SECTION A

REGULATORS

Pneumatic Pressure Regulators

A pressure regulator reduces an unregulated high input pressure to a regulated lower output pressure. Its primary function is to maintain the regulated output pressure under flowing and non-flowing conditions.

Fairchild manufactures a complete line of precision pneumatic regulators including positive pressure, back pressure and vacuum models. Quality engineering and manufacturing excellence assures that 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.


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	10 Precision Regulator	**16** Vacuum Regulator	**17** Vacuum Regulator	**30** Compact Precision Regulator	**63** Filter Regulator	**66** Stainless Regulator	**70B** Sub Miniature Regulator
Flow Capacity: **SCFM (m^3/HR)** Supply =100 psig	40 (68)	2.5 (4) @ 29" Vacuum w/inlet port open 40 (68) Positive Flow	12 (20.4)	40 (68)	25 (42.5)	17 (28.9)	2.5 (4.25)
Exhaust Capacity: **SCFM (m^3/HR)** Downstream pressure 5 psig above 20 psig set point	5.5 (9.4)	5.5 (9.4)	2.0 (3.4) (Relief Capacity)	2.0 (3.4)	0.8 (1.36)	1.0 (1.7)	0.28 (0.48)
Sensitivity: **Inch/WC (cm)**	0.125 (0.32)	0.50 (1.27)	0.50 (1.27)	0.25 (0.63)	1.0 (2.54)	1.0 (2.54)	N/A
Supply Pressure Var: **PSIG (kPa)** For Supply Change:	<0.1 (<0.7) 100 psig	<0.1 (<0.7) 100 psig	<0.1 (<0.7)% of Vacuum Change	<0.2 (1.4) 100 psig	<1.25 (<9) 100 psig	<0.1 (<0.7) 25 psig	<0.05 (<0.35) 5 psig
Supply Pressure Max: **PSIG (kPa)**	500 (3500)	250 (1700)	30 in Hg ((762 Torr) to "Full" Vacuum	250 (1700)	250 (1700)	500 (3500)	250 (1700)
Dimensions (Approx): **Inches (mm)**	Dia. 3 H 6 1/2 (Dia. 76 H 165)	Dia. 3 H 8 (Dia. 76 H 203)	Dia. 3 H 8 (Dia. 76 H 203)	2 1/2 x 1 3/4 x 5 1/4 (57 x 44 x 133)	2 x 3 x 7 3/4 (76 x 76 x 197)	Dia. 3 x 6 1/4 Dia. (76 x 159)	Dia. 7/8 H 3 3/16 (Dia. 22 H 81)
Range PSIG (kPa)	0-2 (0-15), 0-10 (0-70), 1-20 (0-150), 0.5-30 (3-200), 1-60 (10-400), 2-150 (15-1000), 3-200 (20-1500), 5-300 (35-2100), 5-400 (35-2800)	Vacuum-2 (Vacuum-15), Vacuum-10 (Vacuum-70), Vacuum-30 (Vacuum-200), Vacuum-100 (Vacuum-700), Vacuum-150 (Vacuum-1000)	0-5 in Hg(127 Torr) 0-15 in Hg (381 Torr) 0-30 in Hg (762 Torr)	0-2 (0-15), 0-10 (0-70), 0.5-30 (3-200), 1-60 (10-400), 2-100 (15-700)	0.5-30 (3-200), 1-60 (10-400), 2-120 (15-800)	0-10 (0-70), 0.5-30 (3-200), 1-60 (10-400), 2-100 (15-700), 2-150 (15-1000)	0-5 (0-35), 0-15 (0-100), 0.5-30 (3-200), 1-60 (10-400), 2-100 (15-700)
Pipe Size NPT	1/4", 3/8", 1/2"	1/4", 3/8", 1/2"	1/4", 3/8", 1/2"	1/4", 3/8"	1/4"	1/4", 3/8", 1/2"	1/16"

Pneumatic Pressure Regulators

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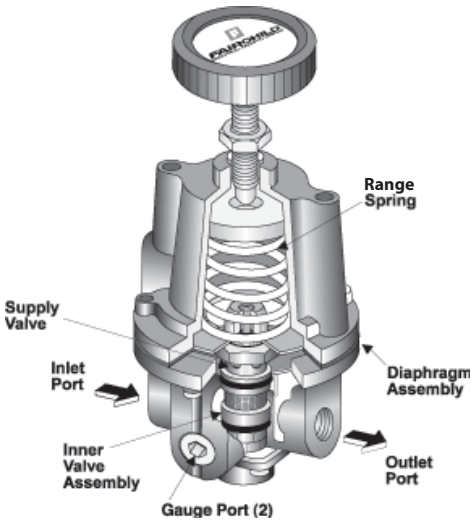
72 Hi-Performance Mini Regulator	**81** High Flow Precision Two-Stage Regulator	**100** High Flow Regulator	**1000** No Bleed Design Regulator	**1600A** High Flow Vacuum Reg.	**2400** Motorized Lock-In Position Reg.	**4000A** High Flow No Bleed Design Reg.
2.5 (4.25)	50 (85)	1500 (2550)	50 (85)	28 (48) @ 29" Vacuum w/inlet port open 150 (255) Positive Flow	Up to 50 (85)	150 (255)
0.28 (0.48)	5.5 (9.4)	44 (75)	8 (13.6)	20 (34)	5.5 (9.4)	40 (65.2)
N/A	<0.1 (<0.254)	0.5 (1.27)	0.5 (1.27)	1.0 (2.54)	<0.1 to 0.125 (0.25 to 0.32)	0.5 (1.27)
<0.025 (<0.35) 5 psig	<0.2 (<1.4) 100 psig	<0.5 (<3.5) 100 psig	<0.1 (<0.7) 100 psig	<0.1 (<0.7) 100 psig	<0.1 (<0.7)	<0.1 (<0.7) 100 psig
250 (1700)	2 & 5 psig range 100 (700) All other ranges 150 (1000)	250 (1700)	250 (1700)	250 (1700)	Up to 500 (3500)	250 (1700)
Dia. 1 H 3 3/16 (Dia. 22 H 81)	Dia. 3 H 6 1/4 (Dia. 76 H 159)	Dia. 5 1/2 H 11 1/4 (Dia. 133 H 286)	2 1/8 x 2 1/8 x 5 (54 x 54 x 127)	Dia. 4 1/2 H 9 1/2 (114 x 241)	Dia. 4 1/2 H 12 5/8 (Dia. 114 x 321)	Dia. 4 1/2 H 8 (Dia. 114 x 203)
0-5 (0-35), 0-15 (0-100), 0.5-30 (3-200), 1-60 (10-400), 2-100 (15-700)	0-2 (0-14), 0-5 (0-35), 0-20 (0-150), 0.5-60 (3.5-400), 0.5-100 (3.5-700)	0-10 (0-70), 0.5-30 (3-200), 1-60 (10-400), 2-100 (15-700), 2-150 (15-1000)	0.5-10 (3.5-70), 0.5-30(3.5-200), 1-60 (7-400), 2-150 (15-1000)	Vacuum-10 (Vacuum-70), Vacuum-30 (Vacuum-200), Vacuum-150 (Vacuum-1000)	**Numerous** (See Catalog pages)	0.5-10 (3.5-70), 0.5-30 (3.5-200), 1-60 (7-400), 2-150 (14-1000), 5-250 (35-1700)
1/16"	1/4"	1", 1 1/2"	1/4", 3/8"	3/8" x 1/2" x 3/4"	1/4", 3/8", 1/2"	3/8", 1/2", 3/4"

The Model 10 is designed for applications that require high capacity and accurate process control. A supply valve which is balanced by utilizing a rolling diaphragm, insures a constant output pressure even during wide supply pressure variations. Stability of regulated pressure is maintained under varying flow conditions through the use of an aspirator tube which adjusts the supply valve in accordance with the flow velocity.

Features

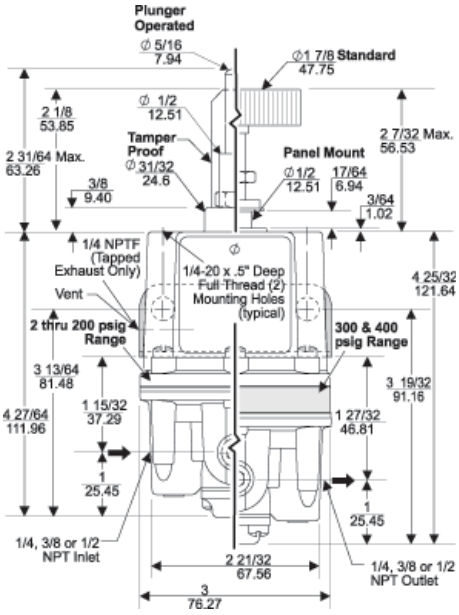
- Control sensitivity of 1/8" water column allows use in precision processes.
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint.
- Optional check valve permits Backflow of downstream pressure when supply is opened to atmosphere.
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- An aspirator tube compensates downstream pressure droop under flow conditions.
- Canadian Registration Number (CRN) certification for all territories and provinces.
- NO Yellow Metals available for harsh media.



Operating Principles

The Model 10 Series regulator use the force balance principal to control the movement of the Valve Assembly that controls the output pressure. When the regulator is adjusted for a specific set point, the downward force of the Range Spring moves the Diaphragm Assembly downward. The Supply Valve opens and allows air to pass to the Outlet Port. As the set point is reached, the downward force exerted by the Range Spring is balanced by the force of the downstream pressure that acts on the Diaphragm Assembly. The resultant force moves the Supply Valve upward to reduce the flow of air to the Outlet Port.

Outlet pressure is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.

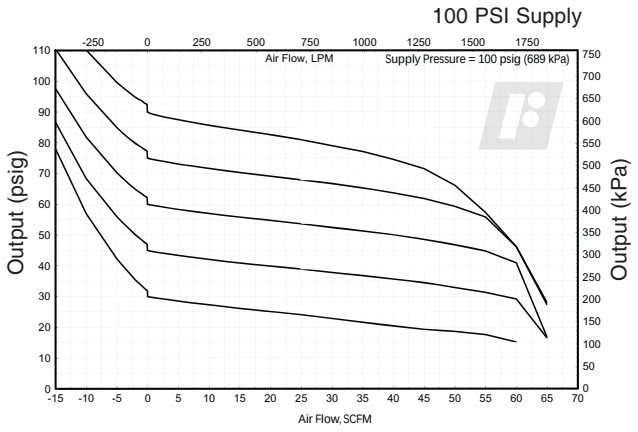


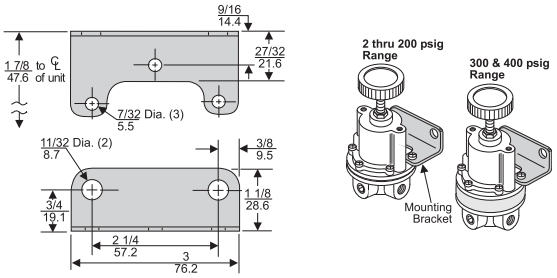
Options

Low Bleed (B)	Option that reduces the bleed rate below that of a standard unit and can be used when bleed or consumption is an issue. A reduction in sensitivity will result from the lower bleed rate.
Low Flow (L)	Option that increases the bleed rate above that of a standard unit to improve response in low flow applications.
Check Valve (C)	Internal check valve that permits rapid Backflow of downstream pressure through the supply line when supply pressure is removed.
Non-Relieving (N)	Option that includes no relief function or continuous bleed. Units with this feature must operate with a continuous downstream flow to regulate properly and prevent the output from equalizing with supply line pressure.

Technical Information

Fairchild Model 10262





Mounting Bracket: 09921 (sold separately)
14523 (sold separately)

Model 10 Regulator Kits & Accessories

Mounting Bracket Kit .....09921 (Zinc Plated Steel)
14523 (316 Stainless Steel)

Specifications

Supply Pressure
500 psig, [35.0 BAR], (3500 kPa) Maximum

Flow Capacity
40 SCFM (68 m³/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity
5.5 SCFM (9.35 m³/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (.7 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

Sensitivity

1/8 in Water Column [0.31 mBAR (0.031 kPa)]

Ambient Temperature
-40°F to +200°F, (-40°C to 93.3°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction
Body and Housing .....Aluminum
Diaphragms .....Buna N on Dacron (Std. unit only)
Trim .....Brass, Zinc Plated Steel

Catalog Information

Catalog Number 102 [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-2	[0-0.15]	(0-15)	1
0-10	[0-0.70]	(0-70)	2
0-20	[0-1.5]	(0-150)	0
.5-30	[0.03-2]	(3-200)	3
1-60	[0.1-4]	(10-400)	4
2-150	[0.1-10]	(15-1000)	6
3-200	[0.2-14]	(20-1400)	7
5-300	[0.3-21]	(35-2100)	8
5-400	[0.3-28]	(35-2800)	9

Pipe Size

1/4" NPT	2
3/8" NPT	3
1/2" NPT	4

Options

	A	B	C	E	H	J	L	N	P	R	S	T	U	Y
Silicone Elastomers [1]	A	-	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N
Low Bleed	B	Y	-	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y
Check Valve [2]	C	Y	Y	-	Y	Y	Y	N	Y	Y	Y	Y	Y	N
Tapped Exhaust	E	Y	Y	Y	-	Y	Y	Y	Y	N	Y	Y	Y	Y
BSPP (Parallel) [3]	H	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	N	Y
Fluorocarbon Elastomers	J	N	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	Y
Low Flow	L	Y	N	Y	Y	Y	Y	-	N	Y	Y	Y	Y	Y
Non-Relieving	N	Y	N	N	Y	Y	Y	N	-	Y	Y	Y	Y	Y
Panel Mount [4]	P	Y	Y	Y	Y	Y	Y	Y	Y	-	N	Y	N	Y
Plunger Operated [5]	R	Y	Y	Y	N	Y	Y	Y	Y	N	-	N	N	Y
Screwdriver Adjust	S	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	-	N	Y
Tamper Proof	T	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	-	Y
BSPT (Tapered)	U	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	-
No Yellow Metals	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	-

Option Compatibility Chart: "Y" in Box = Compatible options

[1] *Maximum SupplyPressure - 75 psig, [5.0 BAR], (500 kPa)*
[2] *Maximum Supply Pressure - 250 psig, [17.0 BAR], (1700 kPa)*
[3] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*
[4] *Panel Mount available for ranges 1, 2, 0, 3, 4 and 6 only.*
[5] *See Table 1 for Push Road Travel and Thrust.*

Table 1. Plunger Operated Regulator Parameters

Range	Push Rod Travel (inches)	Push Rod Thrust (pounds)
0-2 psig	.560 ± 10%	6.28 ± 10%
0-10 psig	.668 ± 10%	31.4 ± 10%
0-20 psig	.668± 10%	62.8 ± 10%
.5-30 psig	.673 ± 10%	94.2 ± 10%
1-60 psig	.698 ± 10%	188.4 ± 10%
2-150 psig	.589 ± 10%	471.0 ± 10%
5-300 psig	.589 ± 10%	471.0 ± 10%
3-200 psig	.418 ± 10%	628.0 ± 10
5-400 psig	.418 ± 10%	628.0 ± 10

Model 10BP Precision Pressure Regulator

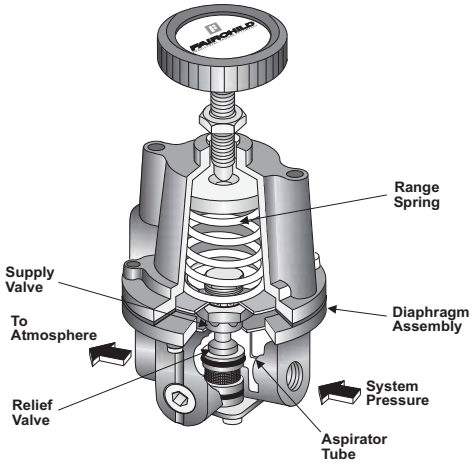
Features

The Model 10BP is a high capacity regulator that relieves excess pressure in a pneumatic system.

The Model 10BP provides greater accuracy than relief valves over a narrow pressure range. The Model 10BP is an excellent choice for a wide range of precision applications.

The Model 10BP has the following features:

- Control sensitivity of 1/8" water column allows use in precision applications.
- A separate Control Chamber and Aspirator Tube isolate the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 10BP without removing it from the line.
- Mounting Bracket is available.

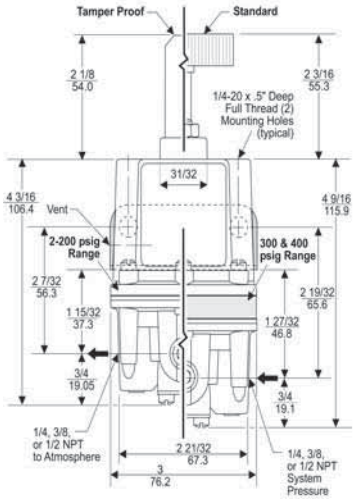


Operating Principles

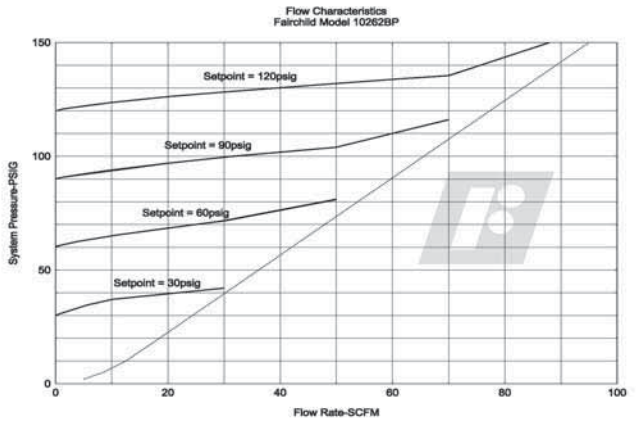
The Model 10BP Regulator uses the force balance principle to open the Relief Valve and vent system pressure when the set point is exceeded.

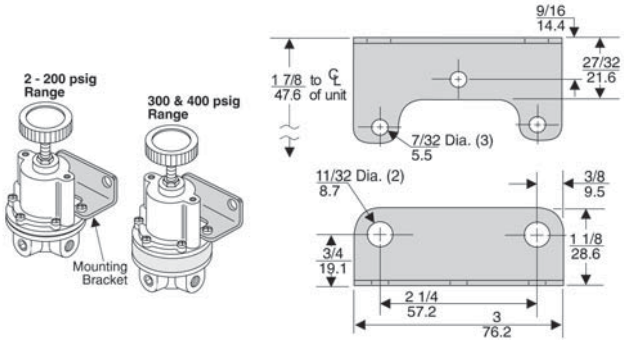
Downstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. When you adjust the range screw for a specific set point, the Range Spring compresses and exerts a force on the top of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm Assembly produces a force less than the spring force acting on the top of the Diaphragm Assembly, the Relief Valve remains closed. When system pressure increases, the force on the bottom of the Diaphragm Assembly increases until it reaches the set point. When system pressure increases beyond the set point, the assembly moves upward, lifting the Relief Valve from its seat and vents the downstream air.

If downstream pressure decreases below the set point, the assembly moves downward closing the Relief Valve.



Technical Information





Model 10BP Regulator Kits & Accessories

Mounting Bracket Kit .....09921 (Sold separately)

Specifications

Set Point Range	System Pressure (Maximum)
2-200 psig [0.15-14 BAR] (15-1400 kPa)	300 psig [21.0 BAR] (2100 kPa)
300-400 psig [21-28 BAR] (2100-2800 kPa)	500 psig [35.0 BAR] (3500 kPa)

Flow Capacity (SCFM)
40 (68 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) system pressure

Sensitivity
Less than 1/8" (.32 cm) Water Column

Ambient Temperature
-40° F to +200° F, (-40° C to +93° C)

Materials of Construction
Body and Housing .....Aluminum
Trim .....Zinc Plated Steel, Brass
Nozzle.....Nitrile on Dacron

Catalog Information

Catalog Number **1 0 2** [ ] [ ] **BP** [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-2	[0-0.15]	(0-15)	1
0-10	[0-0.7]	(0-70)	2
0-20	[0-1.5]	(0-150)	0
.5-30	[0.03-2.0]	(3-200)	3
1-60	[0.1-4.0]	(10-400)	4
2-150	[0.15-10.0]	(15-1000)	6
3-200	[0.2-14.0]	(20-1400)	7
5-300	[0.35-21.0]	(35-2100)	8
5-400	[0.35-28.0]	(35-2800)	9

Pipe Size

1/4" NPT	2
3/8" NPT	3
1/2" NPT	4

Options

Silicone Elastomers	A
BSPP (Parallel)[2]	H
Fluorocarbon (Viton) Elastomers	J
Screwdriver Adjust	S
Tamper Proof	T
BSPT (Tapered)	U

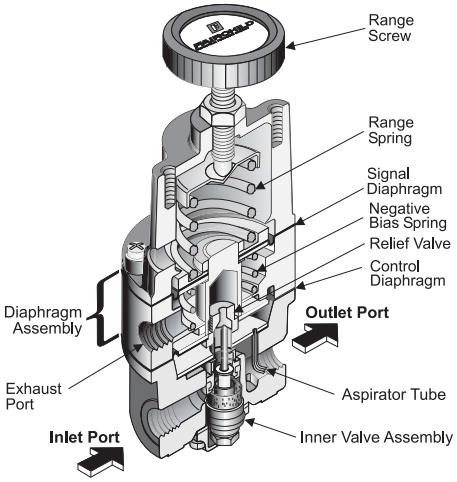
[2] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

Installation

For installation instructions, refer to the *Fairchild Model 10BP Pneumatic Precision Back Pressure Regulator Installation, Operation and Maintenance Instructions,* IS-100010BP.

Features

- The Model 16 Vacuum Regulator is designed for systems that require system pressure control above and below atmospheric pressure.
- Control sensitivity of 1/2" water column allows use in precision applications.
- A balanced Supply Valve minimizes the effects of supply pressure variation.
- An Aspirator Tube compensates downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 16 without removing it from the line.
- Mounting Bracket is available.
- Canadian Registration Number (CRN) Certification for all territories and provinces

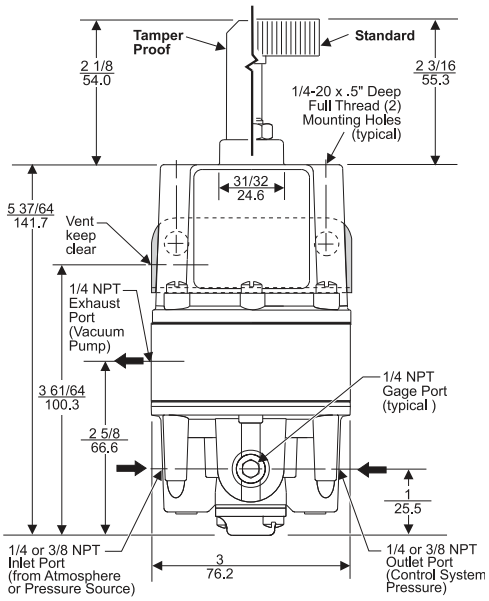


Operating Principles

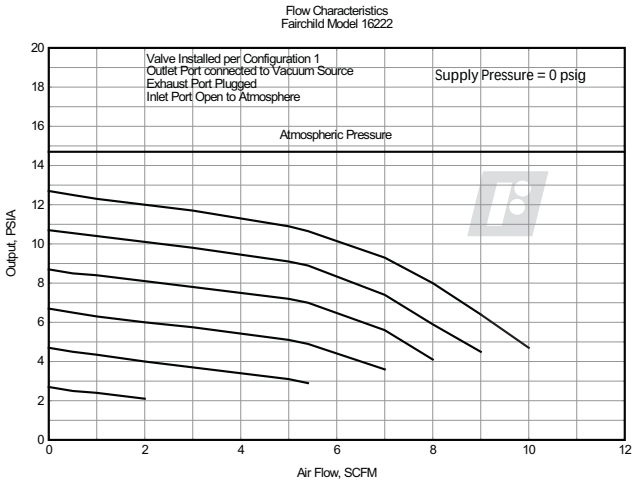
When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force on the top of the Signal Diaphragm. The Negative Bias Spring creates an upward force on the bottom of the Signal Diaphragm. The upward net force opens the Relief Valve (vacuum supply) to let Vacuum flow from the Outlet Port to the Exhaust Port. As the setpoint is reached, the decrease in pressure lets the Diaphragm Assembly move downward to close the Relief Valve (vacuum supply).

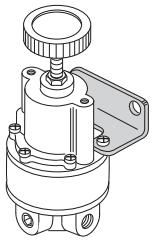
When the Vacuum increases above the setpoint, the Diaphragm Assembly moves downward to open the Supply Valve that adds positive pressure to the system to maintain Output pressure. For more information, see cross sectional diagram.

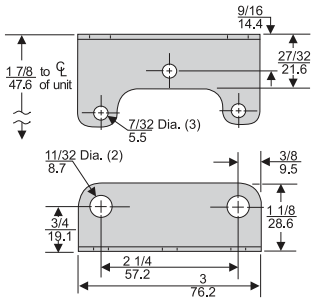
Outlet pressure is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.



Technical Information







Model 16 Regulator Kits & Accessories

Mounting Bracket Kit . . . . . .09921 (sold separately)

Specifications

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Positive Flow Capacity (SCFM)
40 (65.2 m³/HR) @ 100 psig, [7.0 BAR] supply, (700 kPa) supply & 20 psig, [1.5 BAR], (150 kPa) setpoint

Vacuum Flow Capacity (SCFM)
2.5 (4 m³/HR) @ 29" Hg VAC with pump connected to exhaust port

40 (65.2 m³/HR) @ 100 psig supply connected to inlet port

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (0.7 kPa) for 100 psig, [7.0 BAR]. (700 kPa) change in supply pressure

Sensitivity
1/2" (1.27 cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to +93.3°C)

Materials of Construction
Body and Housing . . . . . .Aluminum
Trim . . . . . .Stainless Steel, Brass and Zinc Plated Steel
Diaphragms . . . . . .Nitrile on Dacron

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Catalog Information

Catalog Number 1 6 [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
Vacuum - 2	[Vacuum -0.15]	(Vacuum - 15)	21
Vacuum - 10	[Vacuum -0.7]	(Vacuum - 70)	22
Vacuum - 30	[Vacuum -2.0]	(Vacuum - 200)	23
Vacuum - 100	[Vacuum -7.0]	(Vacuum - 700)	25
Vacuum - 150	[Vacuum - 10]	(Vacuum - 1000)	26

Pipe Size

1/4" NPT	2
3/8" NPT	3
1/2" NPT	4

Options

Silicone Elastomers [1]	A
BSPP (Parallel) [2]	H
Tamper Proof	T
Fluorocarbon (Viton) Elastomers	J
Increased Sensitivity	L
BSPT (Tapered)	U

[1] *Maximum Supply Pressure - 75 psig, [5.0 BAR], (500 kPa)*

[2] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

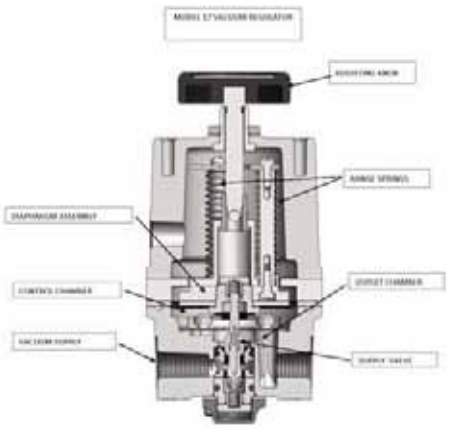
Installation

For installation instructions, refer to the *Fairchild Model 16 Vacuum Regulator Installation, Operation and Maintenance Instructions*, IS-10000016.

Model 17 Vacuum Regulator

Features

- The Model 17 Vacuum Regulator is designed for systems that require system vacuum control up to full vaccum.
- Control sensitivity of 1/2" water column allows use in precision applications.
- High flow capacity
- A balanced vacuum Valve minimizes the effects of variation.
- An Aspirator Tube compensates downstream vacuum droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 17 without removing it from the line.
- Mounting Bracket is available.

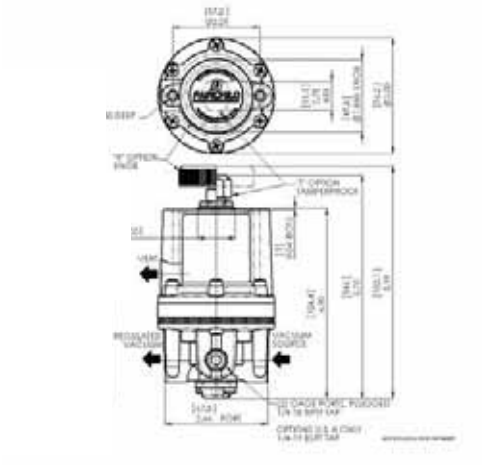


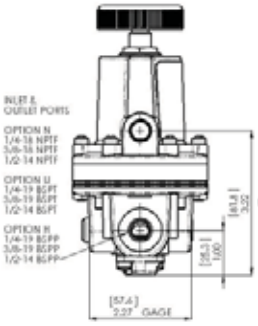
Operating Principles

When you adjust the Range Screw to a specific setpoint, the Range Springs exerts a downward force on the top of the Control Diaphragm. The Negative Bias Spring creates an upward force on the bottom of the Diaphragm. The upward net force opens the Relief Valve (vacuum supply) to let Vacuum flow from the Outlet Port to the Exhaust Port. As the setpoint is reached, the decrease in pressure lets the Diaphragm Assembly move downward to close the Relief Valve (vacuum supply).

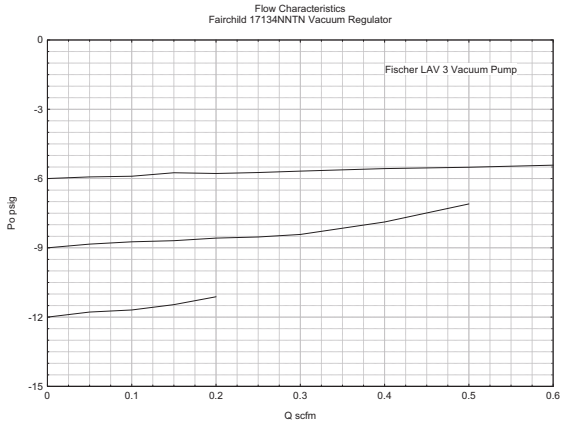
When the Vacuum increases above the set-point, the Diaphragm Assembly moves downward to open the Supply Valve that adds positive pressure to the system to maintain Output pressure. For more information, see cross sectional diagram.

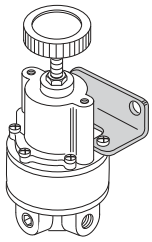
Outlet pressure is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.

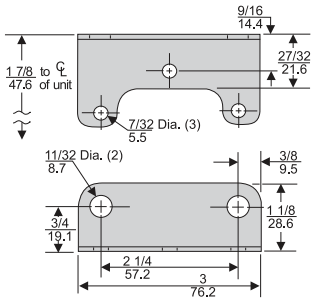




Technical Information







Model 17 Regulator Kits & Accessories

Mounting Bracket Kit . . . . . .09921 (sold separately)

Specifications

Max Vacuum Capacity
30 in Hg (762 Torr) (102 kPa), up to "Full" Vacuum

Flow Capacity
12 SCFM (20.4 m^3/HR)

Relief Capacity
2.0 SCFM (3.4 m^3/HR)

Vacuum Supply Effect
Less than 0.1 % of change in supply vacuum

Ambient Temperature
-40°F to +200°F, (-40°C to 93.3°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction
Body and Housing .....Aluminum
Diaphragms .....Buna N on Dacron (Std. unit only)
Trim ..... Stainless, Zinc Plated Steel

Ordering Information

Catalog Number 171 [ ] [ ] [ ] [ ] [ ] [ ]

Vacuum Range

in Hg	[Torr]	(kPa)	
0-5	[127]	(17)	1
0-15	[381]	(51)	2
0-30	[762]	(102)	3

Pipe Size

1/4" NP	2
3/8" NPT	3
1/2" NPT	4

Port Threads

NPT	N
BSPP	U
BSPT	H

Elastomer

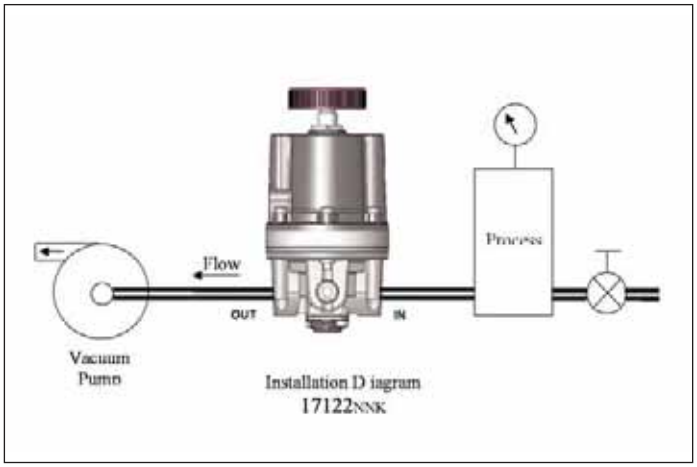
Nitrile	N
Fluorocarbon	J

Actuator Type

Knob Assembly	K
Tamperproof	T

Relief

Relieving	R
Non-Relieving	N



Installation Diagram
17122NNK

The Model 30 is designed for applications that require high capacity and accurate process control. A supply valve which is balanced by utilizing a rolling diaphragm, insures a constant output pressure even during wide supply pressure variations. Stability of regulated pressure is maintained under varying flow conditions through the use of an aspirator tube which adjusts the supply valve in accordance with the flow velocity.

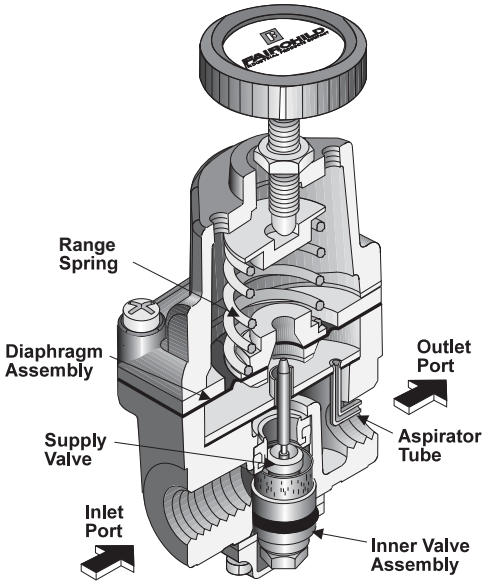
Features

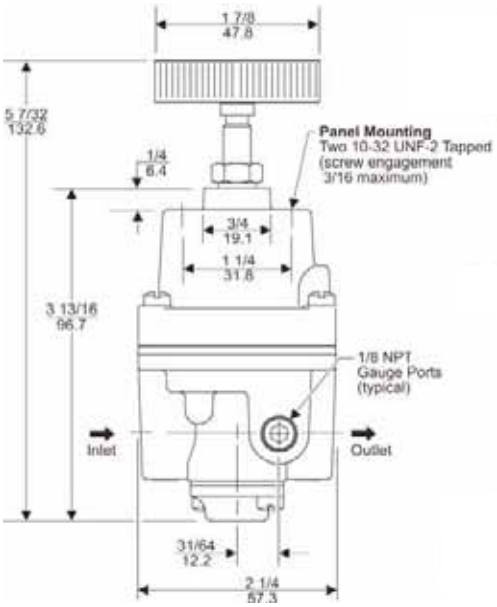
- Control sensitivity of 1/4" water column variation allows use in precision applications.
- Pressure Balanced Supply Valve lets the regulator remain unaffected by supply pressure changes.
- Flow of up to 40 SCFM with 100 psig supply allows use in applications with high flow requirements.
- An aspirator tube compensates downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 30 without removing it from the line.
- Canadian Registration Number (CRN) Certification for all territories and provinces.

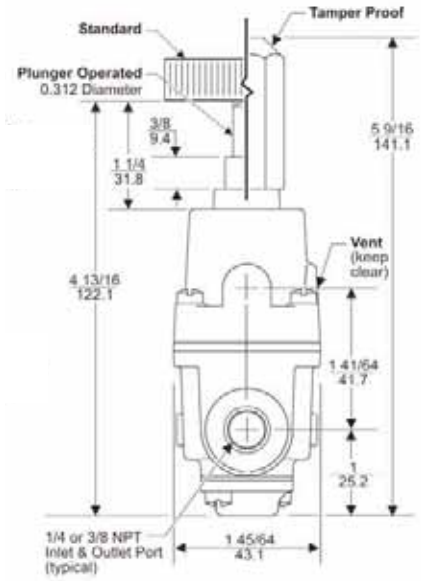
Operating Principles

The Model 30 Regulator uses the force balance principal to control the movement of the valve assembly which in turn controls the output pressure. When the regulator is adjusted for a specific set point, the downward force of the Range Spring causes the Diaphragm Assembly to move downward. The Supply Valve opens and allows air to pass to the Outlet Port. As the set point is reached, the downward force exerted by the Range spring is balanced by the upward force of the downstream pressure acting on the bottom of the Diaphragm Assembly. The resultant force moves the supply Valve upward to reduce the flow of air to the Outlet Port.

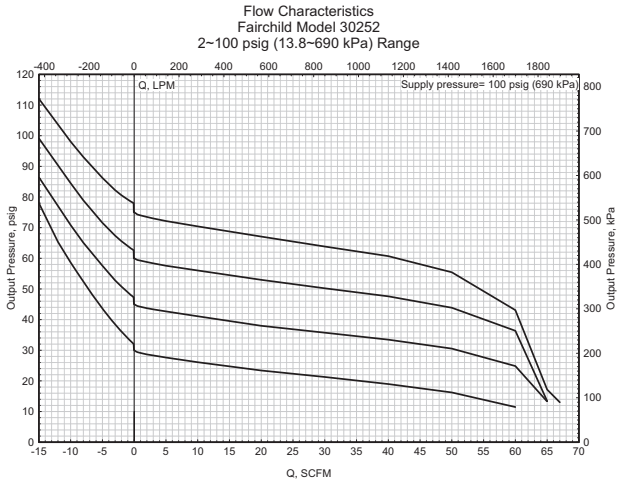
Outlet pressure is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.







Technical Information



Specifications

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Flow Capacity
40 SCFM (68 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity
2.0 SCFM (3.4 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
Less than 0.2 psig, [.014 BAR], (.14 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

Sensitivity
1/4" (.63cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to 93.3°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere: Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction
Body and Housing . . . . . Aluminum
Diaphragms . . . . . Nitrile on Dacron
Trim . . . . . Brass

Catalog Information

Catalog Number 3 0 2 [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-2	[0-0.1]	(0-15)	1
0-10	[0-0.7]	(0-70)	2
0.5-30	[0.03-2]	(3-200)	3
1-60	[0.1-4]	(10-400)	4
2-100	[0.1-7]	(15-700)	5

Pipe Size

1/4" NPT	2
3/8" NPT	3

Options

	A	B	H	J	L	N	R	S	T	U
Silicone Elastomers [1] **A**	-	Y	Y	N	Y	Y	Y	Y	Y	Y
Low Bleed **B**	Y	-	Y	Y	N	N	N	Y	Y	Y
BSPP (Parallel) [2] **H**	Y	Y	-	Y	Y	Y	Y	Y	Y	N
Fluorocarbon *Elastomers **J**	N	Y	Y	-	Y	Y	Y	Y	Y	Y
Low Flow **L**	Y	N	Y	Y	-	N	Y	Y	Y	Y
Non-Relieving **N**	Y	N	Y	Y	N	-	Y	Y	Y	Y
Plunger Operated [3] **R**	Y	Y	Y	N	Y	Y	-	Y	N	Y
Screwdriver Adjust **S**	Y	Y	Y	Y	Y	Y	N	-	N	Y
Tamper Proof **T**	Y	Y	Y	Y	Y	Y	N	N	-	Y
BSPT (Tapered) **U**	Y	Y	N	Y	Y	Y	Y	Y	Y	-

Option Compatibility Chart: "Y" in Box = Compatible options

[1] Maximum Supply Pressure - 75 psig, [5.0 BAR], (500 kPa)
[2] BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.
[3] Refer to Table 1 for Push Rod Travel and Thrust
** Viton*

Table 1. Plunger Operated Regulator Parameters

Range	Push Rod Travel (inches)	Push Rod Thrust (pounds)
0-2 psig	.244 ± 10%	3.2 ± 10%
0-10 psig	.344 ± 10%	15.7 ± 10%
0-30 psig	.333 ± 10%	47.0 ± 10%
0-60 psig	.395 ± 10%	94.0 ± 10%
0-100 psig	.354 ± 10%	157.0 ± 10%

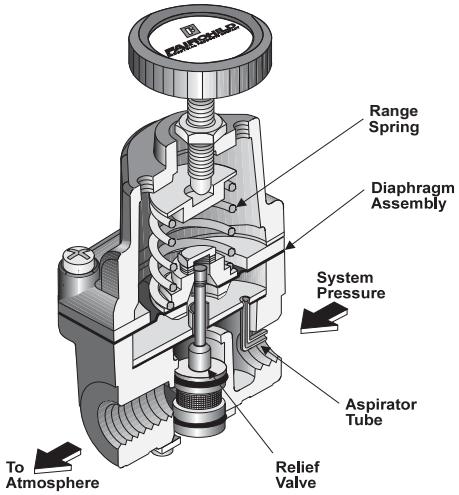
Installation

For installations instructions, refer to the *Fairchild Model 30 Midget Precision Regulator Instruction, Operation and Maintenance Instructions, IS-10000030.*

Model 30BP Midget Precision Back Pressure Regulator

Features

- The Model 30BP is a high capacity back pressure regulator that relieves excess system pressure to maintain a setpoint.
- Combination of high capacity and compact size make the Model 30BP an excellent choice for a wide range of precision applications including: Precise Control of Paper Machinery Felt Guides, Supply of a Precise Repeatable Signal to a Pneumatic Clutch, or Control of Cylinder Pressure.
- The Model 30BP is sensitive to 1/4" Water Column variation which permits use in precision processes.
- Flow of up to 40 SCFM allows use in applications with high flow requirements.
- A Separate Control Chamber and Aspirator Tube isolates the diaphragm from the main flow eliminating hunting and buzzing.

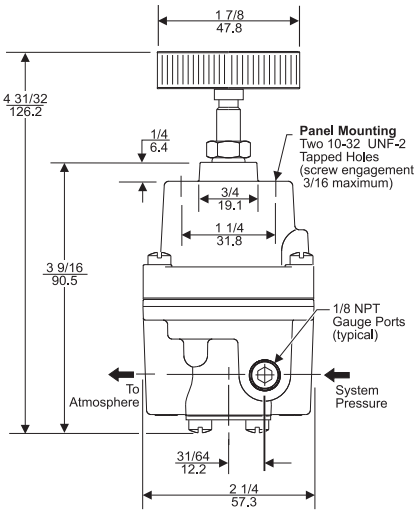


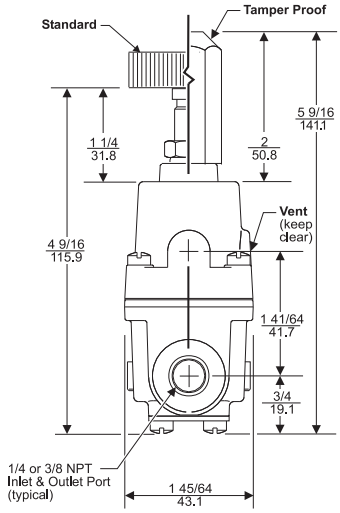
Operating Principles

The Model 30BP Regulator uses the force balance principle to open the Relief Valve and vent system pressure when the set point is exceeded.

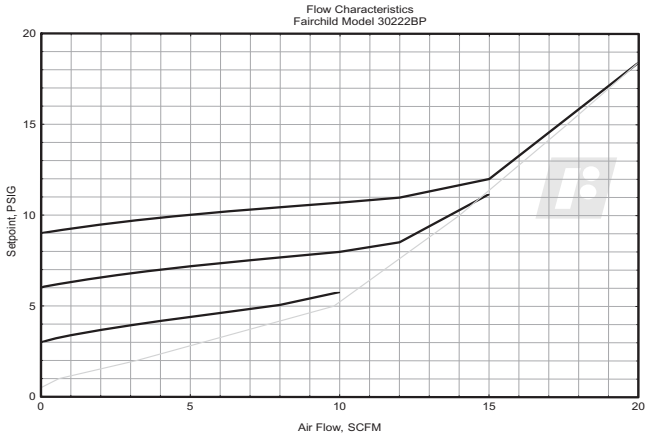
Downstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. When you adjust the range screw for a specific set point, the Range Spring compresses and exerts a force on the top of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm Assembly produces a force less than the spring force acting on the top of the Diaphragm Assembly, the Relief Valve remains closed. When system pressure increases, the force on the bottom of the Diaphragm Assembly increases until it reaches the set point. When system pressure increases beyond the set point, the assembly moves upward, lifting the Relief Valve from its seat and vents the downstream air.

If downstream pressure decreases below the set point, the assembly moves downward closing the Relief Valve.





Technical Information



Specifications

Set Point Range
2-100 psig, [0.15-7.0 BAR], (15-700 kPa)

System Pressure (Maximum)
150 psig, [10.0 BAR], (1000 kPa)

Flow Capacity (SCFM)
40 (68 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa)

Sensitivity
1/4" (.63 cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to 93.3°C)

Materials of Construction
Body and Housing .....Aluminum
Diaphragms .....Nitrile on Dacron
Trim .....Brass

Catalog Information

Catalog Number **3 0 2** [ ] [ ] **BP** [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-2	[0-0.15]	(0-15)	1
0-10	[0-0.7]	(0-70)	2
.5-30	[0.03-2]	(3-200)	3
1-60	[0.1-4]	(10-400)	4
2-100	[0.15-7]	(15-700)	5

Pipe Size

1/4" NPT	2
3/8" NPT	3

Options

Silicone Elastomers	A
Fluorocarbon (Viton) Elastomers	J
BSPP (Parallel)[2]	H
Screwdriver Adjustment	S
Tamper Proof	T
BSPT (Tapered)	U

[2] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

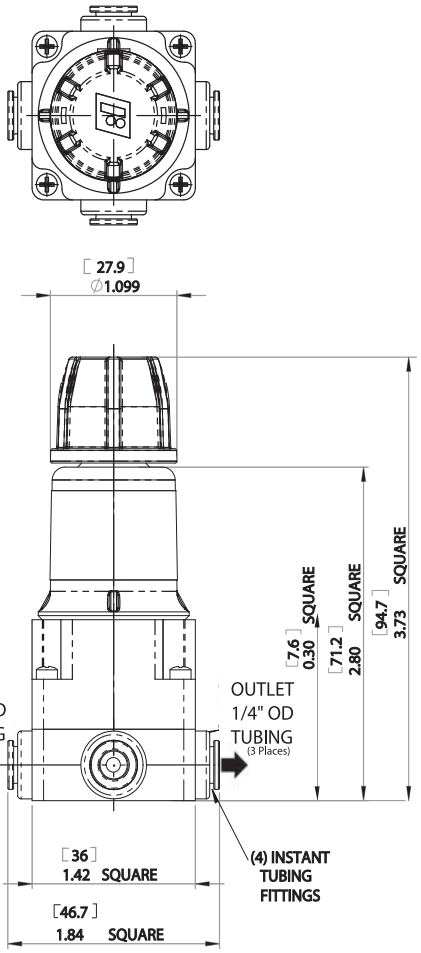
Installation

For installation instructions, refer to the *Fairchild Model 30BP Midget Precision Back Pressure Regulator Installation, Operation and Maintenance Manual*, IS-100030BP.

Model 50 Miniature Precision Regulator

Features

- Compact size
- Lightweight unit
- Handles high supply pressure
- High accuracy for precision control
- Polymer construction for corrosive resistance
- Venturi design compensates downstream pressure droop under flowing conditions
- Non-rising adjustment knob
- Manifold mount capability
- Push to connect fittings in all ports
- Separate control chamber isolates the Diaphragm from the main flow to eliminate hunting and buzzing



Operating Principles

When the setpoint is reached, the upward force of the output pressure that acts on the bottom of the Diaphragm balances with the downward force that acts on the top of the Diaphragm. If the output pressure rises above the setpoint, the force that acts on the bottom of the Diaphragm moves the Diaphragm Assembly upward to close the Supply Valve and open the Relief Valve. Excess output pressure exhausts through the Vent in the unit until it reaches the setpoint.

Specifications

Flow Capacity
10 SCFM (17.0 m^3/HR) @ 120 psig, [8 BAR], (800 kPa) supply

Exhaust Capacity
2 SCFM (3.4 m^3/HR) where downstream pressure is 15 psig, [1.0 BAR], (100 kPa)

Maximum Supply Pressure
150 psig, [10 BAR], (1000 kPa)

Supply Pressure Effect
0.1 psig for 10 psig change in supply

Sensitivity
5" (12.7cm) Water Column

Ambient Temperature
0°F to +160°F, (-17.8°C to 71.1°C)

Materials of Construction
Body and Housing .....Glass Filled Acetal
Valve .....Stainless Steel
Diaphragm .....Polymer Reinforced Nitrile

Catalog Information

Catalog Number 50R1 [ ] [0] [ ] [ ] [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-10	[0-0.7]	(0-70)	2
.5-30	[0.03-2]	(3-200)	3
1-60	[0.07-4]	(7-400)	4
2-100	[0.15-7]	(15-700)	5

Port Tubing Size
1/4" / 6 mm 0

Port Type
Inch ..... E
Metric ..... M

Elastomer
Nitrile ..... N

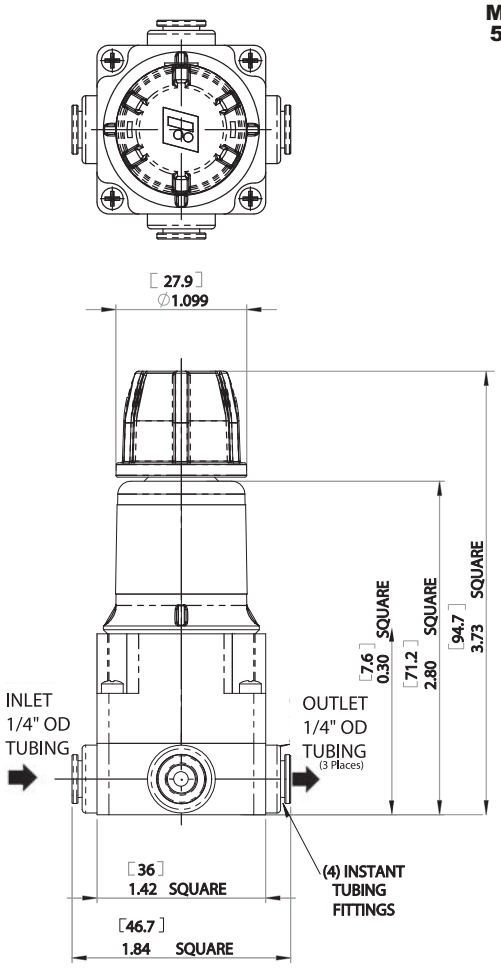
Adjustment Type
Knob ..... K

Function Type
Relieving ..... R
Non-Relieving ..... N

Vent
Untapped ..... S
Tapped ..... E

Features

- Compact size
- Lightweight unit
- High accuracy for precision control
- Polymer construction for corrosive resistance
- Non-rising adjustment knob
- Manifold mount capability
- Push to connect fittings in all ports
- Separate control chamber isolates the Diaphragm from the main flow to eliminate hunting and buzzing



Operating Principles

Downstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm Assembly produces a force less than the spring force acting on the top of the Diaphragm Assembly, the Relief Valve remains closed. When system pressure increases, the force on the bottom of the Diaphragm Assembly increases beyond the set point. When system pressure increases beyond the set point, the assembly moves upward, lifting the Relief Valve from its seat and vents the downstream air.

If downstream pressure decreases below the set point, the assembly moves downward closing the Relief Valve.

Specifications

Flow Capacity
10 SCFM (17.0 m^3/HR) @ 120 psig, [8 BAR], (800 kPa) system pressure

Maximum System Pressure
150 psig, [10 BAR], (1000 kPa)

Sensitivity
5" (12.7cm) Water Column

Ambient Temperature
0°F to +160°F, (-17.8°C to 71.1°C)

Materials of Construction
Body and Housing .....Glass Filled Acetal
Valve .....Stainless Steel
Diaphragm .....Polymer Reinforced Nitrile

Catalog Information

Catalog Number 5 0 B 1 [ ] 0 [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-10	[0-0.7]	(0-70)	2
.5-30	[0.03-2]	(3-200)	3
1-60	[0.07-4]	(7-400)	4
2-100	[0.15-7]	(15-700) . . .	5

Port Tubing Size
1/4" / 6 mm 0

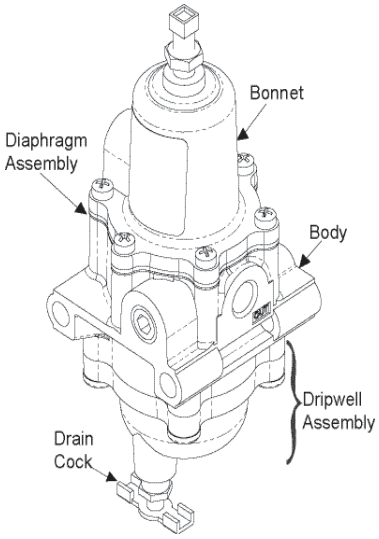
Port Type
Inch . . . . . E
Metric . . . . . M

Elastomer
Nitrile . . . . . N

Adjustment Type
Knob . . . . . K

Features

- The no-brass construction is well suited to harsh environments.
- Epoxy coated finish for superior corrosion resistance
- Non-bleed design to reduce consumption
- Integral Relief Valve
- A Gauge Port provides convenient pressure gauge mounting.
- The standard 5-micron filter minimizes internal contamination.
- The Filter Dripwell contains a Drain Plug to easily drain trapped liquids.
- Standard Tapped Exhaust
- Soft Relief Seat minimizes air loss
- Canadian Registration Number (CRN) certification for all territories and provinces.

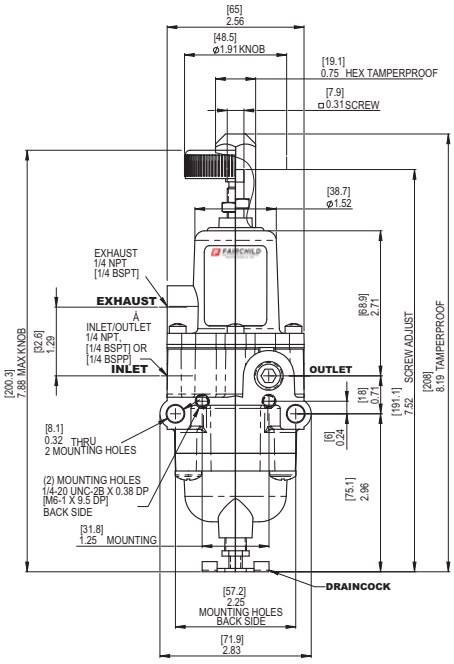


Operating Principles

When you turn the Adjustment Screw to a specific setpoint, the Spring exerts a downward force against the top of the Diaphragm Assembly. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the passage to the Control Chamber where it creates an upward force on the bottom of the Diaphragm Assembly.

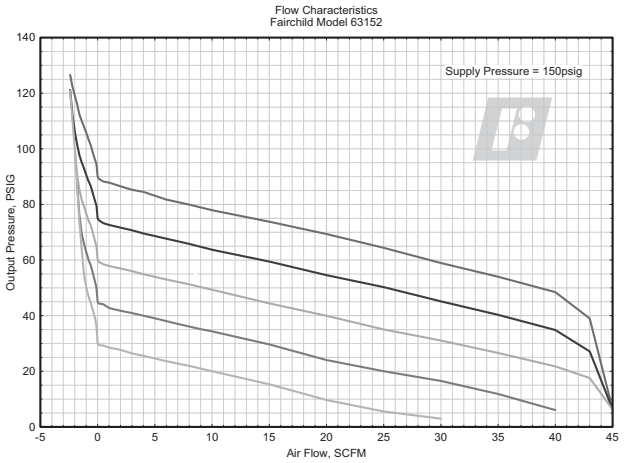
When the setpoint is reached, the force of the Spring that acts on the top of the Diaphragm Assembly balances with the force of output pressure that acts on the bottom of the Diaphragm Assembly and closes the Supply Valve.

When the output pressure increases above the setpoint, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Output pressure flows through the Exhaust Valve and out of the Exhaust Vent on the side of the unit until it reaches the setpoint.



Note: *Pipe plug is included*

Technical Information



Specifications

Supply Pressure
250 psig, [17 BAR], (1700 kPa) Maximum

Flow Capacity (SCFM)
25 (42.5 m^3/HR) @ 100 psig, [7 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity (SCFM)
0.8 (1.36 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint. (0.8 scfm for 120 # unit)

Maximum Supply Pressure
250 psig, [14 BAR], (1400 kPa)

Consumption
Undetectable

Supply Pressure Effect
Less than 1.25 psig, [.09 BAR], (9 kPa) change for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure (1.90 psig for 120 psig Range)

Sensitivity
1" (2.50 cm) Water Column

Temperature Range
-40° F to + 180° F, (-40° C to + 82° C)

Materials of Construction

Body and Housing .....Epoxy Coated Aluminum
Trim .....Stainless Steel, Nickel Plated Steel, Zinc Plated Steel
Elastomers .....Nitrile

Catalog Information

Catalog Number 6 3 2 [ ] [2] [ ] [ ] [ ][ ][ ][ ]

Pressure Range

psig	[BAR]	(kPa)	
0.5-30	[0.03-2]	(3-200)	3
1-60	[0.07-4]	(7-400)	4
2-120	[0.14-8]	(14-800)	5

Port Size

1/4" 2

Port Thread

NPT ..... N
BSPP ..... H
BSPT ..... U

Actuator

Knob ..... K
Screw ..... S
Tamper Proof ..... T

Options

Stainless Steel Trim/Drain ..... S
Screen in Exhaust Port ..... M
Quick Bleed Valve C
2" Pressure Gauge Option (NPT Only) ..... G

Installation Instructions

For installations instructions, refer to the *Fairchild Model 63 Pneumatic Filter Regulator Instruction, Operation and Maintenance Instructions, IS-10000063.*

Model 64A Model 65A

Features

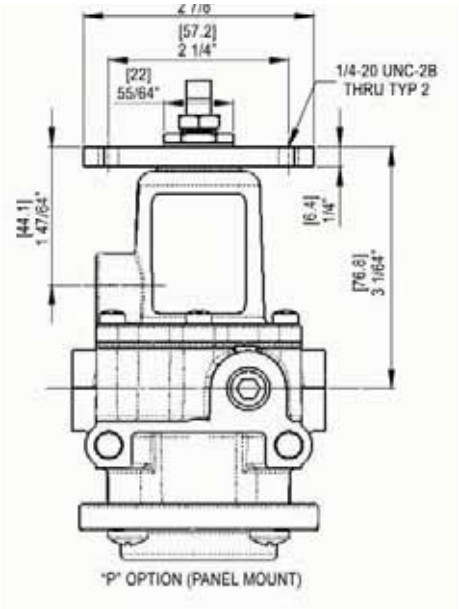
- The Models 64A and 65A Service Regulators are precision units used in instrumentation and general purpose applications.
- A Venturi compensates downstream pressure droop under flow conditions.
- A large Control Diaphragm area provides increased sensitivity.
- A full Flow Gage Port provides convenient pressure gage mounting.
- The Model 65 Standard 5-Micron Filter prevents particles from entering the output airstream.
- The Model 65 Filter Dripwell contains a Petcock Valve to easily drain trapped liquids.

Operating Principles

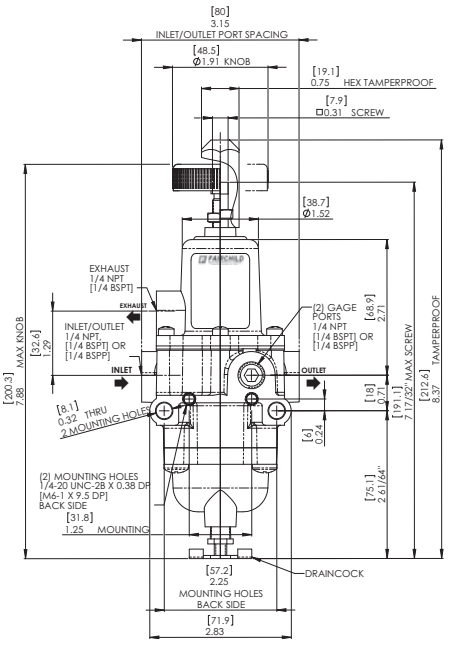
When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the Venturi to the Control Chamber where it creates an upward force on the bottom of the Control Diaphragm.

When the setpoint is reached, the force of the Range Spring that acts on the top of the Control Diaphragm balances with the force of output pressure that acts on the bottom of the Control Diaphragm and closes the Supply Valve.

When the output pressure increases above the set point, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Output pressure flows through the Exhaust Valve and out of the Vent on the side of the unit until it reaches the setpoint. For more information, see cross sectional diagram.



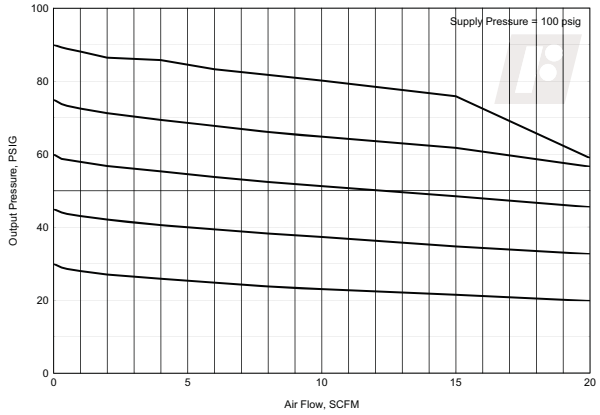
Model 64A



Model 65A

Technical Information

Flow Characteristics
Fairchild Model 65952



Specifications

Supply Pressure*
300 psig, [21.0 BAR], (2100 kPa) Maximum

Flow Capacity (SCFM)
25 (42.5 m^3/HR) @ 100 psig, [7 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity (SCFM)
0.8 (1.36 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint. (0.8 scfm for 120 # unit)

Supply Pressure Effect
Less than 1.25 psig, [.09 BAR], (9 kPa) change for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure (1.90 psig for 120 psig Range)

Sensitivity
1" (2.50 cm) Water Column

Temperature Range
-40° F to + 180° F, (-40° C to + 82° C)

Materials of Construction

Body and Housing . . . . . Epoxy Coated Aluminum

Trim . . . . . .Zinc Plated Steel, Brass

Elastomers . . . . . .Nitrile on Dacron

**For information on CRN certification pressure spec contact Fairchild engineering*

Catalog Information

Catalog Number

6 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Models

64	48
65	59

Pressure Range

psig	[BAR]	(kPa)	
0.5-30	[0.03-2]	(3-200)	3
1-60	[0.10-4]	(10-400)	4
2-120	[0.15-8]	(15-800)	5

Pipe Size

1/4" NPT	2

Port Thread

NPT	N
BSPP [1]	H
BSPT	U

Actuator

Actuator Knob Adjust	K
Screw	S
Tamper Proof	T

Options

Quick Bleed	C
Tapped Exhaust and Sealed Bonnet	E
2" Gauge (Gage port is NPT Only)	G
Screen in Exhaust	M
Stainless Steel Trim	S
Panel Mount	P

[1] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

Installation

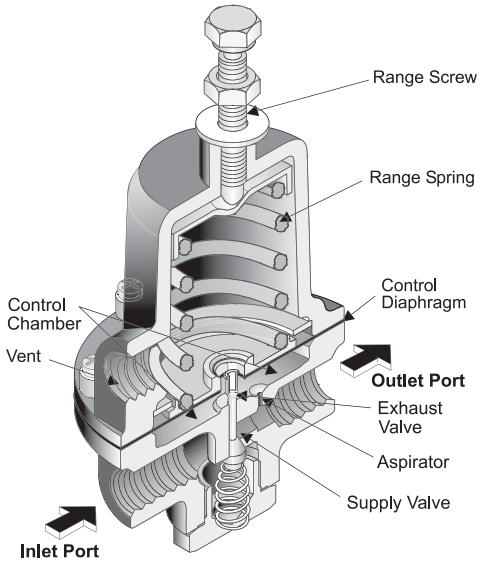
For installation instructions, refer to the *Fairchild Model 64A, 65A Pneumatic Service Regulator Installation, Operation and Maintenance Instructions*, IS-1064A65A.

Model 66 Pneumatic Stainless Steel Regulator

The Model 66 Stainless Steel Regulator is designed for corrosive environments and extreme temperatures.

Features

- Large Control Diaphragm area for increased sensitivity.
- Aspirator design compensates downstream pressure droop under flow conditions.
- Viton Elastomers are compatible with corrosive materials and environments.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Line or Panel Mounting provides flexibility for installation.

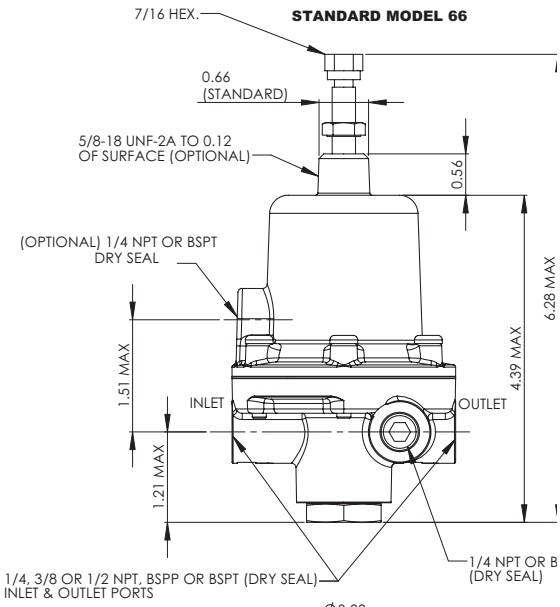


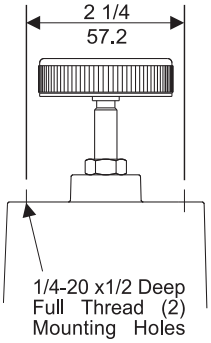
Operating Principles

When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber where it creates an upward force on the bottom of the Control Diaphragm.

When the setpoint is reached, the force of the Range Spring that acts on the top of the Control Diaphragm balances with the force of output pressure that acts on the bottom of the Control Diaphragm and closes the Supply Valve.

When the output pressure increases above the setpoint, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Output pressure exhausts through the Vent on the side of the unit until it reaches the setpoint.

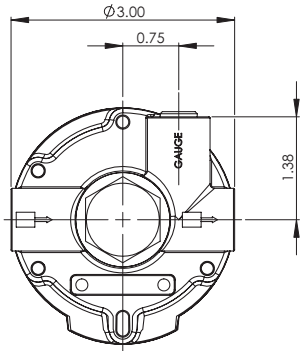




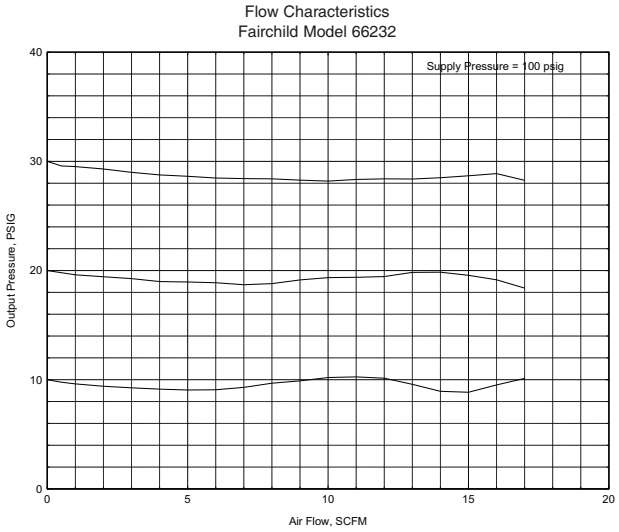
Detail A

NOTE: Mounting Holes used for Non-Relieving Option with Aluminum Bonnet Only

Non-Relieving (optional)



Technical Information



Specifications

Supply Pressure
500 psig, [35 BAR], (3500 kPa) Maximum

Flow Capacity
17 SCFM (28.9 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity
1 SCFM (1.7 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (0.7 kPa) for 25 psig, [1.7 BAR], (170 kPa) change in supply pressure

Sensitivity
1" (2.54 cm) Water Column

Ambient Temperature
-20°F to +300°F, (-28°C to 149°C)

Aluminum Bonnet Option
-20°F to +200°F, (-28°C to 93°C)

Materials of Construction
Body and Housing . . . . . Stainless Steel
Diaphragms . . . . . Viton (Fluorocarbon) with
. . . . . Teflon on control side
Trim . . . . . Stainless Steel and Teflon

Catalog Information

Catalog Number 6 6 2 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-10	[0-0.70]	(0-70)	2
0.5-30	[0.03-2]	(3-200)	3
1-60	[0.10-4]	(10-400)	4
2-100	[0.15-7]	(15-700)	5
2-150	[0.15-10]	(15-1000)	6

Pipe Size

1/4" NPT	2
3/8" NPT	3
1/2" NPT	4

Port Thread

NPTF	N
BSPT (Tapered)	U
BSPP (Parallel)	H

Elastomers

Fluorocarbon	J

Actuator

Knob Adjust	K
Screw	S

Relief

Relieving	R
Non-Relieving	N
Non-Relieving - Aluminum Bonnet	A

Vent

Straight	S
Tapped Exhaust	E

Mounting

None	N
Panel Mounting	P

Installation

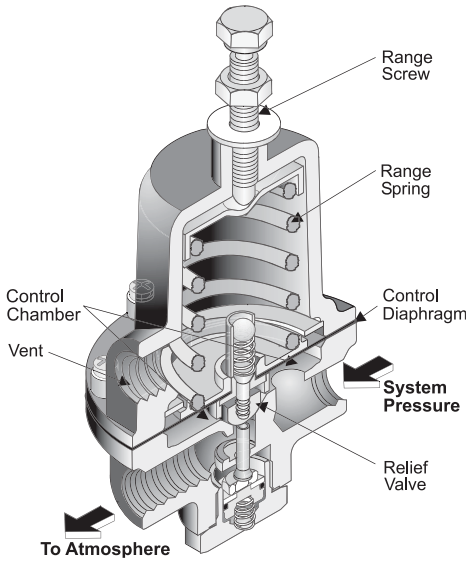
For installations instructions, see the *Fairchild Model 66 Stainless Steel Regulator Instruction, Operation and Maintenance Instructions, IS-10000066.*

Model 66BP Pneumatic Stainless Steel Back Pressure Regulator

The Model 66BP Stainless Steel Regulator is designed for corrosive environments and high temperatures.

Features

- Control sensitivity to 1" water column allows use in precision applications.
- Large Control Diaphragm area for increased sensitivity.
- Fluorocarbon Elastomers are compatible with corrosive materials and environments.
- Valve Damper eliminates hunting and buzzing.
- Line or Panel Mounting provides flexibility for installation.

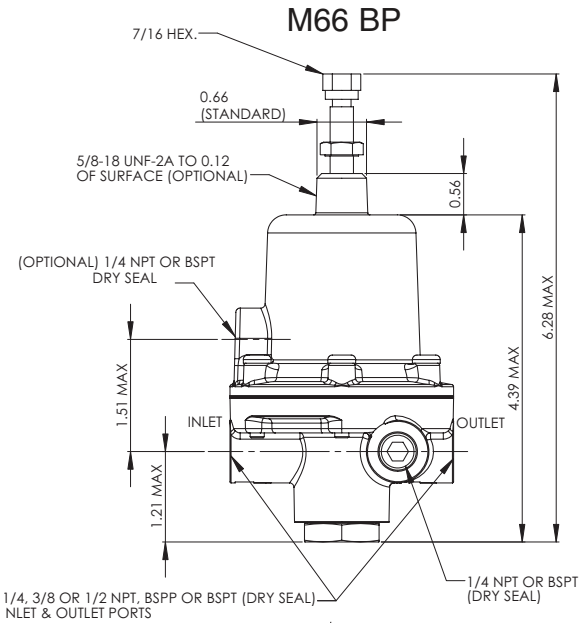


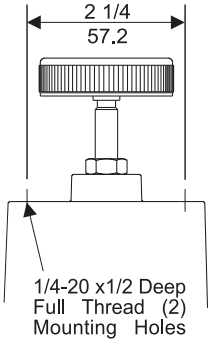
Operating Principles

When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force closes the Relief Valve. When the force from the system pressure that acts on the bottom of the Control diaphragm is less than the force that acts on the top of the Control Diaphragm, the Relief Valve remains closed.

When the system pressure increases, the force that acts on the bottom of the Control Diaphragm increases until it reaches the setpoint.

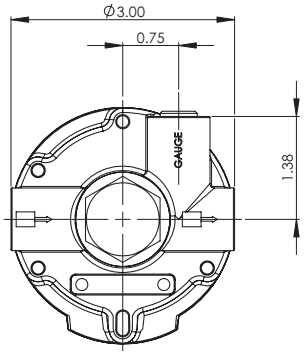
When the system pressure rises above the setpoint, the Diaphragm Assembly moves upward lifting the Relief Valve from its seat and vents the excess pressure from the system. The relief valve closes as set point is reached.



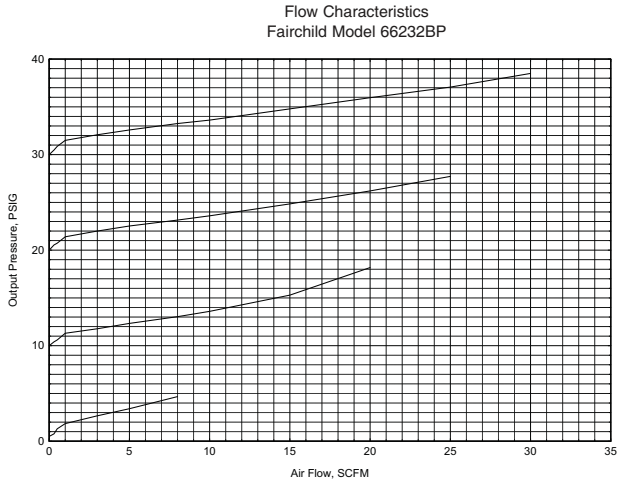


Detail A

NOTE: Mounting Holes used for with Aluminum Bonnet Option Only



Technical Information



Specifications

Supply Pressure
150 psig, [10 BAR], (1000 kPa) Maximum

Flow Capacity
22 SCFM (37.4 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) system pressure

Sensitivity
1" (2.54 cm) Water Column

Ambient Temperature
-20°F to +300°F, (-28°C to 149°C)
Aluminum Bonnet Option
-20°F to +200°F, (-28°C to 93°C)

Materials of Construction
Body and Housing . . . . . 316 Stainless Steel
Diaphragms. . . . . Fluorocarbon on Nomex
. . . . . with Teflon Shield
Trim . . . . . 316 Stainless Steel and Teflon

Catalog Information

Catalog Number 6 6 2 [ ] [ ] B P [ ] [ ] [ ] [ ] [ ] [ ]

Model 66BP

Pressure Range

psig	[BAR]	(kPa)	
0-10	[0-0.70]	(0-70)	2
0.5-30	[0.03-2]	(3-200)	3
1-60	[0.10-4]	(10-400)	4
2-100	[0.15-7]	(15-700)	5
2-150	[0.15-10]	(15-1000)	6

Inlet/Outlet Port Pipe Size

1/4"	2
3/8"	3
1/2"	4

Port Thread

NPTF	N
BSPT (Tapered)	U
BSPP (Parallel)	H

Elastomers

Fluorocarbon	J

Actuator

Knob Adjust	K
Screw	S

Bonnet

Stainless Steel	S
Aluminum	A

Options

Tapped Exhaust	E

Mounting

None	N
Panel Mounting	P

Installation

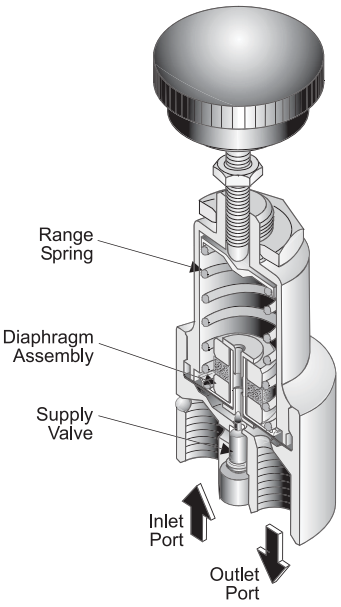
For installations instructions, refer to the *Fairchild Model 66 Stainless Steel Back Pressure Regulator Instruction, Operation and Maintenance Instructions, IS-100066BP.*

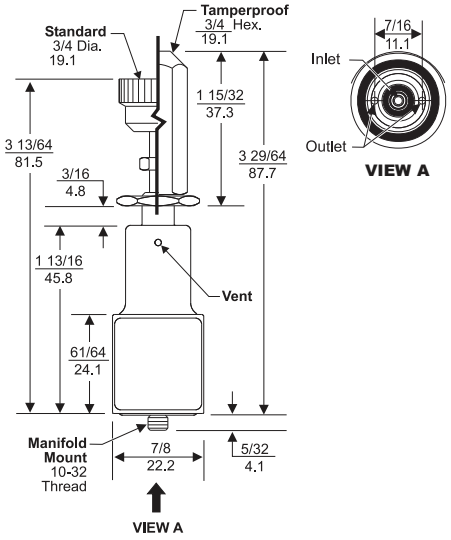
Features

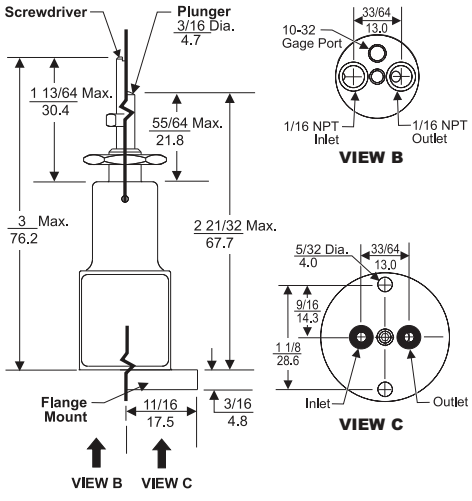
- The Model 70B controls a pressure signal for pneumatic instrumentation. This regulator is ideally suited for applications with limited space.
- Vibration damper provides low noise operation.
- Repeatability within 0.06 psig dead ended allows accurate setpoint control.
- Small size allows installation in restrictive spaces.

Operating Principles

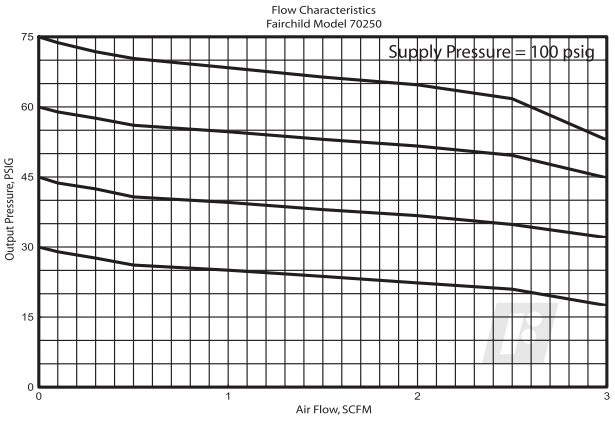
When the setpoint is reached, the upward force of the output pressure that acts on the bottom of the Diaphragm balances with the downward force that acts on the top of the Diaphragm. If the output pressure rises above the setpoint, the force that acts on the bottom of the Diaphragm moves the Diaphragm Assembly upward to close the Supply Valve and open the Relief Valve. Excess output pressure exhausts through the Vents in the unit until it reaches the setpoint. The Vibration Damper dampens the throttling action of the Valve.







Technical Information



Specifications

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum
50 psig, [3.5 BAR], (350 kPa) Minimum

Flow Capacity
2.5 SCFM (4.25 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 30 psig, [2.0 BAR], (200 kPa) setpoint

Exhaust Capacity
0.28 SCFM (.48 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
Less than 0.05 psig, [.0035 BAR], (.35 kPa) for 5 psig [.35 BAR], (35 kPa) change in supply pressure

Ambient Temperature
-40° F to + 160° F, (-40° C to + 71° C)

Materials of Construction

Body . . . . . .Brass
Diaphragms . . . . . .Fluorocarbon
Trim . . . . . .Zinc Plated Steel

Catalog Information

Catalog Number 7 0 2 [ ] 0 [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-5	[0-0.35]	(0-35)	1
0-15	[0-1]	(0-100)	2
0.5-30	[0.035-2]	(3.5-200)	3
1-60	[0.07-4]	(7-400)	4
2-100	[0.15-7]	(15-700)	5

Options

Flange Mounted [1] . . . . . F
Manifold Mounted . . . . . M
Non-Relieving . . . . . N
Plunger Operated [2] . . . . . R
Screwdriver Adjust . . . . . S
Tamperproof . . . . . T
M5 x 0.8 Threaded In/Out Ports V

Table 1. Option Compatibility

	F	M	N	R	S	T	V
F	–	N	Y	Y	Y	Y	N
M	N	–	Y	Y	Y	Y	N
N	Y	Y	–	Y	Y	Y	Y
R	Y	Y	Y	–	N	N	Y
S	Y	Y	Y	N	–	Y	Y
T	Y	Y	Y	N	Y	–	Y
V	N	N	Y	Y	Y	Y	–

Option Compatibility Chart: "Y" in Box = Compatible options

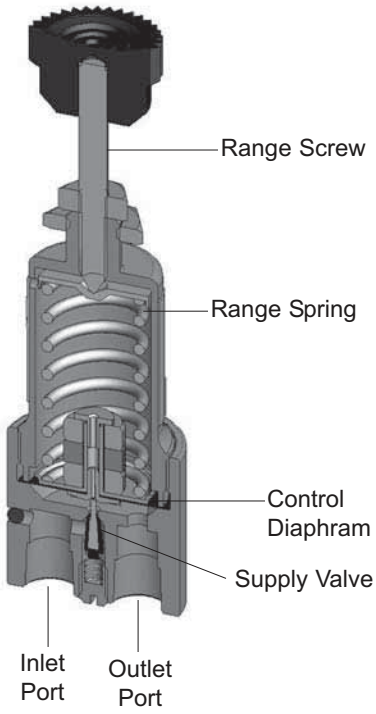
[1] *Supplied with Knob as Standard.*
[2] *Refer to Table 2 for Push Rod Travel and Thrust.*

Table 2. Plunger Operated Regulator Parameters

Range	Push Rod Travel (inches)	Push Rod Thrust (pounds) @ Max. Output
0-5 psig [0-0.35 BAR] (0-35 kPa)	.31 ± 10%	1.25 ± 10%
0-15 psig [0-1 BAR] (0-100 kPa)	.34 ± 10%	3.75 ± 10%
0.5-30 psig [0.035-2 BAR] (3.5-200 kPa)	.34 ± 10%	7.50 ± 10%
1-60 psig [0.07-4 BAR] (7-400 kPa)	.34 ± 10%	15.00 ± 10%
2-100 psig [0.15-7 BAR] (15-700 kPa)	.34 ± 10%	25.00 ± 10%

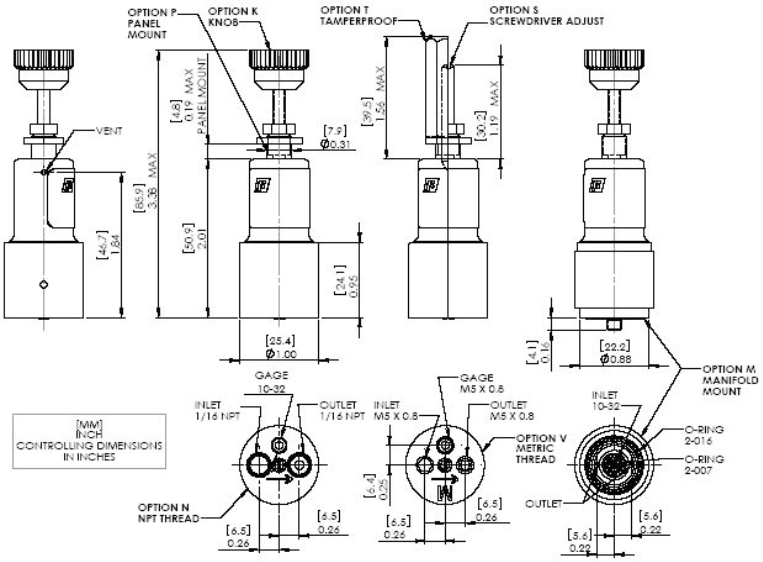
Features

- The Model 72 controls a pressure signal for pneumatic instrumentation. This regulator is ideally suited for applications with limited space.
- Vibration damper provides low noise operation.
- Repeatability within 0.02 psig dead ended allows accurate setpoint control.
- Bubble tight supply valve allows precision control
- Small size allows installation in restrictive spaces.

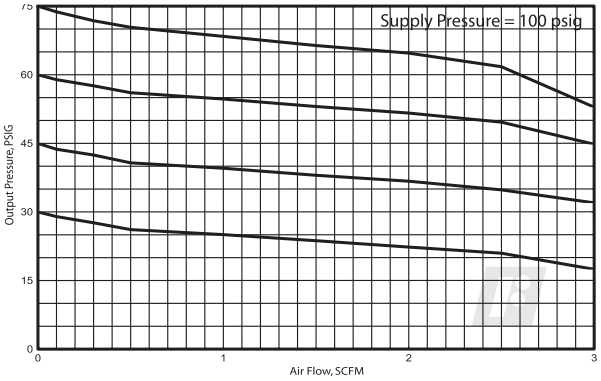


Operating Principles

When the setpoint is reached, the upward force of the output pressure that acts on the bottom of the Diaphragm balances with the downward force that acts on the top of the Diaphragm. If the output pressure rises above the setpoint, the force that acts on the bottom of the Diaphragm moves the Diaphragm Assembly upward to close the Supply Valve and open the Relief Valve. Excess output pressure exhausts through the Vents in the unit until it reaches the setpoint. The Vibration Damper dampens the throttling action of the Valve.



Technical Information



Specifications

Ranges
0-5 psig [0-0.35 BAR] up to
2-100 psig [0.15-15.7 BAR] (see p/n table)

Consumption
No measurable consumption (Non-Relieving unit)

Supply Pressure
up to 300 psi [20 BAR], (2000kPa) Max supply;
25 psig [1.8 BAR], (1800 kPa) Min supply

Supply Pressure Effect
Less than 0.025 psig [.0018 BAR] for 5 psig [.35 BAR] change in supply pressure

Flow Capacity
2.5 SCFM (4.25 m3/hr) @ 100 psig [7 BAR] supply and 30 psig [2 BAR] setpoint

Exhaust Capacity
0.15 SCFM (0.29 m3/hr)with 5 psig [.35 BAR] downstream pressure

Ambient Temperature
-40F to +160F (-40C to +71C)

Materials of Construction

Body . . . . . Anodized Aluminum
Diaphragm . . . . . Flourocarbon
Trim . . . . . Zinc Plated Steel

Catalog Information

Catalog Number 72 0 [ ] 0 [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-5	[0-0.35]	(0-35).....	1
0-15	[0-1]	(0-100).....	2
0.5-30	[0.035-2]	(3.5-200).....	3
1-60	[0.07-4]	(7-400).....	4
2-100	[0.15-7]	(15-700).....	5

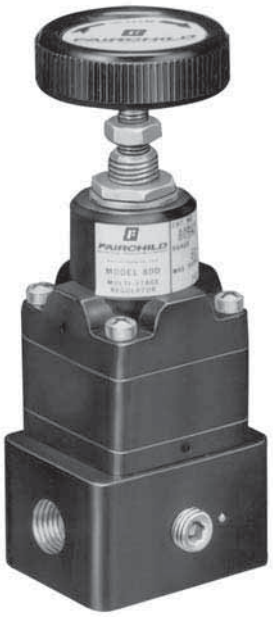
Mounting

ManifoldMount . . . . . M
Bottom Port Mount . . . . . N
Panel Mount . . . . . P
M5 x 0.8 Thread ports V

Actuation AdjustmentMeans

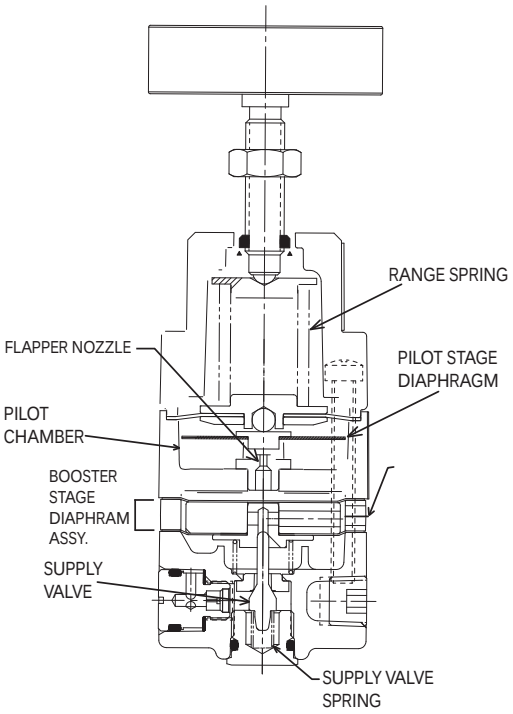
Screwdriver slot . . . . . S
Knob . . . . . K
Tamnperproof . . . . . T

Relieving . . . . . R
Non-Relieving . . . . . N



Features

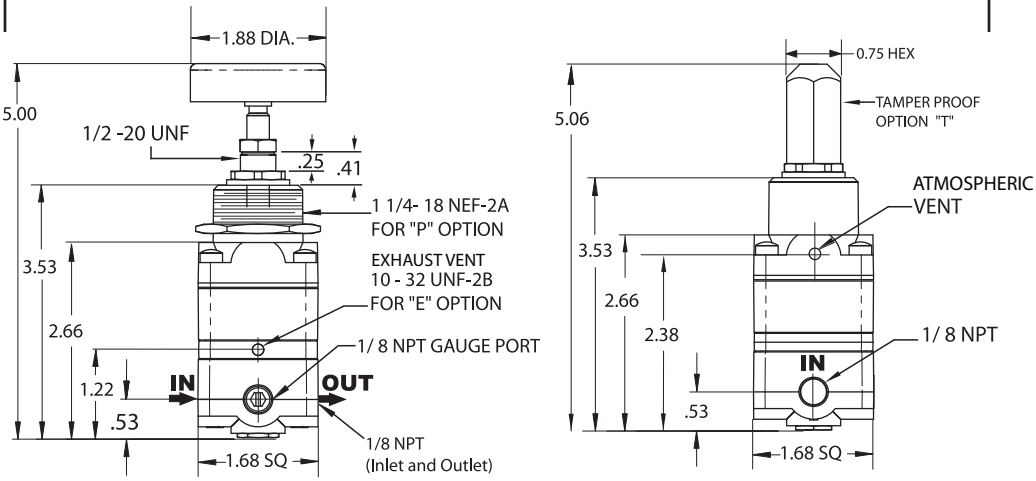
- Force balance and 2 stage pilot control to minimize droop.
- Excellent frequency response to eliminate output pressure excursions.
- Compact size for installation where space is limited.
- Sapphire Orifice provides precise control of pilot control air flow.
- Low air consumption for efficient operation.
- Available in 1/8", 1/4" and 3/8" NPT port sizes.



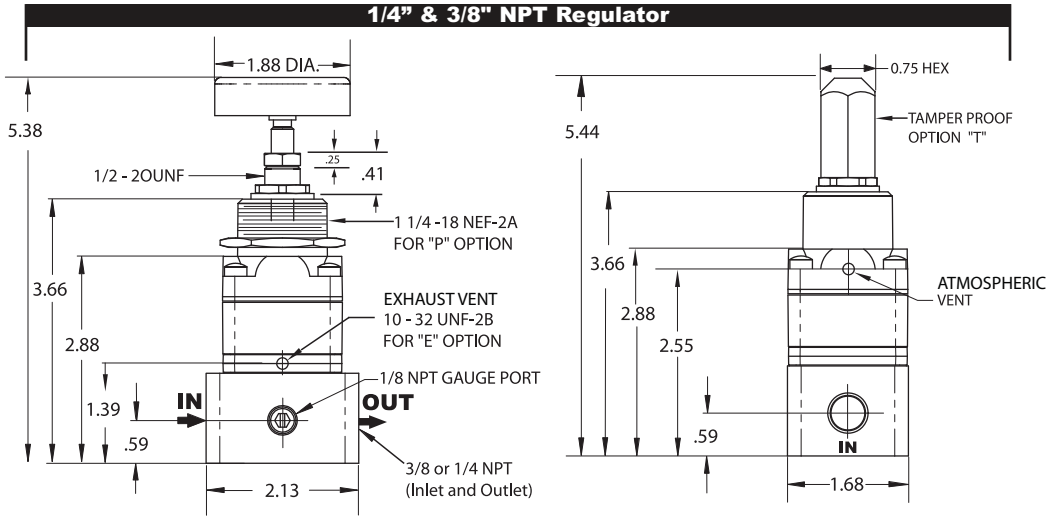
Operating Principles

The Model 80D is a precision two-stage device that incorporates a force balance design with pilot control. This compact, high quality unit combines the flow capacity of a process regulator with the precision of an instrument regulator.

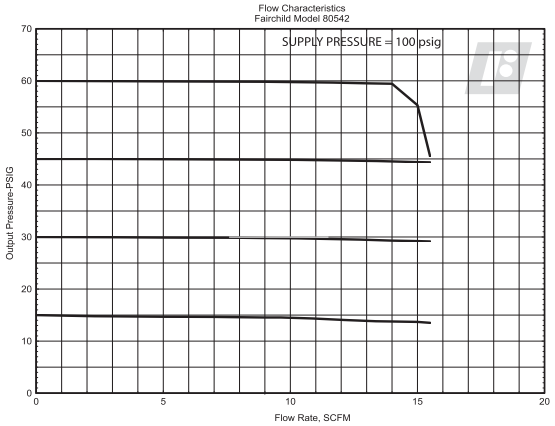
1/8" NPT Regulator

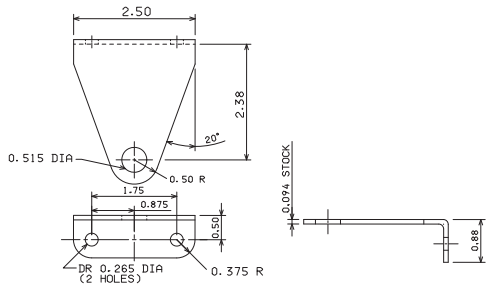


1/4" & 3/8" NPT Regulator



Technical Information





Model 80D Regulator Kits & Accessories

Mounting Bracket Kit.....11989 (sold separately)

Specifications

Flow Capacity
14 SCFM (23.8 m^3/HR) (100 psig, [7.0 BAR], (700 kPa) supply: 20 psig, [1.5 BAR], (150 kPa) setpoint)

Exhaust Capacity
2.5 SCFM (4.25 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig setpoint

Pressure Change under Flow Conditions
Less than 0.1 psig, [.007 BAR], (.7 kPa) from dead end service to 10 SCFM (17 m^3/HR)

(set pressure 10 psig, [0.7 BAR], (70 kPa) supply pressure 100 psig, [7.0 BAR], (700 kPa)

Air Consumption
Less than .1 SCFM (.17 m^3/HR)

Sensitivity
Less than 0.1" (.254 cm) Water Column

Maximum Supply Pressure
150 psig, [10.0 BAR], (1000 kPa) for 20 psig, [1.5 BAR], (150 kPa) range

250 psig, [17.0 BAR], (1700 kPa) for 60 - 100 psig, [4.0 - 7.0 BAR], (400 - 700 kPa) ranges

Effect of Supply Pressure Variation
Less than .2 psig, [.0014 BAR], (1.4 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

Ambient Temperature Limits
-40°F to +200°F, (-40°C to +93.3°C)

Materials of Construction
Trim .....Zinc Plated Steel
Body .....Aluminum
Diaphragms .....Nitrile and Dacron
Orifice.....Sapphire

Catalog Information

Catalog Number **8 0** [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-20	[0-1.5]	(0-150)	53[2]
1-60	[0.07-4]	(7-400)	54[2]
1-100	[0.07-7]	(7-700)	55[2]

Pipe Size

1/8" NPT	1
1/4" NPT	2
3/8" NPT	3

Options

Tapped Exhaust	E
Bonnet Mounting	P
Adjustment Screw	S
Tamper Proof	T
BSPT (Tapered)	U

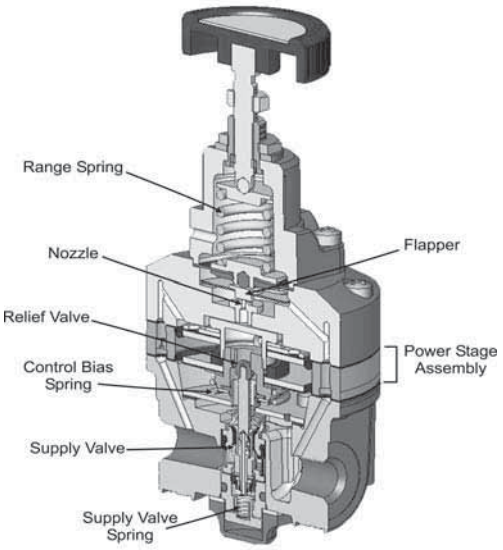
Service Information

A service kit is available for the Model 80D. Refer to the *Fairchild Model 80D Pressure Regulator Installation, Operation and Maintenance Instructions,* IS-1000080D.

Model 81 Multi-Stage Pressure Regulator

Features

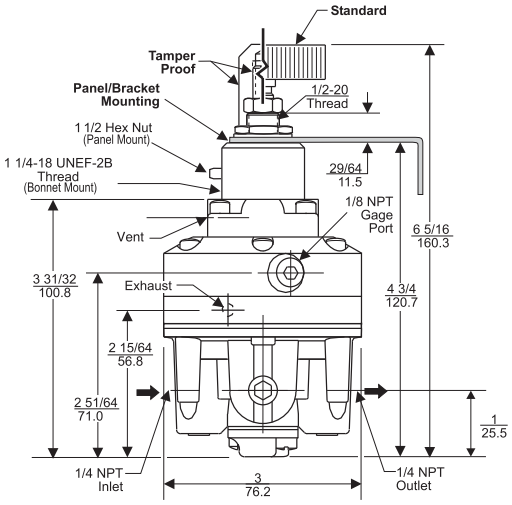
- Outstanding sensitivity
- Droop or boost virtually eliminated
- Fast response
- Minimal effect for supply pressure change
- High forward flow capacity
- High exhaust capacity
- Small physical size, saves space
- Sapphire orifice
- Permits use in instrumentation and control applications
- Provides constant output pressure over large flow range
- Eliminates output pressure excursions
- Reduces time to exhaust



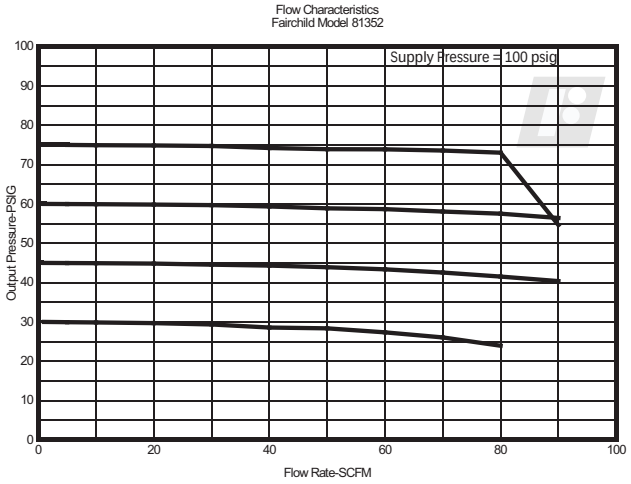
Operating Principles

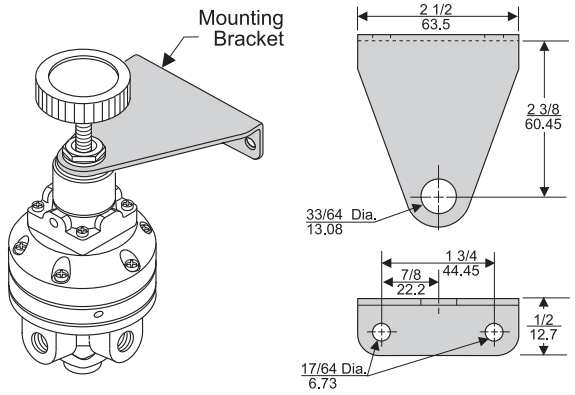
This Model 81 is a precision two-stage regulator that combines a pilot control system with a basic force balance system to provide accurate output pressure regulation.

It is recommended for use in both highly sensitive instrumentation and control circuits and in equipment requiring high flow with precise control.



Technical Information





Mounting Bracket: 11989

Model 81 Regulator Kits & Accessories

Mounting Bracket Kit.....11989 (sold separately)

Catalog Information

Catalog Number **814 -** [ ] [ ] [ ]

Pressure Ranges

psig	[BAR]	(kPa)	
0-2	[0-0.15]	(0-15).	1
0-5	[0-0.35]	(0-35).	2
0-20	[0-1.5]	(0-150).	3
0.5-60	[0.035-4]	(3.5-400)	4
0.5-100	[0.035-7]	(3.5-700)	5

Pipe Size

1/4" NPT 2

Options

Tapped Exhaust . . . . . E
Bonnet Mounting . . . . . P
Tamper Proof . . . . . T
BSPT (Tapered) . . . . . U

Service Information

A service kit is available for the Model 81. Refer to the *Installation, Operation and Maintenance Instructions,* IS-10000081.

Specifications

Flow Capacity (nominal)
50 SCFM (85 m³/HR) (100 psig, [7.0 BAR], (700 kPa) supply; 20 psig, [1.5 BAR], (150 kPa) setpoint)

Exhaust Capacity
5.5 SCFM (9.4 m³/HR) Downstream pressure 5 psig [.35 BAR] (35 kPa) above 20 psig setpoint

Maximum Supply Pressure
2, 5 psig, [.15, .35 BAR], (14, 35 kPa) ranges:
100 psig, [7.0 BAR], (700 kPa)
20, 60, 100 psig, [1.5, 4.0, 7.0 BAR], (140, 400, 700 kPa) ranges:
150 psig, [10.0 BAR], (1000 kPa)

Minimum Supply Pressure
20 psig, [1.5 BAR], (150 kPa)

Maximum Output Pressure
100 psig, [7.0 BAR], (150 kPa)

Effect of Supply Pressure Variation
Less than .2 psig, [.13 BAR], (150 kPa) for 100 psig, [7.0 BAR], (700 kPa) change

Air Consumption
Less than 0.1 SCFM (1.7 m³/HR)

Sensitivity
Less than 0.1" (.254 cm) Water Column

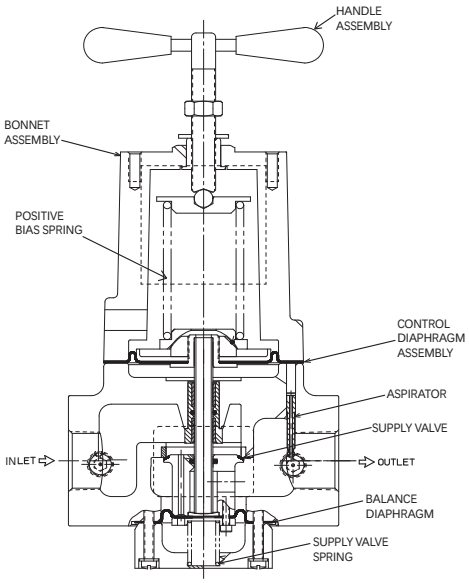
Ambient Temperature Limit
-40°F to +200°F, (-40°C to 93°C)

Materials of Construction
Body. . . . . Die Case Aluminum
Trim . . . Stainless Steel, Brass, Aluminum, and Plated Steel
Diaphragms . . . . . Nitrile on Dacron
Orifice . . . . . Sapphire

Model 100 High Flow Pressure Regulator

Features

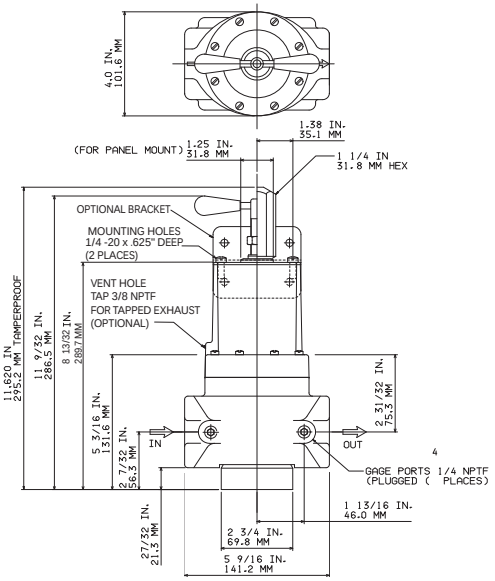
- Sensitivity of 1" (1.27 cm) of water. Column responds to minute changes in downstream pressure.
- Venturi-type aspirator tube to aid stability and minimize downstream pressure droop under flowing conditions.
- Balanced supply valve to minimize effect of supply pressure variation.
- Control Chamber isolates the control diaphragm to eliminate hunting and buzzing.
- Operates equally well on shop air or clean, dry instrument air.
- May be serviced and maintained without removal from line.
- Mounting Bracket available



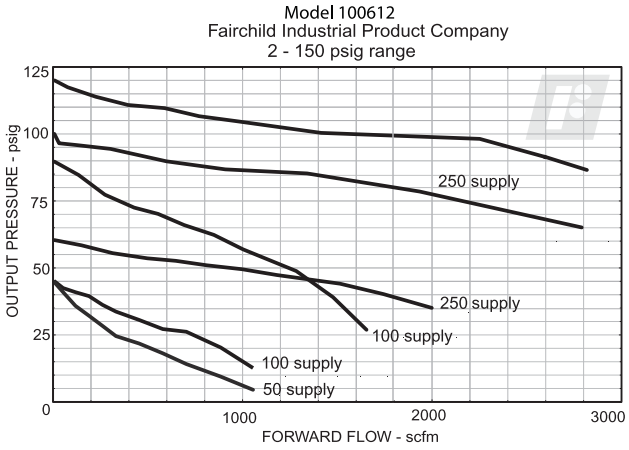
Operating Principles

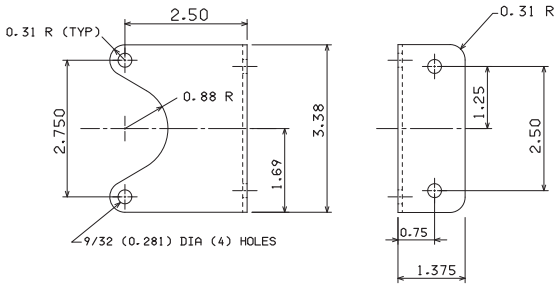
The Model 100 High Flow Pressure Regulator is designed for use in control systems requiring unusually high flow capacities. Like many of the Fairchild regulators, the compensating action of the inner valve assembly of the Model 100 allows complete stabilization of downstream pressure.

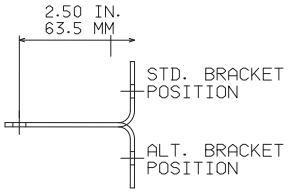
This high quality unit, which operates as efficiently on shop air as on dry instrument air, offers unusual versatility and economy. The Model 100 is capable of providing precise control of set point and good sensitivity under high flow conditions, and is the ideal choice for many demanding applications, including main header regulator control, large nip roll loading, and clutch brake operation.



Technical Information







Mounting Bracket: 10308

Model 100 Regulator Kits & Accessories

Mounting Bracket Kit.....10308 (sold separately)

Specifications

Maximum Supply Pressure
250 psig, [17.0 BAR], (1700 kPa)

Flow Capacity
In excess of 1500 SCFM (2550 m^3/HR) (100 psig, [7.0 BAR], (700 kPa) supply, 1 1/2" NPT Conn. 40 psig, [2.8 BAR], (280 kPa) setpoint

Exhaust Capacity
44 SCFM (75 m^3/HR) for downstream pressure 5 psig, [.35 BAR], (35 kPa) above 20 psig set pressure

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (.7 kPa) per 100 psig, [7.0 BAR], (700 kPa) change

Sensitivity
1" (1.27 cm) Water Column

Ambient Temperature Limit
-40°F to +200°F, (-40°C to +93.3°C)

Catalog Information

Catalog Number **1 0 0** [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0-10	[0-0.7]	(0-70)	2
0.5-30	[0.035-2]	(3.5-200)	3
1-60	[0.07-4]	(7-400)	4
2-100	[0.14-7]	(14-700)	5
2-150	[0.14-10]	(14-1000)	6

Pipe Size

1" NPT	08
1 1/2" NPT	12

Options

Tapped Exhaust	E
Non-Relieving	N
Tamper Proof	T

Service Information

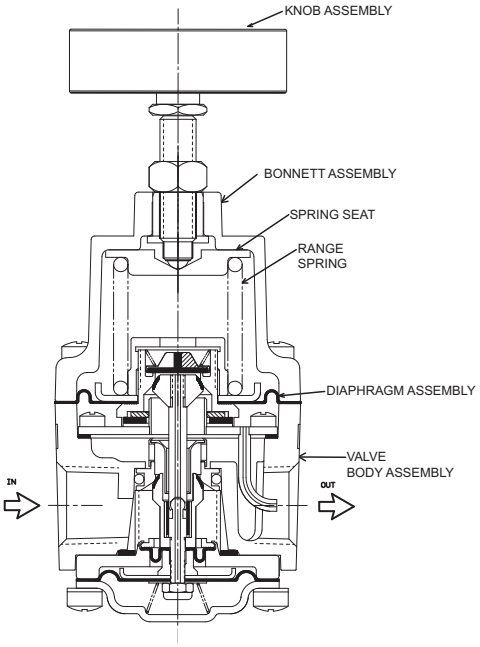
A Service Kit is available for the Model 100. Refer to the *Fairchild Model 100 High Flow Pressure Regulator Installation, Operation and Maintenance Instructions*, IS-10000100.

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction
Body.....Aluminum
Trim .....Zinc Plated Steel, Brass
Diaphragms .....Buna N

Features

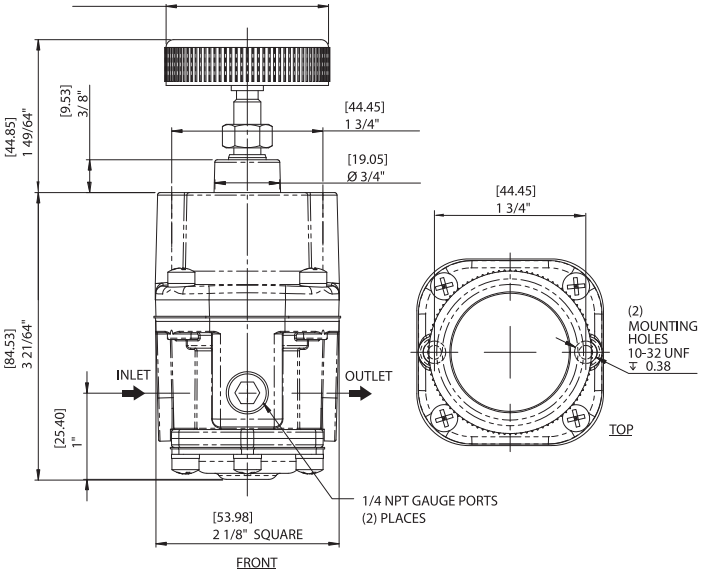
- Stable operation that eliminates hunting and buzzing.
- Flow compensation provided by venturi action of the aspirator tube.
- Indirect operation provided by the action of a separate pilot valve and valve motor to eliminate unbalanced closing forces in inner valve assembly.
- Large correcting effect due to the sensitive pilot valve action that maintains constant pressure drop across the supply valve to assure immunity to supply pressure variations.
- No-Bleed design minimizes consumption of air or inert gas.
- Compact in size where space is limited.

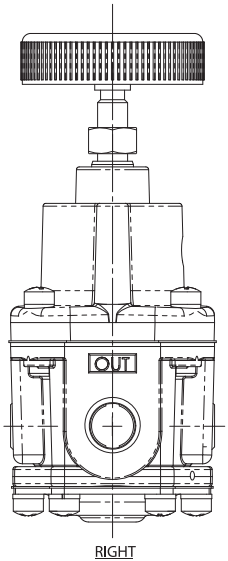


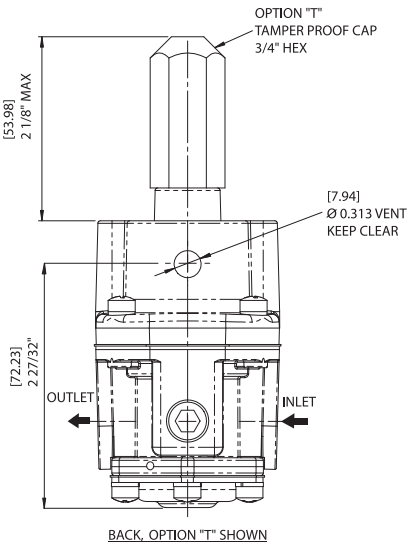
Operating Principles

The Model 1000 Precision Pressure Regulator is designed for use in systems requiring both precision control and high forward flow and exhaust capacity. The sensitive valve motor of this high quality unit makes it virtually immune to supply pressure variations.

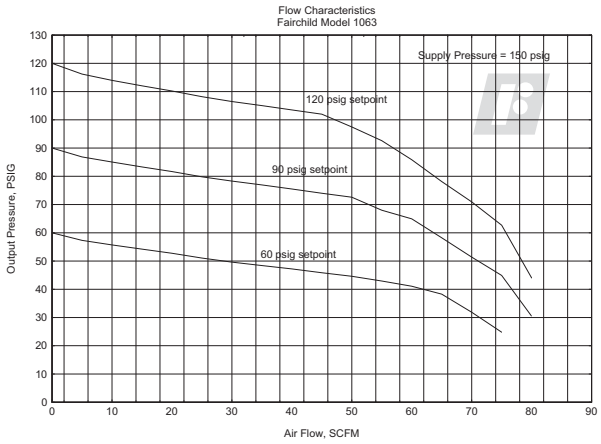
The combination of high flow capacity and good sensitivity make the versatile control applications, including loading of control valve and calendar roll actuators, operation of clutch and braking devices, and winding operations.







Technical Information



Specifications

Flow Capacity
50 SCFM (85 m^3/HR) (100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kpa) setpoint)

Exhaust Capacity
8 SCFM (13.6 m^3/HR) for downstream pressure 5 psig, [.35 BAR], (35 kPa) above set pressure

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Effect of Supply Pressure Variation
0.1 psig, [.007 BAR], (.7 kPa) per 100 psig, [7.0 BAR], (700 kPa) change

Sensitivity
0.5" (1.27 cm) Water Column

Ambient Temperature Limits
-40°F to +200°F, (-40°C to + 93.3°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction

Body . . . . . Zinc
Diaphragms . . . . . Buna N and Dacron
Trim . . . Aluminum, Brass, Neoprene and Zinc Plated Steel

Catalog Information

Catalog Number **1 0** [ ] [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0.5-10	[0.03-0.7]	(3-70)	2
0.5-30	[0.03-2.0]	(3-200)	3
1-60	[0.1-4.0]	(10-400)	4
2-150	[0.15-10.0]	(15-1000)	6

Pipe Size

1/4" NPT	2
3/8" NPT	3

Options

BSPP (Parallel)	H
Tamper Proof	T
BSPT (Tapered)	U

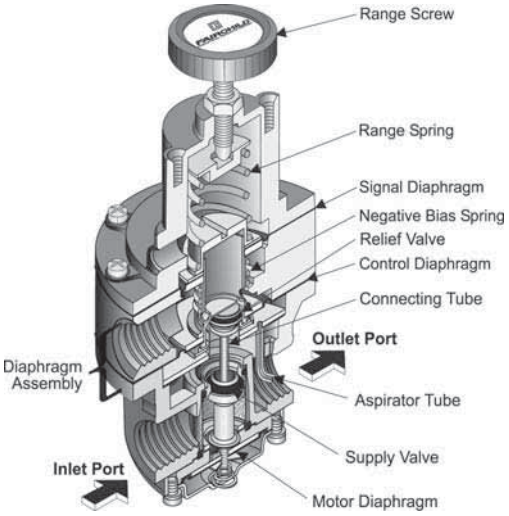
Service Kit

A Service Kit is available for the Model 1000. Refer to the *Fairchild Model 1000 Installation, Operation and Maintenance Instructions*, IS-10001000.

Model 1600A

Features

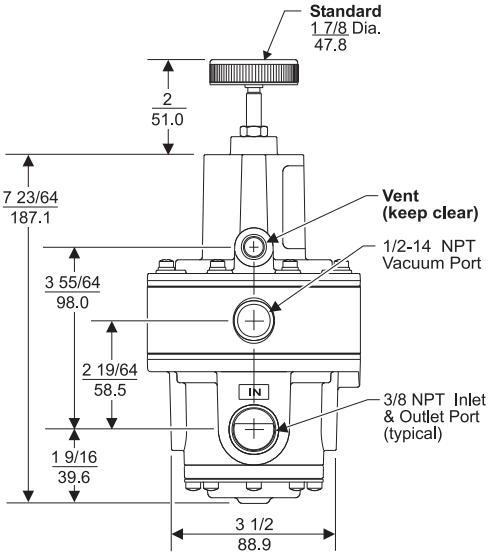
- The Model 1600A Vacuum Regulator controls pressure in high flow systems above and below atmospheric pressure.
- The single unit controls vacuum and positive pressure.
- Control sensitivity of 1" water column allows use in precision applications.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve seats minimize air consumption.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube compensates downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 1600 without removing it from the line.

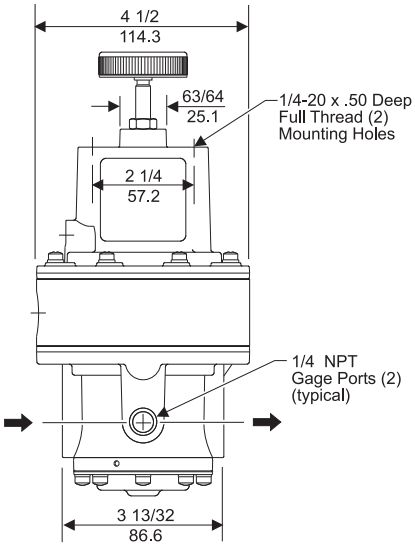


Operating Principles

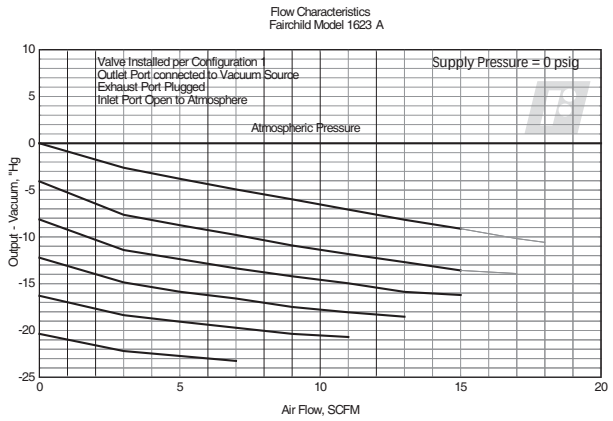
When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force on the top of the Signal Diaphragm. The Negative Bias Spring creates an upward force on the bottom of the Signal Diaphragm. The upward net force opens the Relief Valve (vacuum supply) to let Vacuum pressure flow through the Outlet Port and the Aspirator Tube to the Control Chamber. As the setpoint is reached, the decrease in pressure lets the Diaphragm Assembly move downward to close the Relief Valve (vacuum supply).

When the vacuum pressure increases above the setpoint, the Diaphragm Assembly moves downward to open the Supply Valve (positive pressure) to maintain Output pressure.





Technical Information



Specifications

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Flow Capacity (SCFM)
28 (48 m^3/HR) @ 29" Hg vacuum with inlet port open to atmosphere.

150 (255 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply & 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity
20 (34 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (0.7 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

Sensitivity
1" (2.54 cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to +93°C)

Materials of Construction

Body and Housing	Aluminum
Trim	Zinc Plated Steel, Brass
Diaphragms	Nitrile on Dacron

Catalog Information

Catalog Number 1 6 [ ] [ ] A [ ]

Pressure Range

psig	[BAR]	(kPa)	
Vacuum - 10	[Vacuum -0.7]	(Vacuum - 70)	2
Vacuum - 30	[Vacuum -2.0]	(Vacuum - 200)	3
Vacuum - 150	[Vacuum - 10]	(Vacuum - 1000)	6

Pipe Size

3/8" NPT	3
1/2" NPT	4
3/4" NPT	6

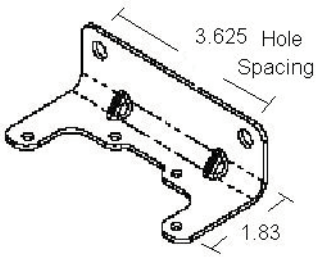
Options

BSPP (Parallel)[1]	H
Fluorcarbon	J
Tamper Proof	T
BSPT (Tapered)	U

[1] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

Installation

For installation instructions, refer to the *Fairchild Model 1600A Vacuum Regulator Installation, Operation and Maintenance Instructions,* IS-1001600A.



20555-1

Model 1600A Mounting Bracket Kit
P/N 20555-1 zinc plated (sold separately)

24CC/24CS (shown)

The 24CC and 24CS M/P Converters are motor driven pneumatic regulators with motor assemblies enclosed in a commercial enclosure.

The AC Control Unit for the 24CC unit is a continuous operation motor available in 115vAC.

The control assembly for the 24CS unit is a stepper motor with an integral Translator Board which converts 23-26vDC digital pulse inputs supplied by the customer, into control logic to drive the motor.

Features

(Varies with 2400 Models)

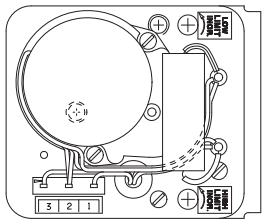
- Output pressure locks in last position in event of power failure.
- Continuous AC Motor unit is instant start-stop, heavy duty impedance protected motor eliminates coasting and prevents burnout in the event of stalling.
- Stepper Motor capable of rapid start-stop with high running torque enables use in open loop control systems.
- Standard commercial enclosure or explosion-proof NEMA 4X housing for use in hazardous or harsh environments.
- End of travel limit switches for user setting of minimum and maximum pressure values.

Summary

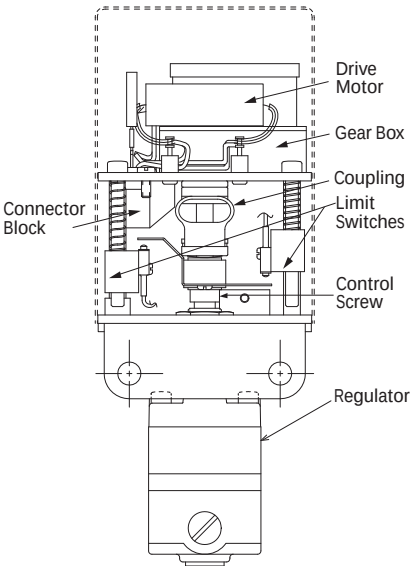
The table summarizes inputs and outputs for all the 2400 Series M/P Converters. Individual converters are described in separate sections.

Model	24CC	24CS	24XFS
Inputs	115vAC	23-26vDC (logic input)	1-5vDC 4-20Ma DC 12-15vDC 23-26vDC
Outputs psig [BAR] (kPa) *Model 30*	0-2 [0-0.15] (0-15)	0-10 [0-0.7] (0-70)	2-100 [0.15-7.0] (15-700)
Model 80		0-20 [0-.1.5] (0-150)	1-100 [0.1-7.0] (10-700)
Model 81	0-2 [0-0.15] (0-15)	0-5 [0-0.35] (0-35)	0.5-100 [0.03-7.0] (3-700)
Model 10			0.5-30 [0.03-2.0] (3-200)
Model 16			Vacuum to 10 [Vacuum-0.7] (Vacuum-70)

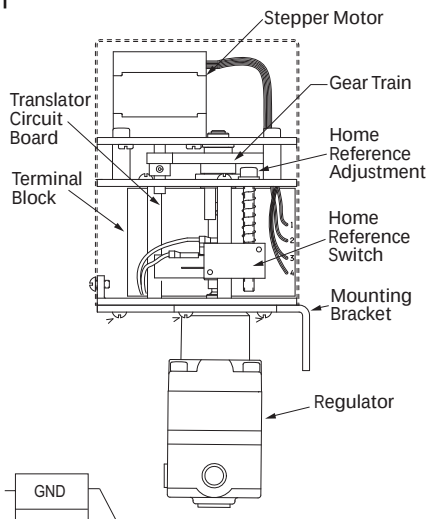
AC Control Unit (CC)

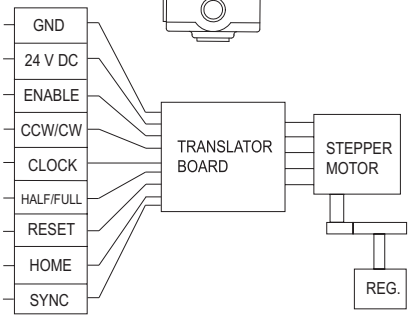


TOP VIEW TYPICAL



Stepper Motor Control (CS)





Environmental

AC Control Unit
- Continuous Operation . . . . . -40°F to +100°F (-40°F to +90°C)
- Intermittent Operation . . . . . -40°F to +150°F (-40°F to +65.5°C)

Stepper Motor
- Operating Temp. Range . . . . . 0° to +125°F (-17.8°F to +51.6°C)
- Intermittent Operation . . . . . -40°F to +200°F (-40°F to +93.2°C)

Electrical

AC Control Unit
- Motor Voltage 115vAC, 60Hz
- Power Consumption (watts)
  - Model 30 Regulator . . . . . 5 (Max.)
  - Model 80 Regulator . . . . . 3 (Max.)
  - Model 81 Regulator . . . . . 3 (Max.)

Stepper Motor with Integral Translator
- Voltage to translator . . . . . 23-26vDc @ 800 Ma
- Power Consumption (watts) . . . . . 21 (Max.)

Inputs

Translator
All inputs except enable
- Input Signal Voltage (High) 2-5v
- Input Signal Voltage (Low) . . . . . .0-0.8v Max.
- Input Signal Current (High) 0
- Input Signal Current (Low) . . . . . .0.9 mA (Sink)
- Enable Input Voltage (Low) 0v-1.5v
- Enable Input Voltage (High) 2v-5v
- Clock Time Duration . . . . . .0.5 us Min.
- Clock setup . . . . . .1.0 us Min.
- * Clock Freq. Range . . . . . .800 Hz Max.

** Clock frequency between 80 and 200 Hz may cause noise; however, operation of the unit will not be adversely affected.*

Performance

Standard Unit: Regulator Characteristics

Regulator	Pressure Ranges	NPT	Flow SCFM*	Flow m^3/HR	Exhaust SCFM**	Exhaust m^3/HR
30	All Ranges	1/4"	30	51	2.0	3.4
80	All Ranges	1/8"	14	23.8	2.5	4.3
81	All Ranges	1/4"	50	85	5.5	9.4

**100 psig, [7.0 BAR], (700 kPa) pressure 20 psig, [1.5 BAR], (150 kPa) setpoint*
*** Downstream Pressure 5 psig, [.35 BAR], (35 kPa) above setpoint*

Materials of Construction
Model 2400 - Steel, Brass, Aluminum, Nylon

NOTE: *For Materials of Construction of individual regulators, please see appropriate specification sheet.*

Full Range Adjusting Time (Seconds)

AC Control Unit

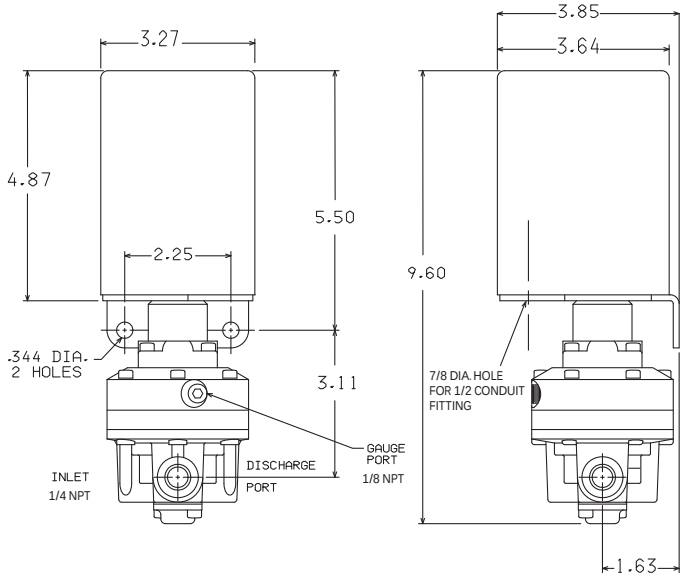
Reg. Model	PRESSURE RANGES: psig, [BAR], (kPa) 2,[.15],(15)	5,[.35],(35)	10,[.7],(70)	20,[1.5],(70)	30,[2.0],(200)	60,[4.0],(400)	100,[7.0],(700)	Motor RPM
30	196		256		226	285	256	2
	98		128		113	143	128	4
	65		85		75	95	N/A	6
	49		64		56	71	N/A	8
80				150		148	156	2
				75		74	78	4
				50		49	52	6
				38		N/A	N/A	8
81	156	186		150		148	156	2
	78	93		75		74	78	4
	52	62		50		49	52	6
	39	47		38		N/A	N/A	8

Stepper Motor

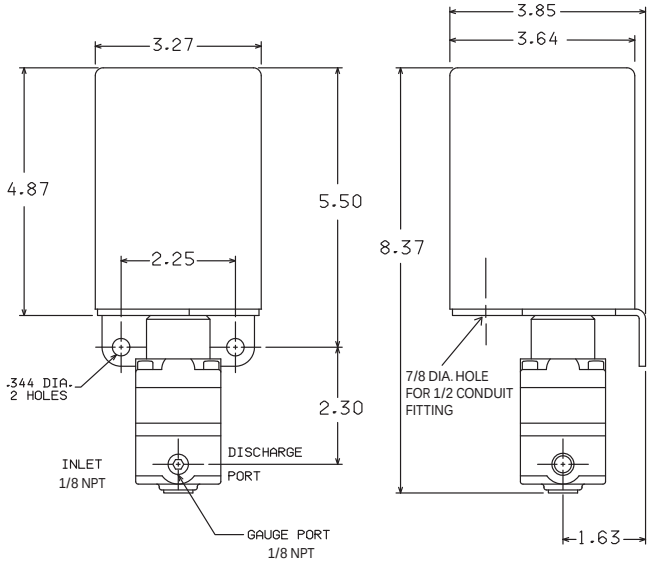
Reg. Model	PRESSURE RANGES: psig, [BAR], (kPa) 2,[.15],(15)	5,[.35],(35)	10,[.7],(70)	20,[1.5],(70)	30,[2.0],(200)	60,[4.0],(400)	100,[7.0],(700)	Motor RPM
30	.000342		.00131		.00444	.00702	.0139	PSI/STEP
	5850		7650		6750	8550	7200	PULSE CNT
	11.7		15.3		13.6	17.1	14.4	FR ADJ TIME
80				.00444		.0136	.0214	PSI/STEP
				4500		4410	4680	PULSE CNT
				9.0		8.8	9.4	FR ADJ TIME
81	.000427	.000896		.00444		.0163	.0214	PSI/STEP
	4680	5580		4500		4410	4680	PULSE CNT
	9.4	11.2		9.0		8.8	9.4	FR ADJ TIME

DEG/STEP of range screw all models, all pressures . . . . . .0.4°/Step
PULSE COUNT (PULSE CNT) to Full Range
FULL RANGE ADJUSTMENT TIME (FR ADJ TIME) is measured @ 500 PPS for 24vDC Supply

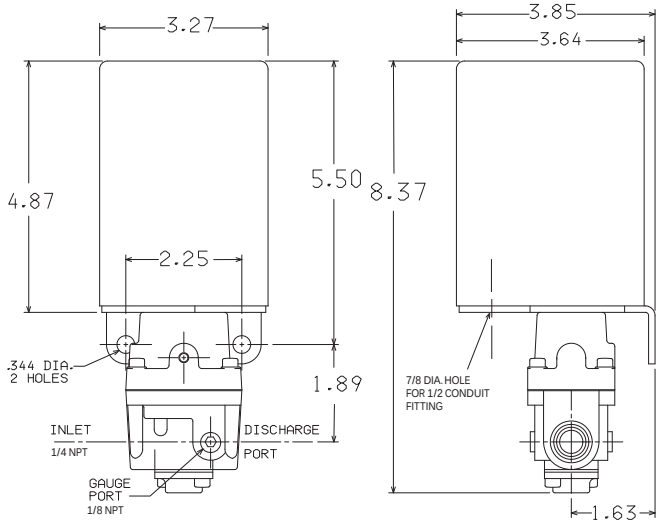
MODELS: 24CC81 / 24CS81



MODELS: 24CC80 / 24CS80



MODELS: 24CC30 / 24CS30



NOTE: *Mount upright for drip proof operation*

AC Control Unit (CC)

The Precision M/P Converter consists of a heavy duty industrial permanent magnet type motor with gear box connected through a coupling to a threaded control screw which compresses the positive bias spring assembly of a Model 30, 80, or 81 Precision Regulator.

Limit switches switch off the current to the instant START/STOP motor when a maximum or minimum pressure is achieved. Electrical connections are made to the terminal block inside the motor cover.

A variety of motor options are available to assure optimum adjustment rates according to specification application.

Motor reversal is achieved by applying voltage between the common terminal of the terminal block and the alternate motor winding (both windings are wired to terminals on the terminal block).

Commercial Stepper Motor

The Model 2400 M/P Converter equipped with a stepper motor is a digital pulse controlled pneumatic regulator. Principle components include a 200 step/revolution stepper motor, a gear train connecting the motor and range screw , a translator circuit board and a pressure regulator. Switches used in the unit are Home Reference switches.

Electronic circuits in an integral translator convert the digital pulse input signals into control logic that operates a 200 step per revolution stepper motor. The stepper motor in turn controls the output of a pressure regulator by driving its range screw through a 4.5:1 reduction gear. The translator consists of a control logic section and a power output section.

NOTE:
The user's computer must supply the digital input pulse in accord with the specifications for stepper motor operation on page 47.

The Control/Logic section contains the logic sequence that determines the proper switching of the stepper motor windings to accomplish rotation. This section accepts the input signal that controls the direction of the motor and the type of switching sequence which is transmitted to the motor windings. This section also contains a pulse width modulated chopper circuit that controls the current in the motor windings.

All inputs have pull up resistors to place them in a HIGH logic state. As a result all inputs can be changed by switch closures. This simplifies manual control circuits and as a result the controlling device does not have to supply input current to the translator inputs.

Catalog Information

Please refer to the full range adjustment time table page 47 and select the proper pressure range and regulator model for your application. Choose the speed (rpm) which will provide the closest adjustment time in seconds. Include all appropriate designations as outlined in the following example:

Catalog Number **24 C** [ ] [ ] [ ] [ ] [ ] **0** [ ]

Control Unit Type

DC Pulse/DC Analog	S
Continuous AC	C

Regulator Model

Model 30	30
Model 80E	80
Model 81E	81
Model 30 BSPT	30U
Model 80E BSPT	80U
Model 81E BSPT	81U

Voltage

115 VAC 60 Hz	1
DC TTL Input with 12-24 VDC Translator Board	5

Pressure Range

psig	[BAR]	(kPa)	
0-2	[0-0.15]	(0-15)	1
0.5-10[2]	[0.03-0.7]	(3-70)	2
0.5-20[1]	[0.03-1.4]	(3-140)	3
0.5-30[2]	[0.03-2.0]	(3-200)	4
1-60	[0.07-4.0]	(7-400)	5
2-100	[0.15-7.0]	(15-700)	6
0-5[3]	[0-0.35]	(0-35)	7

Motor Speed

DC Motor Only	00
2 rpm	02
4 rpm	04
6 rpm	06
8 rpm	08

Enclosure

Commercial Enclosure	0

Option

Low Temperature (CS Only)	3

[1] 0.5-20 psig for Models 80E and 81E Only.
[2] 0.5-10, 0.5-30 psig for Model 30 Only.
[3] 0-5 psig for Model 81E Only.

24XC/24XS (shown)

The 24XC and 24XS M/P Converters are motor driven pneumatic regulators with motor assemblies enclosed in a NEMA 4X Explosion-Proof enclosure.

AC Control Unit (24XC)
The AC Control unit for the 24XC unit is a continuous operation motor available in 115vAC. A feedback potentiometer option is available for these units.

DC Pulse Input Unit (24XS)
The DC pulse input assembly for the 24 XS unit is a Clock Generator/Translator board available for the 12vDC or 24vDC pulse input. This allows the use of an external Controller with a 12vDC or 24vDC output.

DC Analog Input Unit (24XS)
The DC analog input assembly is an Amplifier (Proportional Control) and Translator board which allows operation with a 4-20mA or 1-5vDC analog input. Minimum-maximum limit switches are standard on this unit. Reverse action and split ranging on the analog unit can be achieved in the field.

TTL Input (+5vD) (24XS)
The TTL input unit is equipped with a Translator board only. The user is required to supply the digital input pulses.

The control assembly for the 24XS unit is a stepper motor with an integral Translator board which converts 12vDC or 24vDC digital input pulses supplied by the customer into control logic to drive the stepper motor.

Environmental

AC Control Unit
- Continuous Operation . . . . . -40°F to +100°F (-40°F to +90°C)
- Intermittent Operation . . . . . -40°F to +150°F (-40°F to +65.5°C)

DC Pulse/DC Analog Input Unit
- Operating Temp. Range . . . . . 0° to +125°F (-17.8°F to +51.6°C)
- Low Temp. Option . . . . . -40°F to +200°F (-40°F to +93.2°C)

Electrical

AC Control Unit
- Motor Voltage 115vAC, 60Hz
- Power Consumption (watts)
  - Model 10 Regulator . . . . . .5 (Max.)
  - Model 16 Regulator . . . . . .3 (Max.)
  - Model 80 Regulator . . . . . .3 (Max.)
  - Model 81 Regulator . . . . . .3 (Max.)

Stepper Motor
- Input to Translator Board . . . . . .12-24vDc @ 800 Ma

Inputs

Translator

All inputs except enable

Input Signal Voltage (High) 2-5v
Input Signal Voltage (Low) . . . . . .0-0.8v Max.
Input Signal Current (High) 0
Input Signal Current (Low) . . . . . .0.9mA (sink)
Enable Input Voltage (Low) 0v-1.5v
Enable Input Voltage (High) 2v-5v
Clock Time Duration . . . . . .0.5 us Min.
Clock Setup . . . . . .1.0 us Min.
Clock Freq. Range . . . . . .800Hz Max.

** Clock frequency between 80 and 200 Hz may cause noise; however, operation of the unit will not be adversely affected.*

DC Pulse Input

Input to Clock Generator/Translator Board . . . . . .12-15vDC or 23-26vDC @ 800 mA
Signal Current (sink) . . . . . .10mA @ 24v
Power Consumption (watts) . . . . . .21 (max.) for 12-24vDC

DC Analog Input

Input to Amplifier (Proportional Control)/Translator 4-20mA 1-5vDC
Power Supply 12-24vDC

Hazardous Locations

FM (Factory Mutual) Approval:

Class I, Division I, Groups B, C and D; dust ignition proof for Class II, Division I, Groups E, F, and G; indoor and outdoor (NEMA Type 4X)

Performance

Standard Unit- Regulator Characteristics

Regulator	Pressure Ranges (psig)	NPT	Flow SCFM*	Flow m^3/HR	Flow SCFM**	Flow m^3/HR
10E	0-30	1/4"	40	68	5.5	9.4
16 [1]	Vacuum to 10	1/4"	2.5	4.3		
80E	All Ranges	1/8"	14	23.8	2.5	4.3
81E	All Ranges	1/4"	50	85	5.5	9.4

** 100 psig, [7.0 BAR], (700 kPa) pressure 20 psig, [1.5 BAR], (150 kPa) setpoint*

*** Downstream Pressure 5 psig, [.35 BAR], (35 kPa) above setpoint*

[1] At 29" Hg vacuum

Materials of Construction

Model 2400 - Steel, Brass, Aluminum, Nylon

NOTE: *For Materials of Construction of individual regulators, please see appropriate specification sheet.*

Full Range Adjusting Time (seconds)
DC Pulse/DC Analog Input Unit 12vDC Supply

Estimated Full Range Adjusting Time (seconds) 12VDC Supply

				Mode of Operation			
				Full Step		Half Step	
				Full Range Adj. Times (seconds)		Full Range Adj. Times (seconds)	
Reg. Model	Pressure Ranges psig	[BAR]	(kPa)	Min.	Max.	Min.	Max.
10E	.5-30	0.03-2.0	3-200	25	25	26	48
	6-30	0.4-2.0	40-200	20	20	21	38
	3-27	0.2-1.8	20-180	17	20	19	38
	3-15	0.2-1.0	20-100	6	10	8	21
	3-9	0.2-0.6	20-60	3	6	4	11
	9-15	0.6-1.0	60-100	3	5	4	11
16	vac-10	vac-0.7	vac-70	not capable of performing in this range		26	43
80E	.5-20	0.03-1.5	3-150	10	14	11	28
	1-60	0.1-4.0	10-400	10	14	11	28
	2-100	0.15-7.0	15-700	13	13	8	17
81E	0-2	0-0.15	0-15	6	14	12	28
	0-5	0-0.35	0-35	8	21	16	41
	.5-20	0.03-1.5	3-150	10	14	11	28
	1-60	0.1-4.0	10-400	10	14	11	28
	2-100	0.15-7.0	15-700	13	13	8	17

DC Pulse/DC Analog Input Unit 24vDC Supply

Estimated Full Range Adjusting Time (seconds) 12VDC Supply

				Mode of Operation			
				Full Step		Half Step	
				Full Range Adj. Times (seconds)		Full Range Adj. Times (seconds)	
Model	Pressure Ranges psig	[BAR]	(kPa)	Min.	Max.	Min.	Max.
10E	.5-30	0.03-2.0	3-200	13	25	18	48
	6-30	0.4-2.0	40-200	11	20	15	38
	3-27	0.2-1.8	20-180	10	20	14	38
	3-15	0.2-1.0	20-100	4	10	8	21
	3-9	0.2-0.6	20-60	2	6	4	11
	9-15	0.6-1.0	60-100	2	5	4	11
16	vac-10	vac-0.7	vac-70	13	22	16	43
80E	.5-20	0.03-1.5	3-150	6	14	12	28
	1-60	0.1-4.0	10-400	7	14	11	28
	2-100	0.15-7.0	15-700	4	13	8	17
81E	0-2	0-0.15	0-15	6	14	12	28
	0-5	0-0.35	0-35	8	21	16	41
	.5-20	0.03-1.5	3-150	6	14	12	28
	1-60	0.1-4.0	10-400	7	14	11	28
	2-100	0.15-7.0	15-700	4	13	8	17

Full Range Adjusting Time (seconds)
AC Control Unit

Reg. Model	Pressure Range psig, [BAR], (kPa)							Motor RPM
	2,[.15],(15)	5,[.35],(35)	Vac 10,[.7],(70)	20,[1.5],(150)	30,[2.0],(200)	60,[4.0],(400)	100,[7.0],(700)	
10E					270 135 90 68			2 4 6 8
16			210 105 70 52					2 4 6 8
80E				132 66 44		132 66 44	141 71 47	2 4 6
81E	141 71 47 35	180 90 60 45		129 65 43 32		129 65 43 N/A	135 68 45 N/A	2 4 6 8

Full Range Adjusting Time for TTL Unit

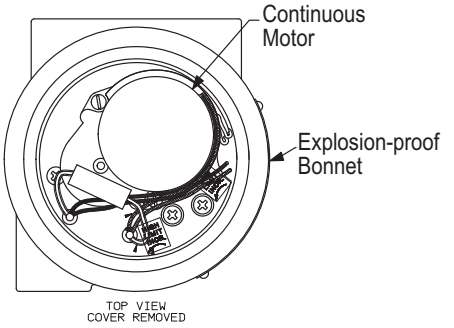
NOTE: Required PPS for a specific FR Adj. Time can be calculated as follows:

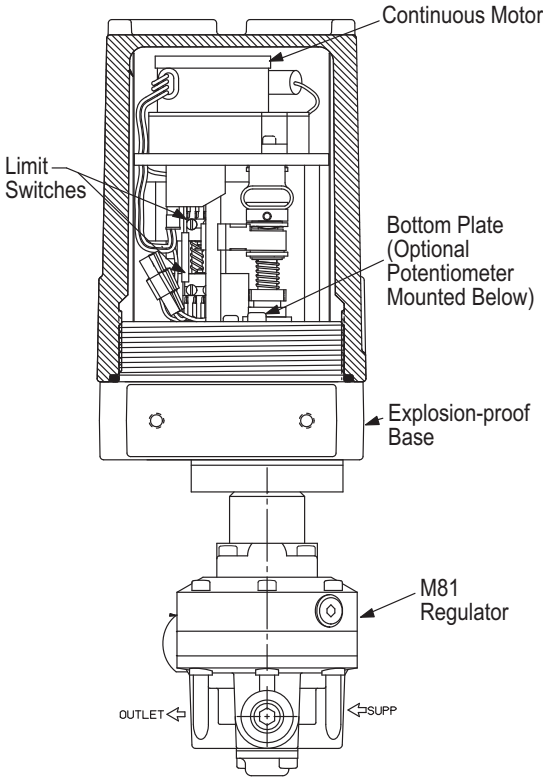
$$PPS = \frac{\text{FR Adj. Time @ 500 PPS x 500}}{\text{Required Fr Adj. Time}}$$

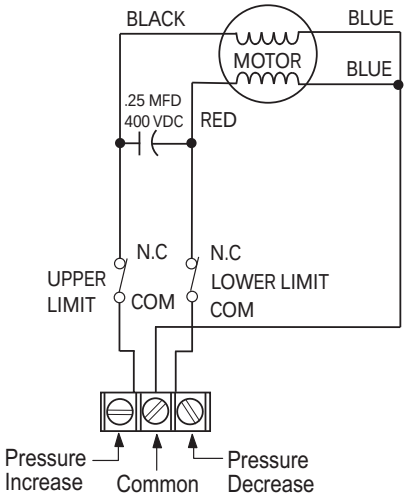
For 110.8 Second Time Requirement

$$PPS = \frac{13.3 \times 500}{110.8} = 60.01 \text{ PPS}$$

AC Control (XC)







Explosion-Proof AC Control Unit (XC)

The Model 2400 M/P Converter is isolated from an explosive environment by enclosing it in an explosion-proof housing. The Continuous Motor configuration includes limit switches.

The Continuous Motor is mounted on the top plate of the motor assembly. Wiring to the unit is made to a terminal block through a 1/2-14 NPT conduit fitting in the base of the housing.

The units as configured at the factory are wired so that connections to the motor are wired to the Normally Closed terminals of the limit switches. Customer connections are made to the Normally Open terminals of the the limit switches.

An optional potentiometer can be provided so that a feedback voltage proportional to the range screw travel is available to the customer. The potentiometer is accessed through the conduit fitting in the base of the housing.

Motor reversal is achieved by applying voltage between the common terminal of the block and the alternate motor winding.

Explosion-Proof Stepper Motor (CC)

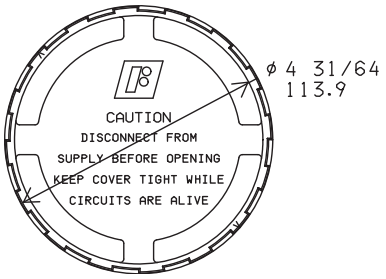
The Model 2400 M/P Converter equipped with a stepper motor is a digital pulse controlled pneumatic regulator. Principle components include a 200 step/revolution stepper motor, a gear train connecting the motor and range screw, a translator circuit board and a pressure regulator. Switches used in the unit are Home Reference switches.

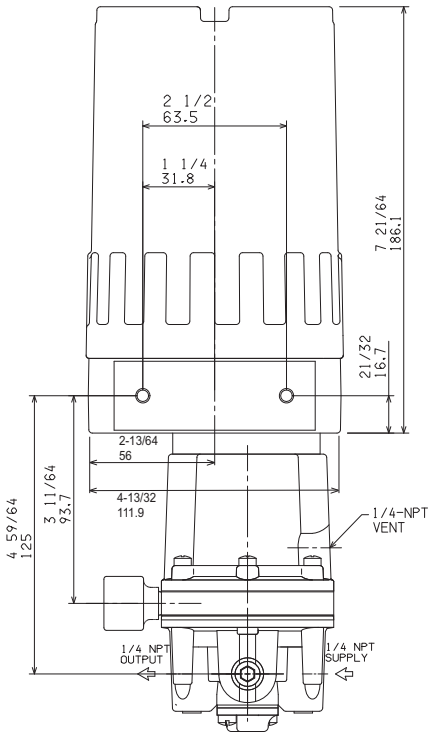
Electronic circuits in an integral translator convert the digital pulse input signals into control logic that operates a 200 step per revolution stepper motor. The stepper motor in turn controls the output of a pressure regulator by driving its range screw through a 4.5:1 reduction gear. The translator consists of a control logic section and a power output section.

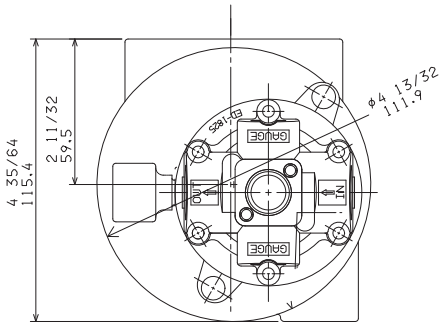
NOTE:
The user's computer must supply the digital input pulse in accord with the specifications for stepper motor operation on page 47.

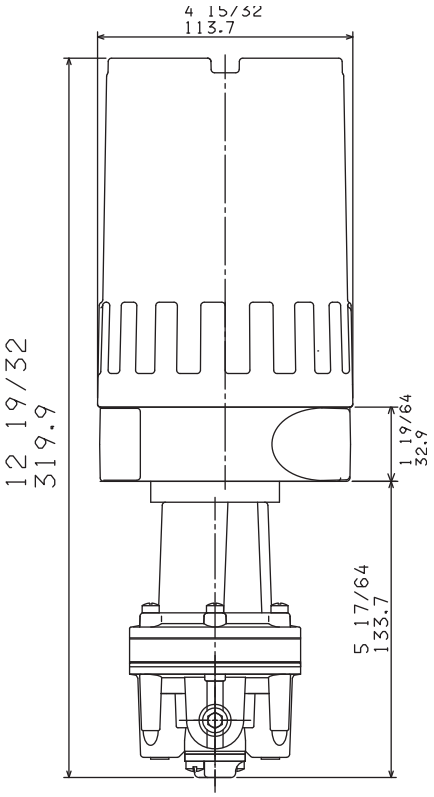
The Control/Logic section contains the logic sequence that determines the proper switching of the stepper motor windings to accomplish rotation. This section accepts the input signal that controls the direction of the motor and the type of switching sequence which is transmitted to the motor windings. This sections also contains a pulse width modulated chopper circuit that controls the current in the motor windings.

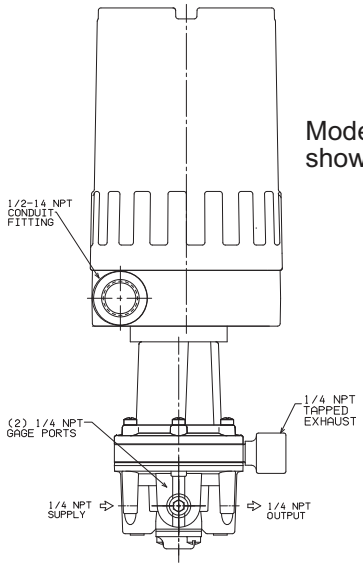
All inputs have pull up resistors to place them in a HIGH logic state. As a result all inputs can be changed by switch closures. This simplifies manual control circuits and as a result the controlling device does not have to supply input current to the translator inputs.











Model 10E shown

Clock Generator Limit Switch Connection

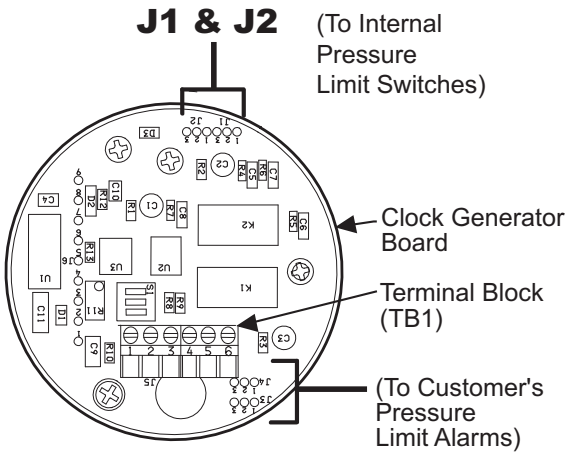
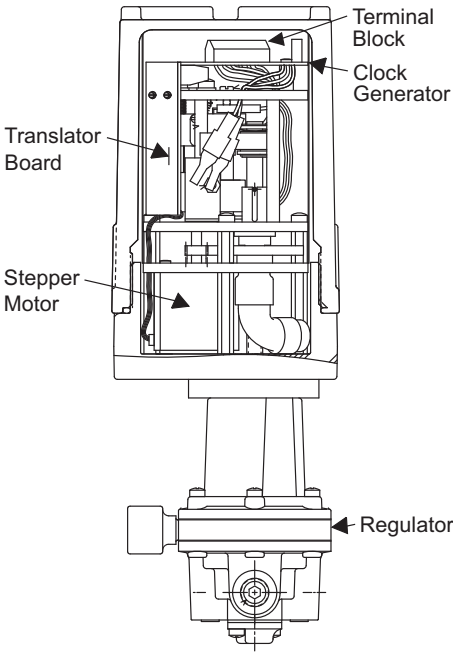


Table 1. Clock Generator PC Board Wiring Connections

From Connector	Color	Function	To Closure
J1-1	Green	Internal High Pressure Limit Switch	Normally Open
-2	White/Green		Normally Closed
-3	Black		Common
J2-1	Red	Internal Low Pressure Limit Switch	Normally Open
-2	White/Red		Normally Closed
-3	White/Black		Common
J3-1	Gray	Customer's High Pressure Limit Alarm	Common
-2	White/Yellow		Normally Closed
-3	Yellow		Normally Open
J4-1	Brown	Customer's Low Pressure Limit Alarm	Common
-2	White/Orange		Normally Closed
-3	Orange		Normally Open



Explosion-Proof DC Pulse Input (XS)

The Model 2400 M/P Converter is isolated from an explosive environment by enclosing in an explosion-proof housing. The Stepper Motor configuration is equipped with a clock generator positioned horizontally, which plugs into a vertically mounted translator board. The configuration includes limit switches.

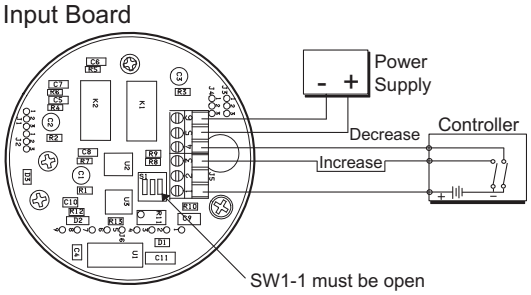
The Stepper Motor is mounted on the bottom of the motor assembly in the base of the explosion-proof housing. Wiring to the unit is made to a terminal board through a 1/2" - 14 NPT conduit fitting in the base of the housing.

The unit includes two single pole, double throw, double break limit switches.

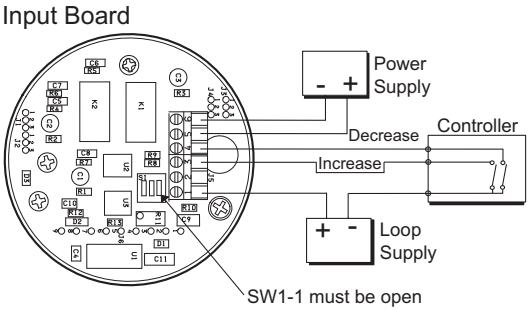
Switches on the clock generator board allow selection of:

a) Internally or Externally powered controls loops.
b) Half-step or Full step mode.
c) High-Speed or Low-Speed operation.

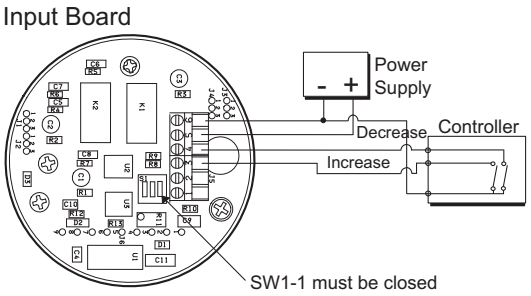
Pulse Input



Controller (Pulse Input) using the isolated loop supply.

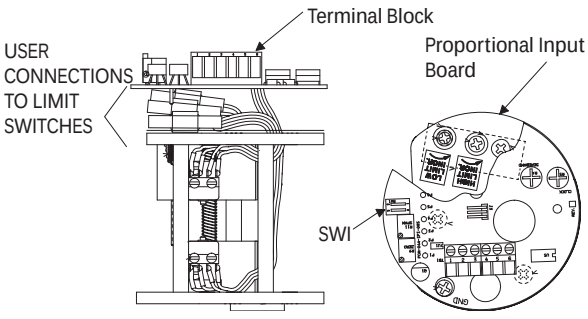


Controller (Pulse Input) using the dual isolated loop supply.



Controller (Pulse Input) using the non-isolated loop supply.

Analog Input



External Control Connections - Explosion-Proof (XS) Unit

The Explosion-Proof stepper motor unit is equipped with a Clock Generator and a Translator. Connections from an external Controller are made to the terminal clock on the Input Board as shown.

a) Controller with Isolated Loop Supply

FROM	TO
External Controller	Input Board
+DC	TB-1 Term 1
Switch Closure	TB-1 Term 3 (Increase)
Switch Closure	TB-1 Term 4 (Decrease)

b) Controller with Dual Isolated Loop Supply

FROM	TO
External Controller	Clock Generator DC Supply
Switch Closure	TB-1 Term 3
	TB-1 Term 4
	TB-1 Term 1

c) Controller using supply which powers Model 2400 as Control Loop Supply

FROM	TO
External Controller	DC Supply Clock Generator
Switch Comm	
Switch Closure	TB-1 Term 3
Switch Closure	TB-1 Term 4

Explosion-Proof DC Analog Input (XS)

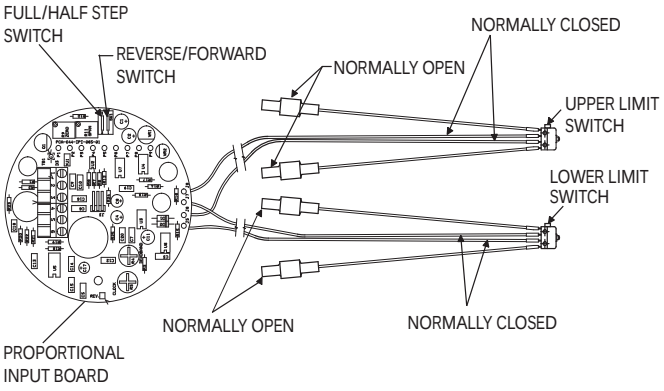
The Model 2400 M/P Converter is isolated from an explosive environment by enclosing it in an explosion-proof housing. The stepper motor configuration for this option is equipped with a Proportional Board mounted horizontally on the top of the Motor Assembly.

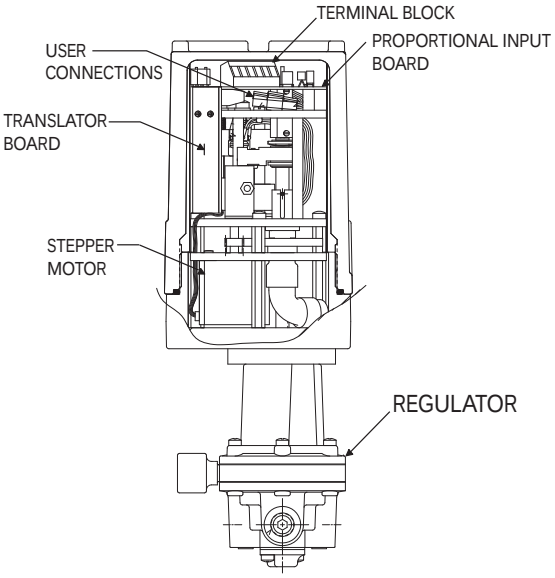
The output of the 4-20 mA Proportional Board is wired to a vertically mounted translator board. The configuration includes limit switches.

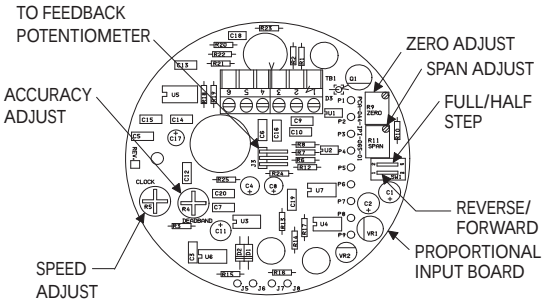
The stepper motor is mounted on the bottom of the motor assembly in the base of the explosion-proof housing. Wiring to the unit is made to a terminal block through a 1/2-14 NPT conduit fitting in the base of the housing.

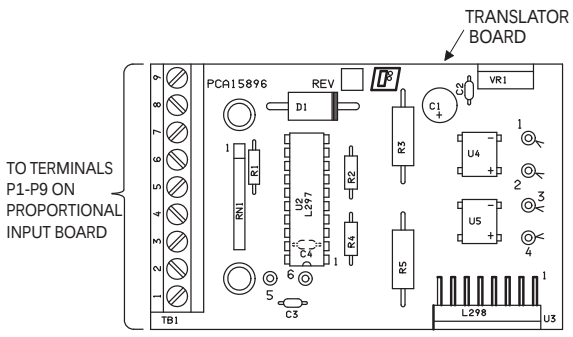
There is one switch (SW-1) located on the 4-20 mA board. SW-1 is made up of two switches (S1 and S2). S1 selects forward or reverse operation; S2 full or half step operation.

DC Analog Control









External Control Connections - Explosion-Proof (XS) Unit

Analog Input
4-20 mA, 1-5vDC Input

Connections are made to Terminal Board TB-1 as follows:

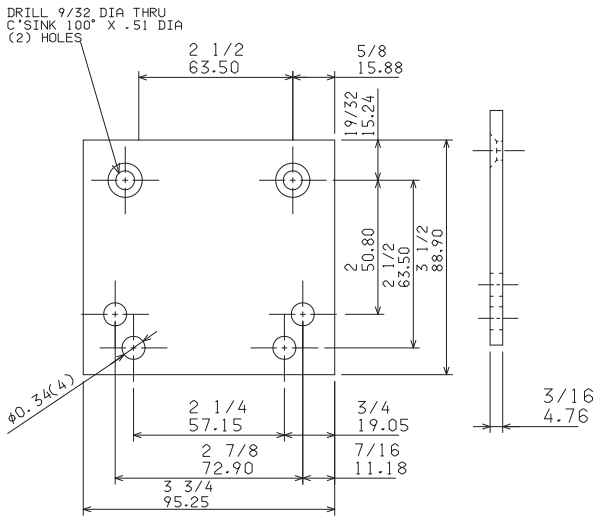
Terminal	Input Connection
1	4-20 mA signal current from Controller (+)
2	4-20 mA or 1-5vDC return (-)
3	1-5vDC signal voltage from Controller (+)
4	24vDC Power (+)
5	Common

The unit includes two single pole, double throw, double break limit switches. The Normally Closed terminals are used in the internal control circuit.

Normally Open terminals of the limit switches have connections available for customer use.

Switches on the Proportional Control Board allow selection of :

a) Reverse or Forward Operation.
b) Half-step or Full-step Mode.



Mounting Plate: 18188-1 part of **18187-1** (Optional)
Mtg. Kit includes 2 screws, 1-1/2" and 2" pipe clamps

Model 2400 Explosion-Proof Kit & Accessories

Mounting Plate 18188-1
Part of 18187-1 (sold separately)

Catalog Information

Catalog Number **2 4 X F** [ ] [ ] [ ] [ ] [ ] **0** [ ]

Control Unit Type

DC Pulse/DC Analog	S
Continuous AC	C

Regulator Model

Model 10E	10
Model 16	16
Model 80E	80
Model 81E	81
Model 10E BSPT	10U
Model 16 BSPT	16U
Model 80E BSPT	80U
Model 81E BSPT	81U

Voltage

115 VAC 60 Hz	1
115 VAC 60 Hz with 1K Potentiometer	10
DC TTL Input with 12-24 VDC Translator Board	5
DC Pulse Input with 24 VDC Clock Generator Control	7
DC Pulse Input with 12 VDC Clock Generator Control	8
DC Analog Input with 12-24 VDC Supply	9

Pressure Range

	psig	[BAR]	(kPa)	
Model 10E	0.5-30	[0.03-2.0]	(3-200)	4
	0.5-20 [1]	[0.03-1.5]	(3-150)	3
Model 16	vac-10	[vac-0.7]	(vac-70)	8
Model 80E	0.5-20	[0.03-1.5]	(3-150)	3
	1-60	[0.07-4.0]	(7-400)	5
	2-100	[0.15-7.0]	(15-700)	6
Model 81E	0-2	[0-0.15]	(0-15)	1
	0.5-20	[0.03-1.5]	(3-150)	3
	1-60	[0.07-4.0]	(7-400)	5
	2-100	[0.15-7.0]	(15-700)	6
	0-5	[0-0.35]	(0-35)	7

Motor Speed

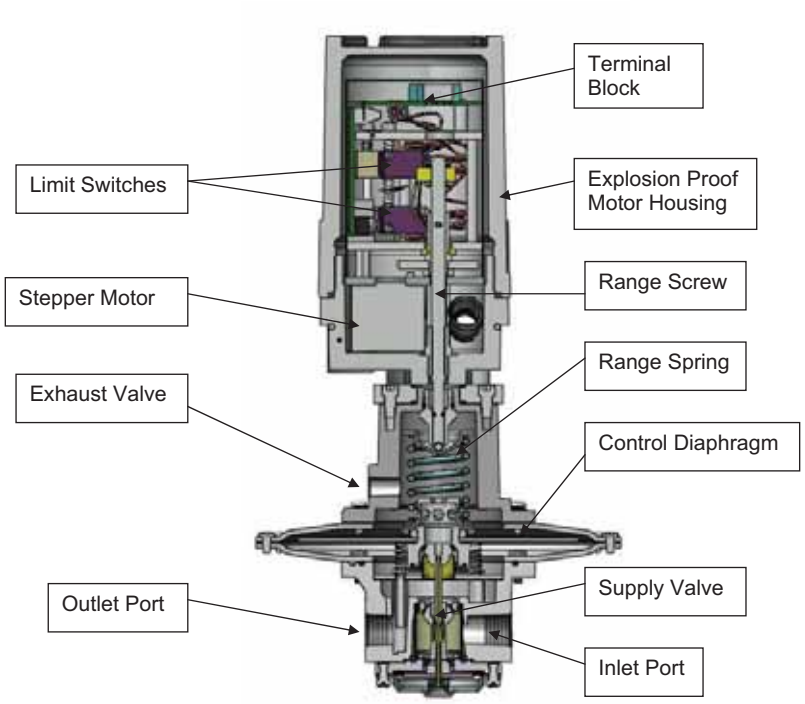
DC Motor Only	00
2 rpm	02
4 rpm	04
6 rpm	06
8 rpm	08

Enclosure

FM Explosion-Proof	2
FM Explosion-Proof with expanded temperature operation (XS Only).	3

[1] *Available on 24XFC Only.*

Model
MP2400



Explosion-Proof DC Pulse Input (XS)

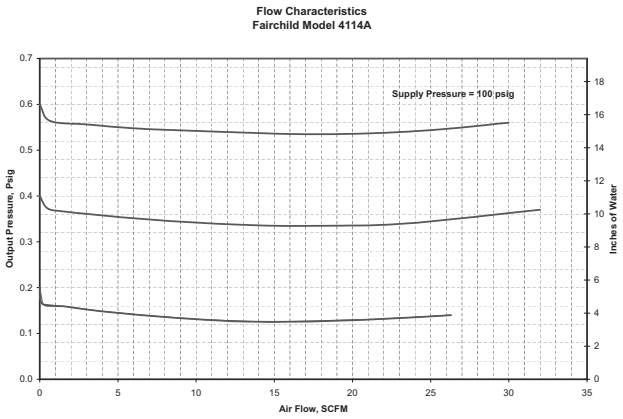
The Model 2400 M/P Converter is isolated from an explosive environment by enclosing in an explosion-proof housing. The Stepper Motor configuration is equipped with a clock generator positioned horizontally, which plugs into a vertically mounted translator board. The configuration includes limit switches.

The Stepper Motor is mounted on the bottom of the motor assembly in the base of the explosion-proof housing. Wiring to the unit is made to a terminal board through a 1/2” - 14 NPT conduit fitting in the base of the housing.

The unit includes two single pole, double throw, double break limit switches.

Switches on the clock generator board allow selection of:

a) Internally or Externally powered controls loops.
b) Half-step or Full step mode.
c) High-Speed or Low-Speed operation.



Specifications

Supply Pressure
20 psi continuous up to 150 psi max

Range
0-20" Water

Consumption
None Detected

Power Supply
12-24 VDC

Materials
Stainless Trim; Aluminum Housings

Submersible to 6 feet

External Control Connections - Explosion-Proof (XS) Unit

The Explosion-Proof stepper motor unit is equipped with a Clock Generator and a Translator. Connections from an external Controller are made to the terminal clock on the Input Board as shown.

a) Controller with Isolated Loop Supply

FROM	TO
External Controller	Input Board
+DC	TB-1 Term 1
Switch Closure	TB-1 Term 3 (Increase)
Switch Closure	TB-1 Term 4 (Decrease)

b) Controller with Dual Isolated Loop Supply

FROM	TO
External Controller	Clock Generator DC Supply
Switch Closure	TB-1 Term 3
	TB-1 Term 4
	TB-1 Term 1

c) Controller using supply which powers Model 2400 as Control Loop Supply

FROM	TO
External Controller	DC Supply Clock Generator
Switch Comm	
Switch Closure	TB-1 Term 3
Switch Closure	TB-1 Term 4

Catalog Information

Catalog Number 2 4 X F [S] [4 B] [8 A] [0 0] [2] [ ]

- DC Pulse ..... S
- Model 4000A 4B
- DC Pulse Input with 24VDC Clock Generator Control 8A
- DC Motor 00
- FM Explosion-Proof Enclosure 2
- Outlet on Right Standard ..... R
- FM Explosion-Proof Enclosure L

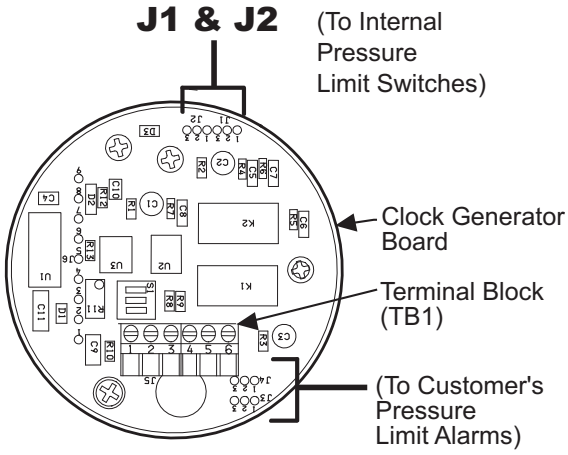


Table 1. Clock Generator PC Board Wiring Connections

From Connector	Color	Function	To Closure
J1-1	Green	Internal	Normally Open
-2	White/Green	High Pressure	Normally Closed
-3	Black	Limit Switch	Common
J2-1	Red	Internal	Normally Open
-2	White/Red	Low Pressure	Normally Closed
-3	White/Black	Limit Switch	Common
J3-1	Gray	Customer's	Common
-2	White/Yellow	High Pressure	Normally Closed
-3	Yellow	Limit Alarm	Normally Open
J4-1	Brown	Customer's	Common
-2	White/Orange	Low Pressure	Normally Closed
-3	Orange	Limit Alarm	Normally Open

FM Explosion Proof for CL1, DIV1, GRPS B, C & D and CL2, DIV1, GRPS E, F, G; NEMA 4X

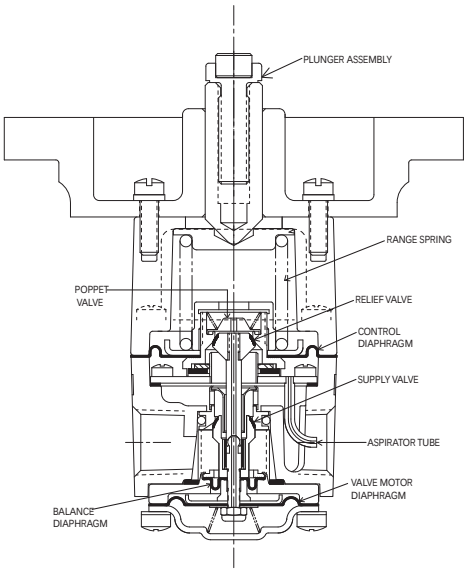
Features

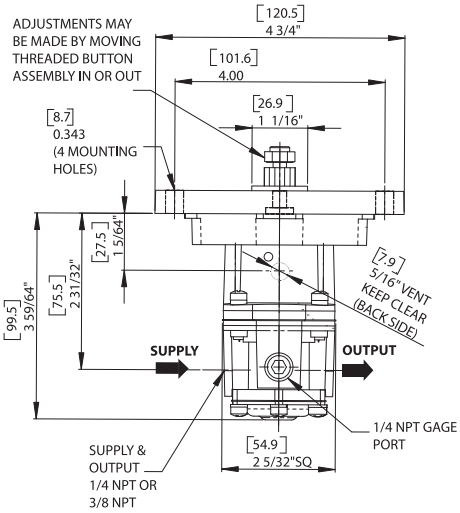
- Regulator is sensitive to 1/2” Water Column which permits use in precision applications.
- Balanced Supply Valve minimizes the effect of supply pressure variation.
- Aspirator Tube minimizes downstream pressure droop under flow conditions.
- Soft Supply and Exhaust Seats minimize air consumption.
- Flow of up to 50 SCFM with 100 psig Supply allows use in applications with high flow requirements.
- Separate Control Chamber isolates the diaphragm from the main flow, eliminating hunting and buzzing.
- Unit construction permits servicing without removing from line.
- Short Plunger Stroke Over full pressure range allows rapid change in pressure for small mechanical movement.

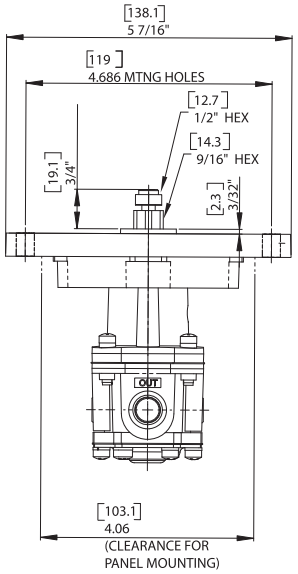
Operating Principles

The Model 2800 Plunger Regulator is designed for applications requiring linear mechanical actuation of set pressure. This precision device provides excellent sensitivity with high forward and reverse flows. The plunger design allows more rapid set point adjustment over the pressure range of the unit than conventional control knob models.

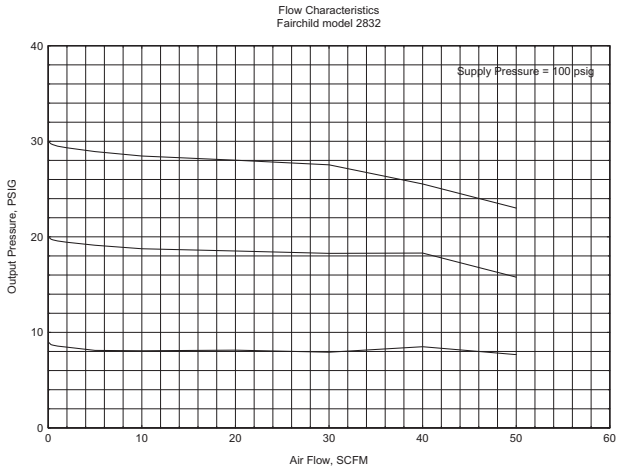
The Model 2800 is recommended for use in a variety of applications where mechanical actuation is required, including control stations and test panels, and in construction machinery and industrial or oil rig control equipment.







Technical Information



Specifications

Flow Capacity
50 SCFM (85 m^3/HR) (100 psig, [7.0 BAR], (700 kPa) supply, 20 psig [1.5 BAR], (150 kPa) setpoint)

Exhaust Capacity
8 SCFM (13.6 m^3/HR) (Downstream pressure 5 psig, [0.35 BAR], (35 kPa) above set pressure)

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (.7 kPa) per 100 psig, [7.0 BAR], (700 kPa) change

Sensitivity
1/2" (1.27 cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to +93.3°C)

Materials of Construction

Regulator
Body . . . . . .Zinc
Trim . . . . . .Zinc Plated Steel, Aluminum, Brass
Diaphragms . . . . . .Buna N and Dacron

Mounting Plate Assembly
Base . . . . . .Aluminum Alloy
Plunger . . . . . .Steel

psig	Range [BAR]	(kPa)	Plunger Travel	Thrust at Max.Range
1/2-10	[0.03-0.7]	(3-70)	.431 ± 10%	20# ± 10%
1/2-30	[0.03-2.0]	(3-200)	.470 ± 10%	62# ± 10%
1-60	[0.1-4.0]	(10-400)	.418 ± 10%	124# ± 10%
2-150	[0.15-10.0]	(15-1000)	.346 ± 10%	311# ± 10%

Catalog Information

Catalog Number 2 8 ☐ ☐

Pressure Range

psig	[BAR]	(kPa)	
0.5-10	[0.03-0.7]	(3 -70)	2
0.5-30	[0.03-2.0]	(3 -200)	3
1-60	[0.07-4.0]	(7-400)	4
2-150	[0.15-10]	(15-1000)	6

Pipe Size

1/4" NPT	2
3/8" NPT	3

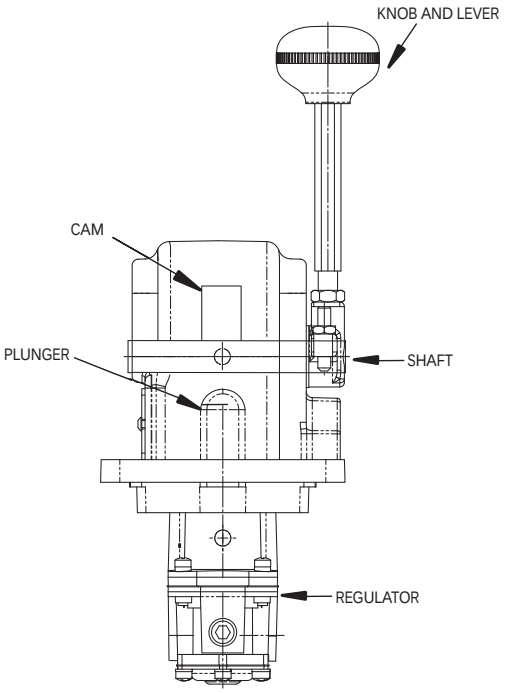
Installation

A service kit is available for the Model 2800. Refer to the *Fairchild Model 2800 Regulator Installation, Operation and Maintenance Instructions,* IS-10002800.

Features

The Model 3400 Pneumatic Lever Operated Regulator is the combination of a Model 1000 High Flow Pressure Regulator and a hand held operated lever mechanism with 120 degree maximum travel.

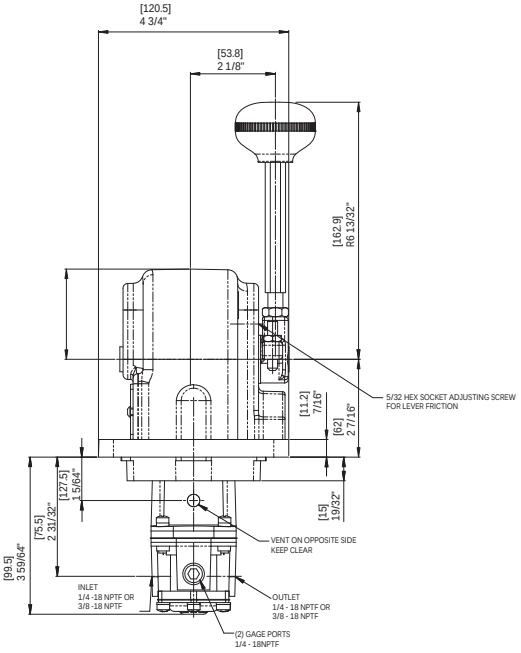
- Sensitive to 1/2" Water Column which permits use in precision applications.
- Balanced supply valve minimizes the effect of supply pressure variation.
- Aspirator Tube minimizes downstream pressure droop under flow conditions.
- Soft supply and Exhaust Valves / Seats minimize air consumption.
- Separate Control Chamber isolates the diaphragm from the main flow, eliminating hunting and buzzing.
- Unit construction permits servicing without removal from line.
- Compact size maximizes economy in installations where space is limited.
- No-Bleed design minimizes consumption of air or inert gas.

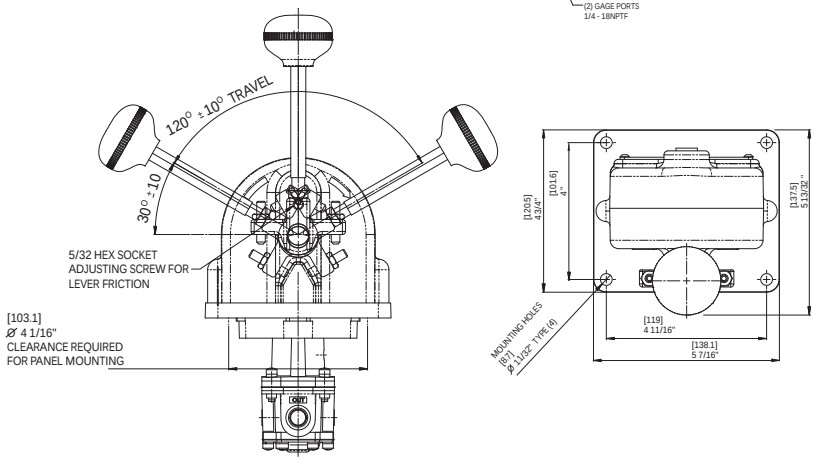


Operating Principles

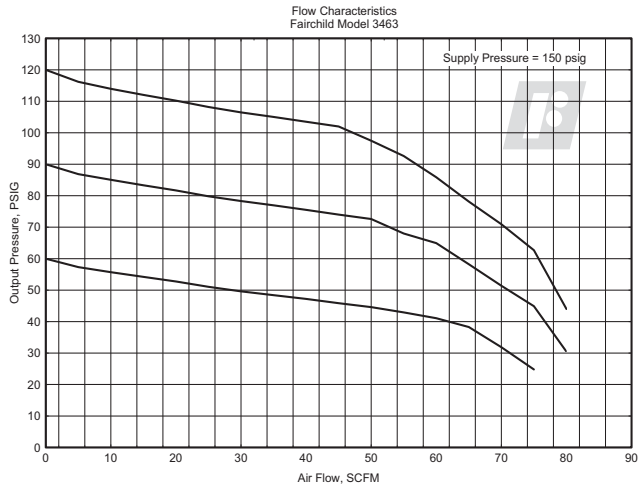
The Model 3400 Lever Operated Regulator is designed to allow rapid changes in pressure settings at control stations and test panels. This high quality unit, capable of handling high flows and exhausts combines positive control with good sensitivity.

The Model 3400 is recommended for use in systems requiring the execution of hand operated pressure control such as the control of a throttle in an engine or engine room. The regulator is the logical choice for rapid, "hands on" control in a variety of applications, including construction machinery, industrial and oil rig equipment, and cylinder operation.





Technical Information



Specifications

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Flow Capacity
50 SCFM (85 m^3/HR) @ (100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kpa) setpoint

Exhaust Capacity
8 SCFM (13.6 m^3/HR) for downstream pressure 5 psig, [.35 BAR], (35 kPa) above set pressure

Effect of Supply Pressure Variation
Less than 0.1 psig, [.007 BAR], (.7 kPa) per 100 psig, [7.0 BAR], (700 kPa) change

Sensitivity
0.5” (1.27 cm) Water Column

Ambient Temperature Limits
-40°F to +200°F, (-40°C to + 93.3°C)

Mounting
Panel

Materials of Construction

Body.....Zinc
Diaphragms .....Buna N and Dacron
Trim .....Zinc Plated Steel and Plastic

Catalog Information

Catalog Number 3 4 ☐ ☐

Pressure Range

psig	[BAR]	(kPa)	
0.5-10	[0.035-0.7]	(3.5-700)	2
0.5-30	[0.035-2]	(3.5-200)	3
1-60	[0.07-4]	(7-400)	4
2-150	[0.15-10]	(15-1000)	6

Pipe Size

1/4" NPT	2
3/8" NPT	3

Service Kit

A Service Kit is available for the Model 3400. Refer to the *Fairchild Model 3400 Installation, Operation and Maintenance Instructions*, IS-10003400.

The Model 4000A Pneumatic Precision Regulator is a no bleed design regulator that precisely controls a set pressure.

Features

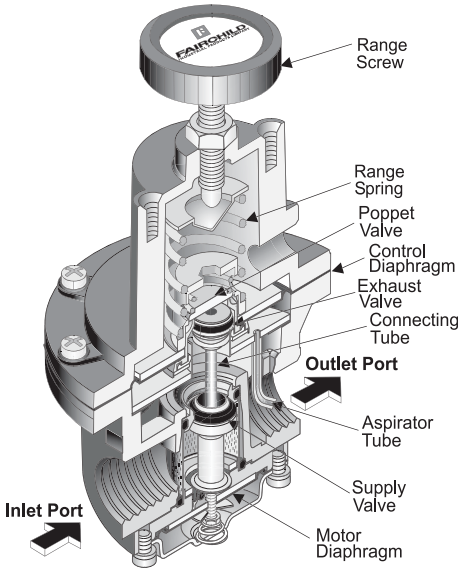
- Control sensitivity of 1/2" water column allows use in precision applications.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve seats minimize air consumption.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube compensates downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 4000A without removing it from the line.
- Canadian Registration Number (CRN) certification for all territories and provinces.

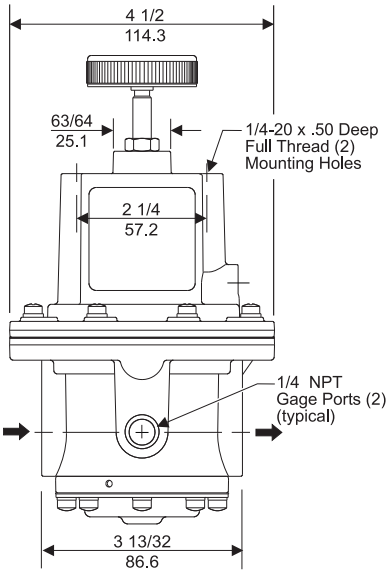
Operating Principles

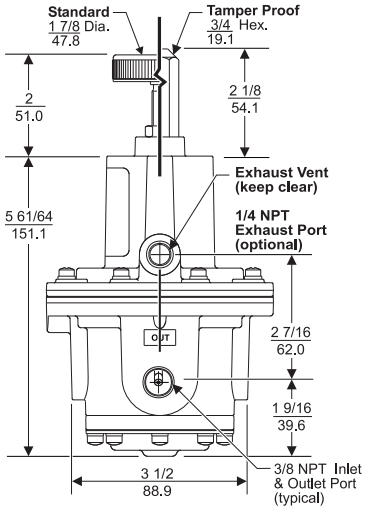
When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber where it creates an upward force on the bottom of the Control Diaphragm.

When the setpoint is reached, the force of the Range Spring that acts on the top of the Control Diaphragm balances with the force of output pressure that acts on the bottom of the Control Diaphragm and closes the Supply Valve.

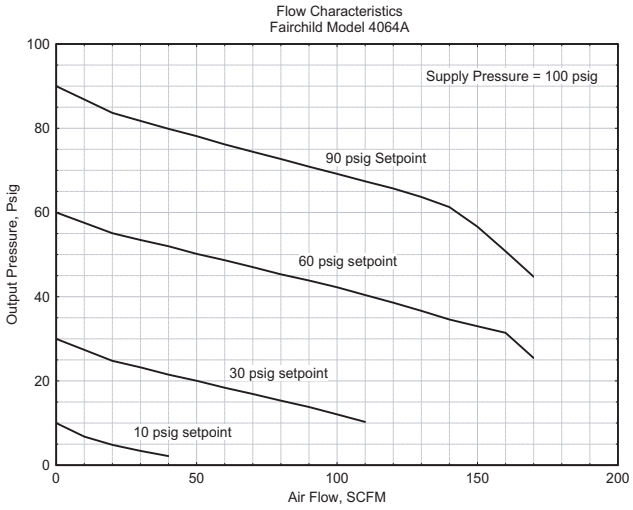
When the output pressure increases above the setpoint, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Because the Poppet Valve is closed, pressure flows down the Connecting Tube to the bottom of the Motor Diaphragm. This pressure keeps the Supply Valve tightly closed while in the exhaust mode. The Poppet Valve opens and output pressure exhausts through the Vent on the side of the unit until it reaches the setpoint.







Technical Information



Specifications

Supply Pressure
250 psig, [17.0 BAR], (1700 kPa) Maximum

Flow Capacity
150 SCFM (255 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Capacity
40 SCFM (65 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
Less than 0.1 psig, [.007 BAR], (0.7 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

Sensitivity
1/2" (1.27 cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to +93°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction
Body and Housing . . . . . Aluminum
Diaphragms . . . . . Nitrile on Dacron
Trim . . . . . Zinc Plated Steel, Brass

Catalog Information

Catalog Number 4 0 [ ] [ ] A [ ]

Pressure Range

psig	[BAR]	(kPa)	
0.5-10	[0.035-0.7]	(3.5-70)	2
0.5-30	[0.035-2]	(3.5-200)	3
1-60	[0.07-4]	(7-400)	4
2-150	[0.15-10]	(15-1000)	6
5-250	[0.35-17]	(35-1700)	7

Pipe Size

3/8" NPT	3
1/2" NPT	4
3/4" NPT	6

Options

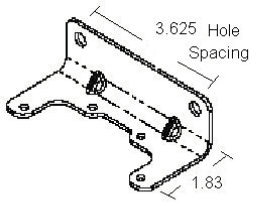
Tapped Exhaust	E
BSPP (Parallel) [1]	H
Tamper Proof	T
BSPT (Tapered)	U
Viton Elastomers [2]	J

[1] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

[1] *Viton Available on Ranges through 2-150 psig Only.*

Installation

For installations instructions, refer to the *Fairchild Model 4000A Pneumatic Precision Regulator Instruction, Operation and Maintenance Instructions, IS-1004000A.*



20555-1

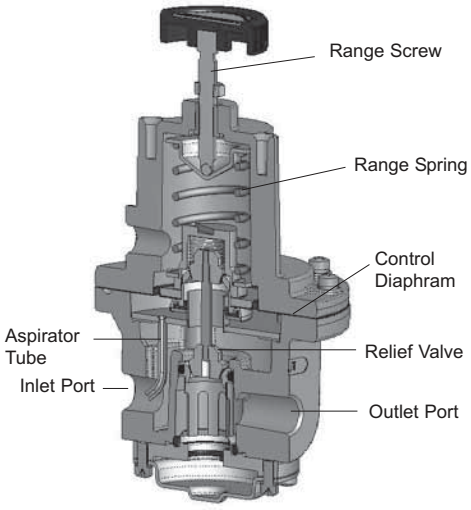
Model 4000A Mounting Bracket Kit
P/N 20555-1 zinc plated (sold separately)

Model 4000ABP Back Pressure Regulator

The Model 4000ABP Pneumatic Precision Back Pressure Regulator is a no bleed design regulator that precisely controls system back pressure.

Features

- Control sensitivity of 1/2" water column allows use in precision applications.
- Large Relief Valve provides high exhaust flows.
- An Aspirator Tube compensates upstream pressure build up under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 4000ABP without removing it from the line.

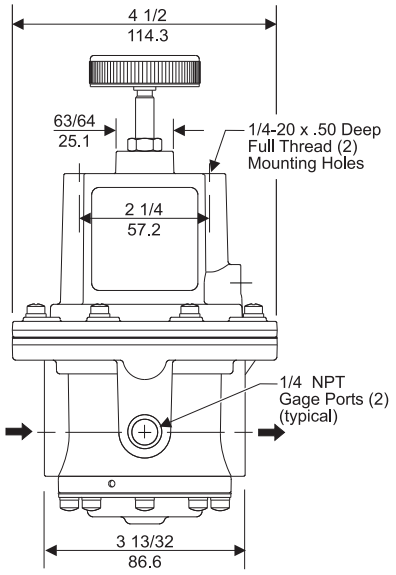


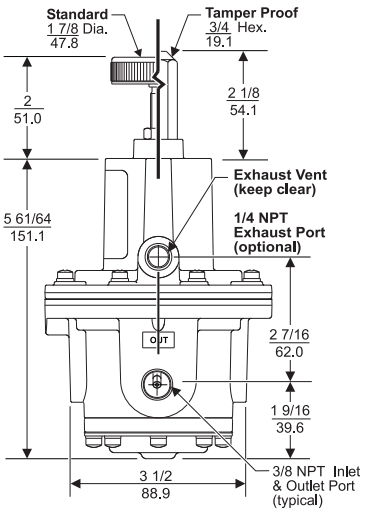
Operating Principles

The Model 4000ABP Regulator uses the force balance principle to open the Relief Valve and vent system pressure when the set point is exceeded.

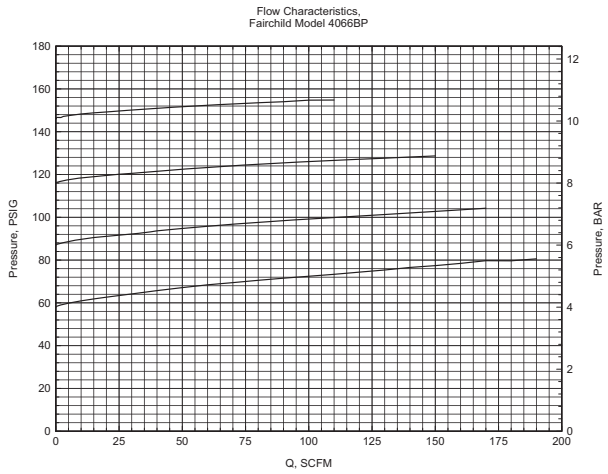
Upstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. When you adjust the range screw for a specific set point, the Range Spring compresses and exerts a force on the top of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm Assembly produces a force less than the spring force acting on the top of the Diaphragm Assembly, the Relief Valve remains closed. When system pressure increases, the force on the bottom of the Diaphragm Assembly increases until it reaches the set point. When system pressure increases beyond the set point, the assembly moves upward, lifting the Relief Valve from its seat and vents the downstream air.

If downstream pressure decreases below the set point, the assembly moves downward closing the Relief Valve.





Technical Information



Specifications

Maximum Inlet Pressure (Psig)
250 [17 BAR], (1700 kPa)

Flow Capacity
150 (255m^3/Hr) at 90 Psig [6 BAR], (600 kPa) setpoint.

Sensitivity
1/2" (1.27 cm) Water Column

Ambient Temperature
-40°F to +200°F, (-40°C to +93°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction

Body and Housing	Aluminum
Diaphragms and seals	Nitrile
Trim	Zinc Plated Steel, Brass

Catalog Information

Model 4000ABP

Catalog Number 40 [ ] [ ] ABP [ ] [ ]

Pressure Range

psig	[BAR]	(kPa)	
0.5-10	[0.03-0.7]	(3.0-70)	2
0.5-30	[0.03-2]	(3.0-200)	3
1-60	[0.1-4]	(10-400)	4
2-150	[0.15-10]	(15-1000)	6

Port Size

3/8" NPT	3
1/2" NPT	4
3/4" NPT	6

Port Th'd

NPT	
BSPP[1]	H
BSPT	U

Elastomer

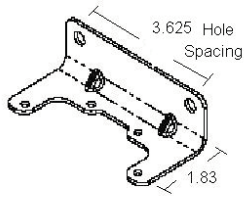
Nitrile	N
Fluorocarbon	J

[1] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

[1] *Viton Available on Ranges through 2-150 psig Only.*

Installation

For installations instructions, refer to the *Fairchild Model 4000A Pneumatic Precision Regulator Instruction, Operation and Maintenance Instructions, IS-1004000ABP.*



20555-1

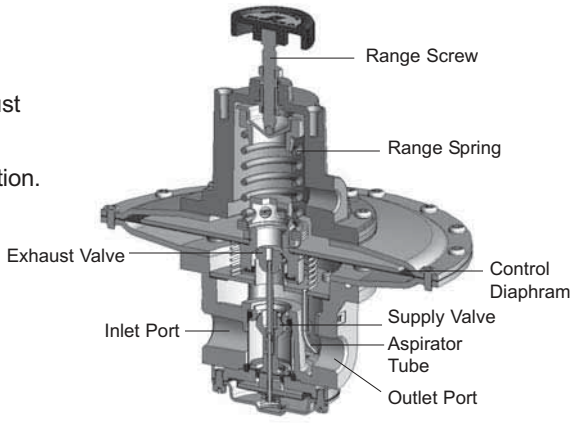
Model 4000ABP Mounting Bracket Kit
P/N 20555-1 zinc plated (sold separately)

Model M4100 Low Pressure Pneumatic Regulator

The Model 4100A Pneumatic Precision Regulator is a no bleed design regulator that precisely controls a set pressure.

Features

- Sensitivity of 0.05" WC for Precision Control in low pressure applications.
- Large Relief Valve provides high exhaust flows.
- Soft Valve seat minimizes air consumption.
- An Aspirator Tube compensates upstream pressure build up under flow conditions.

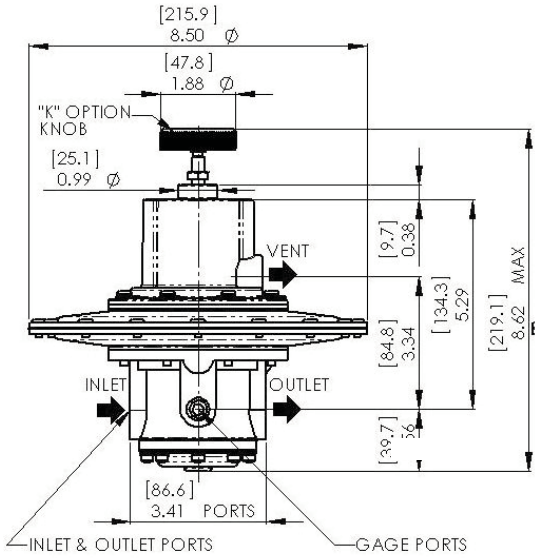


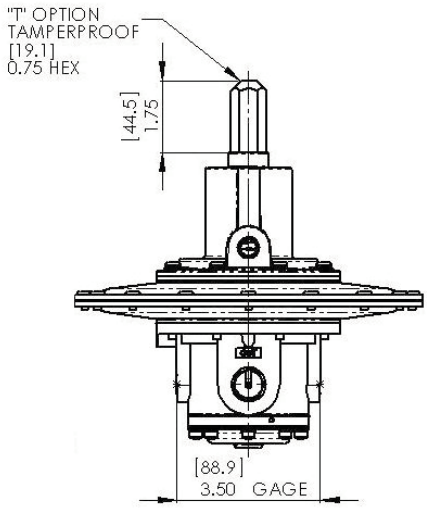
Operating Principles

When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber where it creates an upward force on the bottom of the Control Diaphragm.

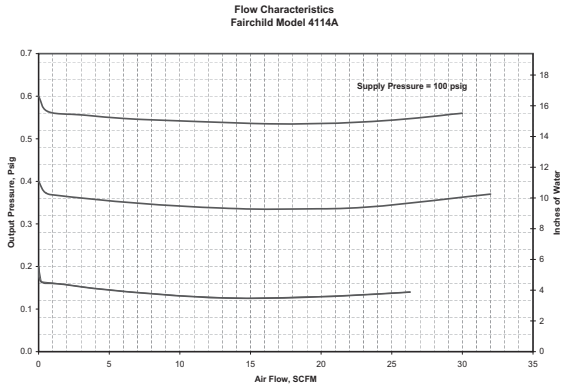
When the setpoint is reached, the force of the Range Spring that acts on the top of the Control Diaphragm balances with the force of output pressure that acts on the bottom of the Control Diaphragm and closes the Supply Valve.

When the output pressure increases above the setpoint, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve, and output pressure exhausts through the Vent on the side of the unit until it reaches the setpoint.





Technical Information



Specifications

Supply Pressure (Psig)
20 psi to 150 psi max.

Output Ranges
0-0.7 psi [0-0.48 BAR]; up to 0-5.0 psi [0-0.35 BAR]

Consumption
None Detected

Sensitivity

Low as 0.05" Water Column

Supply Pressure Effect

None Detected

Ambient Temperature
-40°F to +200°F, (-40°C to +93°C)

Hazardous Locations
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

Materials of Construction

Body and Housing . . . . . Aluminum
Trim . . . . . Zinc Plated Steel, Brass
Diaphragms and seals . . . . . Nitrile on Dacron

Catalog Information

Catalog Number 41 ☐ ☐ A ☐ ☐ ☐ ☐

Pressure Range

psig	[BAR]	(kPa)	
0-0.7	[0-0.048]	(0-4.8). .	1
0-1.4	[0-0.096]	(0-9.7). .	2
0-3	[0-0.21]	(0-21). .	3
0-5	[0-0.35]	(0-35). .	4

Port Size

3/8" NPT.	3
1/2" NPT.	4
3/4" NPT.	6

Port Thread

NPT.	N
BSPT	U
BSPP[1]	H

Elastomer

Nitrile.	N
Fluorocarbon.	J

Actuator

Knob.	K
Tamper Proof.	T

Vent

Straight.	S
Threaded.	E

[1] *BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.*

Installation

For installations instructions, refer to the *Fairchild Model 4000A Pneumatic Precision Regulator Instruction, Operation and Maintenance Instructions, IS-1004100.*