

# MODEL PMX

## Piston Pneumatic Actuator with Integrated Manual Override



### INTRO

Omni Model PMX pneumatic piston 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.

Model PMX actuators can be used for land or off shore installations and are engineered to provide reliable service in a variety of operating conditions.

Omni provides Model PMX actuators already mounted on valves and ready to deploy in 5,000 and 10,000 psi working pressures.

### FEATURES

#### Integrated Manual Override

Model PMX actuated valve assemblies are configured with an integrated manual override system to hold the valve open during well intervention or other servicing activities. The manual override cannot be separated from the actuator. This prevents loss or theft of the override mechanism while the valve is in service.

#### Over-Pressure Protection

Model PMX actuators 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.

#### Orientation, Rotation & Ease of Piping

Model PMX actuators have pressure inlet and outlet ports located at convenient locations on the upper housing assembly. The actuator can be rotated to facilitate proper piping orientation based on field conditions. Once proper orientation has been achieved, the actuator can be secured in position to prevent piping damage due to accidental rotation.

#### Integrated Backseat

Model PMX actuators incorporate bonnet assemblies that have an integrated metal-to-metal backseat that allows valve bore pressure to be isolated in the valve cavity while work is being performed on the actuator.

#### Corrosion Protection

Model PMX actuator housings 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 pneumatic control pressure source.

#### Maintenance

Model PMX actuators are designed for ease of maintenance. All non-metallic seals and other parts are easily replaceable.

### AVAILABLE SIZES

Model	Size	Pressure (PSI)
PMX 13	2 1/16" "	5,000
PMX 13	1 13/16" "	10,000
PMX 13	2 1/16" "	10,000

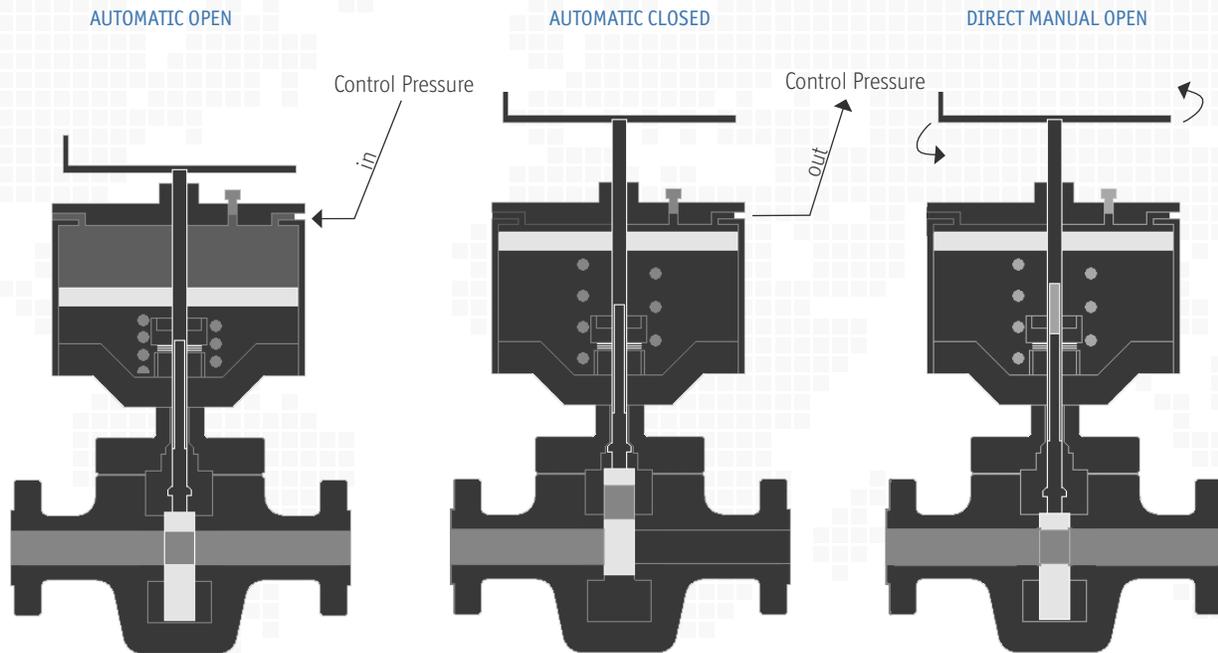
# ACTUATOR OPERATION

Fail "closed" operation is depicted.

Fail "open" operation is available upon request.



Pneumatic Actuation



**Note:** Valve must be in the manually closed position before placing in automatic operation.

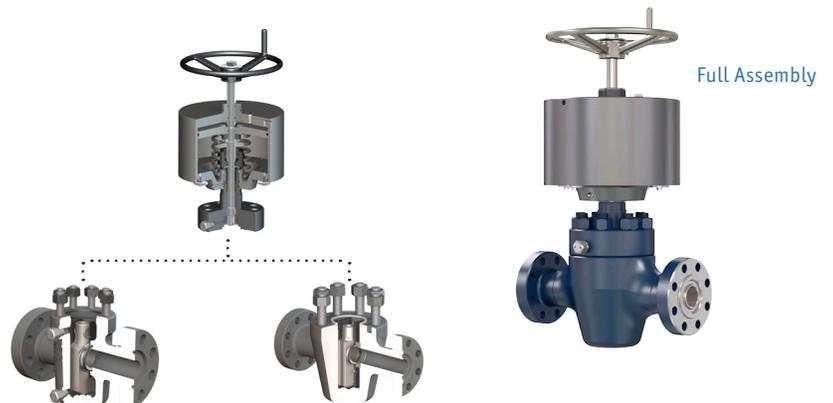
Opened by applying adequate control pressure to the actuator inlet. This moves reverse acting gate downward. Handwheel down indicates open position.

Closed by exhausting the control pressure from the actuator. Valve body pressure acting on effective area of stem generates sufficient force to close the gate. Spring aids closing of valve in absence of body pressure. Handwheel up indicates closed position of gate.

When the control pressure is removed from the actuator, the valve may be opened by rotating handwheel counterclockwise. Gate and stem are fully balanced so body pressure does not resist movement of gate into body cavity. In this case, the handwheel does not indicate position of gate.

## OMNI GATE VALVES PREPARED FOR ACTUATOR:

Omni offers a complete line of cast and forged body reverse acting slab gate valves prepared for actuator. All Omni valves prepared for actuator are designed to be used as surface safety valves for oil and natural gas wellhead, manifold or other critical service applications with operating pressures from 2,000 to 15,000 psi.

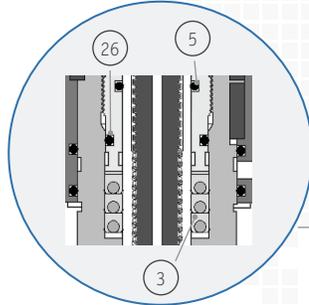
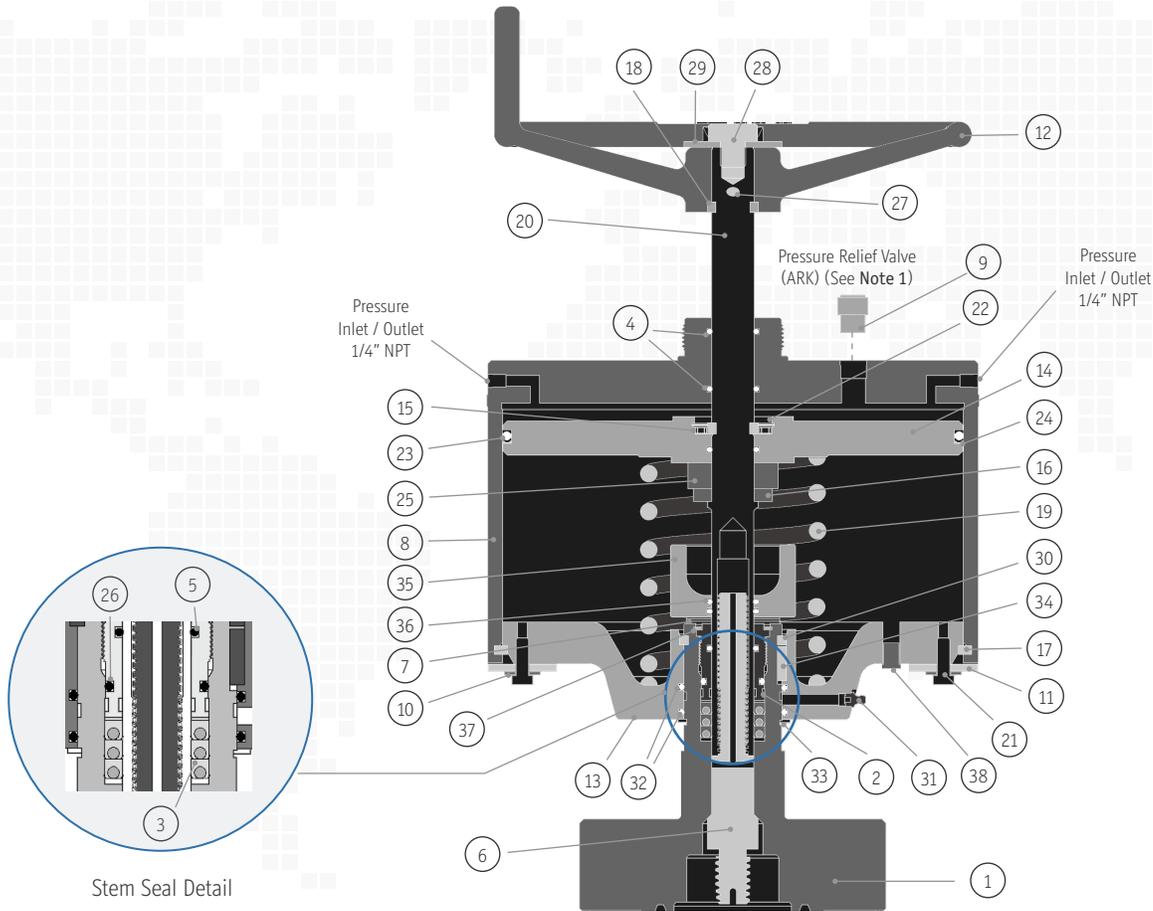


# INTERNAL CONFIGURATION

Actuator depicted with typical 10,000 / 15,000 psi bonnet.  
See Note 2 below.



Pneumatic Actuation



Stem Seal Detail

Component	Description	Qty
1	Valve Bonnet (see Note 2)	1
2	Packing Retainer	1
3	Bonnet Packing	3 (BRK)
4	Upper Stem Seal O-Ring (Buna N 70D 218)	3 (ARK)
5	Inner Packing Retainer O-Ring (Buna N 70D 218)	1 (BRK)
6	Stem - Male	1
7	Drift Shim	3
8	Piston Housing	1
9	Pressure Relief Fitting (250 psi)	1 (ARK)
10	Cylinder Retaining Washer	4
11	Cylinder Retaining Washer	4
12	Manual Override Hand Wheel	1
13	Lower Plate	1
14	Piston	1
15	Piston Retainer Bushing	1
16	Stem Shoulder Ring	1
17	Cylinder Snap Ring	1
18	Hand Wheel Split Ring	2
19	Spring	1

Component	Description	Qty
20	Upper Stem	1
21	Cylinder Retaining Bolt	4
22	Piston Retaining Ring / Fastener	1
23	Piston O-Ring (Buna N 70D 455)	1 (ARK)
24	Piston Backup Ring (Buna N 454)	1 (ARK)
25	Thrust Bearing	1
26	Outer Packing Retainer O-Ring (Buna N 70D 223)	1 (BRK)
27	Hand Wheel Pin (Bolt, Nut, Lock Washer)	1 (ARK)
28	Hand Wheel Bolt	1
29	Hand Wheel Washer	1
30	Bonnet Retaining Ring	2
31	Grease Fitting	1 (ARK)
32	Lower Plate O-Ring (Buna N 70D 233)	2 (ARK)
33	Lower Plate Retaining Ring / Fastener	1
34	Lower Plate Lock Pin	1
35	Down Stop	1
36	Down Stop Stem Seal O-Ring (Buna N 70D 218)	2 (ARK)
37	Packing Retainer Ring	1 (BRK)
38	Breather Vent	1 (ARK)

**Note 1:** Pressure relief valve is set at 250 psi. Valve will relieve any pressure above 250 psi inside the cylinder and then automatically reset.

**Note 2:** Configuration of flange face is different for 5,000 psi bonnets.

(ARK = Actuator Redress Kit Item)

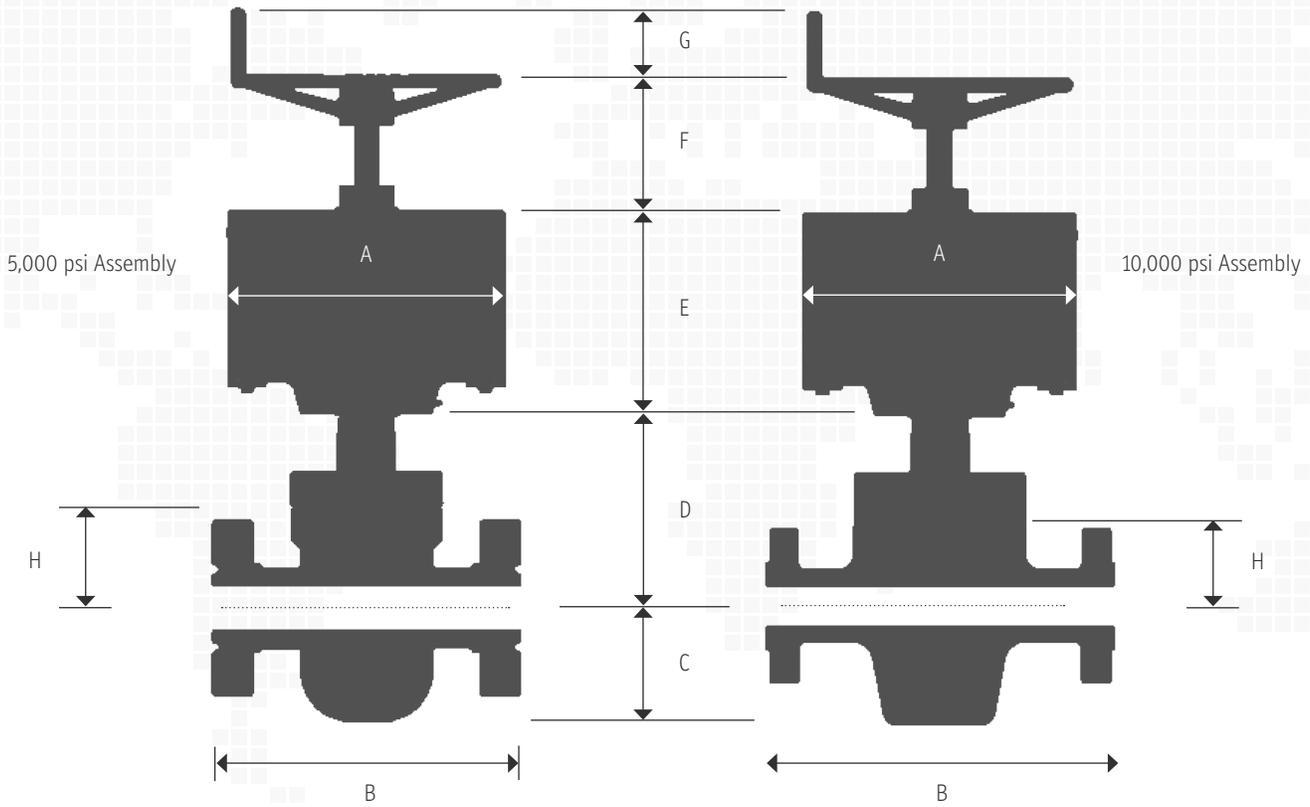
(BRK = Bonnet Redress Kit Item)

# DIMENSIONAL DATA

## Specifications & Control Pressure



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### SIZING CHART

Valve Size	Working Pressure	A		B		C		D		E		F		G		H		Weight	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
2 1/16"	5,000	14.38	365	14.62	371	5.06	128	9.07	230	10.49	266	4.65	118	3.39	86	4.84	123	366	166
1 13/16"	10,000	14.38	365	18.25	464	5.69	145	8.83	224	10.49	266	4.99	127	3.39	86	3.88	99	421	191
2 1/16"	10,000	14.38	365	20.50	521	5.69	145	9.56	243	10.49	266	4.65	118	3.39	86	3.88	99	452	205

### CONTROL PRESSURE EQUATIONS

Bore Size	Working Pressure	Model PMX 13	
		Equation	PSI
2 1/16"	5,000	0.0136 x WP + 3 psi=	71
1 13/16"	10,000	0.0138 x WP + 3 psi=	141
2 1/16"	10,000	0.0149 x WP + 3 psi=	152

# MATERIALS & REDRESS KITS

## Model PMX



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### STANDARD ACTUATOR SPECIFICATIONS

Maximum Operating Pressure (See Note 3)	250 PSI	Pressure relief device on actuator is set at 250 PSI
Cylinder Test Pressure	375 PSI	Upper housings are subjected to pressure test
API Material Class (See Note 2)	AA / BB / CC	Alternate material classes available
API Temperature Rating	P (-20 F to 180 F)	(-29 C to 82 C)

### STANDARD BONNET SPECIFICATIONS

Available Sizes and Pressure Ratings	API 6A 2 1/16" - 5,000 psi	API 6A 1 13/16" - 10,000 psi
	API 6A 2 1/16" - 10,000 psi	
Available API Material Classes (See Note 2)	AA BB CC	For Non-Sour (Non-NACE) Service
	DD-0,5 DD-1,5 DD-NL	EE-0,5 EE-1,5 EE-NL FF-0,5 FF-1,5 FF-NL HH-0,5 HH-1,5 HH-NL
	FF-0,5 FF-1,5 FF-NL	
Available API Product Specification Level (PSL)	PSL-1, 2, or 3	
Available API Temperature Ratings (See Note 4)	L (-50 F) to X (350 F)	(-46 C) to (177 C)

**Note 1:** All specifications listed on this technical bulletin are subject to change without notice.

**Note 2:** If control source contains H2S, please contact Omni for alternate materials of construction. Specific materials of construction for all material classes and temperature ratings can be changed upon customer request; however, Omni reserves the right to monogram Actuators and Bonnets with material class "ZZ" as per API requirements if those requested by the customer do not meet the current requirements of NACE MR 0175 / ISO 15156.

**Note 3:** Maximum Operating Pressure refers to the control pressure source.

**Note 4:** In cases where the bonnet carries a temperature rating above P (U or X for example), mating the bonnet to an actuator will not cause the actuator's temperature rating to be increased. In these cases, it is appropriate to consider the actuator and bonnet assembly to have a temperature rating equivalent to the lower rating of the bonnet or actuator.

Omni stocks redress kits for all of its actuator models. Kit contents are listed below for the two different redress kits available for the Model PMX Actuator. Contact an Omni sales representative to order.

#### (ARK) ACTUATOR REDRESS KIT CONTENTS

#	Description	Qty
1	Upper Stem Seal O-Ring (Buna N 70D 218)	3
2	Pressure Relief Fitting (250 psi)	1
3	Piston O-Ring (Buna N 70D 455)	1
4	Piston Backup Ring (Buna N 454)	1
5	Hand Wheel Pin (Bolt, Nut, Lock Washer)	1
6	Grease Fitting	1
7	Lower Plate O-Ring (Buna N 70D 233)	2
8	Down Stop Stem Seal O-Ring (Buna N 70D 218)	2
9	Breather Vent	1

#### (BRK) ACTUATOR REDRESS KIT CONTENTS

#	Description	Qty
1	Bonnet Packing	3
2	Inner Packing Retainer O-Ring (Buna N 70D 218)	1
3	Outer Packing Retainer O-Ring (Buna N 70D 223)	1
4	Packing Retainer Retainer Ring	1

**Note 1:** Pressure relief valve is set at 250 psi. Valve will relieve any pressure above 250 psi inside the cylinder and then automatically reset.

# PMX ACTUATOR

## Product Warranty



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All products manufactured or sold by Omni are warranted against defects of material and workmanship for a period of twelve (12) months from the date of installation or eighteen (18) months from date of shipment, whichever period first expires, when all such products are used in the service and within the pressure range for which they were manufactured.

In the case of products or parts not wholly of Omni's manufacture, Omni's liability shall be limited to the extent of Omni's recovery from the original manufacturer of such products or parts under its warranty or liability to Omni.

Any repair work performed by Omni is warranted for one year from completion of such repairs and applies only to work performed. If, within these specified periods, Omni receives notice from Buyer of any alleged defect in or nonconformance of any product or repair and if in Omni's sole judgment the product or repair does not conform or is found to be defective in material or workmanship, then, Buyer shall, at Omni's request, return the part or product F.O.B. to Omni's designated plant or service location.

Omni has no liability for removal or reinstallation of products or equipment. Omni, at its option and expense, shall repair or replace the defective part or product, or repay to Buyer the full price paid by Buyer for such defective part, repair or product. Any repayment of purchase price shall be without interest.

Omni's warranty liability, including defects caused by Omni's negligence, shall be limited to such repair, replacement or refund, and shall not include claims for labor costs, expenses of Buyer resulting from such defects, recovery under general tort law or strict liability or for damages resulting from delays, loss of use, or other direct, indirect, incidental or consequential damages of any kind.

Omni will not be responsible for failures of products which have been in any way tampered with or altered by anyone other than an authorized representative of Omni, failures due to lack of compliance with recommended maintenance procedures or products which have been repaired or altered in such a way (in Omni's judgment) as to affect the products adversely.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, STATUTORY OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE WHICH EXCEED THE FOREGOING WARRANTY.

If you have questions regarding this warranty or if you would like information about other Omni products and services please call, click or write us at the following.



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