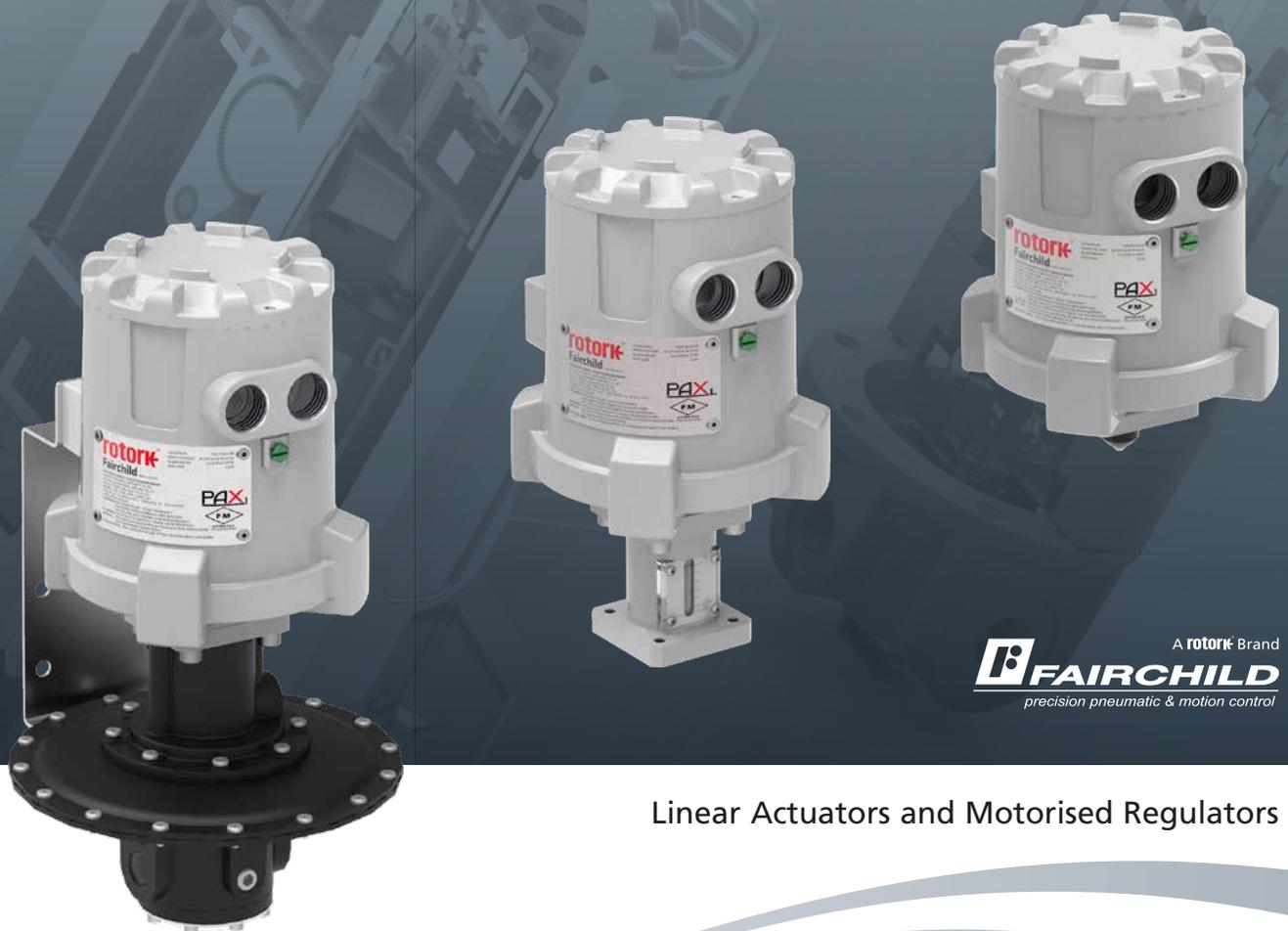


# rotork®

Keeping the World Flowing  
for Future Generations

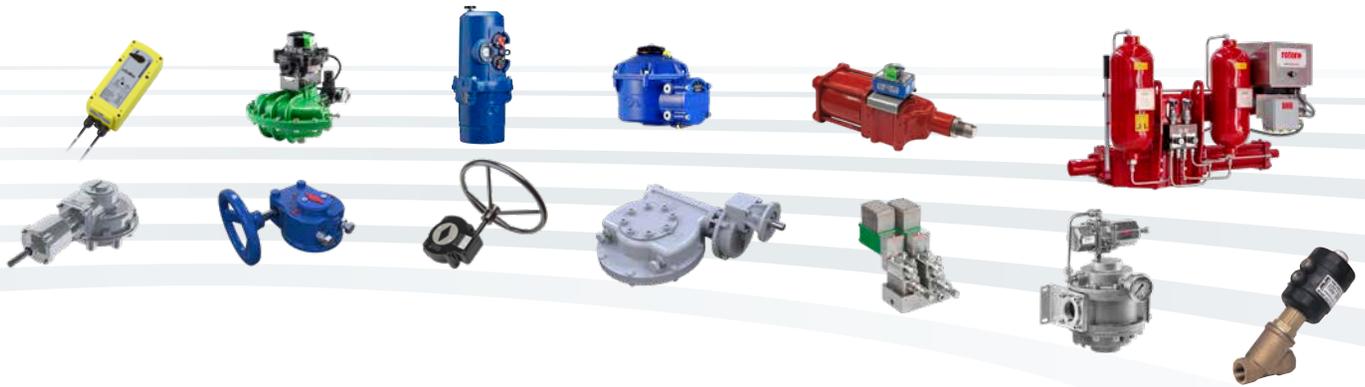
## PAX Range



A rotork® Brand  
**FAIRCHILD**  
precision pneumatic & motion control

Linear Actuators and Motorised Regulators

## Reliability in critical flow control applications



### › Reliable operation when it matters

Assured reliability for critical applications and environments. Whether used infrequently or continuously, Rotork products will operate reliably and efficiently.

### › Quality-driven global manufacturing

We offer products that have been designed with over 60 years of industry and application knowledge.

Our research and development ensures cutting edge products are available for multiple applications across multiple industries.

### › Customer focused service and worldwide support

Rotork solve customer challenges and develop new solutions that are tailored to the needs of our clients.

We offer dedicated, expert service and support from initial inquiry, to product installation, to long term after sales care.

### › Low cost of ownership

Long-term reliability prolongs service life.

Rotork helps to reduce long term cost of ownership and provides greater efficiency to process and plant.

## PAX Range

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### > Comprehensive product range serving multiple industries

Rotork products offer improved efficiency, assured safety and environmental protection across sectors such as the Power, Oil & Gas, Water & Wastewater, HVAC, Marine, Mining, Pulp & Paper, Food & Beverage, Pharmaceutical and Chemical sectors.

### > Market leaders and technical innovators

We have been the recognised market leader in flow control for over 60 years.

Our customers rely upon Rotork for innovative solutions to safely manage the flow of liquids, gases and powders.

### > Global presence, local service

We are a global company with local support.

Manufacturing sites, service centres and sales offices throughout the world provide unrivalled customer services, fast delivery and ongoing, accessible support.

### > Corporate social responsibility is at the heart of our business

We are socially, ethically and environmentally responsible and committed to embedding CSR across all our processes and ways of working.

## PAX Range Linear Electric Actuators

Rotork Fairchild PAX range actuators can be supplied alone or combined with a time proven Fairchild pressure regulator, enabling remote control of pneumatic instrument pressure.

PAX<sub>1</sub> has a rotating linear output rod to control spring return pressure regulators.

PAX<sub>L</sub> has a non-rotating linear output rod optimised for automation of small valves, pumps and other devices.

### Operation

Universal AC and low voltage DC powered PAX range actuators are designed for operation in remote explosionproof locations. Thrust output up to 2,890 N (650 lbf) enables actuation of most regulators, small valves and pumps.

Commissioning is performed using integral UP, DOWN and SET push buttons contained within the top enclosure. Manual operation during power loss is possible using an 8 mm (<sup>5</sup>/<sub>16</sub>" ) Allen (hex.) key.

PAX range actuators facilitate open loop control using two optically isolated switch inputs (up and down) to move the actuator thrust rod. Movement is permitted until one of the stroke limits is reached.

PAX range actuators include two fully adjustable SPDT limit switch relays (High and Low), triggered when the thrust rod reaches one of the set stroke positions. The limit relays are magnetically latched so the switch state is maintained when power is disconnected. An important design feature for typical solar applications that isolate power to conserve energy.

Intermediate position control is available using an isolated 4-20 mA analogue input option or the Modbus RTU network option. Signal is proportional to position across the set stroke. PAX range actuators will lock in place during a loss of signal or loss of power condition.

PAX range actuators can also include an optional 4-20 mA analogue feedback output, proportional to position. Analogue feedback is compatible with pulse control and analogue control configurations. Power is required to enable the analogue feedback output.



### Applications

- Pump stroke control
- Damper systems
- Test equipment
- Automation of mechanical spring loaded pressure regulators

### Actuator Features and Benefits

- Linear stroke is 25 mm (1")
- Max force is 2,890 N (650 lbf)
- Max linear speed is 60 mm (2.36") / minute
- Temperature ranges:
  - 40 to +80 °C (-40 to +176 °F) – intermittent duty
  - 40 to +65 °C (-40 to +149 °F) – continuous duty
- Less than 1 Watt power consumption during standby (DC powered units), ideal for use in isolated locations
- Less than 5 Watts power consumption during standby (AC powered units)
- Optional analogue control and feedback
- User defined stroke limits

### Approval and Environmental Ratings

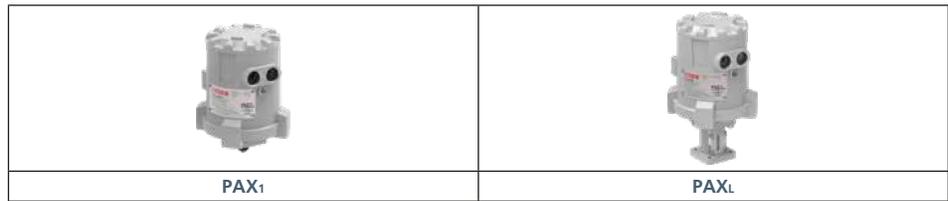
#### Hazardous Area

- FM
- CSA
- ATEX
- IECEx
- UKEX

#### Ingress Protection

- IP66
- IP68 (7 metres for 72 hours)
- Type 4X
- Type 6P

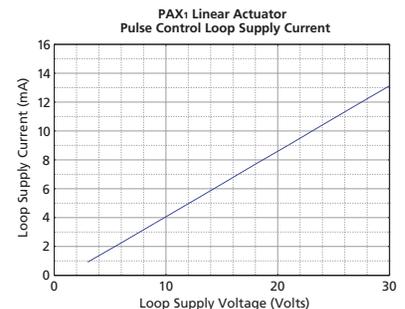
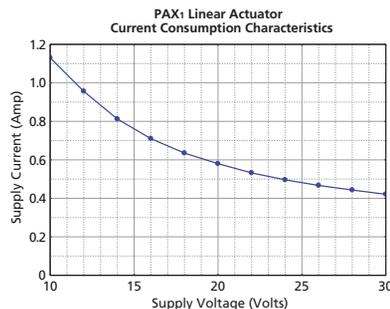
# Product Specifications – PAX<sub>1</sub> and PAX<sub>L</sub>



	PAX <sub>1</sub>	PAX <sub>L</sub>
<b>Electrical Supply</b>	11-30 VDC (12-24 VDC nominal) 95-250 VAC, 47-63 Hz (110-240 VAC, 50-60 Hz nominal)	11-30 VDC (12-24 VDC nominal) 95-250 VAC, 47-63 Hz (110-240 VAC, 50-60 Hz nominal)
<b>Control Methods</b>	<p><b>Analogue Control</b> 4-20 mA</p> <p><b>Pulse Control</b> Switch closure (2) UP &amp; DN, 4-30 VDC loop isolated from supply</p> <p><b>Modbus Comm.</b> 2-wire RS-485 network for direct communication to a PLC or DCS using Modbus RTU protocol</p>	<p><b>Analogue Control</b> 4-20 mA</p> <p><b>Pulse Control</b> Switch closure (2) UP &amp; DN, 4-30 VDC loop isolated from supply</p> <p><b>Modbus Comm.</b> 2-wire RS-485 network for direct communication to a PLC or DCS using Modbus RTU protocol</p>
<b>Thrust Rod Style</b>	Linear rotating rod - push action No coupling connection	Linear non-rotating rod - push and pull action M8 x 1.25 mm female thread coupling
<b>Maximum Stroke</b>	25 mm (1")	25 mm (1")
<b>Mounting Interface</b>	ISO 5211 - F05/F07	ISO 5211 - F07
<b>Accuracy</b>	0.5% of Maximum Stroke	0.5% of Maximum Stroke
<b>Maximum Force</b>	2,890 N (650 lbf)	2,890 N (650 lbf)
<b>Maximum Linear Speed</b>	60 mm (2.36") / min* *at lower supply voltages, slower motor speed may be required to reach maximum force	60 mm (2.36") / min* *at lower supply voltages, slower motor speed may be required to reach maximum force
<b>Operating Temperature Rating</b>	-40 to +80 °C (-40 to +176 °F) intermittent duty -40 to +70 °C (-40 to +158 °F) continuous duty	-40 to +80 °C (-40 to +176 °F) intermittent duty -40 to +70 °C (-40 to +158 °F) continuous duty
<b>Analogue Feedback</b>	4-20 mA, isolated from supply	4-20 mA, isolated from supply
<b>EMC Testing</b>	IEC/EN 61326-1. FCC 47 CFR Part 15	IEC/EN 61326-1. FCC 47 CFR Part 15
<b>Hazardous Area Ratings</b>	<p><b>FM Approval</b> Class I Div I Groups ABCD T6...T5 Class II, III Div I Groups EFG T6...T5 Class 1, Zone 1, AEx db IIC, T6...T5 Gb Zone 21, AEx tb IIIC T85°C...100°C Db T6[T85°C]: Ta = -40 to +65 °C (-40 to +149 °F) T5[T100°C]: Ta = -40 to +70 °C (-40 to +158 °F) Type 4X/6P, IP 66/68*</p> <p><b>CSA Approval</b> Class I Div I Groups BCD T6...T5 Class II, III Div I Groups EFG T6...T5 Ex db IIC, T6...T5 Gb Ex tb IIIC T85°C...100°C Db T6[T85°C]: Ta = -40 to +65 °C (-40 to +149 °F) T5[T100°C]: Ta = -40 to +70 °C (-40 to +158 °F) Type 4X/6P, IP 66/68*</p> <p><b>ATEX / IECEX / UKEX Approval</b> Ex db IIC, T6...T5 Gb Ex tb IIIC T85°C...100°C Db Ⓜ Ex II 2GD T6[T85°C]: Ta = -40 to +65 °C (-40 to +149 °F) T5[T100°C]: Ta = -40 to +70 °C (-40 to +158 °F) IP 66/68* *IP68 - 7 metres (23 feet) for 72 hours</p>	<p><b>FM Approval</b> Class I Div I Groups ABCD T6...T5 Class II, III Div I Groups EFG T6...T5 Class 1, Zone 1, AEx db IIC, T6...T5 Gb Zone 21, AEx tb IIIC T85°C...100°C Db T6[T85°C]: Ta = -40 to +65 °C (-40 to +149 °F) T5[T100°C]: Ta = -40 to +70 °C (-40 to +158 °F) Type 4X/6P, IP 66/68*</p> <p><b>CSA Approval</b> Class I Div I Groups BCD T6...T5 Class II, III Div I Groups EFG T6...T5 Ex db IIC, T6...T5 Gb Ex tb IIIC T85°C...100°C Db T6[T85°C]: Ta = -40 to +65 °C (-40 to +149 °F) T5[T100°C]: Ta = -40 to +70 °C (-40 to +158 °F) Type 4X/6P, IP 66/68*</p> <p><b>ATEX / IECEX / UKEX Approval</b> Ex db IIC, T6...T5 Gb Ex tb IIIC T85°C...100°C Db Ⓜ Ex II 2GD T6[T85°C]: Ta = -40 to +65 °C (-40 to +149 °F) T5[T100°C]: Ta = -40 to +70 °C (-40 to +158 °F) IP 66/68* *IP68 - 7 metres (23 feet) for 72 hours</p>

## Power Supply Sizing

- 12 VDC system:  
12 VDC, 2A power supply recommended
- 24 VDC system:  
24 VDC, 1A power supply recommended
- 95 - 250 VAC, 50 - 60Hz system:  
30 Watts maximum



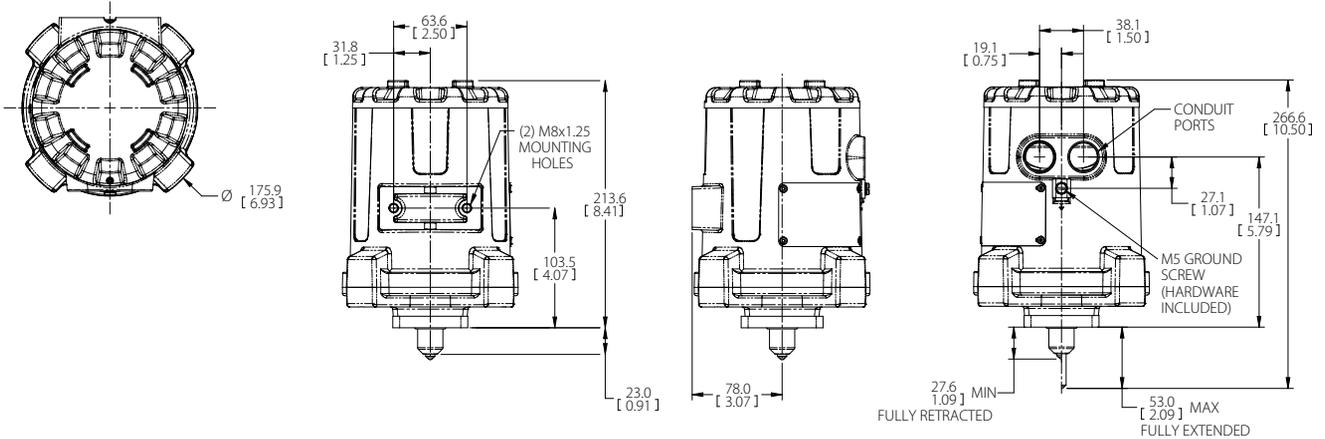
# Ordering Information – PAX<sub>1</sub> and PAX<sub>L</sub>

Model Code:

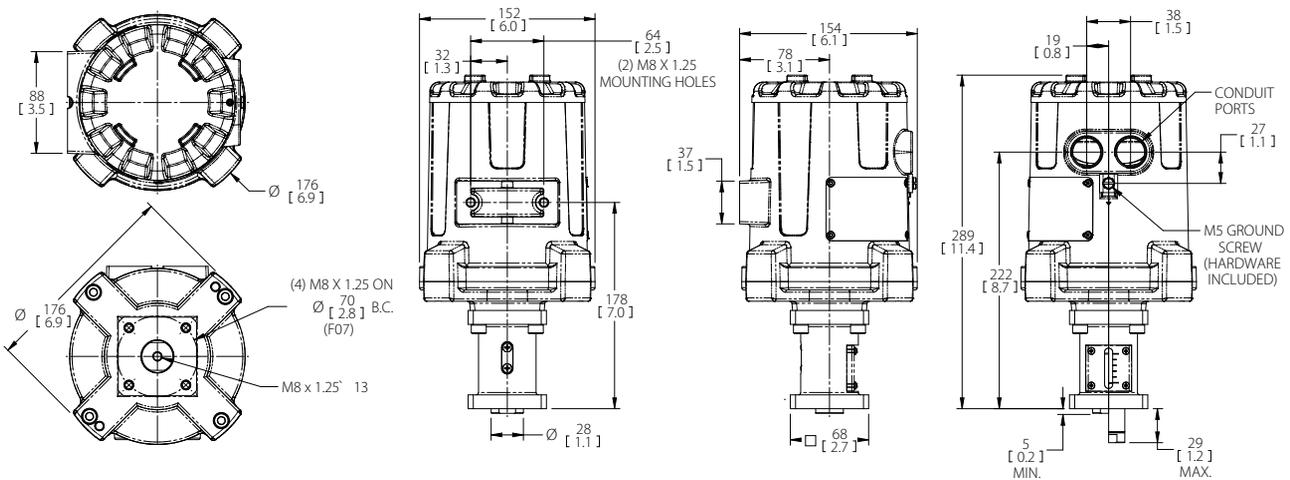
PAX \* \* 6 2 \* \* \*

<b>Actuation</b>	
1 = Basic (Push action)	L = Linear Adapter (Push and pull action)
<b>Approval</b>	
F = FM	C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	
6 = 3/4"	
<b>Conduit Port Openings</b>	
2 = Two ports	
<b>Power</b>	
D = 12-24 VDC A = 95-250 VAC, 50-60 Hz	
<b>Feedback</b>	
0 = None	1 = Analogue Feedback
<b>Digital Communications</b>	
0 = None	M = MODBUS Digital Communication

## PAX<sub>1</sub> Linear actuator



## PAX<sub>L</sub> Linear actuator



## PAX<sub>1</sub> Motorised Pressure Regulators

The Rotork Fairchild PAX<sub>1</sub> is optimised for controlling Fairchild precision pressure regulators. PAX<sub>1</sub> can control pressures up to 20,684 kPa (3,000 psig) in isolated locations and hazardous area environments. PAX<sub>1</sub> moves in both directions using the integral motor but avoids the requirement for a coupling by acting against or with the regulator spring. PAX<sub>1</sub> locks in place to maintain position during power or control signal loss.

### Features and Benefits

- Pressure ranges from vacuum to 20,684 kPa (3,000 psig)
- Full range actuation speeds down to 10 secs
- Ingress Protection IP66 / IP68 / Type 4X / Type 6P
- Temperature range -40 to +80 °C (-40 to +176 °F)
- Less than 1 Watt power consumption during standby, ideal for installations in isolated locations
- Optional analogue control and feedback
- User defined stroke limits



*PAX<sub>1</sub> installed on a solar powered remote pressure control station.*

### Applications

- Natural gas distribution systems
- Natural gas pipeline systems
- Pilot operated regulator systems
- Plunger lift systems

### Pneumatic Pressure Regulators

Fairchild manufactures a complete line of precision pneumatic regulators including positive pressure, back pressure and vacuum models. Quality engineering and manufacturing excellence assures our pressure regulators meet all the requirements of a precision device.

Our large selection of pressure ranges and flow capacities lets you select the models that meet your needs for instrument or general industrial control applications.

While we have included our most popular models in this brochure, other pressure regulators and relays are adaptable. Contact Fairchild for your needs.



*PAX<sub>1</sub> installed in pressure control and metering stations for natural gas distribution*



*PAX<sub>1</sub> installed as a pilot on a natural gas Control Valve*

# PAX<sub>1</sub> Motorised Pressure Regulators

Vacuum	Low Pressure		Standard (Pneumatic) Pressure
			
<b>PAX<sub>1</sub> with Model 16</b>	<b>PAX<sub>1</sub> with Model 11</b>	<b>PAX<sub>1</sub> with Model 4100A</b>	<b>PAX<sub>1</sub> with Model 10</b>

<b>Flow Capacity - m<sup>3</sup>/hr (SCFM)</b> Supply = 6.9 bar (100 psi)	4 (2.5) @ Vacuum <sup>1</sup> or 68 (40) Positive Flow	34 (20)	42 (25)	68 (40)
<b>Exhaust Capacity - m<sup>3</sup>/hr (SCFM)</b>	9.4 (5.5)	0.85 (0.5) <sup>2</sup>	2.55 (1.5) <sup>2</sup>	9.4 (5.5)
<b>Sensitivity - cm of WC (inches of WC)</b>	1.27 (0.5)	0.127 (0.05)	0.127 (0.05)	0.32 (0.125)
<b>Supply Pressure Variation - kPa (psig)</b> For Supply Pressure Change - kPa (psig)	<0.7 (<0.1) 689 kPa (100 psig)	<0.07 (<0.01) 689 kPa (100 psig)	<0.07 (<0.01) 689 kPa (100 psig)	<0.07 (<0.01) 689 kPa (100 psig)
<b>Maximum Supply Pressure - kPa (psig)</b>	1,724 (250)	1,034 (150)	1,034 (150)	3,447 (500)
<b>Dimensions (Approx.) - mm (Inches)</b>	Dia. 176 x 348 mm (Dia. 6.93 x 13.71")	Dia. 176 x 368 mm (Dia. 6.93 x 14.47")	Dia. 216 x 388 mm (Dia. 8.5 x 15.26")	Dia. 176 x 348 mm (Dia. 6.93 x 13.71")
<b>Output Pressure Range - kPa (psig)</b>	Vacuum - 14 (2) Vaccum - 69 (10) Vaccum - 207 (30) Vaccum - 689 (100) Vaccum - 1,034 (150)	0 - 3.4 (0.5) 0 - 14 (2) 0 - 28 (4) 0 - 41 (6) 0 - 83 (12)	0 - 4.8 (0.7) 0 - 9.7 (1.4) 0 - 21 (3) 0 - 34 (5)	0 - 14 (0 - 2) 0 - 69 (0 - 10) 7 - 138 (1 - 20) 3.4 - 207 (0.5 - 30) 7 - 414 (1 - 60) 14 - 1,034 (2 - 150) 21 - 1,379 (3 - 200) 34 - 2,068 (5 - 300) 34 - 2,758 (5 - 400)
<b>Port Size</b>	¼", ⅜", ½"	¼", ⅜", ½"	⅜", ½", ¾"	¼", ⅜", ½"
<b>Body Material</b>	Aluminium	Aluminium	Aluminium	Aluminium

<sup>1</sup> - at 29 inHg of vacuum with inlet port open

<sup>2</sup> - Downstream pressure is 0.7 kPa (0.1 psig) above 7 kPa (1.0 psig) set point

Standard (Pneumatic) Pressure	High Pressure	
		
<b>PAX<sub>1</sub> with Model 81</b>	<b>PAX<sub>1</sub> with Model HPD</b>	<b>PAX<sub>1</sub> with Model HPP</b>

<b>Flow Capacity - m<sup>3</sup>/hr (SCFM)</b> Supply = 100 psi	85 (50)	Cv 0.06 or Cv 0.25	Cv 0.06
<b>Exhaust Capacity - m<sup>3</sup>/hr (SCFM)</b>	9.4 (5.5)	Cv 0.02	Cv 0.02
<b>Sensitivity - cm of WC (inches of WC)</b>	<0.254 (<0.1)	Not Applicable	Not Applicable
<b>Supply Pressure Variation - kPa (psig)</b> For Supply Pressure Change - kPa (psig)	<1.4 (<0.2) 689 (100)	<4 (<0.6) 689 (100)	<379 (<55) 6,895 (1,000)
<b>Maximum Supply Pressure - kPa (psig)</b>	1,034 (150) <sup>3</sup>	41,369 (6,000)	41,369 (6,000)
<b>Dimensions (Approx.) - mm (Inches)</b>	Dia. 176 x 348 mm (Dia. 6.93 x 13.71")	Dia. 176 x 325 mm (Dia. 6.93 x 12.81")	Dia. 176 x 325 mm (Dia. 6.93 x 12.81")
<b>Output Pressure Range - kPa (psig)</b>	0 - 14 (0 - 2) <sup>3</sup> 0 - 34 (0 - 5) <sup>3</sup> 0 - 138 (0 - 20) 3.4 - 414 (0.5 - 60) 3.4 - 689 (0.5 - 100)	0 - 172 (0 - 25) 0 - 345 (0 - 50) 7 - 689 (1 - 100) 14 - 1,724 (2 - 250) 14 - 3,447 (2 - 500)	0 - 6,895 (0 - 1,000) 0 - 13,790 (0 - 2,000) 0 - 20,684 (0 - 3,000)
<b>Port Size</b>	¼"	¼" or SAE AS5202-4	¼" or SAE AS5202-4
<b>Body Material</b>	Aluminium	Stainless Steel	Stainless Steel

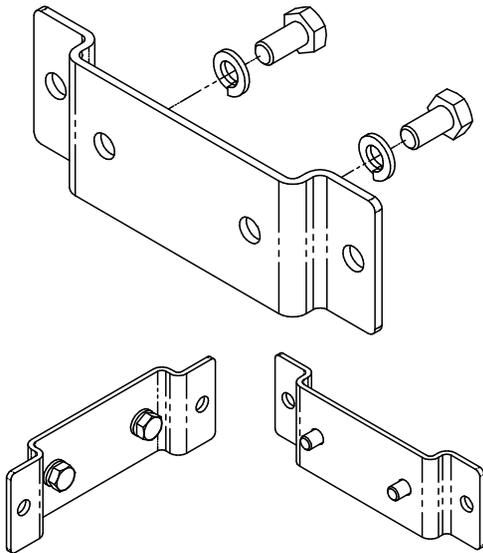
<sup>3</sup> - Maximum Supply Pressure 689 kPa (100 psig)

Other regulators are available upon request. Contact Rotork.

## PAX Range – Adapter Kits

PAX range actuators can directly interface with a regulator or valve to provide a motorised assembly. PAX<sub>1</sub> is designed for pressure regulators with motorised push and spring return pull actions. PAX<sub>L</sub> is designed for valves with motorised push and pull actions.

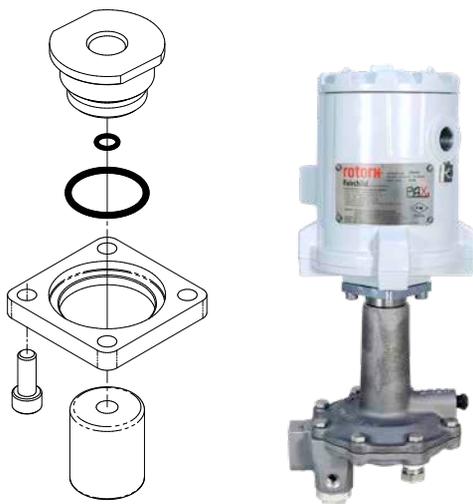
**Universal PAX Mounting Kit P/N 22619-1**



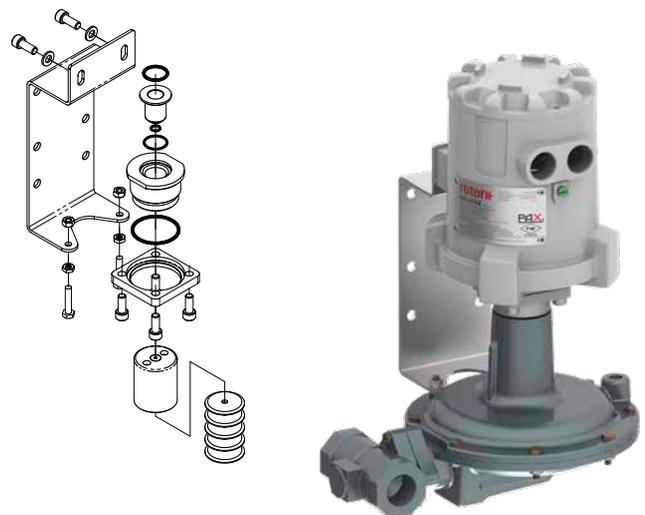
**Mounting Kit for the Fisher 161EBM Regulator P/N 23043-1**



**Mounting Kit for the Mooney 20H and 20L Pilot Regulator P/N 22819-1**



**Mounting Kit for the Fisher Y600A Pilot Regulator P/N 23027-1**



## Model 16 Vacuum Regulator

The Model 16 is designed for systems that require system pressure control above and/or below atmospheric pressure

The regulated output pressure is precisely maintained by balancing forces acting on the top and bottom of the diaphragm assembly. The main supply valve is pressure balanced by utilising a rolling diaphragm, ensuring a constant output pressure even under a wide range of supply pressure variations. An aspirator tube automatically adjusts the supply valve in accordance with the flow demand to ensure output pressure is maintained at a constant value under varying flow conditions.



### Features

- Control sensitivity of 1.27 cm (0.5") water column, allows precise pressure control
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- An aspirator tube compensates downstream pressure drop under flow conditions

### Specifications

#### Supply Pressure

- 1,724 kPa (250 psig) maximum

#### Positive Flow Capacity

- 65.2 m<sup>3</sup>/hr (40 SCFM) @ 689 kPa (100 psig) supply and 138 kPa (20 psig) setpoint

#### Vacuum Flow Capacity

- 4 m<sup>3</sup>/hr (2.5 SCFM) @ 74 cmHg (29 "Hg) vacuum with pump connected to the exhaust port
- 65.2 m<sup>3</sup>/hr (40 SCFM) @ 689 kPa (100 psig) supply connected to inlet port

#### Supply Pressure Effect

- <0.7 kPa (0.1 psig) for a 689 kPa (100 psig) change in supply pressure

#### Sensitivity

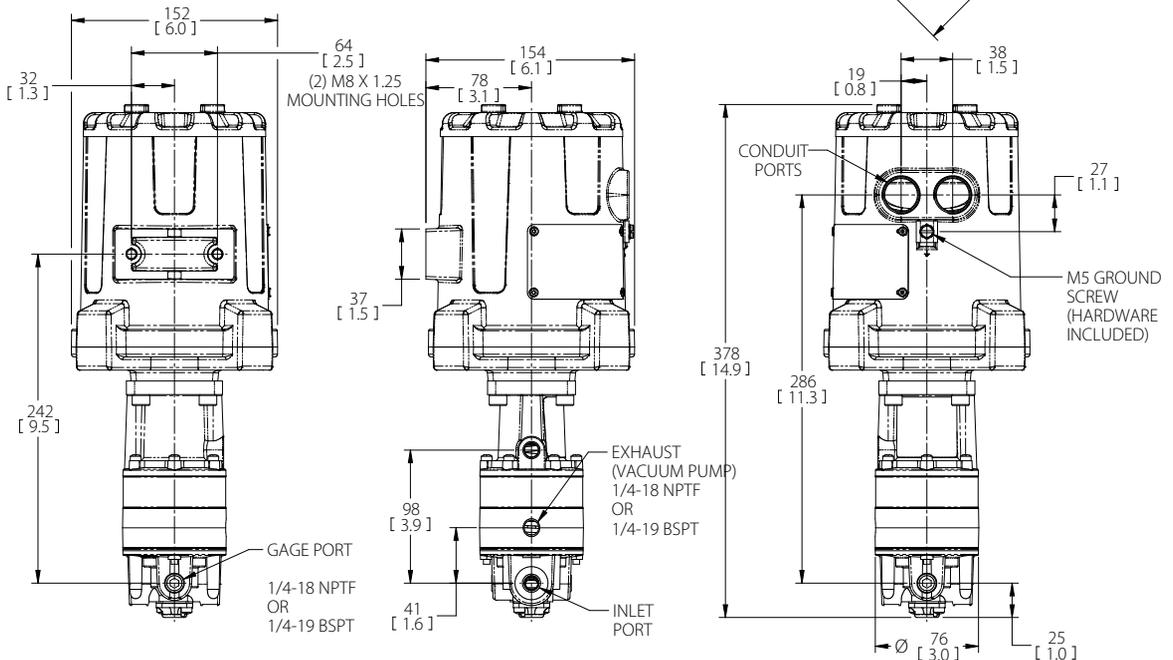
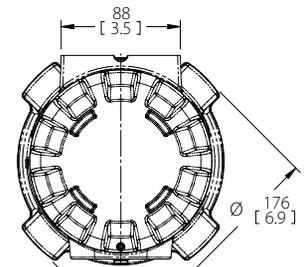
- 1.27 cm (0.5") water column

# Model 16 Vacuum Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - 16 2 \* \* \* \* \*

<b>Actuation</b>	1 = Basic (Push Action)
<b>Approval</b>	F = FM C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	6 = 3/4"
<b>Conduit Ports</b>	2 = Two ports
<b>Power</b>	D = 12-24 VDC A = 95-250 VAC, 50-60 Hz
<b>Feedback</b>	0 = None 1 = Analogue Feedback
<b>Digital Communication</b>	0 = None M = MODBUS RTU
<b>Pressure Regulator Series</b>	16 = Model 16
<b>Revision</b>	2 = Revision 2
<b>Range – Vacuum kPa (psig)</b>	1 = 14 (2)    3 = 207 (30)    5 = 1,034 (150) 2 = 69 (10)    4 = 689 (100)
<b>Port Size</b>	2 = 1/4" 3 = 3/8" 4 = 1/2"
<b>Port Thread</b>	H = BSPP† N = NPTF U = BSPT
<b>Elastomers</b>	J = Fluorocarbon N = Nitrile
<b>Relief Valve</b>	R = Relieving, Normal M16 Bleed L = Relieving, Increased Sensitivity

†BSPP @ In & Out, BSPT @ Exhaust & Gage



## Model 11 Precision Low Pressure Regulator

The Model 11 is designed for applications that require moderate capacity and accurate low pressure control.

The main supply valve is pressure balanced by utilising a rolling diaphragm, ensuring a constant output pressure even during wide supply pressure variations. An aspirator tube automatically adjusts the supply valve in accordance with the flow demand to ensure output pressure is maintained at a constant value under varying flow conditions.



### Features

- Large area, high sensitivity diaphragm provides control sensitivity of 0.127 cm (0.05") water column, ideal for precision applications
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- An aspirator tube compensates downstream pressure droop for flow demand
- Non-relieving option available for applications requiring containment of gas

### Specifications

#### Supply Pressure

- 1,034 kPa (150 psig) maximum

#### Flow Capacity

- 34 m<sup>3</sup>/hr (20 SCFM) @ 689 kPa (100 psig) supply and 7 kPa (1.0 psig) setpoint

#### Exhaust Capacity

- 0.85 m<sup>3</sup>/hr (0.5 SCFM) where downstream pressure is 0.7 kPa (0.1 psig) above 7 kPa (1.0 psig) setpoint

#### Supply Pressure Effect

- <0.07 kPa (0.01 psig) for 689 kPa (100 psig) change in supply

#### Sensitivity

- 0.127 cm (0.05") water column

#### Materials of Construction

Body and housing: Aluminum

Diaphragm: Nitrile or Fluorocarbon

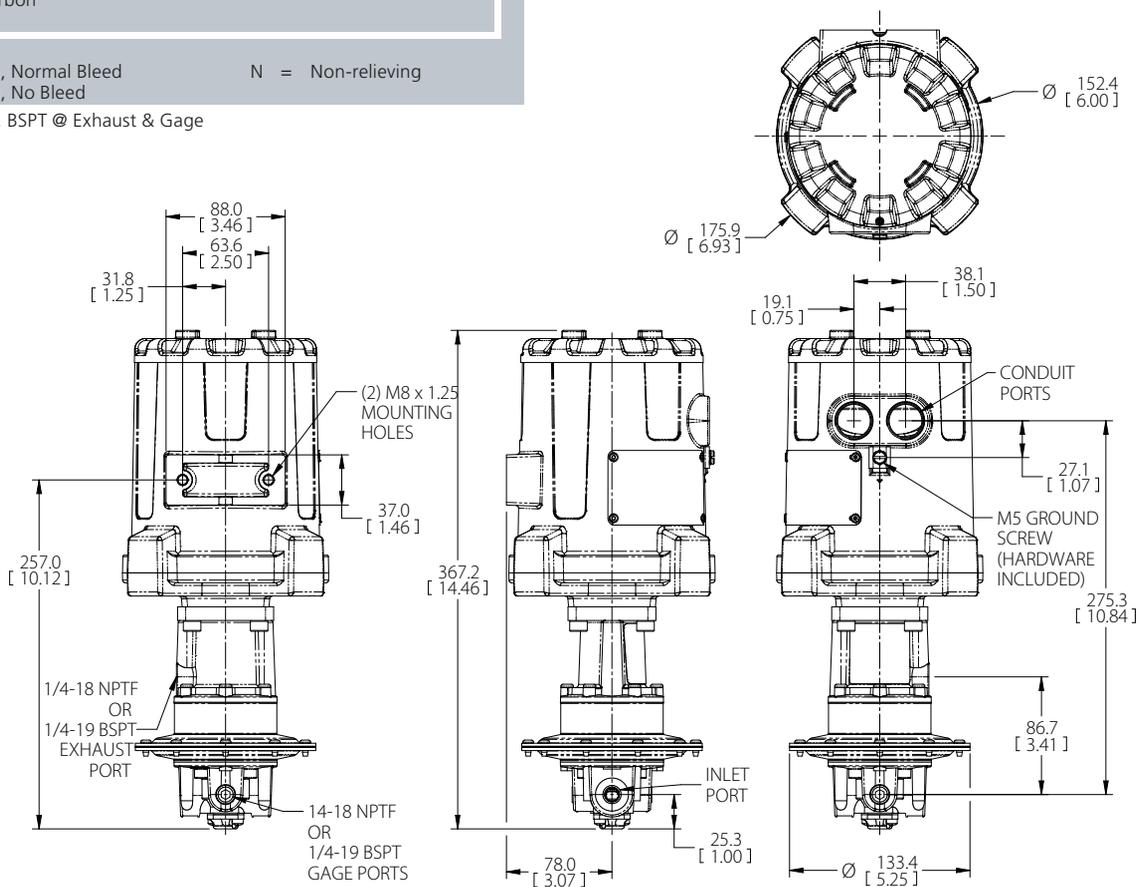
Trim: Zinc plated steel, Stainless steel

# Model 11 Precision Low Pressure Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - 11 1 \* \* \* \* \*

<b>Actuation</b>	
1	= Basic (Push Action)
<b>Approval</b>	
F	= FM
C	= CSA
E	= ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	
6	= 3/4"
<b>Conduit Ports</b>	
2	= Two ports
<b>Power</b>	
D	= 12-24 VDC
A	= 95-250 VAC, 50-60 Hz
<b>Feedback</b>	
0	= None
1	= Analogue Feedback
<b>Digital Communication</b>	
0	= None
M	= MODBUS RTU
<b>Pressure Regulator Series</b>	
11	= Model 11
<b>Revision</b>	
1	= Revision 1
<b>Range - kPa (psig)</b>	
1	= 0-3.4 (0-0.5)
2	= 0-14 (0-2)
3	= 0-28 (0-4)
4	= 0-41 (0-6)
5	= 0-83 (0-12)
<b>Port Size</b>	
2	= 1/4"
3	= 3/8"
4	= 1/2"
<b>Port Thread</b>	
H	= BSPP#
N	= NPTF
U	= BSPT
<b>Elastomers</b>	
J	= Fluorocarbon
N	= Nitrile
<b>Relief Valve</b>	
R	= Relieving, Normal Bleed
D	= Relieving, No Bleed
N	= Non-relieving

#BSPP @ In & Out, BSPT @ Exhaust & Gage



## Model 4100A High Capacity Low Pressure Regulator

The Model 4100A is designed for applications requiring high flow capacity and accurate low pressure control.

The main supply valve is pressure balanced by utilising a rolling diaphragm, ensuring a constant output pressure even during extreme supply pressure variations. An aspirator tube automatically adjusts the supply valve in accordance with the flow demand to ensure output pressure is maintained at a constant value under varying flow conditions.



### Features

- Large area, high sensitivity diaphragm provides control sensitivity of 0.13 cm (0.05") water column for precision control in low pressure applications
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Large relief valve provides high exhaust flow capacity
- Soft seat valves minimise air consumption
- Aspirator tube compensates for downstream pressure droop during flow demand

### Specifications

#### Supply Pressure

- 1,034 kPa (150 psig) maximum

#### Flow Capacity

- 119 m<sup>3</sup>/hr (70 SCFM) @ 345 kPa (150 psig) supply, and 21 kPa (3 psig) setpoint

#### Exhaust Capacity

- 22 m<sup>3</sup>/hr (13 SCFM), where downstream pressure is 1.4 kPa (0.2 psig) above 21 kPa (3 psig) setpoint

#### Sensitivity

- 0.13 cm (0.05") water column

#### Supply Pressure Effect

- None detected

#### Materials of Construction

Body and Housing: Aluminum

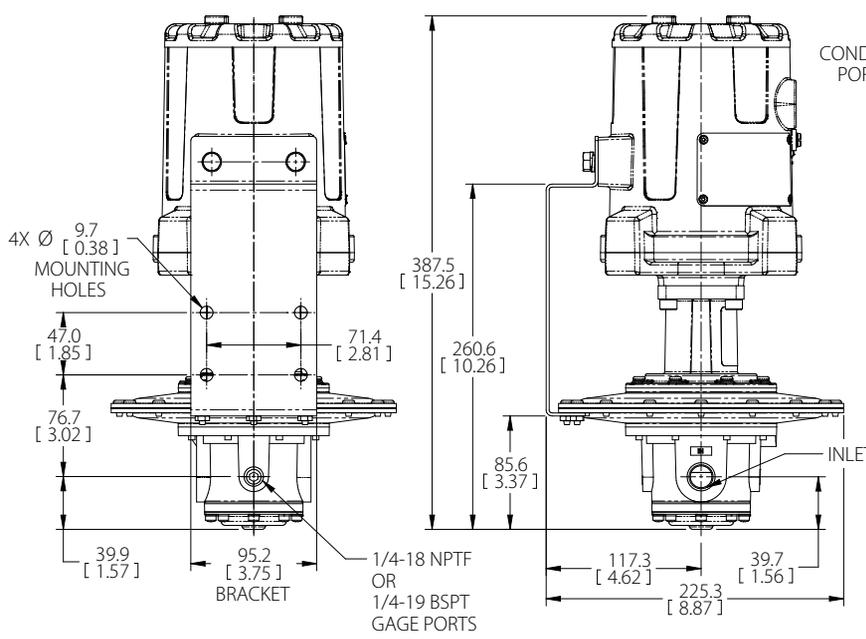
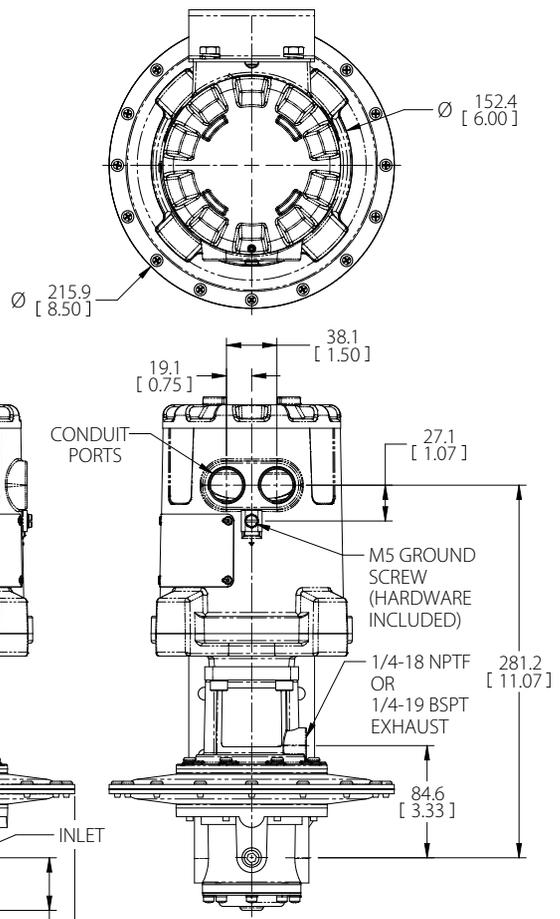
External Trim: Zinc plated steel, Stainless steel

Diaphragms and seals: Nitrile on Dacron, optional Fluorocarbon on Dacron

# Model 4100A High Capacity Low Pressure Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - 41 \* \* A \* \* \*

<b>Actuation</b>	1 = Basic (Push Action)
<b>Approval</b>	F = FM C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	6 = 3/4"
<b>Conduit Ports</b>	2 = Two ports
<b>Power</b>	D = 12-24 VDC A = 95-250 VAC, 50-60 Hz
<b>Feedback</b>	0 = None 1 = Analogue Feedback
<b>Digital Communication</b>	0 = None M = MODBUS RTU
<b>Pressure Regulator Series</b>	41 = Model 4100A
<b>Range – kPa (psig)</b>	1 = 0-5 (0-0.7) 2 = 0-10 (0-1.4) 3 = 0-21 (0-3) 4 = 0-34 (0-5)
<b>Port Size</b>	4 = 1/2"                      6 = 3/4"
<b>Revision</b>	A = Revision A
<b>Port Thread</b>	H = BSPP                      N = NPTF                      U = BSPT
<b>Elastomers</b>	J = Fluorocarbon N = Nitrile
<b>Relief Valve</b>	D = Relieving, No Bleed



## Model 10 Precision Pressure Regulator

The Model 10 is designed for applications that require moderate flow capacity and accurate pressure control.

The main supply valve is pressure balanced by utilising a rolling diaphragm, ensuring a constant output pressure even during wide supply pressure variations. An aspirator tube automatically adjusts the supply valve in accordance with the flow demand to ensure output pressure is maintained at a constant value under varying flow conditions.



### Features

- Control sensitivity of 0.32 cm (0.125") water column allows use in precision processes
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- An aspirator tube compensates downstream pressure drop under flow conditions
- Non-relieving option available for applications requiring containment of gas

### Specifications

#### Supply Pressure

- 3,447 kPa (500 psig) maximum

#### Flow Capacity

- 68 m<sup>3</sup>/hr (40 SCFM) @ 689 kPa (100 psig) supply and 138 kPa (20 psig) setpoint

#### Exhaust Capacity

- 9.35 m<sup>3</sup>/hr (5.5 SCFM) where downstream pressure is 34 kPa (5 psig) above 138 kPa (20 psig) setpoint

#### Supply Pressure Effect

- Less than 0.7 kPa (0.1 psig) for 689 kPa (100 psig) change in supply pressure

#### Sensitivity

- 0.32 cm (0.125") water column

#### Materials of Construction

Body and housing: Aluminum

Diaphragms: Nitrile or Fluorocarbon

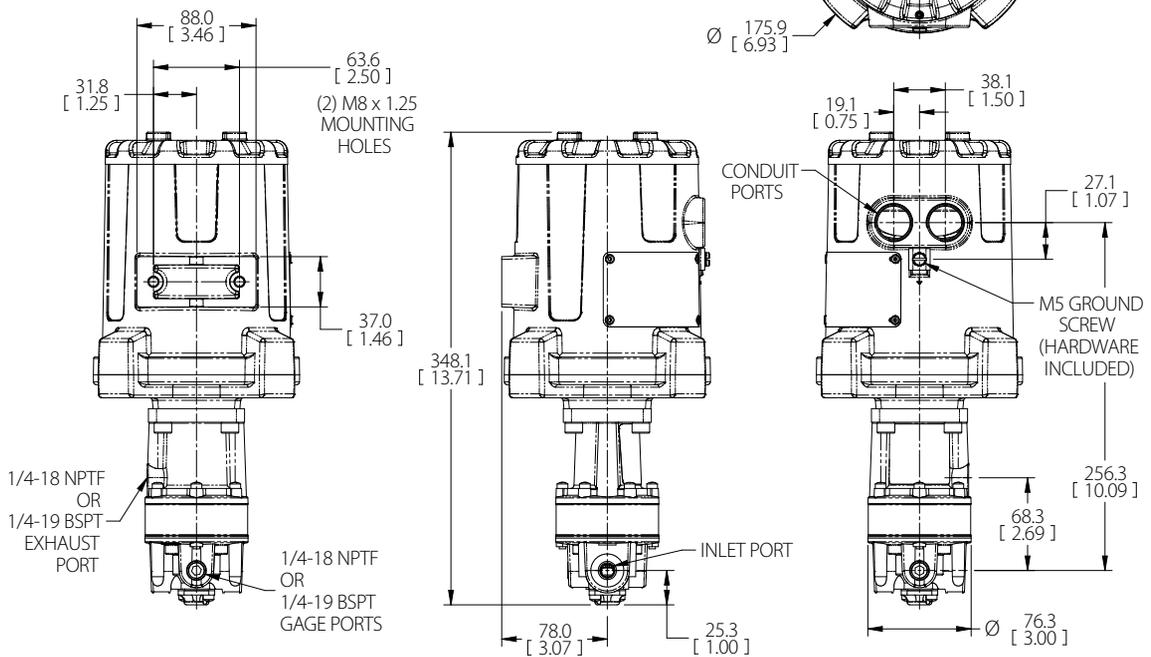
Trim: Brass, Zinc plated steel

# Model 10 Precision Pressure Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - 10 2 \* \* \* \* \*

<b>Actuation</b>	1 = Basic (Push Action)
<b>Approval</b>	F = FM C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	6 = 3/4"
<b>Conduit Ports</b>	2 = Two ports
<b>Power</b>	D = 12-24 VDC A = 95-250 VAC, 50-60 Hz
<b>Feedback</b>	0 = None 1 = Analogue Feedback
<b>Digital Communication</b>	0 = None M = MODBUS RTU
<b>Pressure Regulator Series</b>	10 = Model 10
<b>Revision</b>	2 = Revision 2
<b>Range – kPa (psig)</b>	1 = 0-14 (0-2)      6 = 14-1,034 (2-150) 2 = 0-69 (0-10)    7 = 21-1,379 (3-200) 0 = 0-138 (0-20)   8 = 34-2,068 (5-300) 3 = 3-207 (0.5-30) 9 = 34-2,758 (5-400) 4 = 7-414 (1-60)
<b>Port Size</b>	2 = 1/4" 3 = 3/8" 4 = 1/2"
<b>Port Thread</b>	H = BSPP‡      N = NPTF      U = BSPT
<b>Elastomers</b>	J = Fluorocarbon N = Nitrile
<b>Relief Valve</b>	R = Relieving, Normal Bleed      N = Non-relieving D = Relieving, No Bleed

‡BSPP @ In & Out, BSPT @ Exhaust & Gage



## Model 81 Precision Two Stage Pressure Regulator

The Model 81 is designed for applications that require moderate flow capacities and very high accuracy pressure control.

The regulated output pressure is precisely maintained using two stage regulation, combining a pilot control system with a basic force balance system. The main supply valve is also pressure balanced by utilising a rolling diaphragm, ensuring a constant output pressure even under a wide range of supply pressure variations. An aspirator tube automatically adjusts the supply valve in accordance with the flow demand to ensure output pressure is maintained at a constant value under varying flow conditions.



### Features

- Control sensitivity of less than 0.25 cm (0.1") of water column, allows high precision pressure control
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- An aspirator tube compensates downstream pressure drop under flow conditions

### Specifications

#### Supply Pressure

- 689 kPa (100 psig) maximum for ranges 1 and 2
- 1,034 kPa (150 psig) maximum for ranges 3 to 5

#### Flow Capacity

- 85 m<sup>3</sup>/hr (50 SCFM) @ 689 kPa (100 psig) supply and 138 kPa (20 psig) setpoint

#### Exhaust Flow Capacity

- 9.4 m<sup>3</sup>/hr (5.5 SCFM) where downstream pressure is 34 kPa (5 psig) above 138 kPa (20 psig) setpoint

#### Supply Pressure Effect

- <0.7 kPa (0.1 psig) for a 689 kPa (100 psig) change in supply pressure

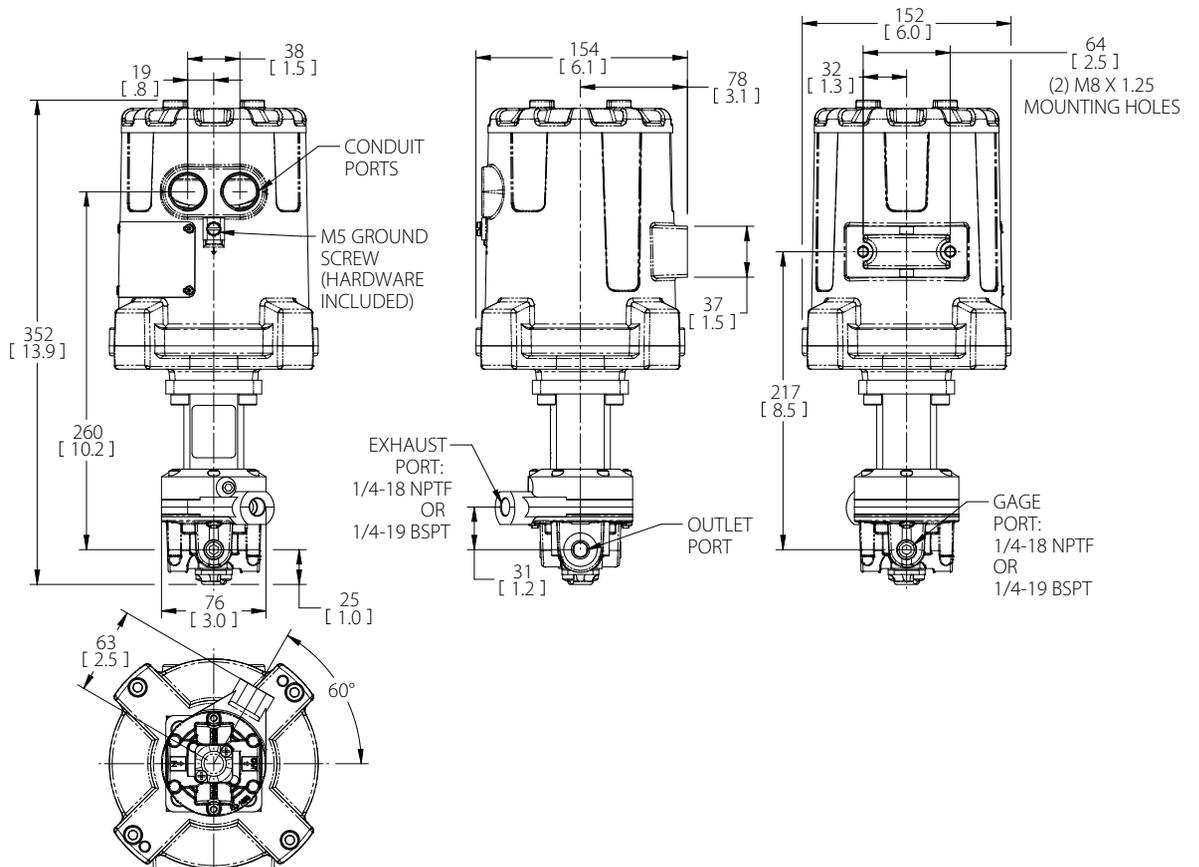
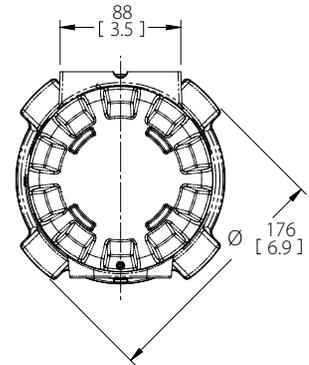
#### Sensitivity

- <0.25 cm (0.1") water column

# Model 81 Precision Two Stage Pressure Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - 81 4 \* 2 \*

<b>Actuation</b>	1 = Basic (Push Action)
<b>Approval</b>	F = FM C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	6 = 3/4"
<b>Conduit Ports</b>	2 = Two ports
<b>Power</b>	D = 12-24 VDC A = 95-250 VAC, 50-60 Hz
<b>Feedback</b>	0 = None 1 = Analogue Feedback
<b>Digital Communication</b>	0 = None M = MODBUS RTU
<b>Pressure Regulator Series</b>	81 = Model 81
<b>Revision</b>	4 = Revision 4
<b>Range - kPa (psig)</b>	1 = 0-14 (0 - 2)      4 = 3.4-414 (0.5 - 60) 2 = 0-34 (0 - 5)      5 = 3.4-689 (0.5 - 100) 3 = 0-138 (0 - 20)
<b>Port Size</b>	2 = 1/4"
<b>Port Thread</b>	N = NPTF U = BSPT



## Model HPD High Pressure Regulator

The Model HPD is a diaphragm sensed low capacity high pressure regulator. A stainless steel supply valve with a polymer seat insures accurate and reliable sealing of the valve for trouble free operation.

The fatigue resistant Inconel diaphragm provides long life and leak free operation. Using metal to metal and Teflon sealing ensures the regulator does not contaminate the medium with rubber type elastomers.



### Features

- Three seat material choices for a wide range of chemical compatibility (PEEK, CTFE and Vespel)
- High maximum supply pressure to allow more through put of gas

### Specifications

#### Supply Pressure

- 41,369 kPa (6,000 psig) maximum depending on seal material
- **Supply Valve Cv** 0.06, 0.25
- **Exhaust Valve Cv** 0.02

#### Supply Pressure Effect

- <4 kPa (0.6 psig) change for a 689 kPa (100 psig) change in supply pressure

#### Materials of Construction

Body and housing: Alloy 316L stainless steel

Valve: 316L stainless steel

Seal: Teflon

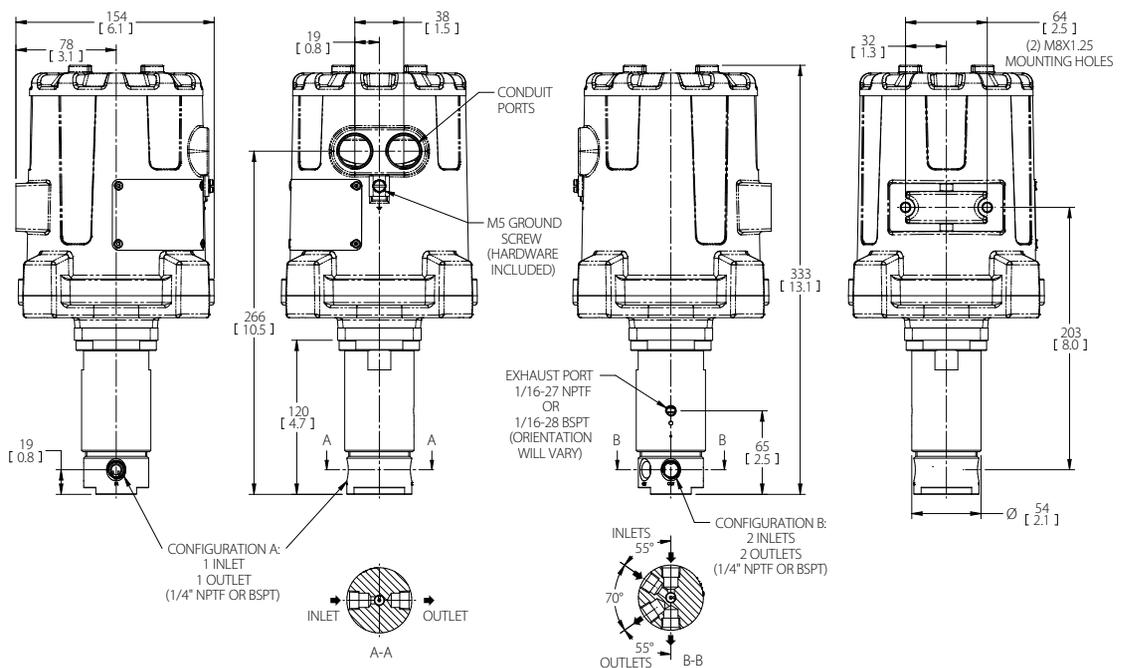
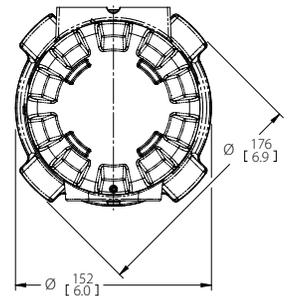
#### Installation

Refer to the *Fairchild Model HPD Installation, Operation and Maintenance Instructions*, IS-10000HPD.

# Model HPD High Pressure Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - HPD 1 \* 2 \* \* \* \*

<b>Actuation</b>	1 = Basic (Push Action)
<b>Approval</b>	F = FM C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	6 = 3/4"
<b>Conduit Ports</b>	2 = Two ports
<b>Power</b>	D = 12-24 VDC A = 95-250 VAC, 50-60 Hz
<b>Feedback</b>	0 = None 1 = Analogue Feedback
<b>Digital Communication</b>	0 = None M = MODBUS RTU
<b>Pressure Regulator Series</b>	HPD = Model HPD
<b>Valve</b>	1 = 0.06 Cv 3 = 0.25 Cv
<b>Range – kPa (psig)</b>	3 = 0-172 (0-25)      7 = 14-1,724 (2-250) 4 = 0-345 (0-50)      9 = 34-3,447 (5-500) 5 = 7-689 (1-100)
<b>Port Size</b>	2 = 1/4"
<b>Port Thread</b>	N = NPTF      U = BSPT
<b>Port Configuration</b>	A = 2 (1 inlet, 1 outlet) B = 4 (2 inlets, 2 outlets)
<b>Seal Material &amp; Max Supply – kPa (psig)</b>	P = PEEK 41,369 (6,000) T = CTFE 24,132 (3,500) V = VESPEL 41,369 (6,000)
<b>Relief Valve</b>	R = Relieving      N = Non-relieving



## Model HPP High Pressure Regulator

The Model HPP is a piston sensed low capacity high pressure regulator. A stainless steel supply valve with a polymer seat insures accurate and reliable sealing of the valve for long life, leak free operation.



### Features

- Three seat material choices for a wide range of chemical compatibility (PEEK, CTFE and Vespel)
- High maximum supply pressure to allow more through put of gas

### Specifications

#### Maximum Supply Pressure

- 41,369 kPa (6,000 psig) maximum depending on seal material
- **Supply Valve Cv** 0.06
- **Exhaust Valve Cv** 0.02

#### Supply Pressure Effect

- <34 kPa (5 psig) change for 689 kPa (100 psig) change in supply pressure

#### Materials of Construction

Body and Housing: Alloy 316L stainless steel

Valve: 316L stainless steel

Seal: Viton A

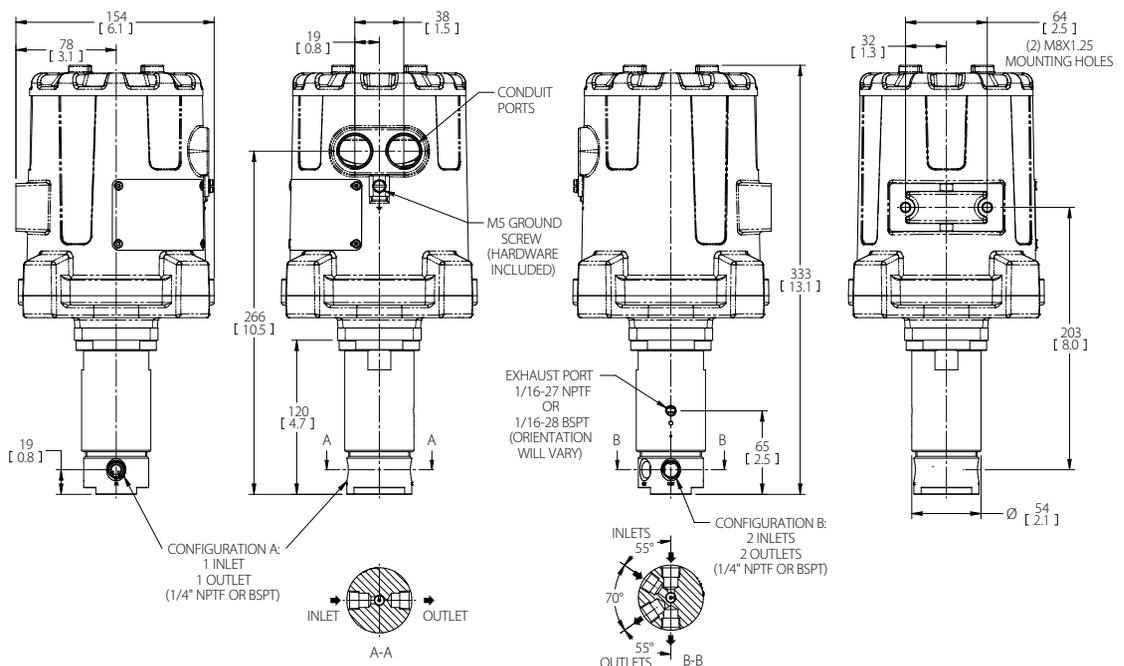
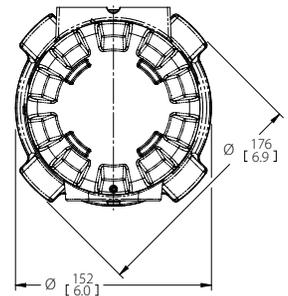
#### Installation

Refer to the *Fairchild Model HPP Installation, Operation and Maintenance Instructions*, IS-10000HPP.

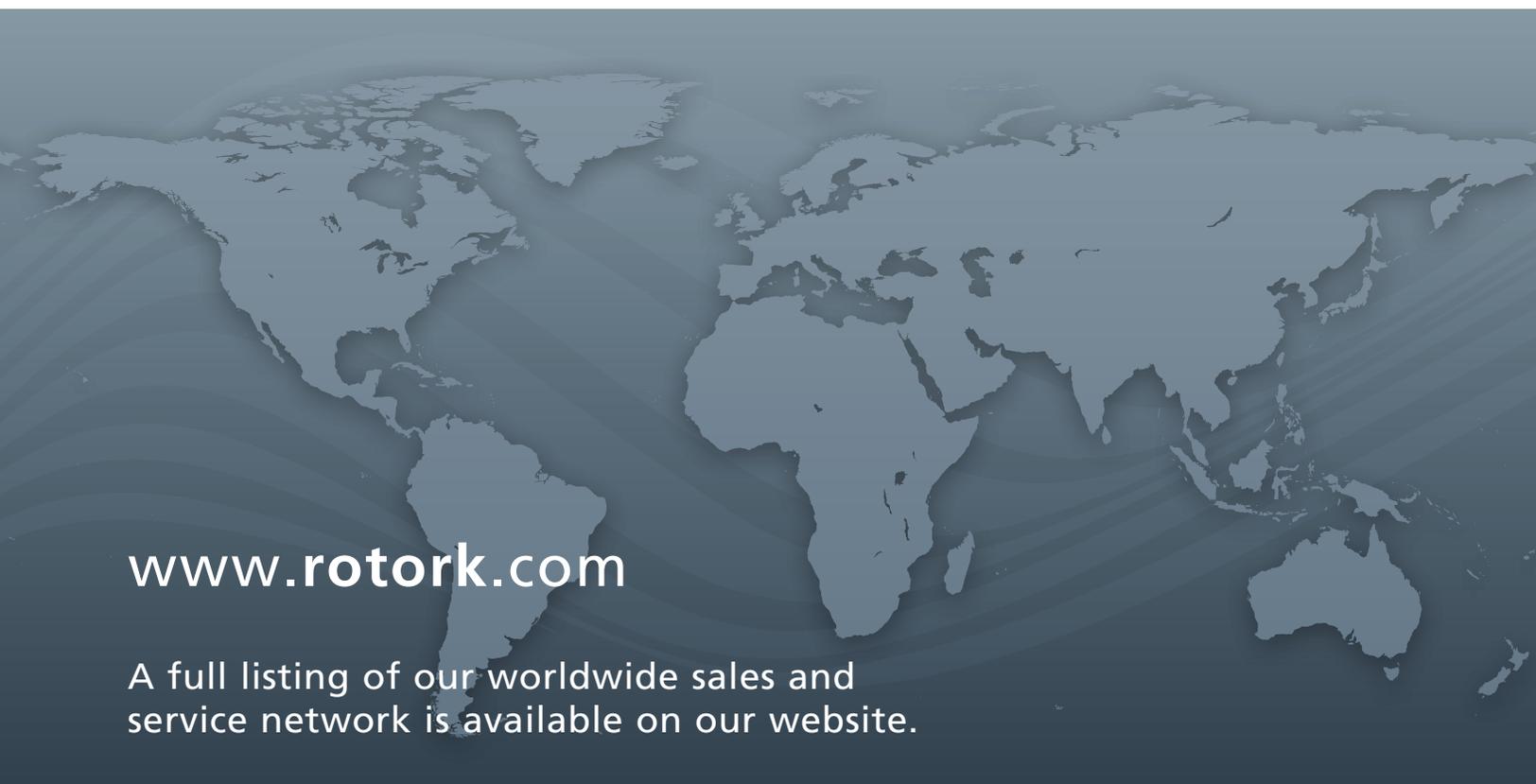
# Model HPP High Pressure Regulator

Model Code: PAX 1 \* 6 2 \* \* \* - HPP 1 \* 2 \* \* \* \*

<b>Actuation</b>	1 = Basic (Push Action)
<b>Approval</b>	F = FM C = CSA E = ATEX / IECEx / UKEX
<b>Conduit Port Size</b>	6 = 3/4"
<b>Conduit Ports</b>	2 = Two ports
<b>Power</b>	D = 12-24 VDC A = 95-250 VAC, 50-60 Hz
<b>Feedback</b>	0 = None 1 = Analogue Feedback
<b>Digital Communication</b>	0 = None M = MODBUS RTU
<b>Pressure Regulator Series</b>	HPP = Model HPP
<b>Valve</b>	1 = 0.06 Cv
<b>Range – kPa (psig)</b>	2 = 0-6,895 (0-1,000) 4 = 0-13,790 (0-2,000) 5 = 0-20,684 (0-3,000)
<b>Port Size</b>	2 = 1/4"
<b>Port Thread</b>	N = NPTF                      U = BSPT
<b>Port Configuration</b>	A = 2 (1 inlet, 1 outlet) B = 4 (2 inlets, 2 outlets)
<b>Seal Material &amp; Max Supply – kPa (psig)</b>	P = PEEK    41,369 (6,000) T = CTFE    24,132 (3,500) V = VESPEL 41,369 (6,000)
<b>Relief Valve</b>	R = Relieving                  N = Non-relieving



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