature set of each system "as delivered" can be customized based on end user preference or specific wellsite requirements by either adding additional functional modules or by adjusting the individual components used within a particular module.

The system efficiently mounts to any valve with an Omni Model PX actuator, but can easily be adapted to fit valves with actuators from another manufacturer.



PCX System - As Mounted (Base ESD Module Only)

PCX System - As Mounted (All Available Modules)

Base ESD Module	Adjustable Components	Standard Configuration	Options
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Provides basic ESD functionality and remote control. The safety valve will automatically close upon loss of signal power to the solenoid or may be intentionally closed by terminating the solenoid signal via PLC or other wellsite control system.

» Solenoid Valve	» 24 vDC - 1.8 Watt	» 12 vDC / Customer Specified
» Quick Exhaust Valve	» 1/2" NPT - 3/4" Exhaust	» Customer Specified

HI-LO Pressure Sensor Module	Adjustable Components	Standard Configuration	Options
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Provides the ability to monitor a pressure source and automatically close (ESD) the safety valve if pressure is above or below set values. The reset relay feature allows the low pressure switch to be bypassed during the startup period when the safety valve is brought back online.

» Low Pressure Switch	» Electronic - SST/NACE (50 - 500 psi)	» Customer Specified Range / PSL
» High Pressure Switch	» Electronic - SST/NACE (300 - 1,200 psi)	» Customer Specified Range / PSH
» Pressure Gauge	» 2.50" - Liquid Filled	» Customer Specified Range
» Flow Line Pressure Connection	» 1/4" NPT to 3/8" Compression	» Customer Specified
» Low Pressure Switch Override	» 24 vDC Relay w/Remote Mount Override	» Customer Specified / Local Mount

Open-Close Position Indicator Module	Adjustable Components	Standard Configuration	Options
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Provides the ability to monitor a pressure source and automatically close (ESD) the safety valve if pressure is above or below set values. The reset relay feature allows the low pressure switch to be bypassed during the startup period when the safety valve is brought back online.

» Proximity Switch	» Euroswitch F-B - Globally Certified Haz Loc	» Topworx M73 / Customer Specified
» Conduit	» Eaton Crouse-Hinds - Electri-Flex EF11-500	» Customer Specified



**PNEUMATIC PISTON**



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PX



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