

# The Widest Range of Products for Diverse Market Applications



For over 50 years, Fairchild Industrial Products Company has maintained an excellent reputation as a manufacturer of precision, high quality, pneumatic, and electro-pneumatic controls. Our line of industrial control products offers one of the largest varieties of precision pneumatic and electro-pneumatic control devices available for process, machine tool, robotic and OEM applications.

Our developing technology in four main product groups - pneumatic pressure regulators, volume boosters, relays and electro-pneumatic transducers has been the basis for our growth and leadership.

Fairchild Industrial Products Company is ISO 9001 approved. We are authorized to display the CE mark on our electro-pneumatic products. Many of our electro-pneumatic products are also approved for intrinsically safe, explosion-proof, and NEMA 4X (IP65) ratings by FM, CSA, ATEX and SAA.

Our worldwide network of stocking distributors can assist you with application support at the local level. At the factory, our applications engineering staff can solve your problems with new or existing applications. We can work with your plant and design engineers to develop a custom product to suit a specific application.

At Fairchild Industrial Products Company, we have built our reputation on providing quality products, excellent customer service, quick delivery, and immediate response to customer emergencies.

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**A REGULATORS** **13**

<i>MODEL</i>	<i>DESCRIPTION</i>	<i>PAGE</i>
10	Pneumatic Precision Regulator	14
10BP	Pneumatic Precision Back Pressure Regulator	16
16	Vacuum Regulator	18
17	Vacuum Regulator	20
30	Compact Precision Regulator	22
30BP	Compact Precision Back Pressure Regulator	24
50	Miniature Precision Regulator	26
50BP	Miniature Precision Back Pressure Regulator	27
63	Pneumatic Filter Regulator	28
64A / 65A	Pneumatic Service Regulator	30
66	Pneumatic Stainless Steel Regulator	32
66BP	Pneumatic Stainless Steel Back Pressure Regulator	34
70B	Pneumatic Subminiature Regulator	36
72	High Performance Mini Regulator	38
80D	Pneumatic Multi-Stage Regulator	40
81	Pneumatic Multi-Stage Regulator	42
100	Pneumatic High Flow Regulator	44
1000	Pneumatic Precision Regulator	46
1600A	Vacuum Regulator	48
24CC/24CS	Precision M/P Converters	50
24XFC/24XFS	Precision M/P Converters	54
24XFS	Precision Low Pressure M/P Converters	62
2800	Pneumatic Plunger Regulator	64
3400	Pneumatic Lever Operated Regulator	66
4000A	Pneumatic Precision Regulator	68
4000ABP	Back Pressure Regulator	70
4100	Low Pressure {Pneumatic Regulator	72

**B TRANSDUCERS** **75**

<i>MODEL</i>	<i>DESCRIPTION</i>	<i>PAGE</i>
T5200	Electro-Pneumatic I/P, EP Transducer	76
T5220	Electro-Pneumatic I/P, EP Transducer	79
T5221	Electro-Pneumatic I/P, EP Adjustable Ratio Transducer	83
T5400	Digital-Pneumatic Transducer	86
T5420	Digital-Pneumatic Transducer	88
T5700	Electro-Pneumatic I/P, EP Transducer	90
T6000	Electro-Pneumatic I/P, EP Transducer	92
T6100	Lock In Place Electro-Pneumatic I/P Transducer	97
T7800	Electro-Pneumatic I/P, EP Transducer	99
TXI7800	Explosion-Proof I/P Transducer	105
TXI7850	Explosion-Proof I/P Transducer, Moisture Resistant	110
T7900	Electro-Pneumatic Transducer	115
T8000	Miniature Two Wire P/I Pressure Transducer	117

**C VOLUME BOOSTERS 121**

<i>MODEL</i>	<i>DESCRIPTION</i>	<i>PAGE</i>
20	Pneumatic Volume Booster	122
20BP	Pneumatic Back Pressure Volume Booster	124
200	Pneumatic Volume Booster, Highest Flow	126
200XLR	Pneumatic Volume Booster, Highest Flow	128
2000	Pneumatic Volume Booster	130
4500A	Pneumatic Volume Booster	132
4500ABP	Pneumatic Volume Back Pressure Booster	134
4800A	Pneumatic Volume Booster for Valve Positioners	136
4900A	Pneumatic Precision Higher Flow Volume Booster	138

**D RELAYS 141**

<i>MODEL</i>	<i>DESCRIPTION</i>	<i>PAGE</i>
14	Positive and Negative Bias Relay	142
15	Positive Bias Relay	144
21	Adjustable Ratio Relay	146
22	Pneumatic Computing Relay	148
24	Snap Acting Relay	151
25	Reversing Relay	153
85D	Multi-Stage Positive Biasing Relay	155
90 Low Pressure	Pneumatic Selector Relay	157
91 High Pressure	Pneumatic Selector Relay	157
1500A	Positive Bias Relay	159
2500A	High Flow Reversing Relay	161

**E ACCESSORIES 163**

<i>MODEL</i>	<i>DESCRIPTION</i>	<i>PAGE</i>
T6000, T7800 T7950, T8000	Manifold and Rack Kit	164
MPL-70, MPLT-70	Mini-Panel Loading Stations	169
PL-5, PL-8	Panel Loading Stations	171
1-1/2", 2", 3-1/2"	Pressure Gages	173
Mini Strip	Pressure Gages	173
FGF, FGM, FGD	Automatic Drain Filter Series	175

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# 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.

	 <b>10</b> Precision Regulator	 <b>16</b> Vacuum Regulator	 <b>17</b> Vacuum Regulator	 <b>30</b> Compact Precision Regulator	 <b>63</b> Filter Regulator	 <b>66</b> Stainless Regulator	 <b>70B</b> Sub Miniature Regulator
<b>Flow Capacity:</b> SCFM (m <sup>3</sup> /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)
<b>Exhaust Capacity:</b> SCFM (m <sup>3</sup> /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)
<b>Sensitivity:</b> 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
<b>Supply Pressure Var:</b> 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
<b>Supply Pressure Max:</b> PSIG (kPa)	500 (3500)	250 (1700)	30 in Hg ((762 Torr) to "Full" Vacuum	250 (1700)	250 (1700)	500 (3500)	250 (1700)
<b>Dimensions (Approx):</b> 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)
<b>Range PSIG (kPa)</b>	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)
<b>Pipe Size NPT</b>	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



page 38



page 42



page 44



page 46



page 48



page 50



page 68

<b>72</b> Hi-Performance Mini Regulator	<b>81</b> High Flow Precision Two-Stage Regulator	<b>100</b> High Flow Regulator	<b>1000</b> No Bleed Design Regulator	<b>1600A</b> High Flow Vacuum Reg.	<b>2400</b> Motorized Lock-In Position Reg.	<b>4000A</b> 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)	<b>Numerous</b> (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"

# Electro-Pneumatic Transducers

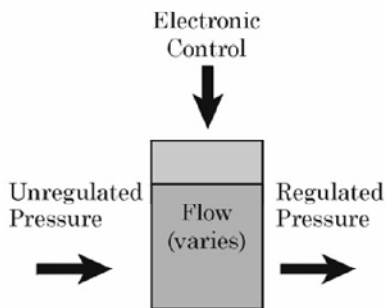
Fairchild transducers are accurate, compact, light-weight, and fast responding. Some models include an analog feedback input option that controls the process variable independent of transducer output.

Many models are approved for splash-proof, explosion-proof, and intrinsically safe use. With a large combination of inputs and outputs, we can provide transducers for every application.

## Motorized Regulator

One of the most reliable types of electro-pneumatic control is the motor to pressure regulator. This technology uses a motor to turn the adjusting screw of a pressure regulator. Regulated output pressure is adjusted using AC, DC, or analog pulse control signals. These units are sturdy, reliable, and lock in the last setting when the power is interrupted.

- 24X Series
- 24C Series

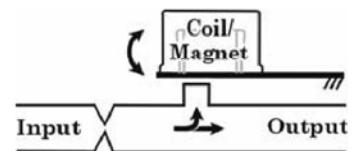


## Voice Coil Technology

This is a traditional, proven type of control technology. In voice coil systems, a flapper nozzle is attached to a voice coil that is suspended in a magnetic field. The strength of an electronic signal to the coil moves the coil into or out of the magnetic field. This movement causes a flapper nozzle to open or partially close a nozzle and change the regulated output.

Fairchild's voice coil technology transducers are:

- T5200 Series
- T5220 Series
- T5221
- T5400
- T5420
- T5700
- T6000 Series



## Electro-pneumatic Transducers

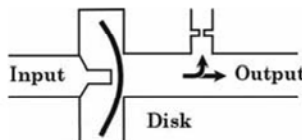
The electro-pneumatic Transducer was developed as a smaller, lighter, and more cost effective alternative to the Motorized Regulator. An electro-pneumatic I/P, E/P, and D/P transducer receives an analog or digital input control signal and converts it to a regulated pneumatic output that is directly or inversely related to the input.

## Piezo-ceramic Technology

This technology is relatively new to I/P and E/P control. A piezo electric ceramic disk actuates the nozzle. An electronic signal to the disk causes a deflection that opens or partially closes the orifice. Internal electronic feedback assures precise output pressure control. This technology is extremely resistant to shock, vibration, and changes in positional orientation.

Fairchild's piezo-ceramic technology transducers are:

- T7800
- TX17800
- TX17850

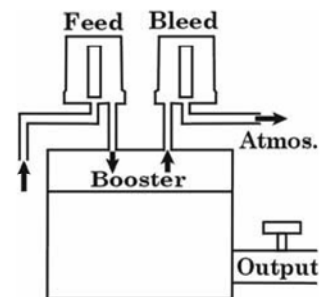


## Feed and Bleed Technology

This is the latest type of technology. This system uses microprocessor controlled electro-pneumatic solenoid valves to feed supply pressure to the regulated output and bleed excess pressure to atmosphere. Analog or digital input control signals control the solenoids that monitor and maintain the regulated output. This technology is extremely resistant to shock and vibration.

Fairchild's feed and bleed technology transducers are:

- T7900



# Electro-Pneumatic Transducers



	<b>T5700</b> High Flow Voice Coil I/P, E/P	<b>T6000</b> Voice Coil I/P, E/P	<b>T6100</b> Lock in Last Position I/P	<b>T7800</b> Piezo Ceramic I/P, E/P	<b>TXI7800</b> Explosion-Proof I/P, E/P	<b>T7900</b> High Flow Digital I/P, E/P
<b>Max Flow Capacity:</b> SCFM (m <sup>3</sup> /HR)	47 (79.9) Supply =120 psig	9 (15.3) Supply =120 psig	5.0 (8.5) Supply = 21 psig	9 (15.3) Supply =120 psig	9 (15.3) Supply =120 psig	100 (17.0) Supply =100 psig
<b>Output Pressure:</b> PSIG (kPa)	3-15 (20-100)	3-15, 0-120 (20-100), (0-800) 6 ranges	3-15 (20-100)	3-15, 0-120 (20-100), (0-800) 6 ranges	3-15, 3-27, 6-30 (20-100), (20-180), (40-200)	0-30, 0-75, 0-150 (0-200), (0-500).
<b>Exhaust Capacity:</b> SCFM (m <sup>3</sup> /HR) Downstream pressure 5 psig above 9 psig setpoint	< 9 (15.3)	2 (3.4)	2 (3.4)	2 (3.4)	2 (3.4)	50 (85)
<b>Max Air Consumption:</b> SCFH (m <sup>3</sup> /HR)	3 (.08)	5.0 to 17.0 (0.14) to (0.48) Varies with model	5.0 (0.14)	5.5 to 15.0 (0.16) to (0.42) Varies with model	13.5 (0.38)	0 @ steady state
<b>Accuracy: % FS</b>	±0.5 Independent Linearity	0.5 to 1.0 Independent Linearity Varies with model	0.5	±0.15 (typical)	±0.15	±0.5
<b>Repeatability:</b> % FS	<0.1	0.25 to <1.0	.025	<0.1	<0.1	<0.1
<b>Supply Pressure:</b> PSIG (kPa)	18-150 (120-1000)	20-150 (150-1000)	20-40 (150-280)	20-150 (150-1000)	20-120 (150-800) Maximum	200 (1400) Maximum
<b>Supply Voltage:</b> DC	Signal Powered	Signal Powered	Signal Powered	Current Input Signal Powered Voltage Input 7.2-30 VDC	Signal Powered	24 VDC
<b>Input Signal</b>	4-20 mA, 10-50 mA 1-5 VDC, 1-9 VDC	4-20 mA, 10-50 mA 0-5 VDC, 0-10 VDC, 1-5 VDC, 1-9 VDC	4-20 mA	4-20 mA DC, 0-10 VDC, 1-9 VDC 1-5, 0-5 VDC Limited Availability	4-20 mA	4-20 mA, 0-10 VDC
<b>Pipe Size</b>	1/4"	1/4"	1/4"	1/4"	1/4"	1/4, 3/8, 1/2"
<b>Underwriting Group Approvals: *</b>	CE	F, C, E, CE	F, CE	F, C, E, CE	A, F, C, E, CE	CE
<b>Dimensions (Aprx.) Inches (mm)</b>	Dia. 3 H 6 1/2 (Dia. 76 H 165)	1 1/2 x 3 1/8 x 3 3/4 (38 x 79 x 95)	2 1/2 x 2 1/2 x 6 1/2 (64 x 64 x 165)	1 1/2 x 3 1/8 x 3 3/4 (38 x 79 x 95)	3 11/16 x 3 13/16 x 4 5/8 (94 x 97 x 117.5)	3 x 3 1/8 x 7 3/4 (76 x 79 x 197)



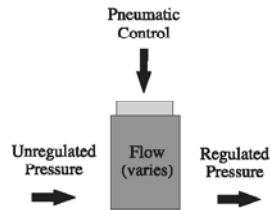
A	=	SAA, Australia	E	=	ATEX, IEC*
F	=	FM, Factory Mutual	C	=	CSA, Canadian Standards
CE	=	CONFORMITÉ EUROPEËNNE	*	T7800 Series	

# Pneumatic Volume Boosters

A pneumatic air volume booster reproduce a low flow control signal with a higher regulated flow output pressure. It uses an unregulated input pressure to maintain a regulated output pressure under flowing and non-flowing conditions.

Fairchild volume boosters meet all the requirements of a precision device including:

- Accuracy
- Sensitivity
- Fast response
- Stability
- Drift-free settings
- Low output droop
- Supply pressure immunity
- High forward and exhaust flow capacity



The regulated output of a pneumatic air volume booster can be any of the following:

- A direct reproduction of the pneumatic control signal
- A multiple of the pneumatic control signal
- A fraction of the pneumatic control signal

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

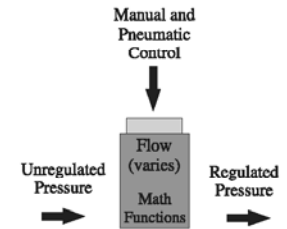


	<b>20 Precision Booster</b>	<b>200 High Flow Booster</b>	<b>200XLR High Forward &amp; Exhaust Flow Booster</b>	<b>2000 No Bleed Booster</b>	<b>4500A High Flow No Bleed Booster</b>	<b>4800/4900 High Flow Booster</b>
Flow Capacity SCFM(m <sup>3</sup> /HR) Supply= 100 psig	45 (76.5)	1500 (2550)	1500 (2550)	40 (68)	150 (255)	500 (850)
Exhaust Capacity: Downstream pressure 5 psig above 20 psig set point	7.5 to 11 (12.8 and 18.7) Varies with ratio	65 (110.5)	325 (552.5)	16 (27.2)	40 (65.2)	100 (170)
Sensitivity: Inch/WC (cm)	.25 to 1.50 (.64 to 3.8) Varies with ratio	1.0 (2.54)	1.0 (2.54)	<1.0 (2.54)	1.0 to 3.0 (2.54 to 7.62) Varies with ratio	0.5 (1.27)
Supply Pressure Var: PSIG (kPa) For Supply Change =100psig	0.1 to 0.60 (0.7 to 4.0) Varies with ratio	<0.5 (<3.5)	<0.5 (<3.5)	<0.1 (<0.7)	0.1 to 0.3 (0.7 to 2.1) Varies with ratio	0.1 (<0.7)
Supply Pressure (Max): PSIG (kPa)	250 (1700)	250 (1700)	250 (1700)	250 (1700)	250 (1700)	250 (1700)
Max Signal/Output Pressure: PSIG (kPa)	Varies (see Catalog)	150 (1000)	150 (1000)	150 (1000)	Varies (see Catalog)	150 (1000)
Dimensions (Approx): Inches (mm)	Dia. 3 H 4 1/4 (Dia. 76 H 114)	5 1/2 H 7 7/8 (Dia. 140 H 200)	9 1/2 x 5 1/2 x 9 3/4 (241 x 140 x 248)	2 x 2 x 3 1/4 (54 x 54 x 83)	Dia. 4 1/2 x 5 1/4 (Dia. 114 H 133)	Dia. 6 1/2 x 8 (Dia. 165 H 204)
Ratio Available	1:1, 1:2, 1:3, 2:1, 3:1 1:4, 4:1, 1:5, 5:1, 1:6	1:1	1:1	1:1, 1:1.6	1:1, 1:2, 1:3, 2:1, 3:1	1:1
Pipe Size	1/4", 3/8"	1", 1 1/2"	1 1/2"	1/4", 3/8"	3/8", 1/2", 3/4"	3/4", 1"

# Pneumatic Relays

Pneumatic relays perform mathematical functions on one or more input signals that result in a single regulated pneumatic output including:

- Average
- Sum



Fairchild pneumatic relays meet all the requirements of a precision device including:

- Accuracy
- Sensitivity
- Fast response

	 <b>14</b> Positive/Negative Bias Relay	 <b>15</b> Positive Bias Relay	 <b>21</b> Adjustable Ratio Relay	 <b>22</b> Pneumatic Computing Relay	 <b>24</b> Snap Acting Relay	
<b>Flow Capacity:</b> SCFM (m <sup>3</sup> /HR)	40 (68)	40 (68)	40 (68)	2 (3.4)	14 (23.8)	
<b>Exhaust Capacity:</b> SCFM (m <sup>3</sup> /HR)	5.5 (9.4)	5.5 (9.4)	5.5 (9.4)	Note 1	14 (23.8)	
<b>Sensitivity:</b> Inch/WC (cm)	0.5 (1.27)	0.25 (0.64)	0.5 (1.27)	Note 1	0.2" WC to 0.5 psig Depending on model	
<b>Supply Pressure Max:</b> PSIG (kPa)	250 (1700)	250 (1700)	250 (1700)	150 (1000)	120 (800)	
<b>Signal Pressure Max:</b> PSIG (kPa)	150 (1000)	150 (1000)	150 (1000)	50 (350)	120 (800)	
<b>Output Pressure Max:</b> PSIG (kPa)	150 (1000)	150 (1000)	150 (1000)	50 (350)	120 (800)	
<b>Dimensions (Approx):</b> Inches (mm)	Dia. 3 H 8 (Dia. 76 H 203)	Dia. 3 H 7 (Dia. 76 H 177)	9 7/8 x 3 5/8 4 7/8 (251 x 92 x 124)	Dia. 3 H 9 (Dia. 76 H 229)	Dia. 3 H 8 1/2 (Dia. 76 H 216)	
	 <b>25</b> Reversing Relay	 <b>85D</b> Two-Stage Biasing Relay	 <b>1500A</b> High Flow Positive Bias Relay	 <b>2500A</b> High Flow Reversing Relay	 <b>90</b> Low Pressure Selector Relay	 <b>91</b> High Pressure Selector Relay
<b>Flow Capacity:</b> SCFM (m <sup>3</sup> /HR)	40 (68)	14 (23.8)	150 (255)	150 (255)	Note 2	Note 2
<b>Exhaust Capacity:</b> SCFM (m <sup>3</sup> /HR)	11 (18.7)	2.5 (4.25)	40 (68)	40 (68)	Note 2	Note 2
<b>Sensitivity:</b> Inch/WC (cm)	.13 (.32)	N/A	1.0 (2.54)	1.0 (2.54)	Note 2	Note 2
<b>Supply Pressure Max:</b> PSIG (kPa)	250 (1700)	250 (1700)	250 (1700)	250 (1700)	Note 2	Note 2
<b>Signal Pressure Max:</b> PSIG (kPa)	150 (1000)	150 (1000)	150 (1000)	150 (1000)	200 (1400)	200 (1400)
<b>Output Pressure Max:</b> PSIG (kPa)	150 (1000)	150 (1000)	150 (1000)	150 (1000)	200 (1400)	200 (1400)
<b>Dimensions (Approx):</b> Inches (mm)	Dia. 3 H 7 1/2 (Dia. 76 H 191)	1 3/4 x 1 3/4 x 5 (44 x 44 x 127)	Dia. 4 1/2 x 8 1/2 (Dia. 114 H 216)	Dia. 4 1/2 x 8 1/2 (Dia. 114 H 216)	Dia. 3 H 1 3/4 (Dia. 76 H 44)	Dia. 3 H 1 3/4 (Dia. 76 H 44)

Note 1: Multiple configurations allowing up to 4 inputs plus positive and negative biasing over a broad range, designed for multiple functions such as Averaging, Differential, Inverting, Totalizing and On/Off.

Note 2: Switching Differential: +0.1 PSID (<0.7); max.differential between signals: 100PSID (700)

**Accessories** page 163



Fairchild offers a variety of accessories for product support. These items are:

- A selection of panel loading stations for local control to set or troubleshoot a control loop.
- Automatic drain filters to remove dirt, water, oil and other foreign matter from supply air lines.
- Manifold and rack kits for high density mounting T6000, T7800, T7950 and T8000 Series Transducers.



**Service Kits**

Service Kits are available for most products. These kits include elastomers and other items that are necessary to restore the unit to its original operating condition.



**SECTION A**



**REGULATORS**



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.

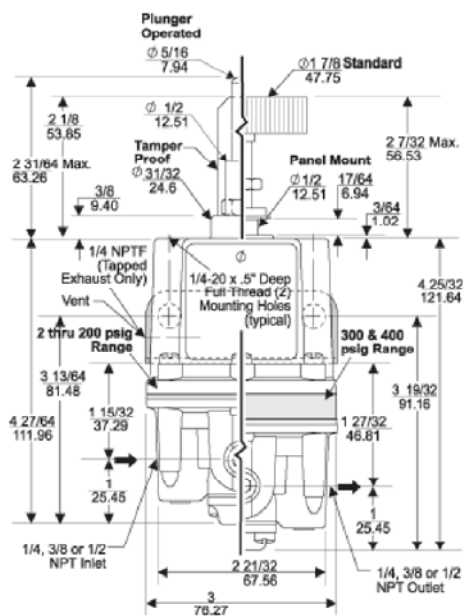
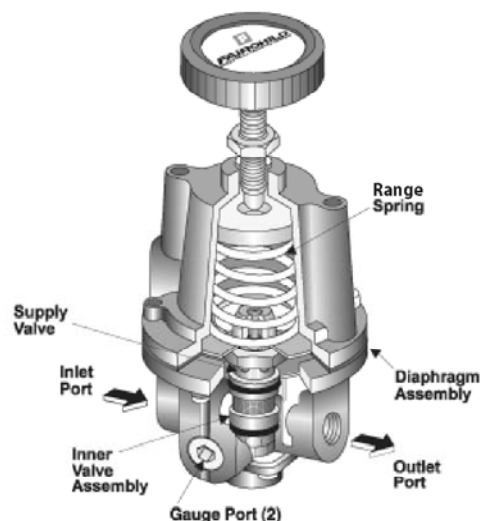
## Features

- 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)

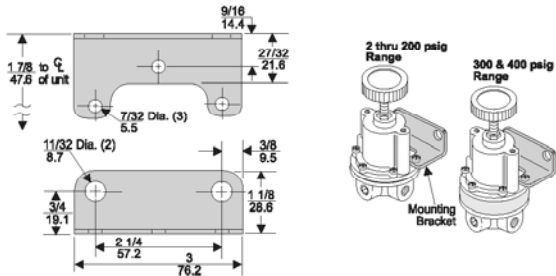
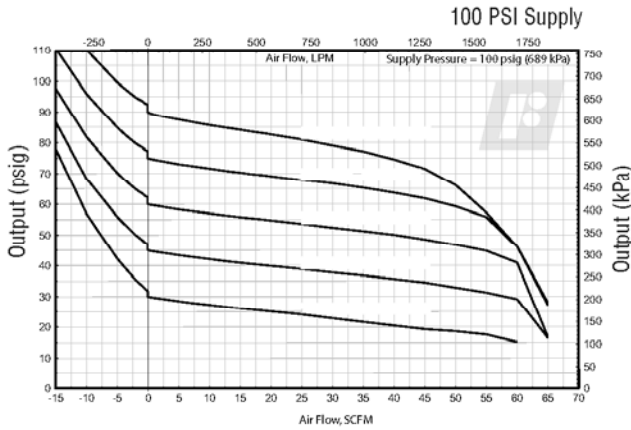
Internal check valve that permits rapid Backflow of downstream pressure through the supply line when supply pressure is removed.

### 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 m<sup>3</sup>/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 m<sup>3</sup>/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**

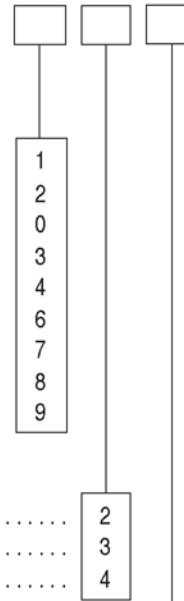
Body and Housing.....Aluminum  
Diaphragms ..... Buna N on Dacron (Std. unit only)  
Trim ..... Brass, Zinc Plated Steel

**Catalog Information**

**Catalog Number 102**

**Pressure Range**

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



**Pipe Size**

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

**Options**

- Silicone Elastomers <sup>1</sup>
- Low Bleed
- Check Valve <sup>2</sup>
- Tapped Exhaust
- BSPP (Parallel) <sup>3</sup>
- Fluorocarbon Elastomers
- Low Flow
- Non-Relieving
- Panel Mount <sup>4</sup>
- Plunger Operated <sup>5</sup>
- Screwdriver Adjust
- Tamper Proof
- BSPT (Tapered)
- No Yellow Metals**

	A	B	C	E	H	J	L	N	P	R	S	T	U	Y
A	-	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N
B	Y	-	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
C	Y	Y	-	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N
E	Y	Y	Y	-	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
H	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	Y	N	Y
J	N	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y	Y	Y
L	Y	N	Y	Y	Y	Y	-	N	Y	Y	Y	Y	Y	Y
N	Y	N	N	Y	Y	Y	N	-	Y	Y	Y	Y	Y	Y
P	Y	Y	Y	Y	Y	Y	Y	Y	-	N	Y	N	Y	Y
R	Y	Y	Y	N	Y	Y	Y	Y	N	-	N	N	Y	N
S	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	-	N	Y	Y
T	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	-	Y	Y
U	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	-	Y
Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	-

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

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

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

## 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:

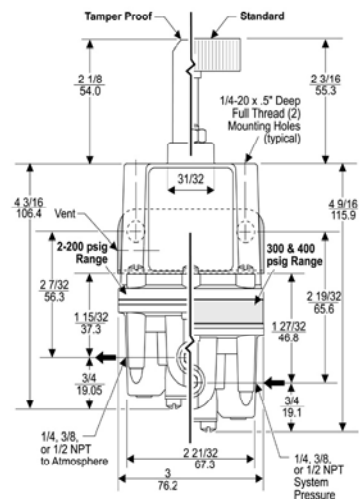
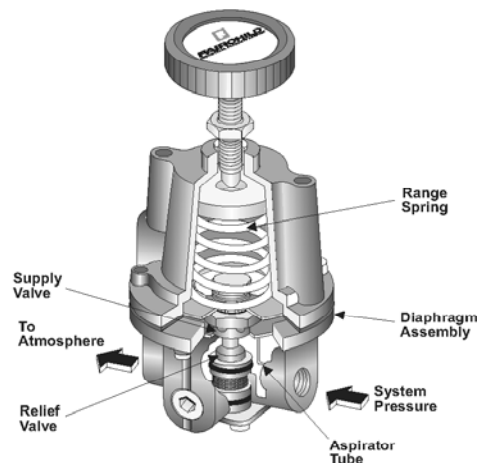
- Control sensitivity of 1/8" water column allows use in precision applications.
- A separate Control Chamber and Aspirator Tube isolate the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the Model 10BP without removing it from the line.
- Mounting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

## Operating Principles

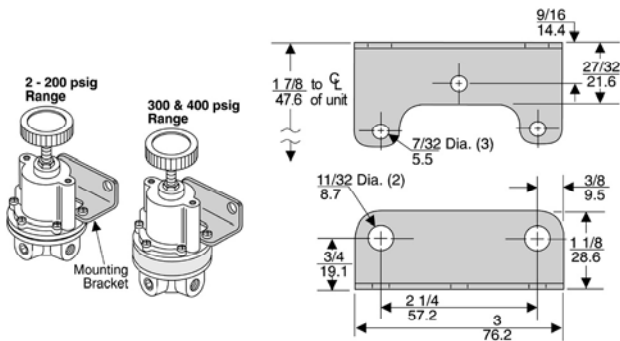
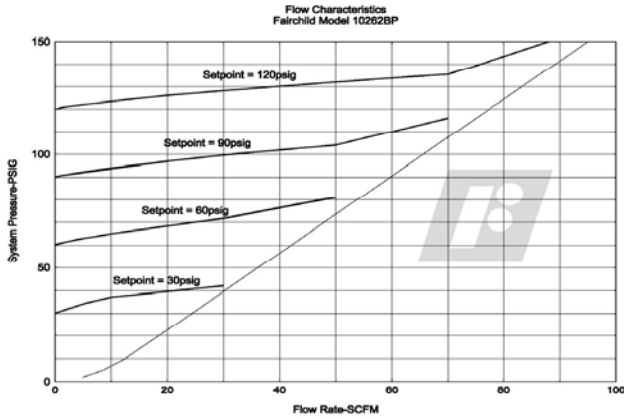
The Model 10BP Regulator uses the force balance principle to open the Relief Valve and vent system pressure when the set point is exceeded.

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<sup>3</sup>/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)
0-10	[0-0.7]	(0-70)
0-20	[0-1.5]	(0-150)
.5-30	[0.03-2.0]	(3-200)
1-60	[0.1-4.0]	(10-400)
2-150	[0.15-10.0]	(15-1000)
3-200	[0.2-14.0]	(20-1400)
5-300	[0.35-21.0]	(35-2100)
5-400	[0.35-28.0]	(35-2800)

- 1
- 2
- 0
- 3
- 4
- 6
- 7
- 8
- 9

**Pipe Size**

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

**Options**

- Silicone Elastomers..... A
- BSPP (Parallel)<sup>2</sup> ..... H
- Fluorocarbon (Viton) Elastomers ..... J
- Screwdriver Adjust. .... S
- Tamper Proof ..... T
- BSPT (Tapered) ..... U

<sup>2</sup> 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

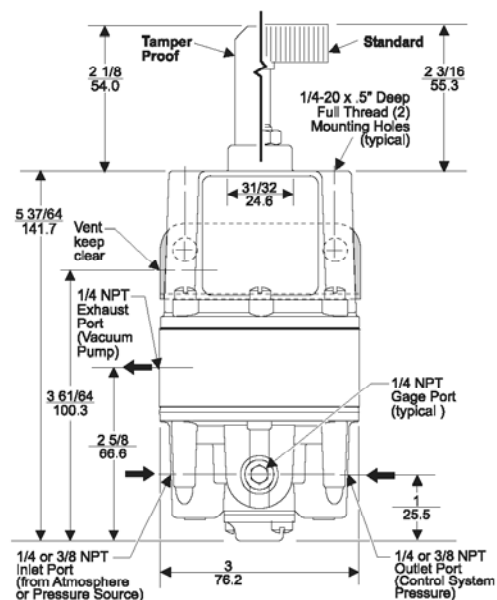
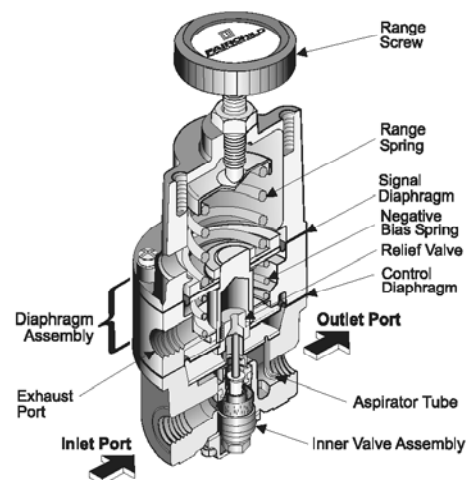
- The Model 16 Vacuum Regulator is designed for systems that require system pressure control above and below atmospheric pressure.
- Control sensitivity of 1/2" water column allows use in precision applications.
- A balanced Supply Valve minimizes the effects of supply pressure variation.
- An Aspirator 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).

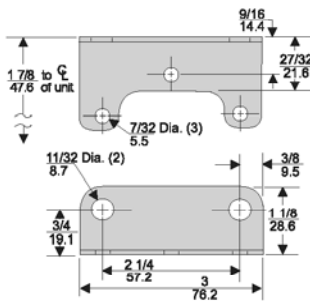
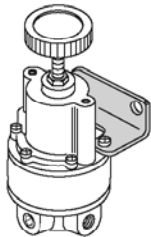
When the Vacuum increases above the setpoint, the Diaphragm Assembly moves downward to open the Supply Valve that adds positive pressure to the system to maintain Output pressure. For more information, see cross sectional diagram.

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 m<sup>3</sup>/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 m<sup>3</sup>/HR) @ 29" Hg VAC with pump connected to exhaust port  
40 (65.2 m<sup>3</sup>/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**

**Model 16**

**Pressure Range**

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

21  
22  
23  
25  
26

**Pipe Size**

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

**Options**

Silicone Elastomers <sup>1</sup> . . . . . A  
BSPP (Parallel) <sup>2</sup> . . . . . H  
Tamper Proof . . . . . T  
Fluorocarbon (Viton) Elastomers . . . . . J  
Increased Sensitivity . . . . . L  
BSPT (Tapered) . . . . . U

<sup>1</sup> Maximum Supply Pressure - 75 psig, [5.0 BAR], (500 kPa)

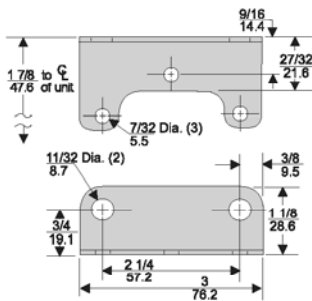
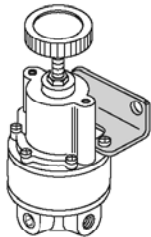
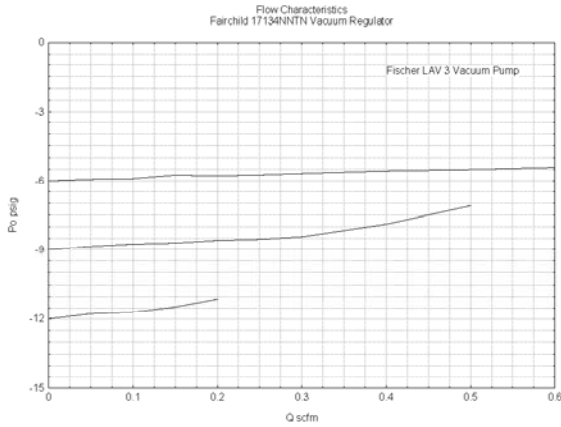
<sup>2</sup> BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.

**Installation**

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



**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<sup>3</sup>/HR)

**Relief Capacity**  
2.0 SCFM (3.4 m<sup>3</sup>/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)	1	2	3
0-5	[127]	(17)	1		
0-15	[381]	(51)	2		
0-30	[762]	(102)	3		

**Pipe Size**

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

**Port Threads**

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

**Elastomer**

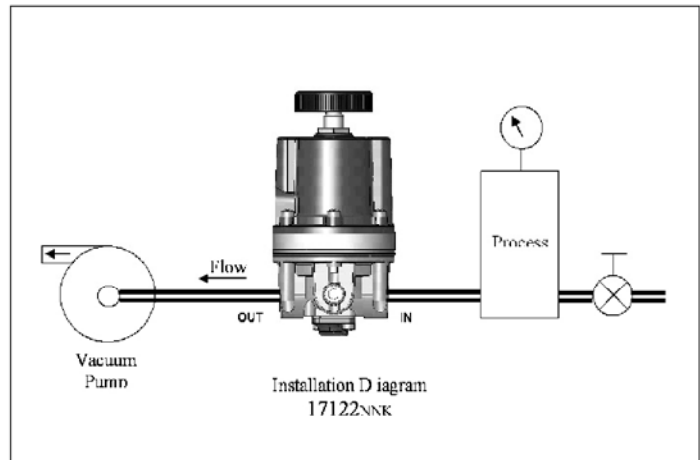
Nitrile	Fluorocarbon	N	J
Nitrile	Fluorocarbon	N	J

**Actuator Type**

Knob Assembly	Tamperproof	K	T
Knob Assembly	Tamperproof	K	T

**Relief**

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



Model  
30



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.

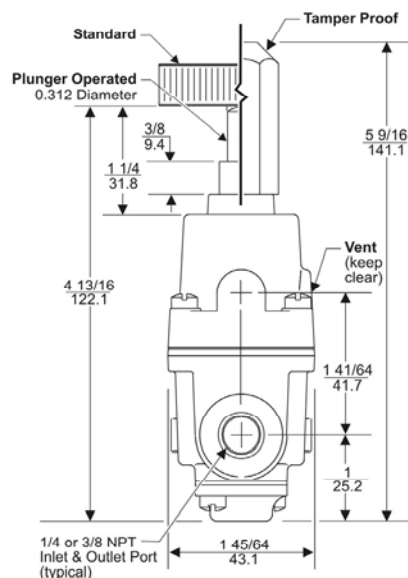
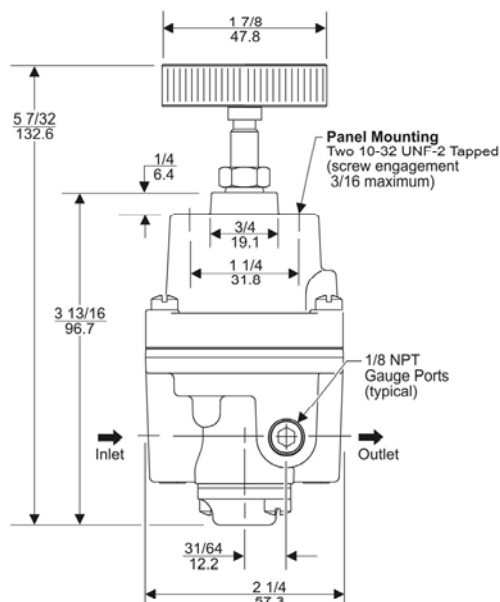
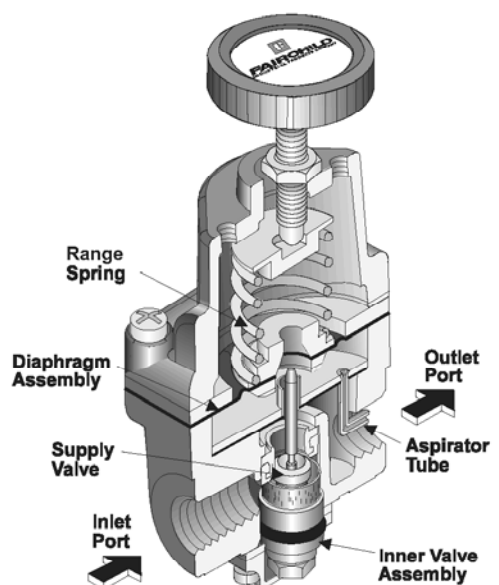
### Features

- 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 drop 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.

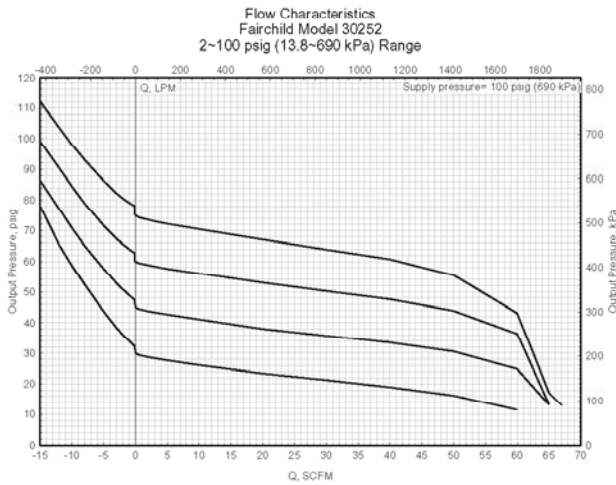
### Operating Principles

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<sup>3</sup>/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<sup>3</sup>/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**

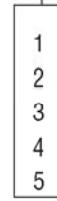
Catalog Number

3 0 2



Pressure Range

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



Pipe Size

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



Options

- Silicone Elastomers <sup>1</sup>
- Low Bleed
- BSPP (Parallel) <sup>2</sup>
- Fluorocarbon \*Elastomers
- Low Flow
- Non-Relieving
- Plunger Operated <sup>3</sup>
- Screwdriver Adjust
- Tamper Proof
- BSPT (Tapered)

	A	B	H	J	L	N	R	S	T	U
A	-	Y	Y	N	Y	Y	Y	Y	Y	Y
B	Y	-	Y	Y	N	N	N	Y	Y	Y
H	Y	Y	-	Y	Y	Y	Y	Y	Y	N
J	N	Y	Y	-	Y	Y	Y	Y	Y	Y
L	Y	N	Y	Y	-	N	Y	Y	Y	Y
N	Y	N	Y	Y	N	-	Y	Y	Y	Y
R	Y	Y	Y	N	Y	Y	-	Y	N	Y
S	Y	Y	Y	Y	Y	Y	N	-	N	Y
T	Y	Y	Y	Y	Y	Y	N	N	-	Y
U	Y	Y	N	Y	Y	Y	Y	Y	Y	-

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

<sup>1</sup> Maximum Supply Pressure - 75 psig, [5.0 BAR], (500 kPa)

<sup>2</sup> BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.

<sup>3</sup> Refer to Table 1 for Push Rod Travel and Thrust

\* Viton

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-1000030*.

Model 30BP



## Features

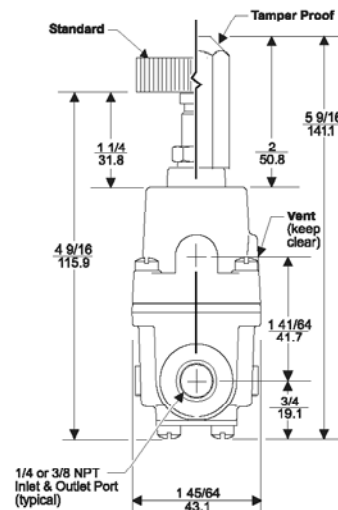
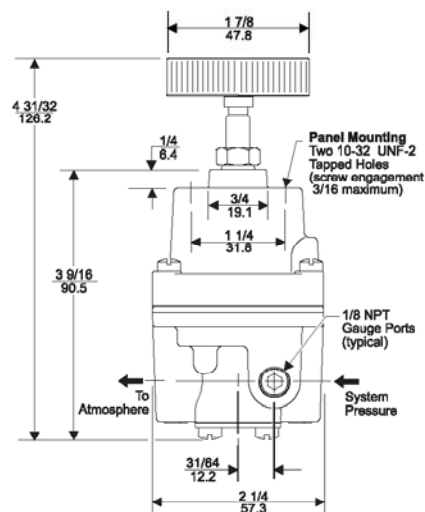
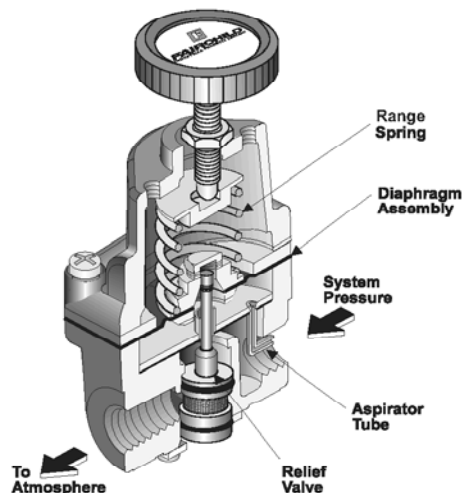
- The Model 30BP is a high capacity back pressure regulator that relieves excess system pressure to maintain a setpoint.
- Combination of high capacity and compact size make the Model 30BP an excellent choice for a wide range of precision applications including: Precise Control of Paper Machinery Felt 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.

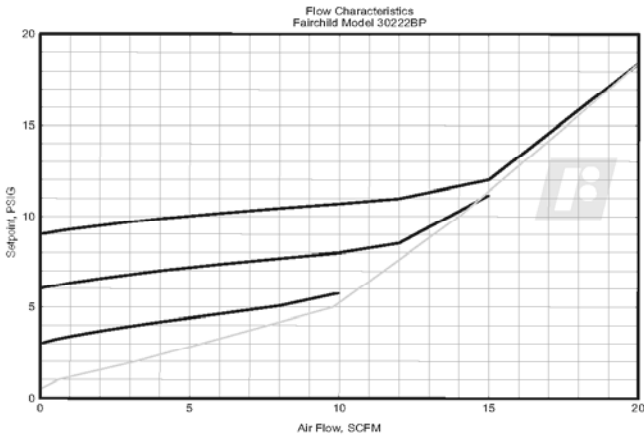
Downstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. When you adjust the range screw for a specific set point, the Range Spring compresses and exerts a force on the top of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm 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<sup>3</sup>/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) <sup>2</sup> .....	H
Screwdriver Adjustment .....	S
Tamper Proof .....	T
BSPT (Tapered) .....	U

<sup>2</sup> 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

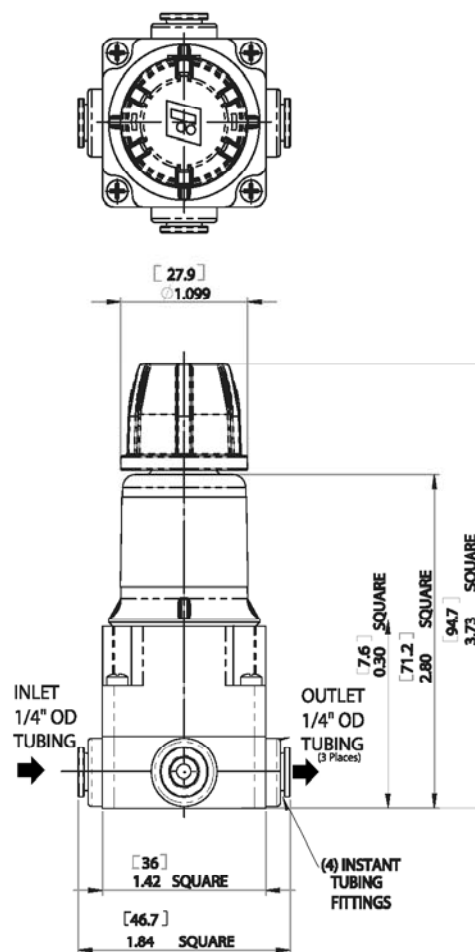


### Features

- 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<sup>3</sup>/HR) @ 120 psig, [8 BAR], (800 kPa) supply

#### Exhaust Capacity

2 SCFM (3.4 m<sup>3</sup>/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 5 0 R 1

#### 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



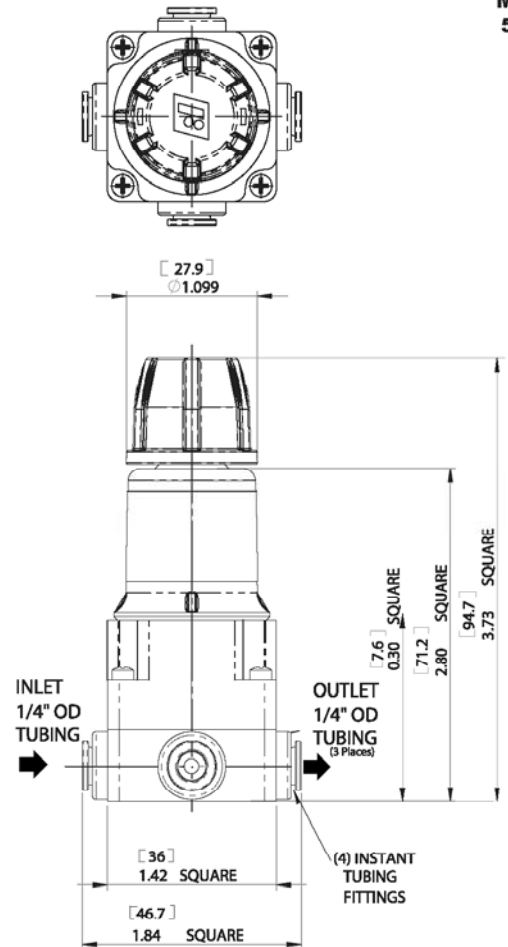
**Features**

- 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<sup>3</sup>/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 50B1 [ ] 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

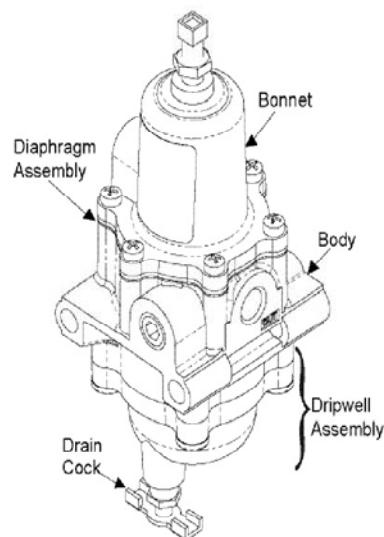
**Adjustment Type**

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.

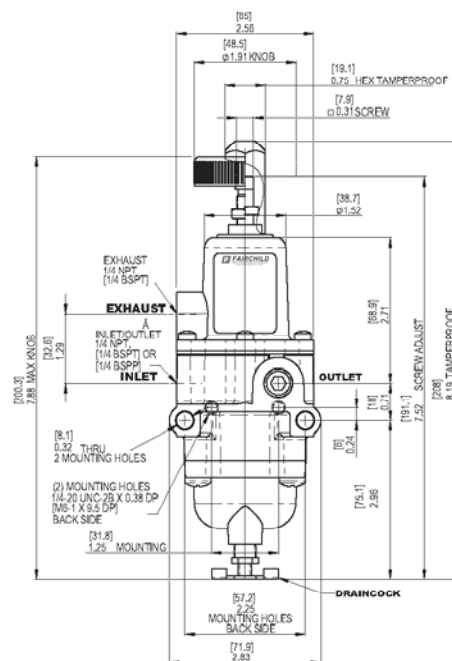


## Operating Principles

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.

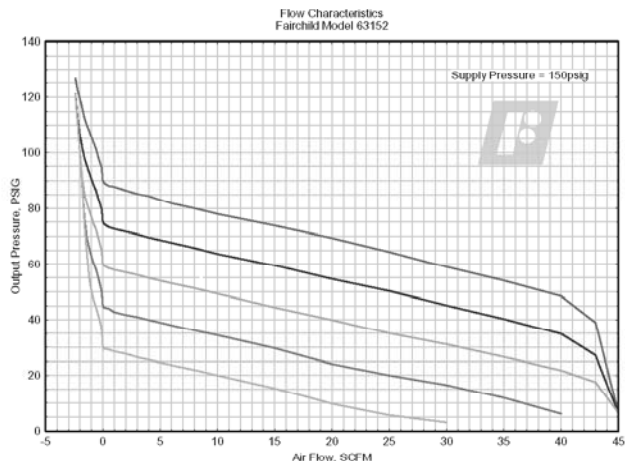
When the setpoint is reached, the force of the Spring that acts on the top of the Diaphragm Assembly balances with the force of output pressure that acts on the bottom of the Diaphragm Assembly and closes the Supply Valve.

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<sup>3</sup>/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<sup>3</sup>/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**

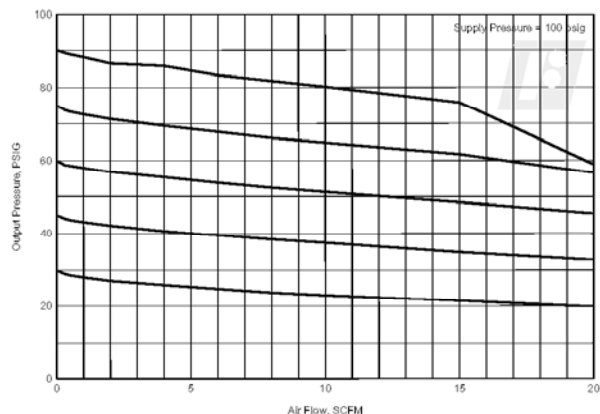
For installations instructions, refer to the *Fairchild Model 63 Pneumatic Filter Regulator Instruction, Operation and Maintenance Instructions, IS-10000063*.





**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<sup>3</sup>/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<sup>3</sup>/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**



**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 <sup>1</sup> . . . . . 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

<sup>1</sup>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



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

## Features

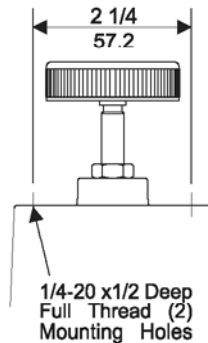
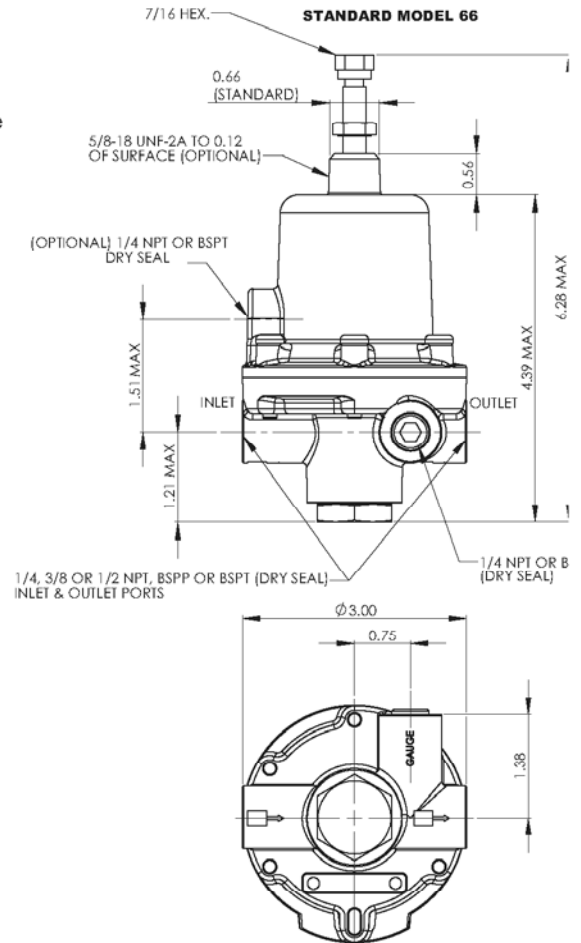
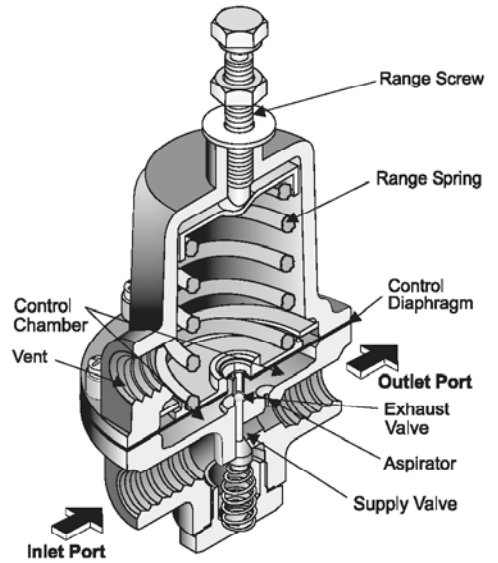
- Large Control Diaphragm area for increased sensitivity.
- Aspirator design compensates downstream pressure droop under flow conditions.
- Viton Elastomers are compatible with corrosive materials and environments.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting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

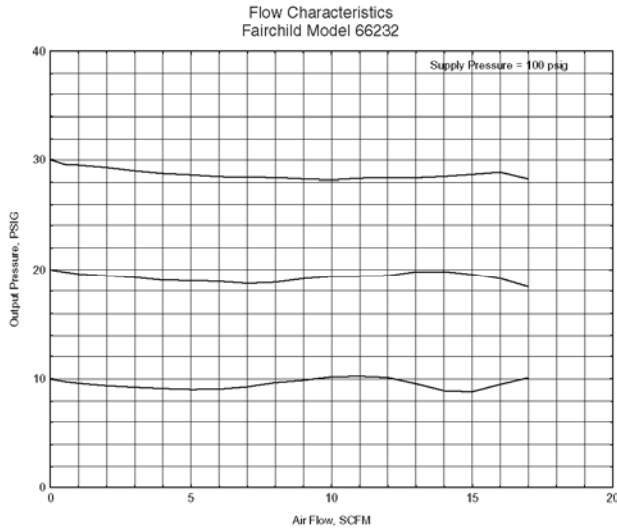


### Detail A

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<sup>3</sup>/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<sup>3</sup>/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



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

### Features

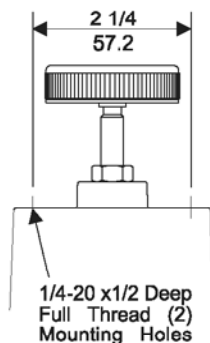
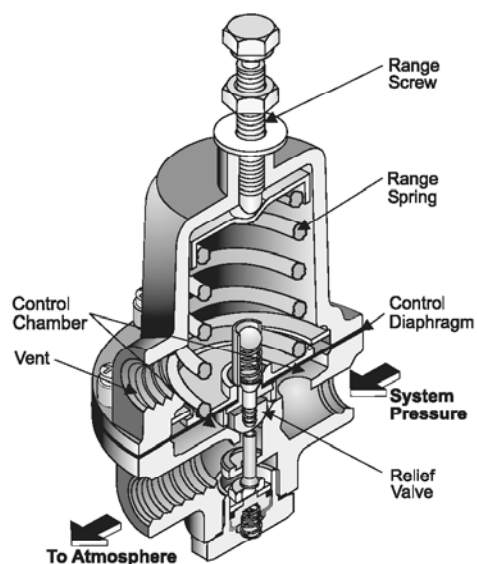
- Control sensitivity to 1" water column allows use in precision applications.
- Large Control Diaphragm area for increased sensitivity.
- Fluorocarbon Elastomers are compatible with corrosive materials and environments.
- Valve Damper eliminates hunting and buzzing.
- Line or Panel Mounting provides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

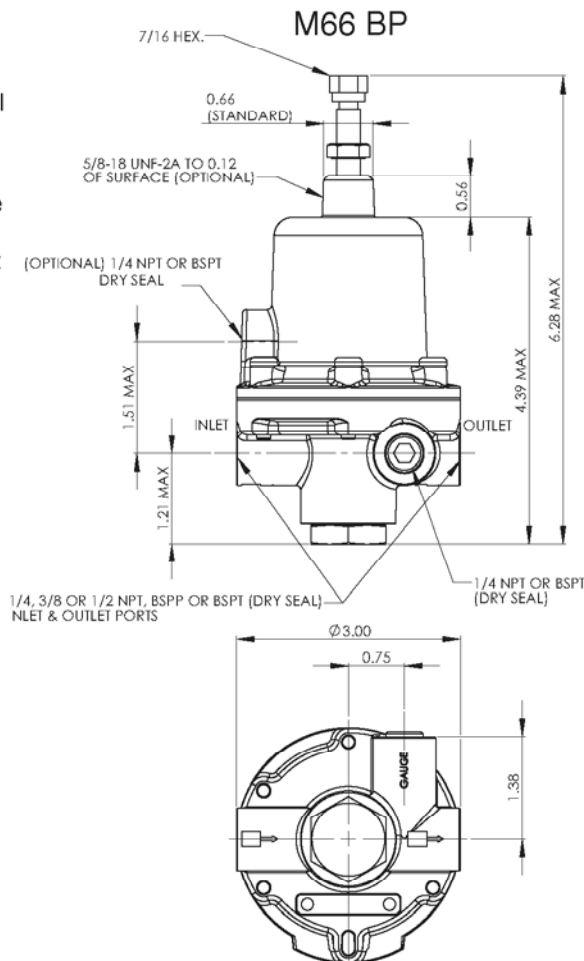
When the system pressure increases, the force that acts on the bottom of the Control Diaphragm increases until it reaches the setpoint.

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





Model  
70B

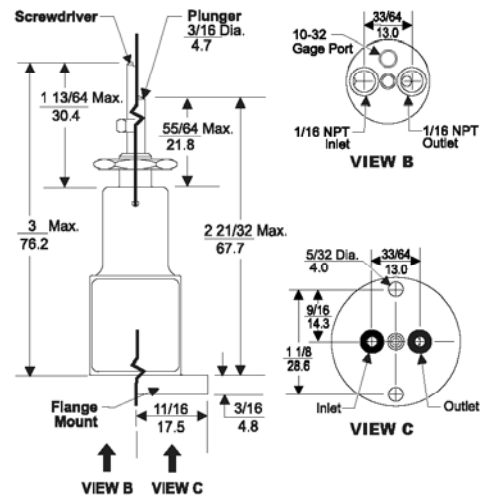
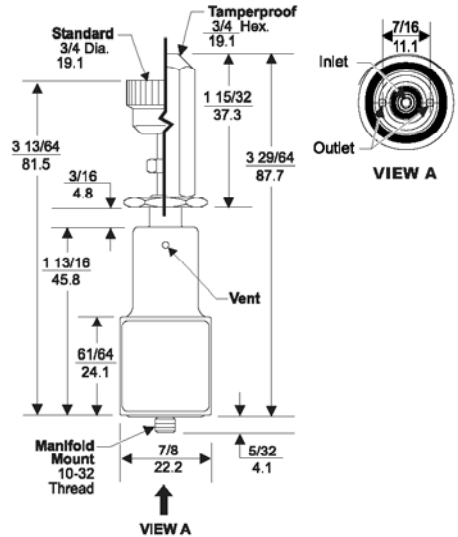
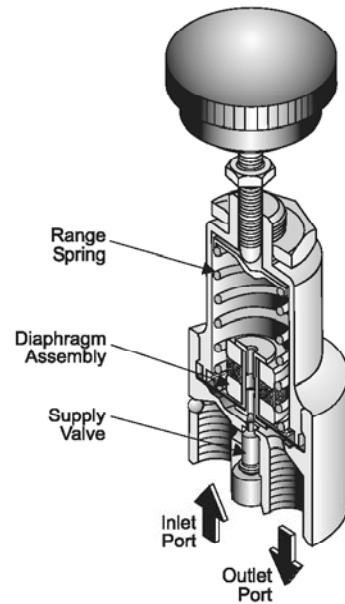


### Features

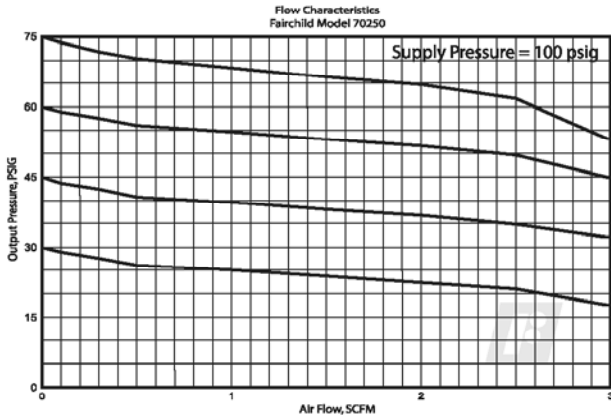
- The Model 70B controls a pressure signal for pneumatic instrumentation. This regulator is ideally suited for applications with limited space.
- Vibration damper provides low noise operation.
- Repeatability within 0.06 psig dead ended allows accurate setpoint control.
- Small size allows installation 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<sup>3</sup>/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<sup>3</sup>/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 <sup>1</sup> .....
- Manifold Mounted .....
- Non-Relieving .....
- Plunger Operated <sup>2</sup> .....
- Screwdriver Adjust. ....
- Tamperproof. ....
- M5 x 0.8 Threaded. ....
- In/Out Ports

Table 1. Option Compatibility

	F	M	N	R	S	T	V
Flange Mounted <sup>1</sup>	F	-	N	Y	Y	Y	N
Manifold Mounted	M	N	-	Y	Y	Y	N
Non-Relieving	N	Y	Y	-	Y	Y	Y
Plunger Operated <sup>2</sup>	R	Y	Y	Y	-	N	N
Screwdriver Adjust.	S	Y	Y	Y	N	-	Y
Tamperproof.	T	Y	Y	Y	N	Y	-
M5 x 0.8 Threaded.	V	N	N	Y	Y	Y	-

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

<sup>1</sup> Supplied with Knob as Standard.

<sup>2</sup> Refer to Table 2 for Push Rod Travel and Thrust.

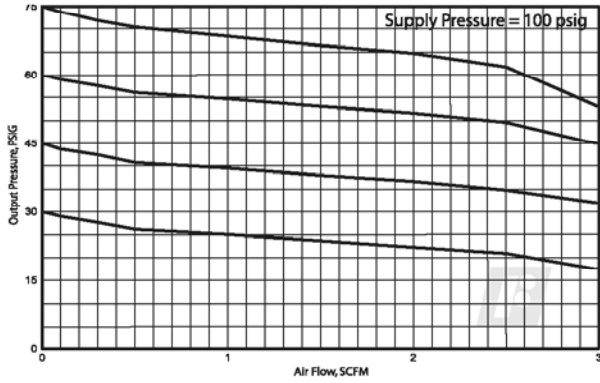
Table 2. Plunger Operated Regulator Parameters

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%





**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 m<sup>3</sup>/hr) @ 100 psig [7 BAR]  
supply and 30 psig [2 BAR] setpoint

**Exhaust Capacity**

0.15 SCFM (0.29 m<sup>3</sup>/hr)with 5 psig [.35 BAR]  
downstream pressure

**Ambient Temperature**

-40°F to +160°F (-40°C to +71°C)

**Materials of Construction**

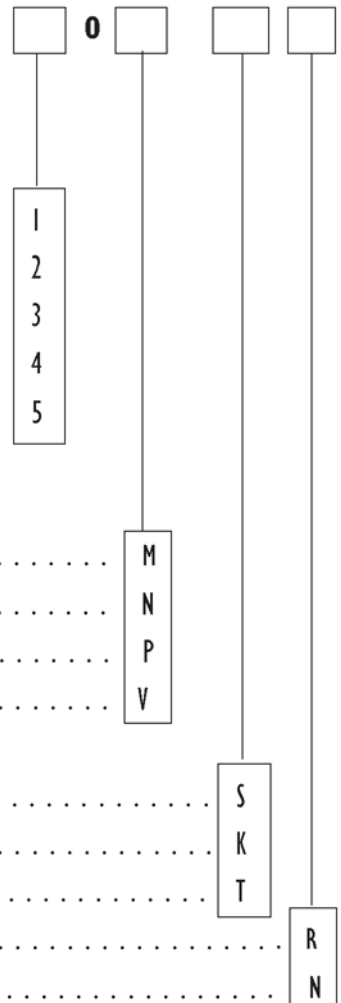
Body . . . . . Anodized Aluminum  
Diaphragm . . . . . Fluorocarbon  
Trim . . . . . Zinc Plated Steel

**Catalog Information**

Catalog Number 72 0  0

**Pressure Range**

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



**Mounting**

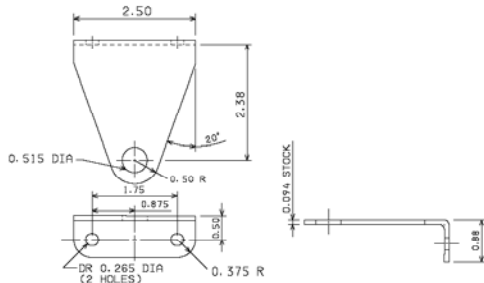
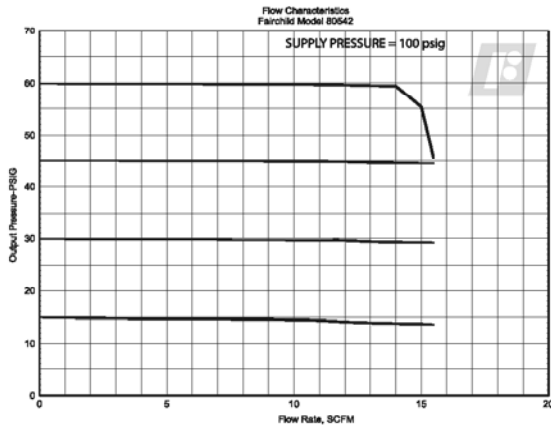
- ManifoldMount . . . . .
- Bottom Port Mount . . . . .
- Panel Mount . . . . .
- M5 x 0.8 Thread ports . . . . .

**Actuation Adjustment Means**

- Screwdriver slot . . . . .
- Knob . . . . .
- Tamperproof . . . . .
- Relieving . . . . .
- Non-Relieving . . . . .



**Technical Information**



**Model 80D Regulator Kits & Accessories**

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

**Specifications**

**Flow Capacity**

14 SCFM (23.8 m<sup>3</sup>/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<sup>3</sup>/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<sup>3</sup>/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<sup>3</sup>/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**

<b>Catalog Number</b>	<b>8 0 5</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Pressure Range</b>				
<b>psig</b>	<b>[BAR]</b>	<b>(kPa)</b>		
0-20	[0-1.5]	(0-150).....	3	
1-60	[0.07-4]	(7-400).....	4	
1-100	[0.07-7]	(7-700).....	5	

**Pipe Size**

1/8" NPT <sup>1</sup> .....	1
1/4" NPT <sup>2</sup> .....	2
3/8" NPT <sup>2</sup> .....	3

<sup>1</sup> FIGURE 1 on Pg. 40 Shows 1/8" port body style

<sup>2</sup> FIGURE 2 on Pg. 40 shows 1/4 and 3/8" port body style

**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

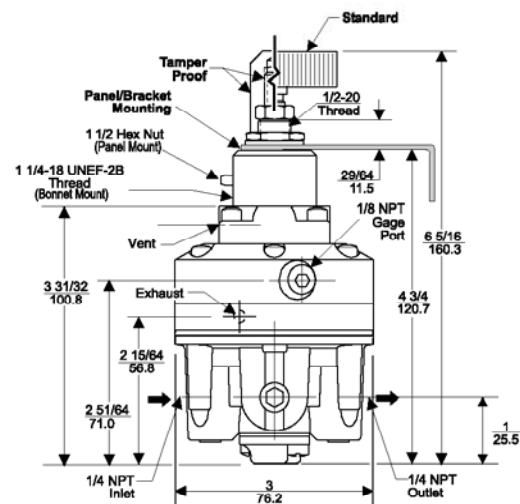
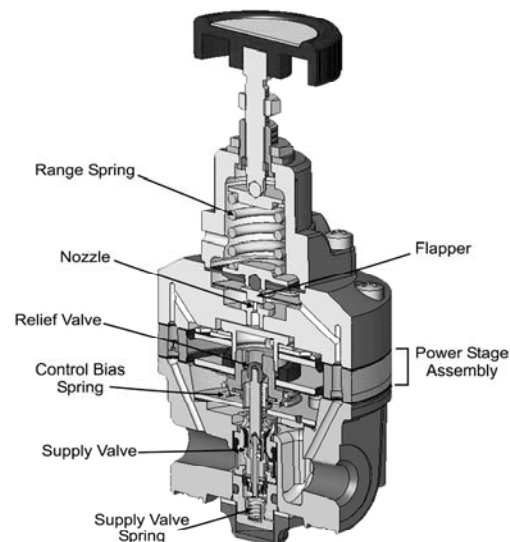
## Features

- 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

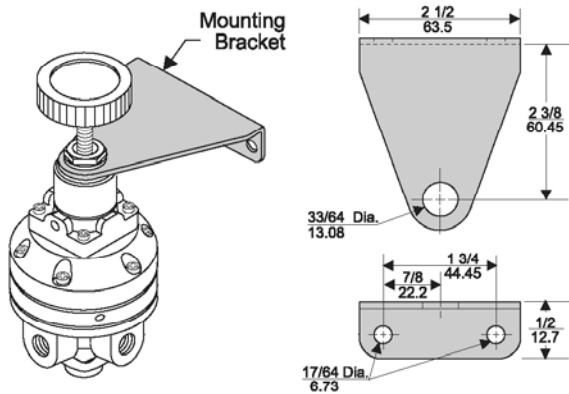
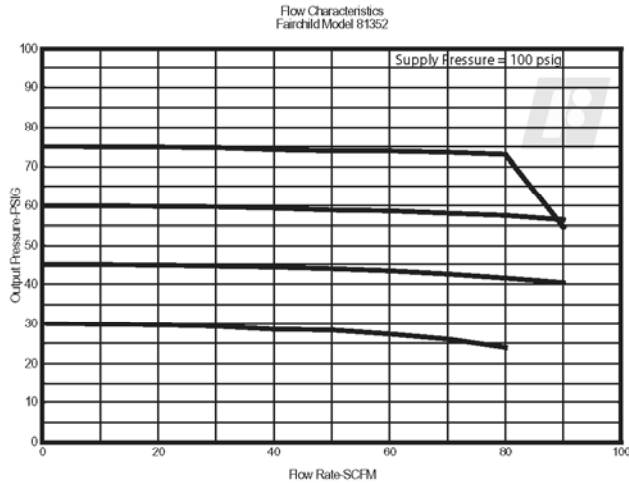
## Operating Principles

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 m<sup>3</sup>/HR) (100 psig, [7.0 BAR], (700 kPa) supply; 20 psig, [1.5 BAR], (150 kPa) setpoint)

**Exhaust Capacity**

5.5 SCFM (9.4 m<sup>3</sup>/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 m<sup>3</sup>/HR)

**Sensitivity**

Less than 0.1" (.254 cm) Water Column

**Ambient Temperature Limit**

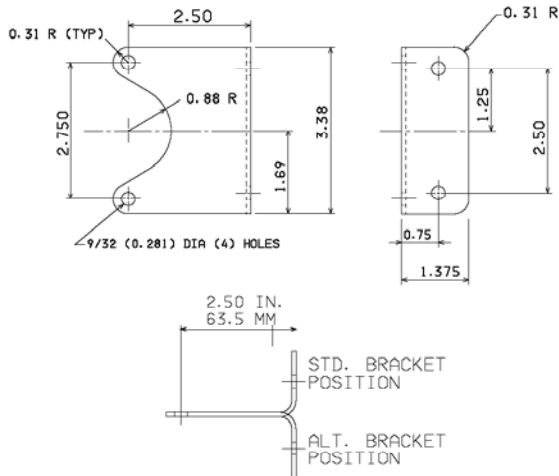
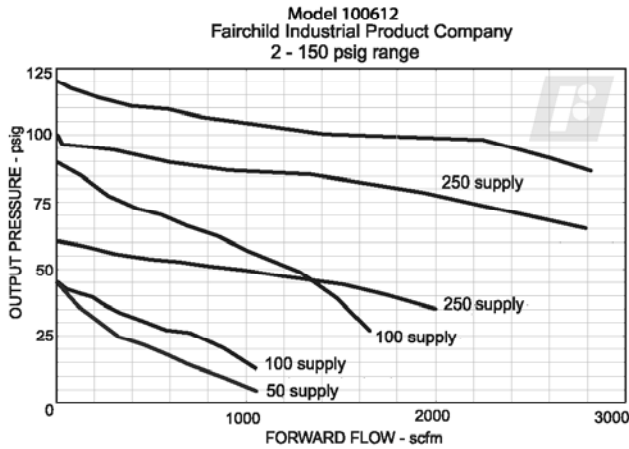
-40°F to +200°F, (-40°C to 93°C)

**Materials of Construction**

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



**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<sup>3</sup>/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<sup>3</sup>/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

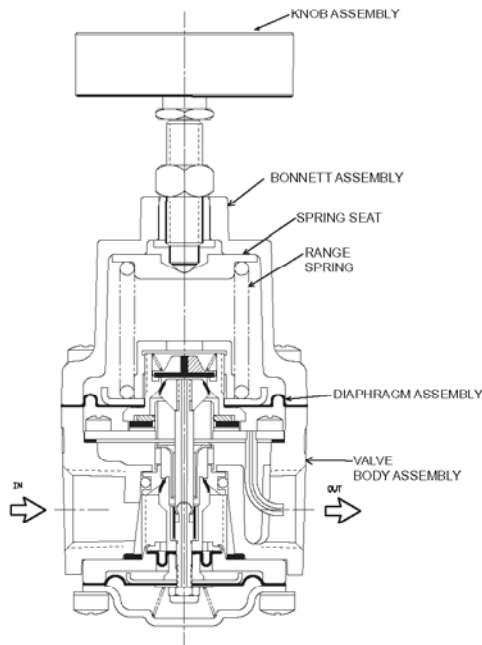
**Materials of Construction**

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



### Features

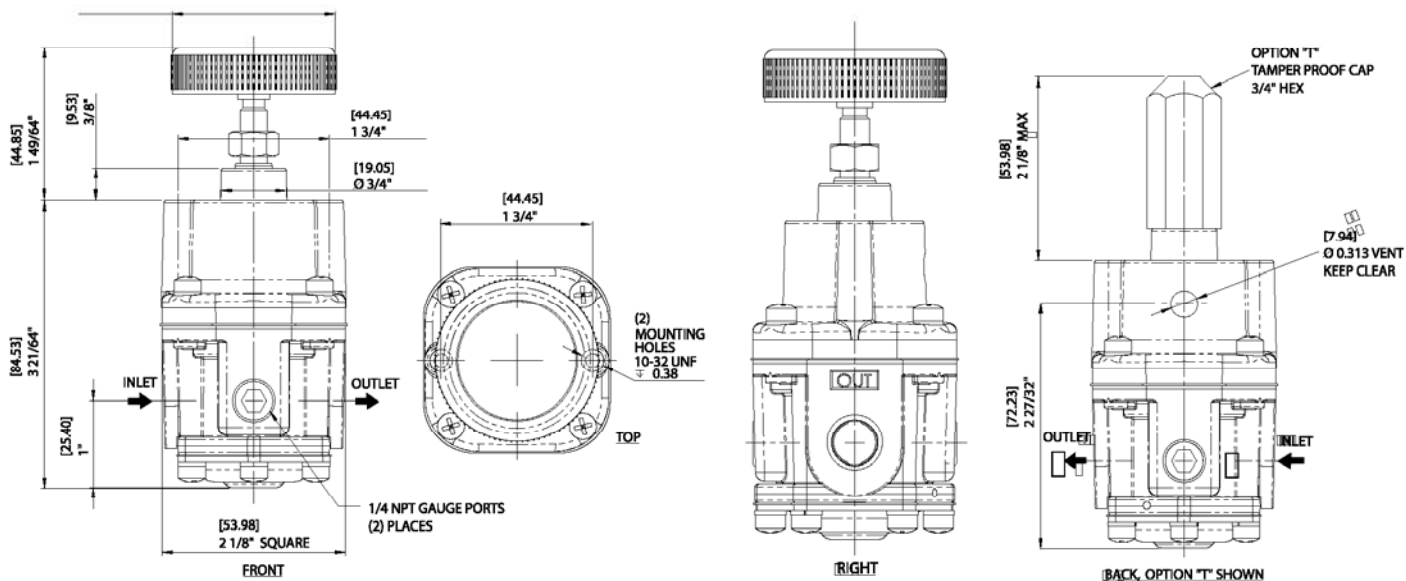
- Stable operation that eliminates hunting and buzzing.
- Flow compensation provided by venturi action of the aspirator tube.
- Indirect operation provided by the action of a separate pilot valve and valve motor to eliminate unbalanced closing forces in inner valve assembly.
- Large correcting effect 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

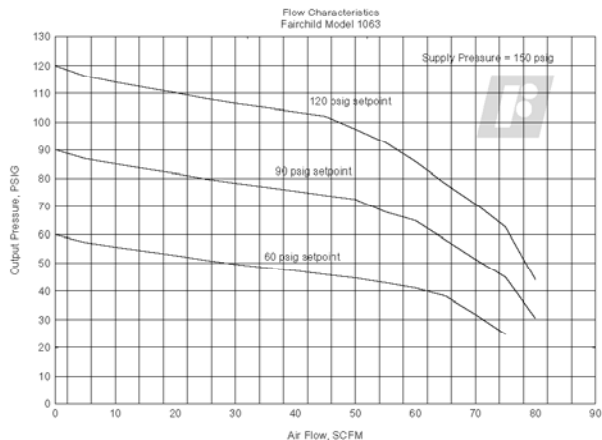
The Model 1000 Precision Pressure Regulator is designed for use in systems requiring both precision control and high forward flow and exhaust capacity. The sensitive valve motor of this high quality unit makes it virtually immune to supply pressure variations.

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<sup>3</sup>/HR) (100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint)

**Exhaust Capacity**

8 SCFM (13.6 m<sup>3</sup>/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) . . . . .
0.5-30	[0.03-2.0]	(3-200) . . . . .
1-60	[0.1-4.0]	(10-400) . . . . .
2-150	[0.15-10.0]	(15-1000) . . . . .

**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



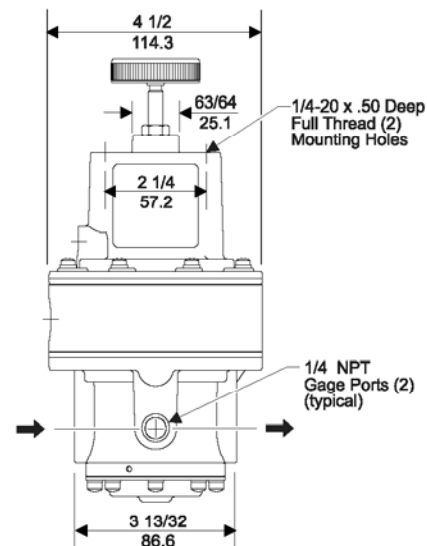
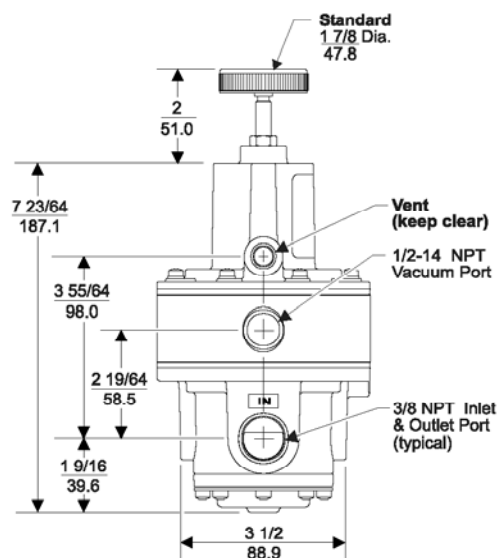
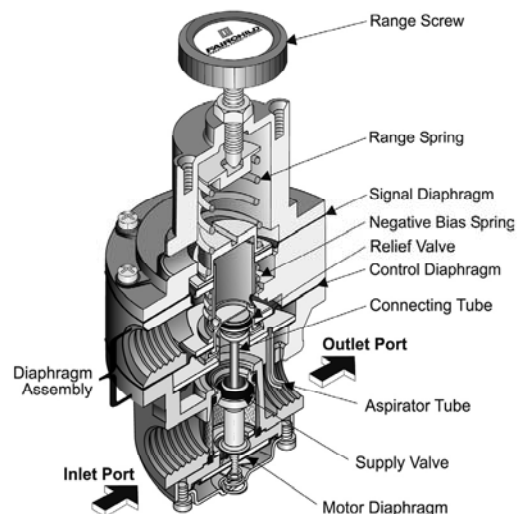
### Features

- 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.

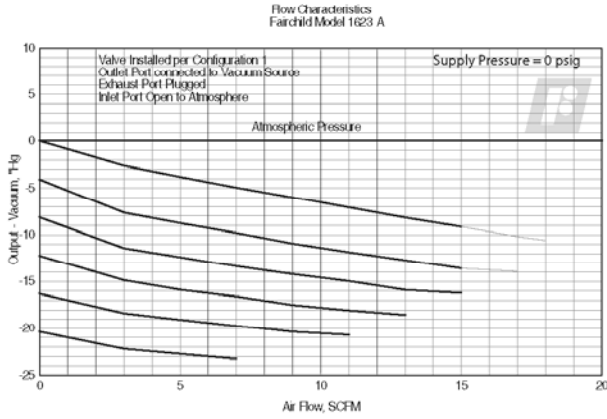
### Operating Principles

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<sup>3</sup>/HR) @ 29" Hg vacuum with inlet port open to atmosphere.

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

**Exhaust Capacity**

20 (34 m<sup>3</sup>/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) . . . .
Vacuum - 30	[Vacuum -2.0]	(Vacuum - 200) . . . .
Vacuum - 150	[Vacuum - 10]	(Vacuum - 1000) . . . .

2  
3  
6

**Pipe Size**

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

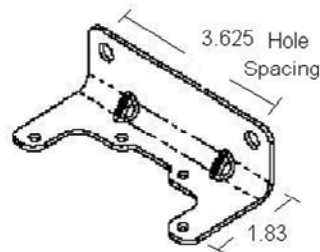
**Options**

BSP (Parallel) <sup>1</sup>	H
Fluorcarbon	J
Tamper Proof	T
BSPT (Tapered)	U

<sup>1</sup> BSP 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)

Model 2400



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)

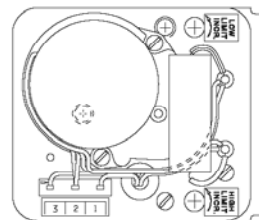
- Output pressure locks in last position in event of power failure.
- Continuous AC Motor unit is instant start-stop, heavy duty impedance protected motor eliminates coasting and prevents burnout in the event of stalling.
- Stepper Motor capable of rapid start-stop with high running torque enables use 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

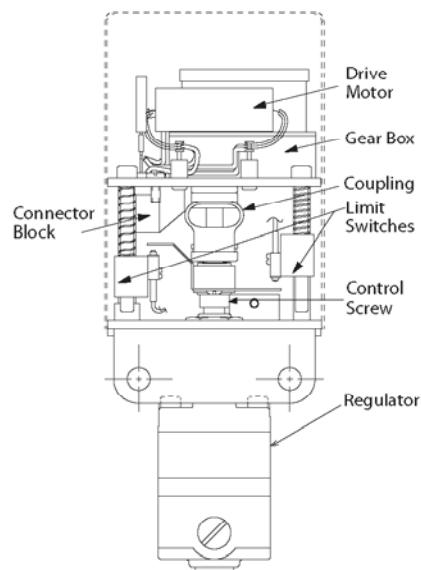
The table summarizes inputs and outputs for all the 2400 Series M/P Converters. Individual converters are described in separate sections.

Model	24CC	24CS	24XFS
<b>Inputs</b>	115vAC	23-26vDC (logic input)	1-5vDC 4-20Ma DC 12-15vDC 23-26vDC
<b>Outputs</b> 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)

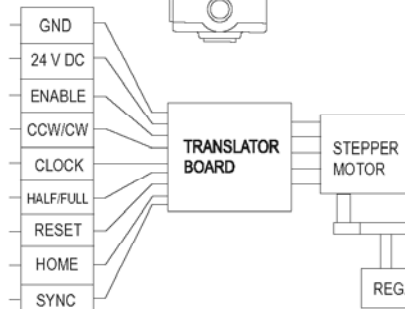
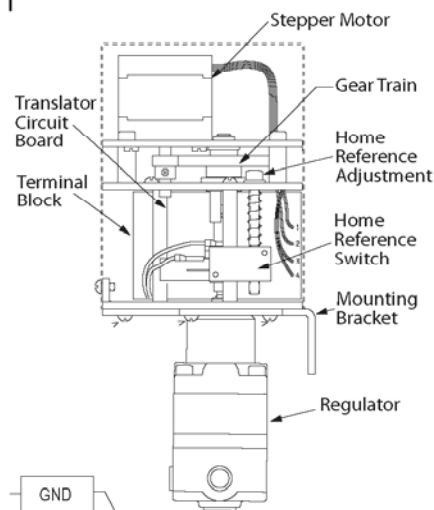
### AC Control Unit (CC)



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		Exhaust	
			SCFM*	m <sup>3</sup> /HR	SCFM**	m <sup>3</sup> /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)							Motor RPM
	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]	
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**

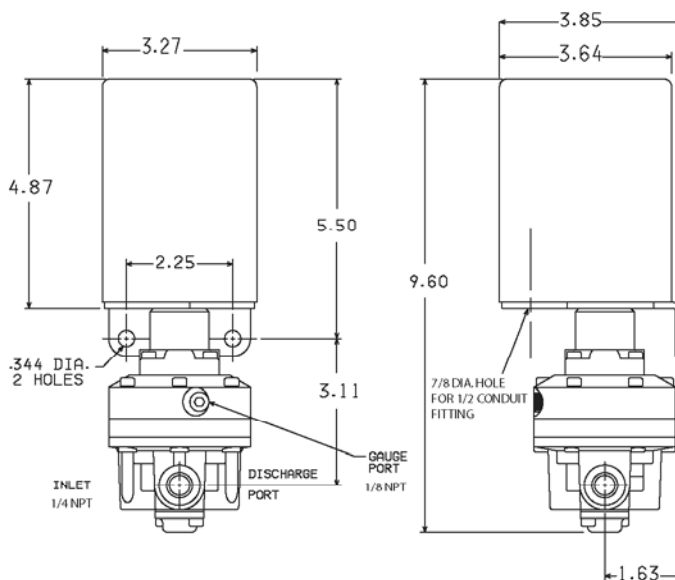
Reg. Model	PRESSURE RANGES: psig, [BAR], (kPa)							Motor RPM
	2,[.15],[15]	5,[.35],[35]	10,[.7],[70]	20,[1.5],[70]	30,[2.0],[200]	60,[4.0],[400]	100,[7.0],[700]	
30	.000342		.00131		.00444	.00702	.0139	PSI/STEP
	5850		7650		6750	8550	7200	PULSE CNT
	11.7		15.3		13.6	17.1	14.4	FR ADJ TIME
80				.00444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

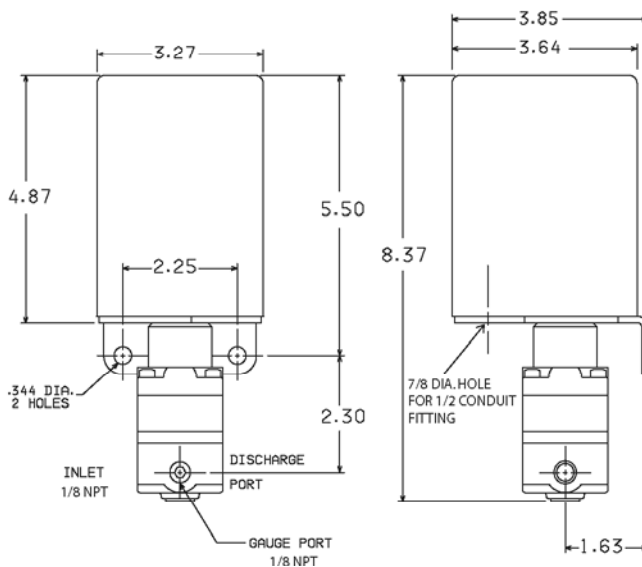
PULSE COUNT (PULSE CNT) to Full Range

FULL RANGE ADJUSTMENT TIME (FR ADJ TIME) is measured @ 500 PPS for 24vDC Supply

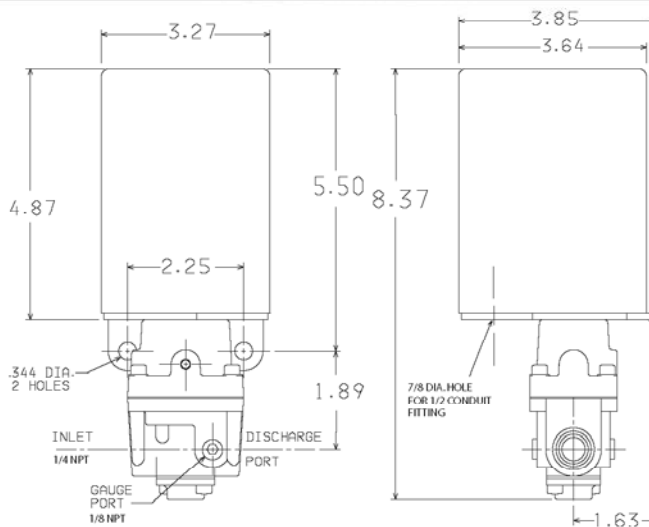
### MODELS: 24CC81 / 24CS81



### 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:**

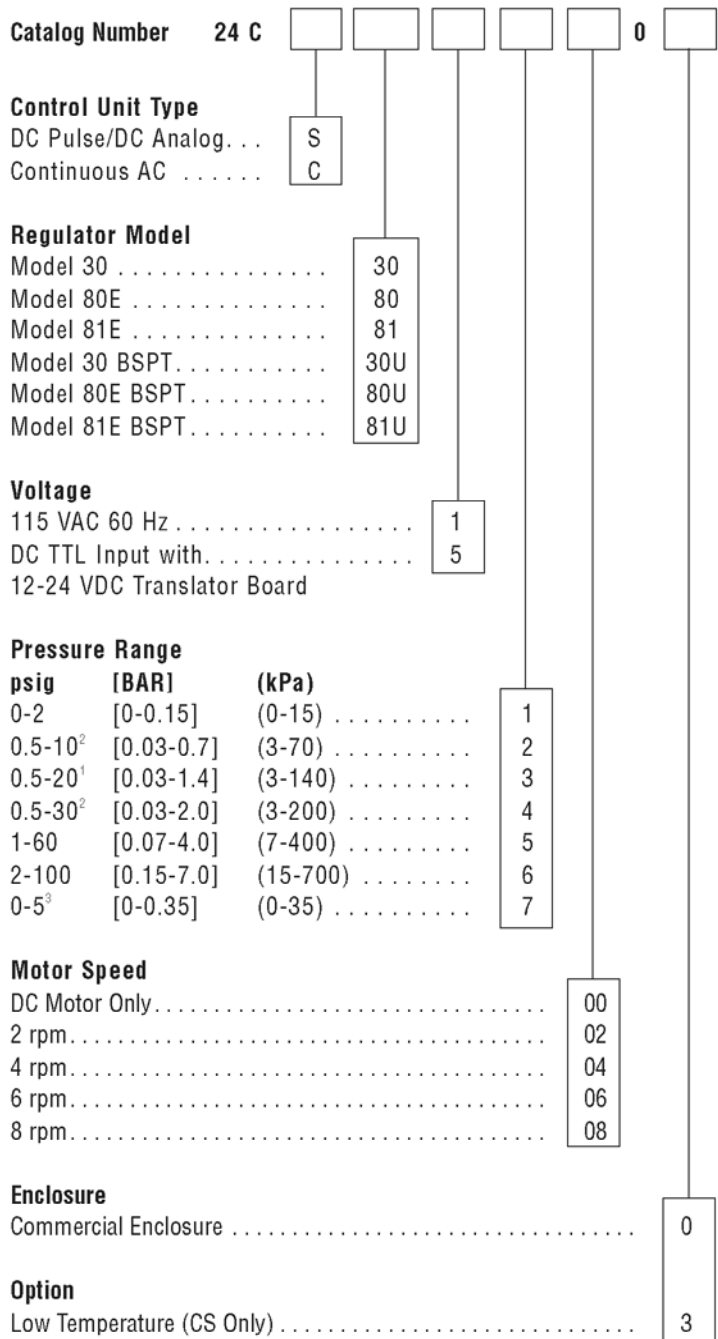
The user's computer must supply the digital input pulse in accord with the specifications for stepper motor operation on page 47.

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:



<sup>1</sup> 0.5-20 psig for Models 80E and 81E Only.  
<sup>2</sup> 0.5-10, 0.5-30 psig for Model 30 Only.  
<sup>3</sup> 0-5 psig for Model 81E Only.

Model  
2400



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		Flow	
			SCFM*	m <sup>3</sup> /HR	SCFM**	m <sup>3</sup> /HR
10E	0-30	1/4"	40	68	5.5	9.4
16 <sup>1</sup>	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  
<sup>1</sup> 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			
Reg. Model	Pressure Ranges psig [BAR] (kPa)			Mode of Operation			
				Full Step		Half Step	
				Full Range Adj. Times (seconds)		Full Range Adj. Times (seconds)	
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			
Reg. Model	Pressure Ranges psig [BAR] (kPa)			Mode of Operation			
				Full Step		Half Step	
				Full Range Adj. Times (seconds)		Full Range Adj. Times (seconds)	
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]	10,[.7],[70]	20,[1.5],[150]	30,[2.0],[200]	60,[4.0],[400]	100,[7.0],[700]		
10E								270	2
								135	4
								90	6
								68	8
16				210					2
				105					4
				70					6
				52					8
80E					132		132	141	2
					66		66	71	4
					44		44	47	6
81E	141	180			129		129	135	2
	71	90			65		65	68	4
	47	60			43		43	45	6
	35	45			32		N/A	N/A	8

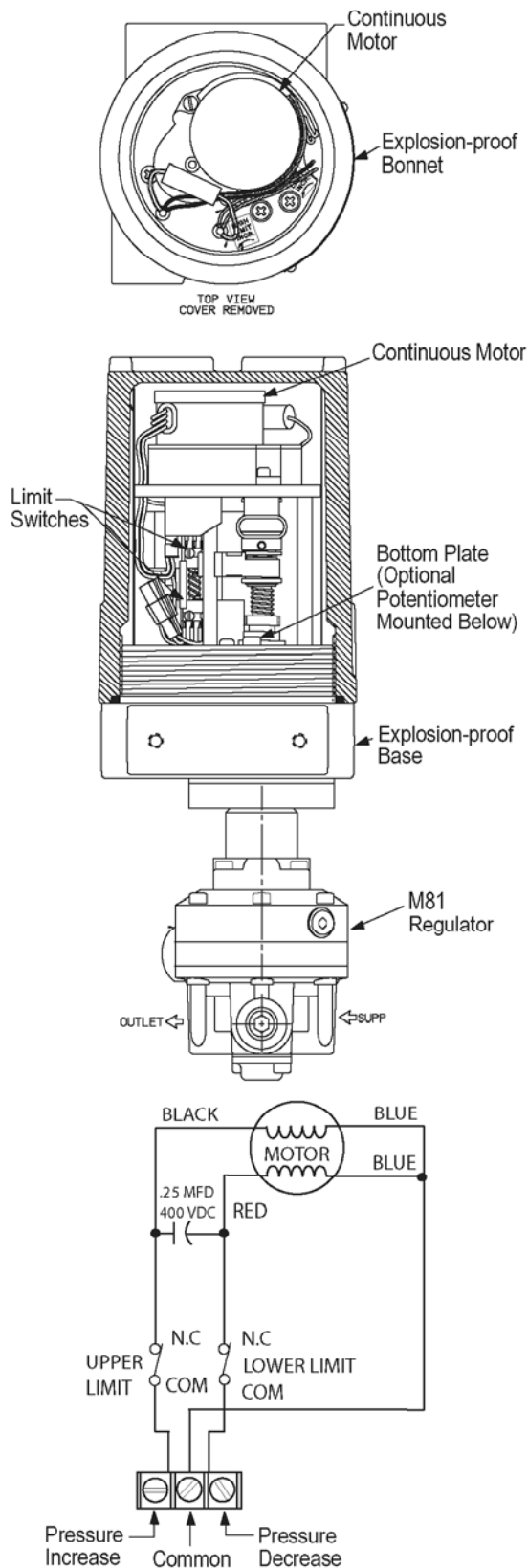
**Full Range Adjusting Time for TTL Unit**  
 NOTE: Required PPS for a specific FR Adj. Time can be calculated as follows:  

$$PPS = \frac{FR \text{ Adj. Time @ } 500 \text{ PPS} \times 500}{\text{Required Fr Adj. Time}}$$
 For 110.8 Second Time Requirement  

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

Model  
2400

### 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.

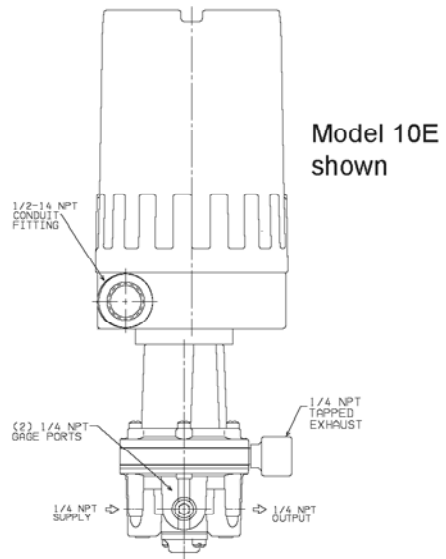
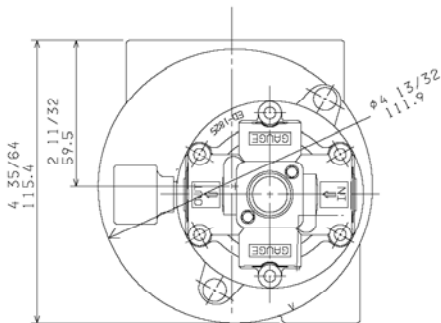
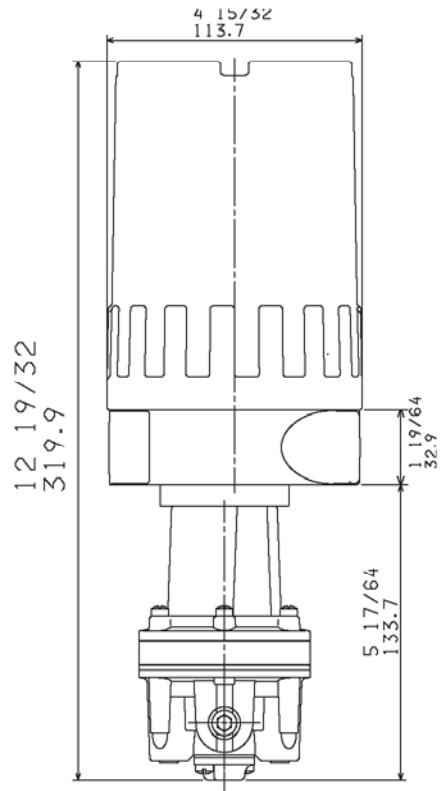
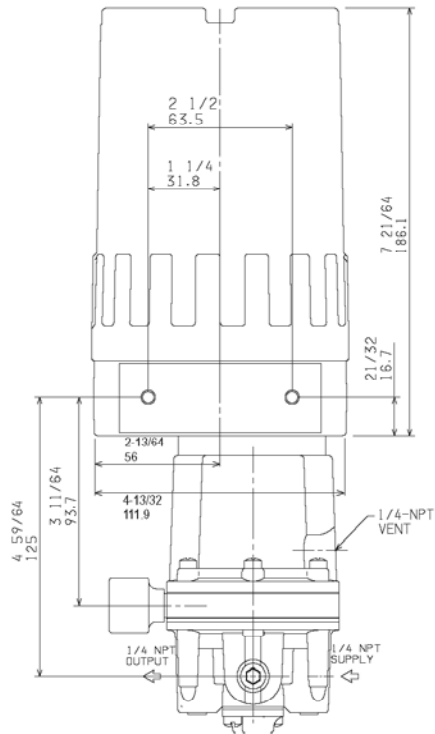
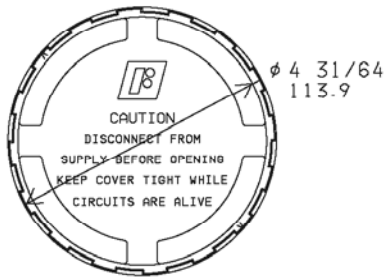
Electronic circuits in an integral translator convert the digital pulse input signals into control logic that operates a 200 step per revolution stepper motor. The stepper motor in turn controls the output of a pressure regulator by driving its range screw through a 4.5:1 reduction gear. The translator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

#### NOTE:

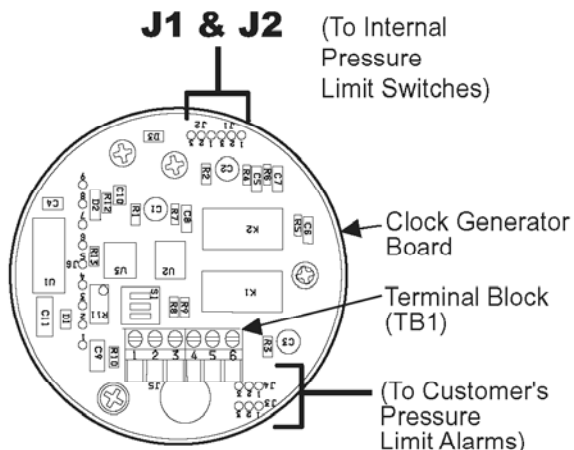
The user's computer must supply the digital input pulse in accord with the specifications for stepper motor operation on page 47.

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.

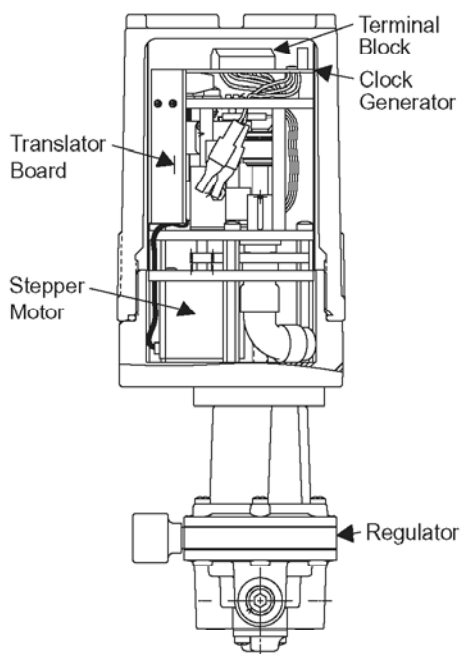


### Clock Generator Limit Switch Connection



**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.

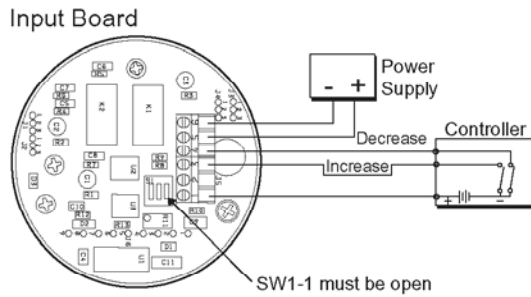
The Stepper Motor is mounted on the bottom of the motor assembly in the base of the explosion-proof housing. Wiring to the unit is made to a terminal board through a 1/2" - 14 NPT conduit fitting in the base of the housing.

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

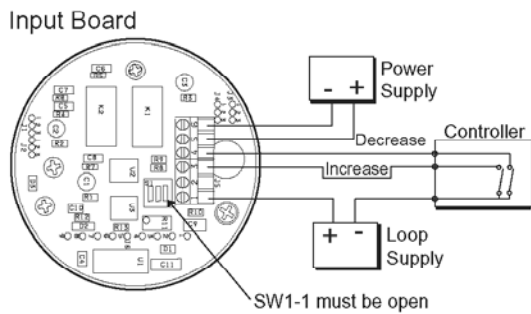
Switches on the clock generator board allow selection of:

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

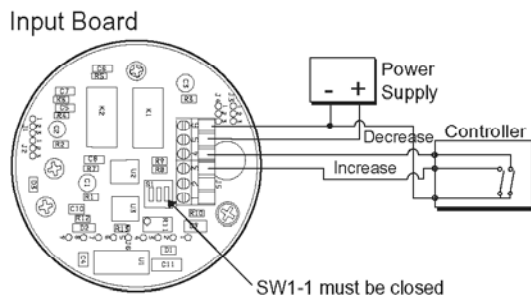
**Pulse Input**



Controller (Pulse Input) using the isolated loop supply.

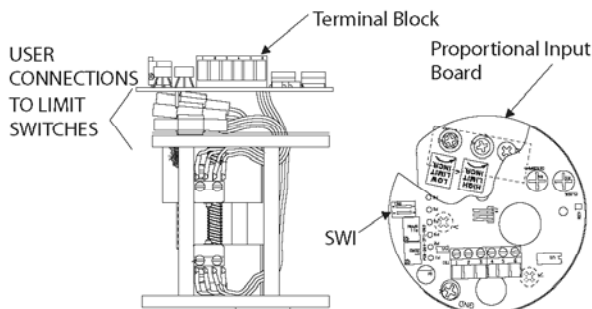


Controller (Pulse Input) using the dual isolated loop supply.



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 +DC	Input Board 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 +DC	Clock Generator DC Supply TB-1 Term 3
Switch Closure	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	DC Supply Clock Generator
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.

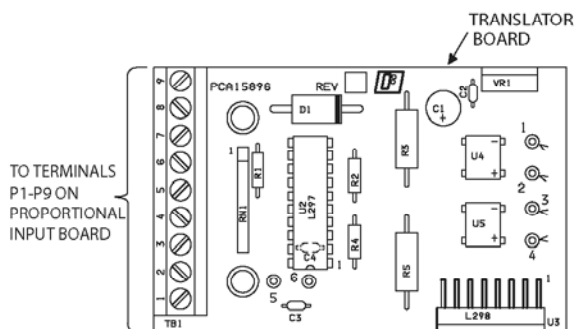
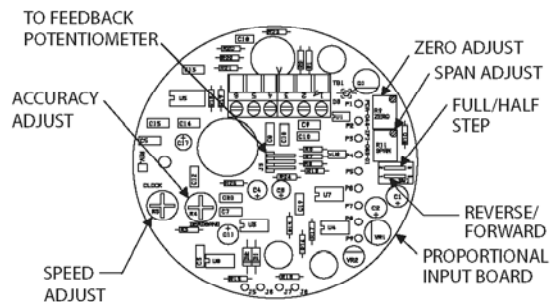
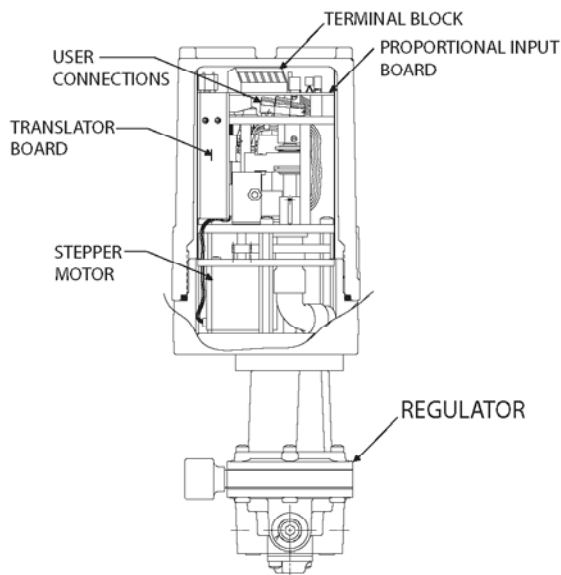
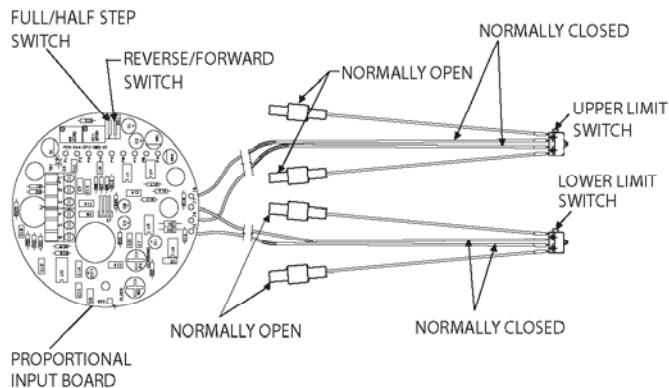
The output of the 4-20 mA Proportional Board is wired to a vertically mounted translator board. The configuration includes limit switches.

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

Model 2400



### 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:

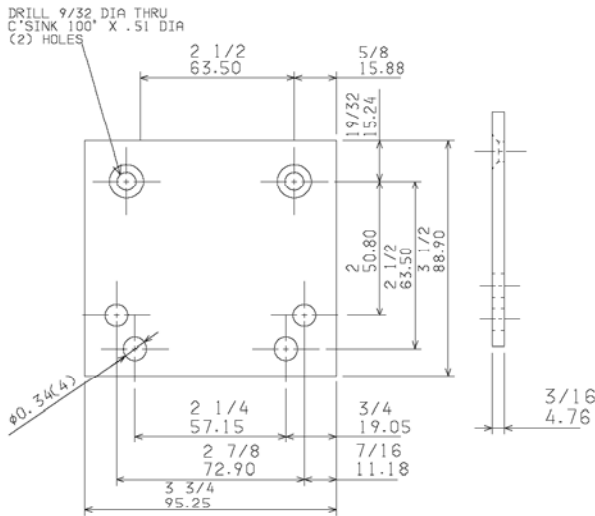
Terminal	Input Connection
1	4-20 mA signal current from Controller (+)
2	4-20 mA or 1-5vDC return (-)
3	1-5vDC signal voltage from Controller (+)
4	24vDC Power (+)
5	Common

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 :

- Reverse or Forward Operation.
- 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 ..... 5  
12-24 VDC Translator Board  
DC Pulse Input with ..... 7  
24 VDC Clock Generator Control  
DC Pulse Input with ..... 8  
12 VDC Clock Generator Control  
DC Analog Input with ..... 9  
12-24 VDC Supply

**Pressure Range**

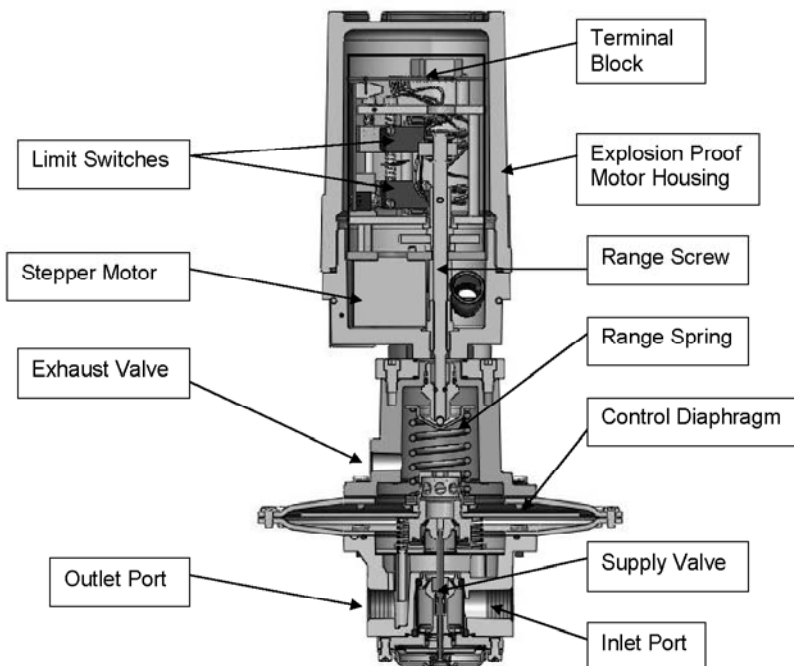
	psig	[BAR]	(kPa)	
Model 10E	0.5-30	[0.03-2.0]	(3-200).....	4
	0.5-20 <sup>1</sup>	[0.03-1.5]	(3-150).....	3
Model 16	vac-10	[vac-0.7]	(vac-70) ....	8
Model 80E	0.5-20	[0.03-1.5]	(3-150).....	3
	1-60	[0.07-4.0]	(7-400).....	5
	2-100	[0.15-7.0]	(15-700)....	6
Model 81E	0-2	[0-0.15]	(0-15).....	1
	0.5-20	[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 ..... 3  
with expanded temperature operation (XS Only).

<sup>1</sup> Available on 24XFC Only.

**Model  
MP2400**



### Explosion-Proof DC Pulse Input (XS)

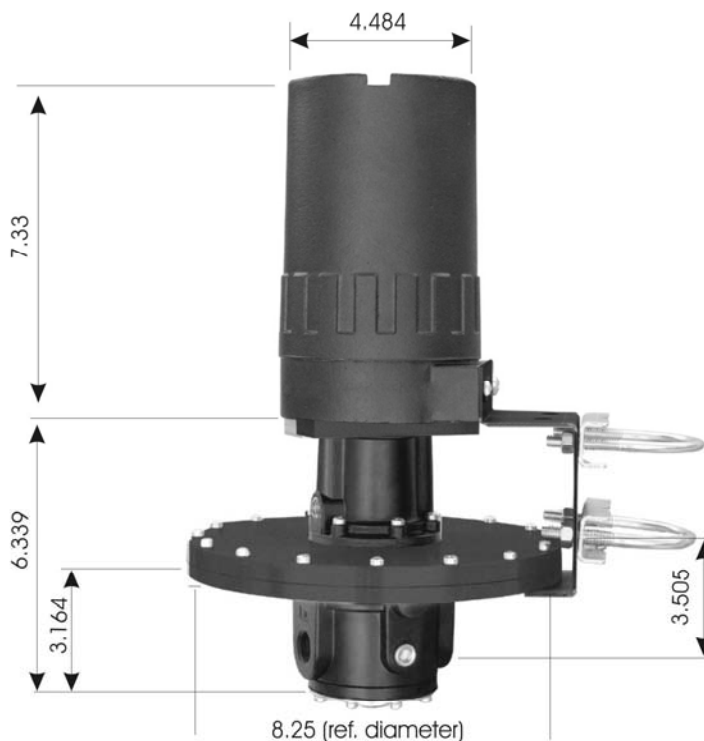
The Model 2400 M/P Converter is isolated from an explosive environment by enclosing in an explosion-proof housing. The Stepper Motor configuration is equipped with a clock generator positioned horizontally, which plugs into a vertically mounted translator board. The configuration includes limit switches.

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.

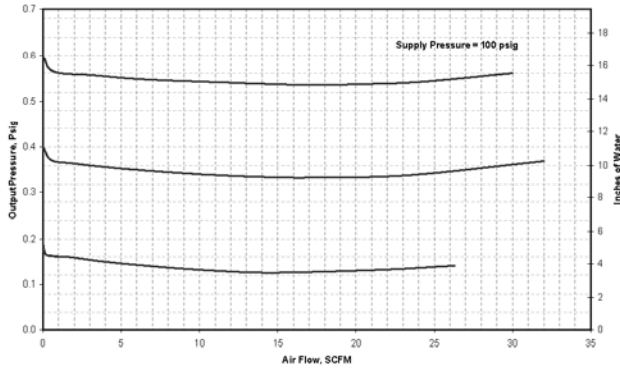
Switches on the clock generator board allow selection of:

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





Flow Characteristics  
Fairchild Model 4114A



**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
 

<b>FROM</b>	<b>TO</b>
External Controller +DC	Input Board 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
 

<b>FROM</b>	<b>TO</b>
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
 

<b>FROM</b>	<b>TO</b>
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

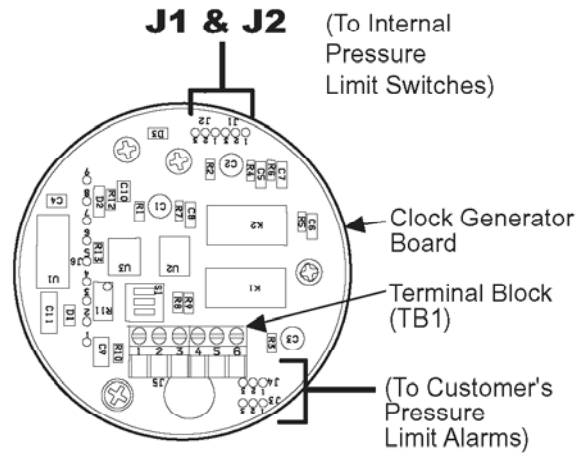
DC Pulse Input with 24VDC Clock Generator Control ..... 8A

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

Model  
2800



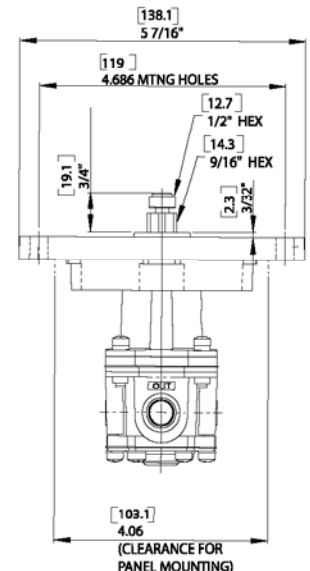
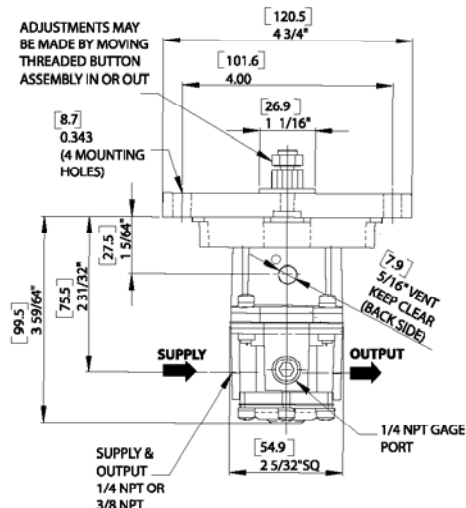
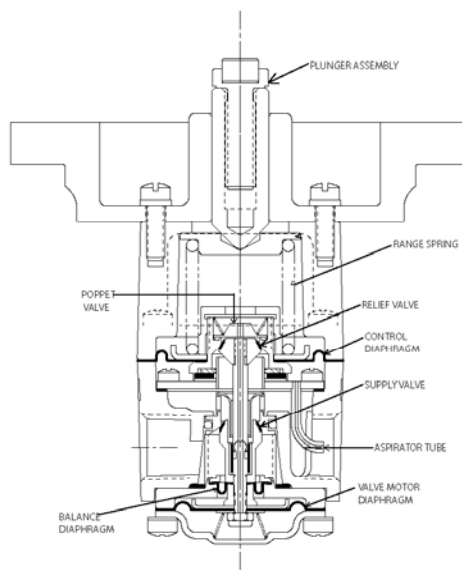
### Features

- 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.

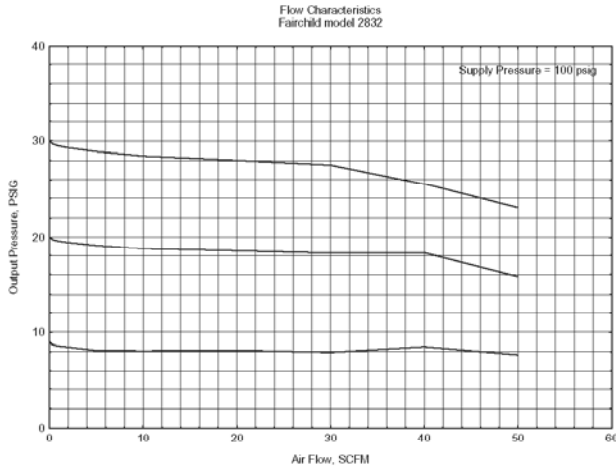
### Operating Principles

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<sup>3</sup>/HR) (100 psig, [7.0 BAR], (700 kPa) supply, 20 psig [1.5 BAR], (150 kPa) setpoint)

**Exhaust Capacity**

8 SCFM (13.6 m<sup>3</sup>/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

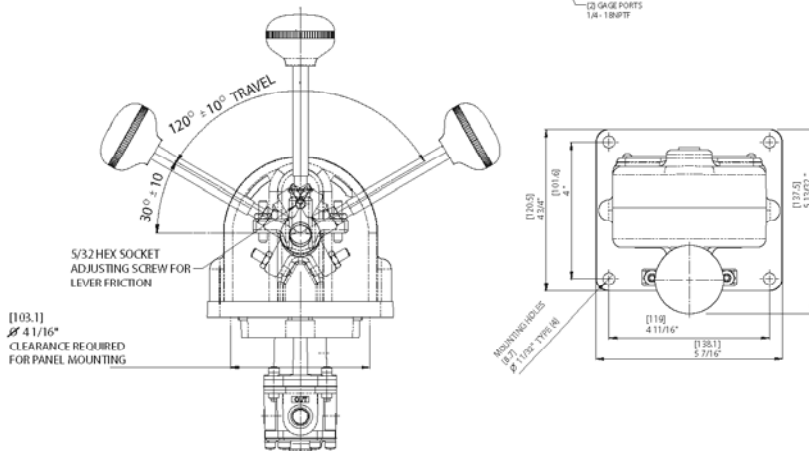
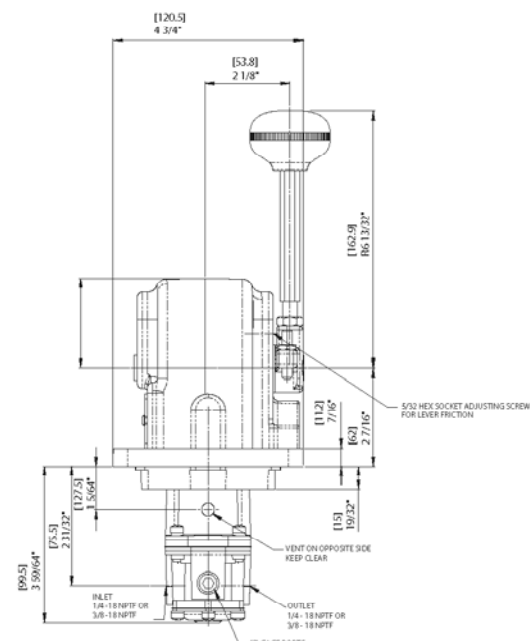
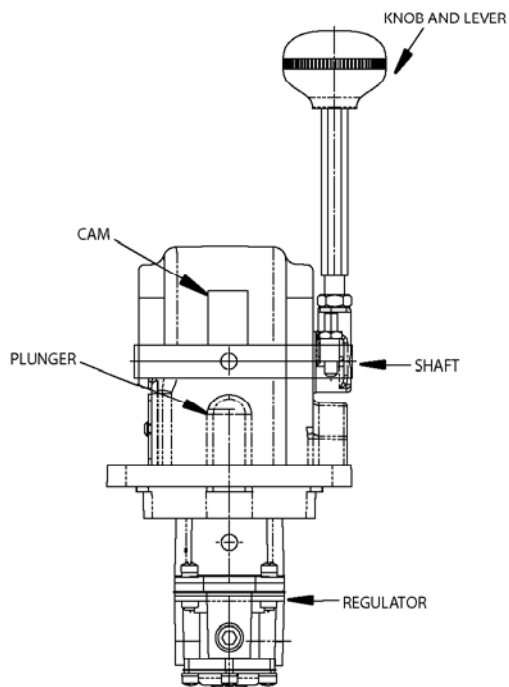
The Model 3400 Pneumatic Lever Operated Regulator is the combination of a Model 1000 High Flow Pressure Regulator and a hand held operated lever mechanism with 120 degree maximum travel.

- 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.

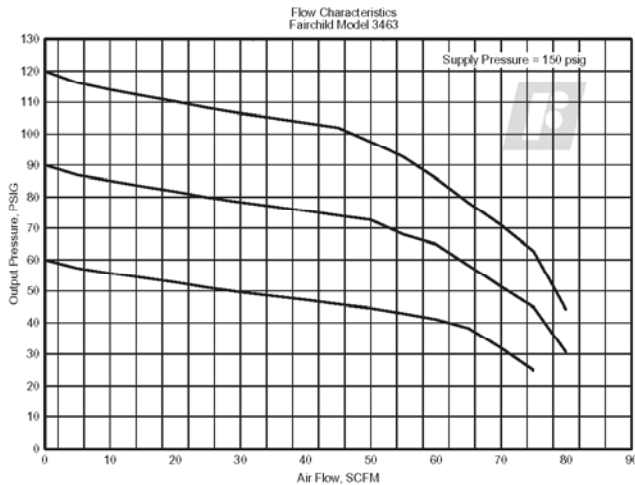
### Operating Principles

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<sup>3</sup>/HR) @ (100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint

**Exhaust Capacity**

8 SCFM (13.6 m<sup>3</sup>/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) .....
0.5-30	[0.035-2]	(3.5-200) .....
1-60	[0.07-4]	(7-400) .....
2-150	[0.15-10]	(15-1000) .....

2  
 3  
 4  
 6

**Pipe Size**

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

2  
 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.

Model  
4000A

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

## Features

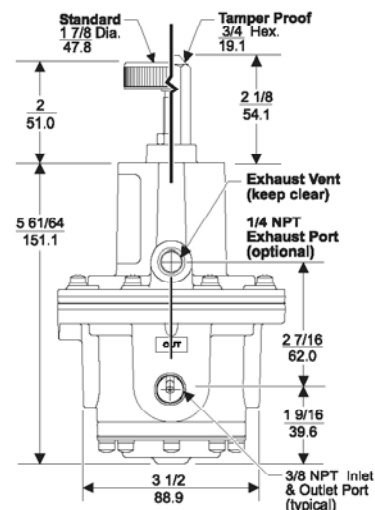
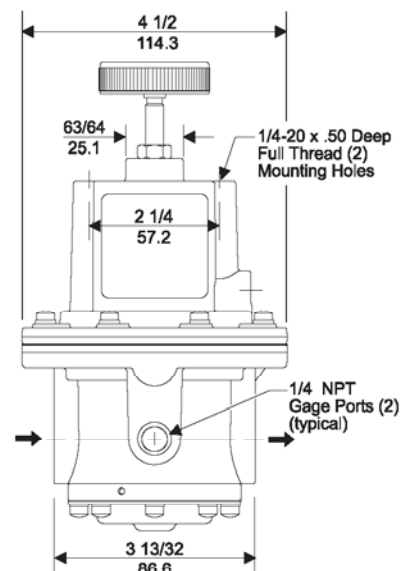
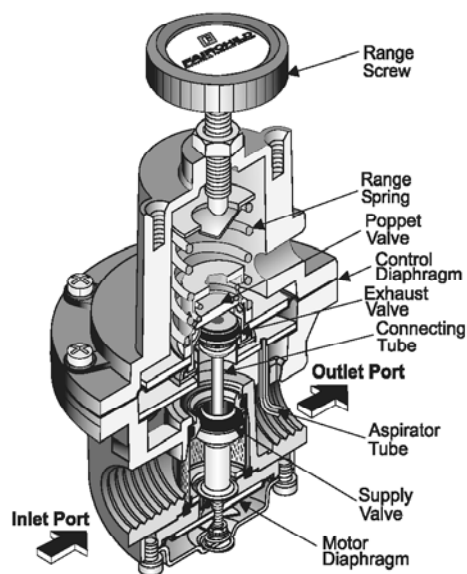
- Control sensitivity of 1/2" water column allows use in precision applications.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve seats minimize air consumption.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube compensates downstream pressure drop 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

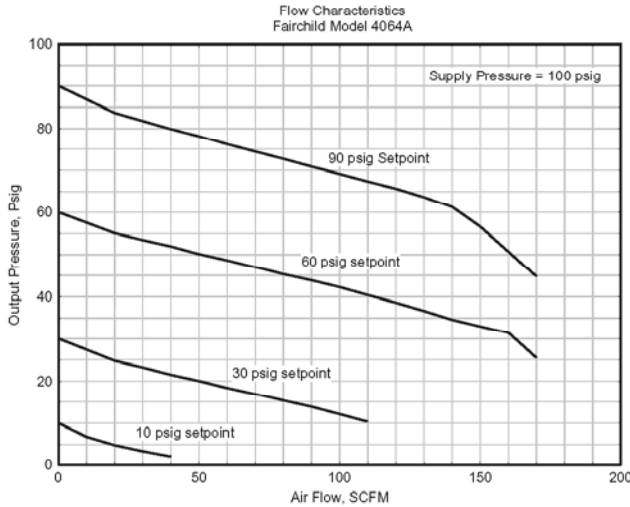
When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber where it creates an upward 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<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint

**Exhaust Capacity**

40 SCFM (65 m<sup>3</sup>/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

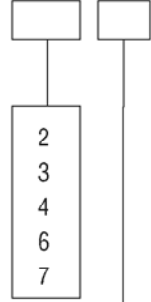
**Catalog Information**

**Catalog Number**

4 0 [ ] [ ] A [ ]

**Pressure Range**

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



**Pipe Size**

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

**Options**

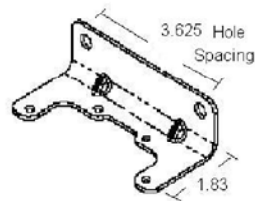
Tapped Exhaust.....	E
BSPP (Parallel) <sup>1</sup> .....	H
Tamper Proof.....	T
BSPT (Tapered).....	U
Viton Elastomers <sup>2</sup> .....	J

<sup>1</sup> BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.

<sup>2</sup> 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

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

## Features

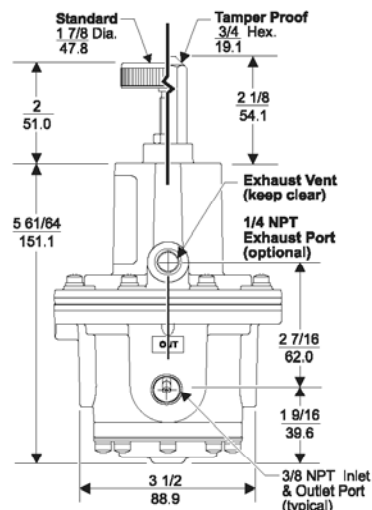
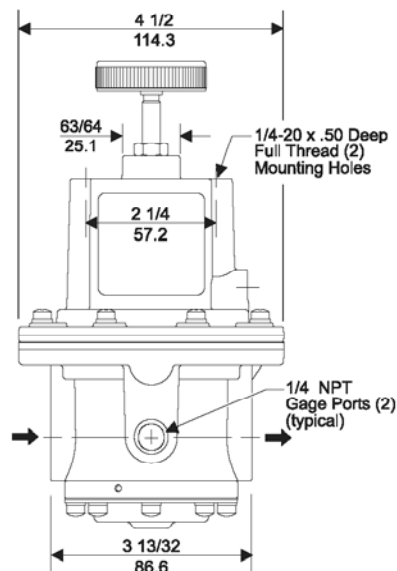
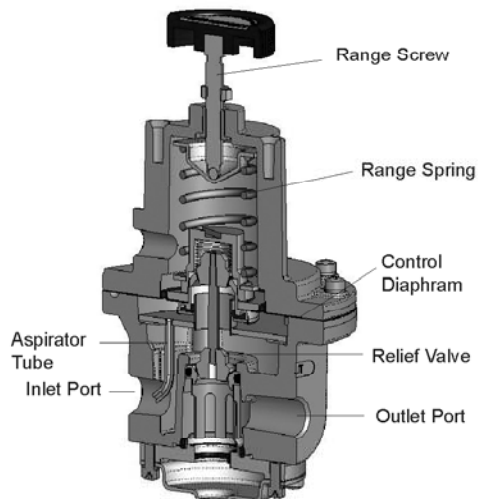
- Control sensitivity of 1/2" water column allows use in precision applications.
- Large Relief Valve provides high exhaust flows.
- An Aspirator Tube compensates upstream pressure build up under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting 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.

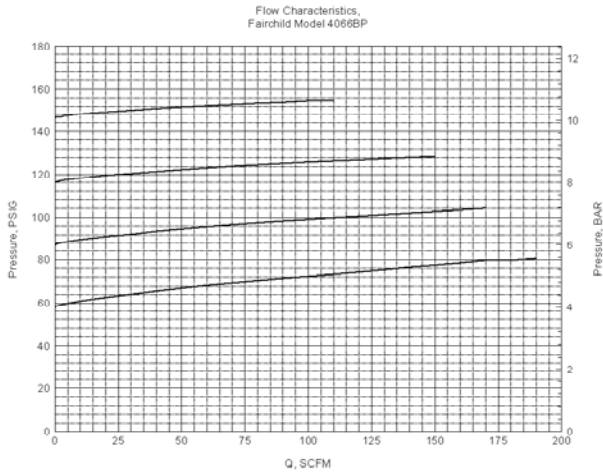
Upstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. When you adjust the range screw for a specific set point, the Range Spring compresses and exerts a force on the top of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm 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<sup>3</sup>/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**

**Catalog Number**

40 [ ] [ ] ABP [ ] [ ]

**Pressure Range**

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

2  
3  
4  
6

**Port Size**

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

3  
4  
6

**Port Th'd**

NPT . . . . .  
BSPP<sup>†</sup> . . . . .  
BSPT . . . . .

H  
U

**Elastomer**

Nitrile . . . . .  
Fluorocarbon . . . . .

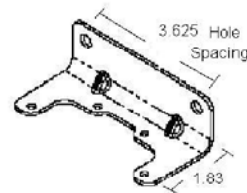
N  
J

<sup>†</sup> BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.

<sup>†</sup> 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**

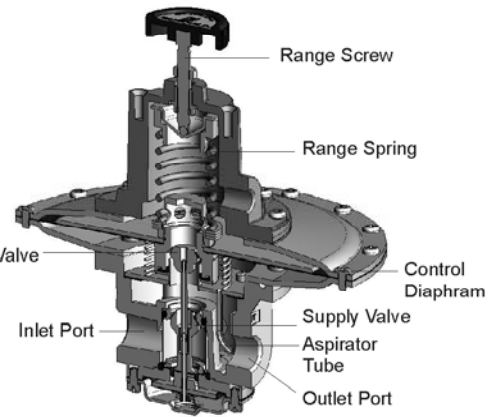
P/N 20555-1 zinc plated (sold separately)

Model  
M4100



### 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.



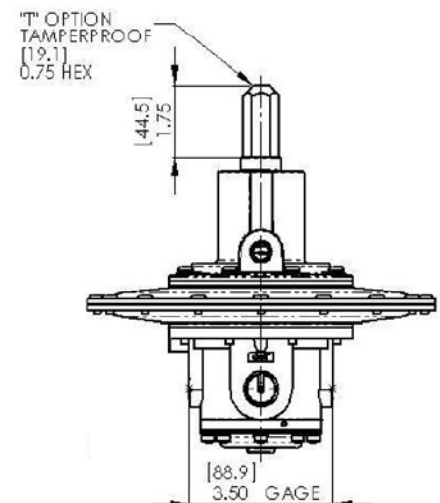
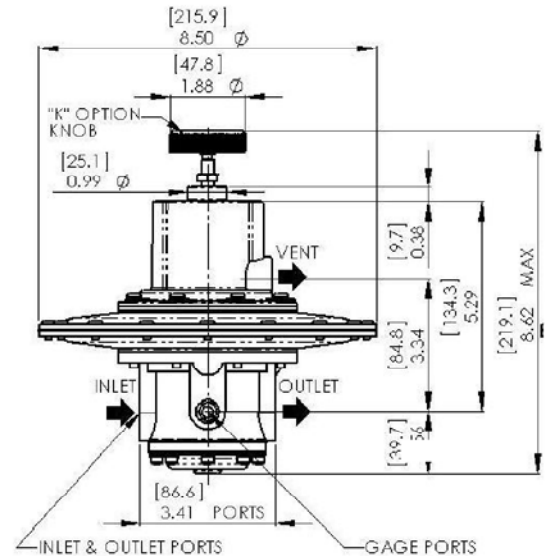
The Model 4100A Pneumatic Precision Regulator is a no bleed design regulator that precisely controls a set pressure.

### Operating Principles

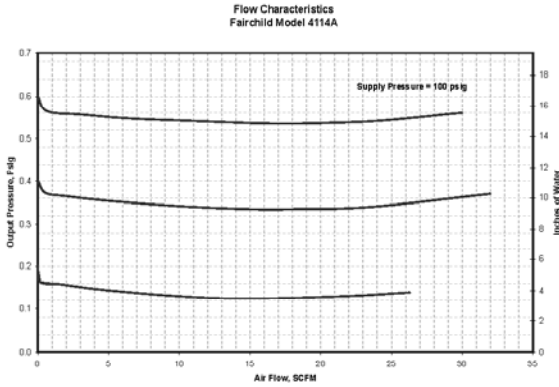
When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a downward force against the top of the Control Diaphragm. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber where it creates an upward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

<b>Catalog Number</b>	41			A				
<b>Pressure Range</b>								
<b>psig</b>	<b>[BAR]</b>	<b>(kPa)</b>						
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					
<b>Port Size</b>								
3/8" NPT. ....				3				
1/2" NPT. ....				4				
3/4" NPT. ....				6				
<b>Port Thread</b>								
NPT. ....					N			
BSPT. ....					U			
BSPP <sup>1</sup> . . . . .					H			
<b>Elastomer</b>								
Nitrile. ....						N		
Fluorocarbon. ....						J		
<b>Actuator</b>								
Knob. ....							K	
Tamper Proof. ....							T	
<b>Vent</b>								
Straight. ....								S
Threaded. ....								E

<sup>1</sup> 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.*



**B**

**SECTION B**



# **ELECTRO-PNEUMATIC TRANSDUCERS**

# Model T5200 Electro-Pneumatic I/P, E/P Transducer

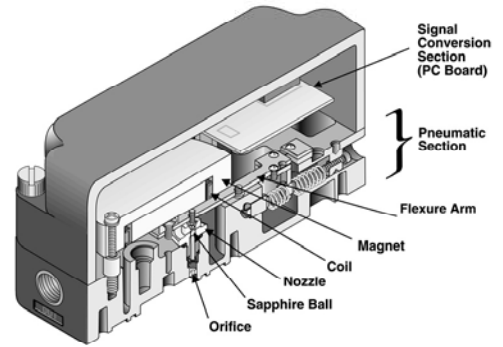
**B**

**Model T5200**



## Features

- Fast Response to Input Signal changes results in faster loop control and savings in process materials.
- Minimal Air Consumption allows use in systems where operating gas is expensive.
- Five Input Signal Ranges meet most process and machine requirements.
- Temperature Compensation provides stable operation over wide temperature Range.
- Compact Size permits use in space restricted areas.
- Vibration Resistance maintains set points under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- NEMA 3R Enclosure available for outdoor and indoor installations.

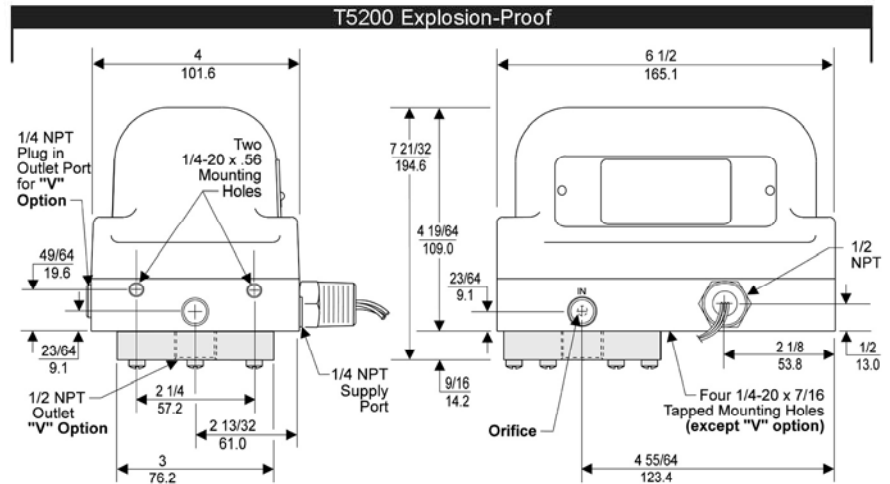
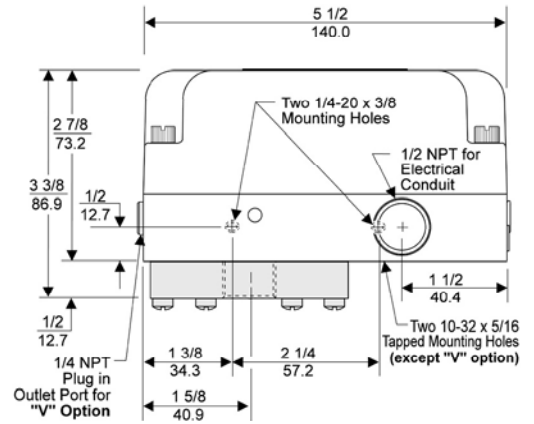
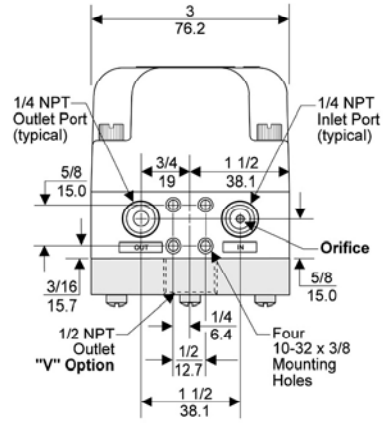


## Operating Principles

The T5200 Transducer is an electro-pneumatic device that is controlled by a 4-20 mA current in a control loop. This device is made up of two sections, the Signal Conversion Section and the Pneumatic Section.

The Signal Conversion Section (PC Board) accepts a 4-20 mA current from the control loop. This signal current is applied to a coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force of the Flexure Arm.



## Hazardous Area Specifications

	Explosion-Proof	Intrinsically Safe										
Factory Mutual (FM) Approvals	<b>TFXPD5200</b> Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; Maximum Ambient 65° C.	<b>TFI5200</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, Fibers; NEMA 3R Enclosure. <i>(Upright Position ONLY)</i>										
	<b>TFXPDI5200</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, Fibers; NEMA 3R Enclosure. <i>(Upright Position ONLY)</i>	<table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: left;"><i>Entity Parameters</i></th> </tr> </thead> <tbody> <tr> <td>Voc<sup>1</sup> = 40 VDC</td> <td>Ca<sup>3</sup> = 0 µF</td> </tr> <tr> <td>Isc<sup>2</sup> = 125 mA</td> <td>La<sup>4</sup> = 0 mH</td> </tr> <tr> <td><small><sup>1</sup>Voc = Open Circuit Voltage</small></td> <td><small><sup>3</sup>Ca = External Capacitance</small></td> </tr> <tr> <td><small><sup>2</sup>Isc = Short Circuit Voltage</small></td> <td><small><sup>4</sup>La = External Inductance</small></td> </tr> </tbody> </table>	<i>Entity Parameters</i>		Voc <sup>1</sup> = 40 VDC	Ca <sup>3</sup> = 0 µF	Isc <sup>2</sup> = 125 mA	La <sup>4</sup> = 0 mH	<small><sup>1</sup>Voc = Open Circuit Voltage</small>	<small><sup>3</sup>Ca = External Capacitance</small>	<small><sup>2</sup>Isc = Short Circuit Voltage</small>	<small><sup>4</sup>La = External Inductance</small>
	<i>Entity Parameters</i>											
Voc <sup>1</sup> = 40 VDC	Ca <sup>3</sup> = 0 µF											
Isc <sup>2</sup> = 125 mA	La <sup>4</sup> = 0 mH											
<small><sup>1</sup>Voc = Open Circuit Voltage</small>	<small><sup>3</sup>Ca = External Capacitance</small>											
<small><sup>2</sup>Isc = Short Circuit Voltage</small>	<small><sup>4</sup>La = External Inductance</small>											
<b>TFN5200</b> NEMA 4X Enclosure.												
Canadian Standards Association (CSA) Approvals	<p><i>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</i></p> <p>Rated: 28V Maximum 300 Ohm Minimum</p>	<b>TCI5200</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Type 3 Enclosure; Rated 1-5 mA, 4-20 mA, 10-50 mA, 1-5 VDC, 1-9 VDC; Temperature Code T4A.										

B

Model  
T5200

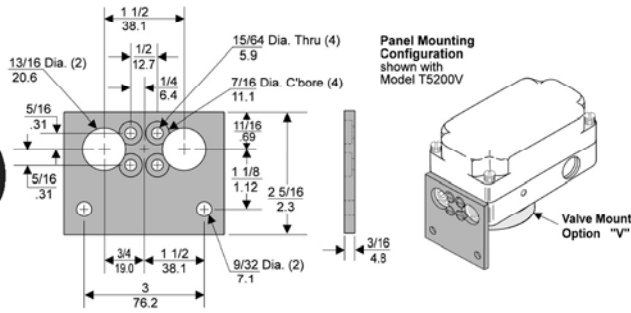


# Model T5200 Electro-Pneumatic I/P, E/P Transducer

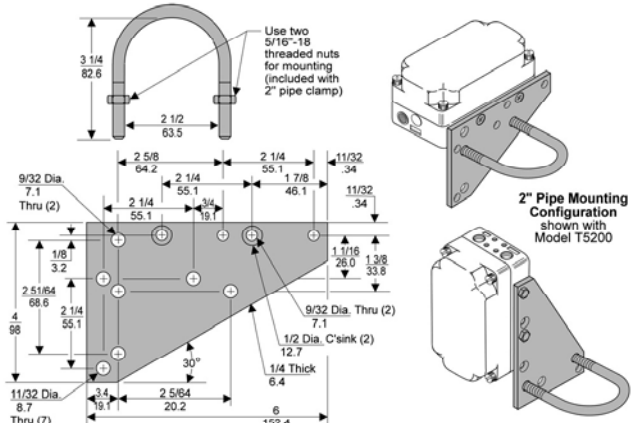
## Mounting Kits

**B**

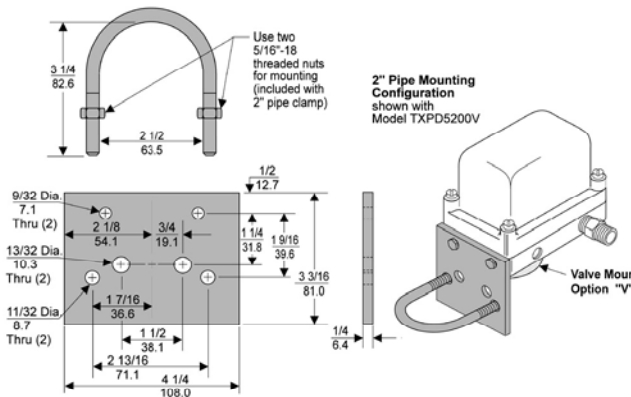
**Model T5200**



Mounting Bracket: 15268



Mounting Bracket: 14596



Mounting Bracket: 14140

## Model T5200 Transducer Kits & Accessories

- Mounting Bracket Kits ..... 15268 (sold separately)
- 14596 (sold separately)
- 14140 (sold separately)

## Installation

For Installation Instructions, refer to the *Fairchild T5200 Series Electro-Pneumatic Transducer Installation, Operation and Maintenance*, IS-500T5200.

## Catalog Information

**Catalog Number** T    **5200**

### Underwriting Group

Canadian Standard ..... C  
Factory Mutual ..... F

### Approval Class

Explosion-Proof ..... XPD  
NEMA 4X/IP65<sup>1</sup> ..... N  
None (leave blank) .....  
Intrinsically Safe<sup>2</sup> ..... I  
None (leave blank) ..... V

### Input

1-5 mA ..... 1  
4-20 mA ..... 4  
10-50 mA<sup>3</sup> ..... 5  
1-5 VDC ..... 9  
1-9 VDC ..... 9

### Output Pressure Units

psig ..... 0  
[BAR] ..... 1  
(kPa) ..... 2

### Options

Valve Mount ..... V  
<sup>1</sup> Factory Mutual Approval Only.  
<sup>2</sup> Intrinsically Safe Units cannot be set for Reverse Acting Mode in field.  
<sup>3</sup> Units shipped calibrated 4-20 mA; 10-50 mA units must be calibrated in field.

## Specifications

### Supply Pressure

20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 kPa)

### Output Capacity (SCFM)

0.15 (0.26 m<sup>3</sup>/HR) Maximum

### Air Consumption (SCFM)

0.16 (0.27 m<sup>3</sup>/HR) Maximum

### Output Range

3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

### Supply Pressure Effect

+ 0.3% of Span for a 1 psig, [0.1 BAR], (10 kPa) supply change

Impedance / Input Signal	Range	OHMS
	1-5 mA	2000
	4-20 mA	120 <sup>1</sup>
	10-50 mA	50 <sup>1</sup>
	1-9 VDC	2550
	1-5 VDC	375

### Shock & Vibration Effect

Negligible up to 2 g's between 5 Hz and 200 Hz

### Terminal Based Linearity

+ 0.50% Full Scale

### Independent Linearity

+ 0.25% Full Scale

### Temperature Coefficient

Less than 1% of Span / 50° F (10° C)

### Hysteresis

Within 0.1% Full Scale

### Frequency Response

-3 db @ 20 Hz (unloaded)

### Ambient Temperature

-40° F to +150° F, (-40° C to +65.5° C)

### Materials of Construction

Body and Housing ..... Aluminum  
Ball and Orifice ..... Sapphire, Brass  
Nozzle ..... Stainless Steel

<sup>1</sup> Add 332 OHMS for CSA Units.





## Features

- Fast Response to Input Signal changes results in faster loop control and savings in process materials.
- Integrated Volume Booster Output meets input requirements of final control elements requiring a higher capacity output signal and/or increased output pressure.
- Six Input Signal Ranges meet most process and machine requirements.
- Negative Bias Option allows zero pressure based operation.
- Five Booster Ratios meet industrial equipment requirements for higher output pressure ranges.
- Temperature Compensation provides stable operation under environmental changes.
- Vibration Resistance maintains set points under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- NEMA 3R or optional NEMA 4X Enclosure for outdoor and indoor installations.
- Conduit Port for convenient wiring.

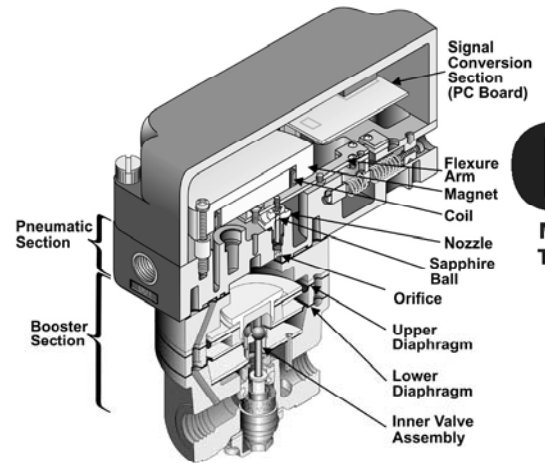
## Operating Principles

The T5220 Transducer is an electro-pneumatic device that converts a DC current or voltage input signal to a proportional pneumatic output. This device is made up of three sections, the Signal Conversion Section, the Pneumatic Section and Booster Section.

The Signal Conversion Section (PC Board) accepts a DC current or voltage. This signal is applied to a coil which creates a magnetic force that moves a Flexure Arm.

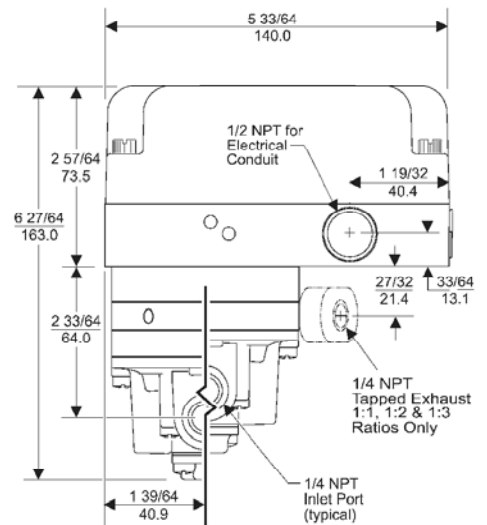
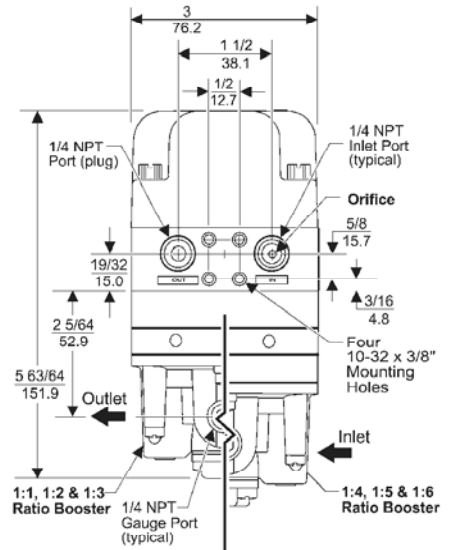
The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force transferred to the Flexure Arm by the Coil.

The Booster Section amplifies the output pressure of the transducer. At set point, the force due to transducer output pressure acting on the top of the Upper Diaphragm is balanced by the force due to booster output pressure acting on the underside of the Lower Diaphragm. Any imbalance results in actuation of the appropriate supply valve or exhaust valve to correct the output pressure.



# B

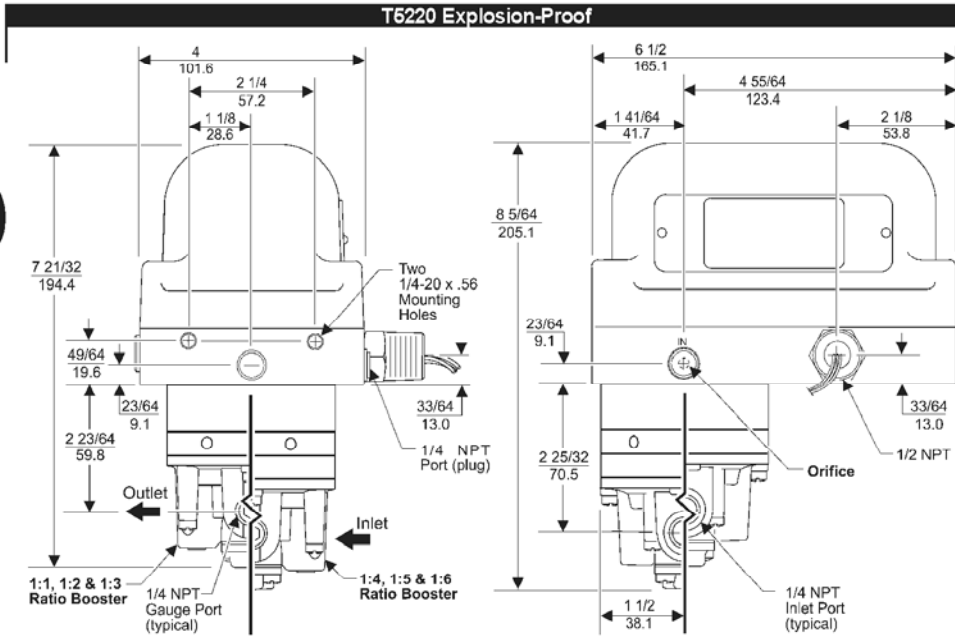
Model  
T5220



# Model T5220 Electro-Pneumatic I/P, E/P Transducer

**B**

**Model T5220**

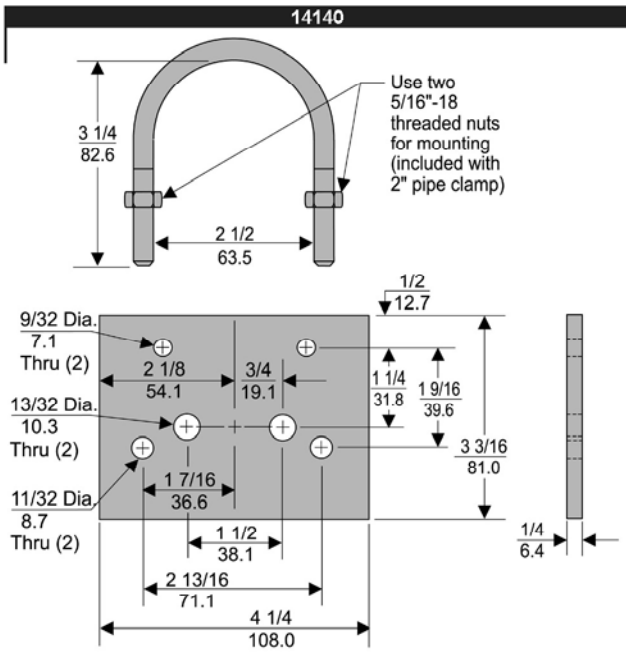


## Hazardous Area Specifications

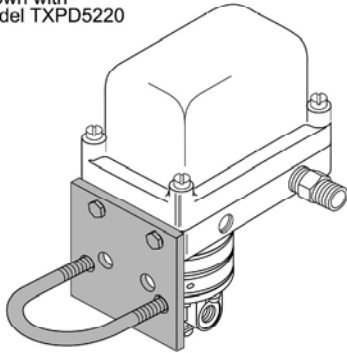
	Explosion-Proof	Intrinsically Safe										
Factory Mutual (FM) Approvals	<p><b>TFXPD5220</b> Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; Maximum Ambient 65° C.</p>	<p><b>TFI5220</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, Fibers; NEMA 3R Enclosure. <b>(Upright Position ONLY)</b></p>										
	<p><b>TFXPDI5220</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, Fibers; NEMA 3R Enclosure. <b>(Upright Position ONLY)</b></p>	<table border="1"> <thead> <tr> <th colspan="2">Entity Parameters</th> </tr> </thead> <tbody> <tr> <td>Voc<sup>1</sup> = 40 VDC</td> <td>Ca<sup>3</sup> = 0 µF</td> </tr> <tr> <td>Isc<sup>2</sup> = 125 mA</td> <td>La<sup>4</sup> = 0 mH</td> </tr> <tr> <td><sup>1</sup>Voc = Open Circuit Voltage</td> <td><sup>3</sup>Ca = External Capacitance</td> </tr> <tr> <td><sup>2</sup>Isc = Short Circuit Voltage</td> <td><sup>4</sup>La = External Inductance</td> </tr> </tbody> </table>	Entity Parameters		Voc <sup>1</sup> = 40 VDC	Ca <sup>3</sup> = 0 µF	Isc <sup>2</sup> = 125 mA	La <sup>4</sup> = 0 mH	<sup>1</sup> Voc = Open Circuit Voltage	<sup>3</sup> Ca = External Capacitance	<sup>2</sup> Isc = Short Circuit Voltage	<sup>4</sup> La = External Inductance
	Entity Parameters											
Voc <sup>1</sup> = 40 VDC	Ca <sup>3</sup> = 0 µF											
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<sup>2</sup> Isc = Short Circuit Voltage	<sup>4</sup> La = External Inductance											
<p><b>TFN5220</b> NEMA 4X Enclosure.</p>												
Canadian Standards Association (CSA) Approvals		<p><b>TCI5220</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Type 3 Enclosure; Rated 1-5 mA, 4-20 mA, 10-50 mA, 1-5 VDC, 1-9 VDC; Temperature Code T4A.</p> <table border="1"> <tr> <td> <p><b>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</b></p> <p>Rated: 28V Maximum 300 Ohm Minimum</p> </td> </tr> </table>	<p><b>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</b></p> <p>Rated: 28V Maximum 300 Ohm Minimum</p>									
<p><b>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</b></p> <p>Rated: 28V Maximum 300 Ohm Minimum</p>												



## Mounting Kits



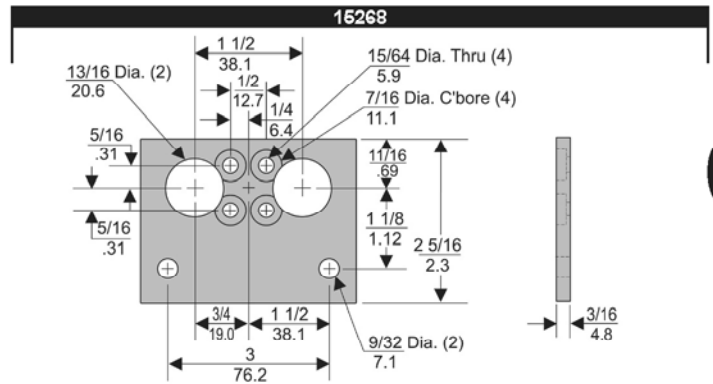
**2" Pipe Mounting Configuration**  
shown with Model TXPD5220



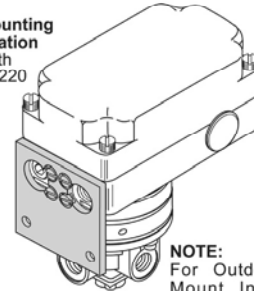
**Mounting Kit 14140**  
Includes the following:  
Mounting Plate • 2" Pipe Clamp  
Support Bar • Two 1/4" Lockwashers  
Two 1/4-20 x 5/8" Bolts • Two 3/8" Lockwashers  
Two 3/8-16 Nuts • Two 3/8-16 x 1 1/2" Caps

## Model T5220 Transducer Kits & Accessories

- Mounting Bracket Kits ..... 14140 (sold separately)
- 15268 (sold separately)
- 14596 (sold separately)

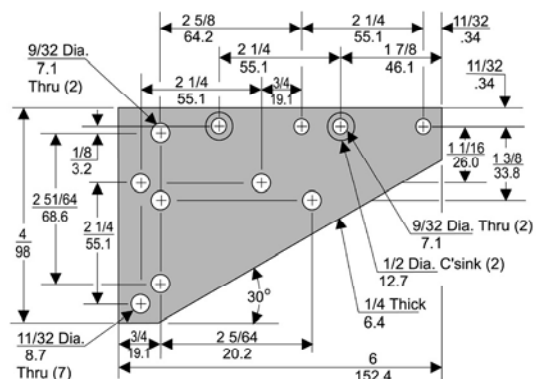
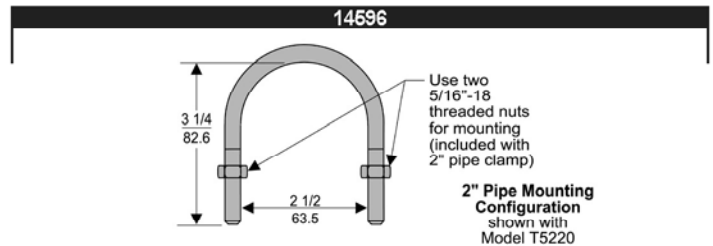


**Panel Mounting Configuration**  
shown with Model T5220

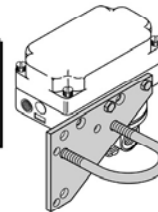


**NOTE:**  
For Outdoor Use, Mount In Upright Position. (cover up)

**Mounting Kit 15268**  
Includes the following:  
Mounting Bracket • Four 10-32 x 7/16" Screws



**NOTE:**  
If Not Mounted In An Upright Position, Zero & Span Adjustments Must Be Re-Calibrated For Proper Output Range.



**NOTE:**  
For Outdoor Use, Mount In Upright Position. (Cover up)

**Mounting Kit 14596**  
Includes the following:  
Mounting Bracket • Two Lockwashers  
2" Pipe Clamp • Two 1/4-20 x 5/8" Bolts  
Two 1/4-20 x 1/2" Screws

# Model T5220 Electro-Pneumatic I/P, E/P Transducer

## Specifications

### Supply Pressure<sup>1</sup>

20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 kPa)

### Output Capacity (SCFM)

15 (25.5 m<sup>3</sup>/HR) Max. @ 20 psig, [1.5 BAR], (150 kPa) supply. 45 (76.5 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) (with separate supply.)

### Exhaust Capacity (SCFM)

7 (11.9 m<sup>3</sup>/HR) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above 3 psig, [0.2 BAR], (20 kPa) set point.  
14 (23.8 m<sup>3</sup>/HR) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above 15 psig, [1.0 BAR], (100 kPa) set point.

### Air Consumption (SCFM)

0.28 (0.48 m<sup>3</sup>/HR) Max. (dead end) @ 20 psig, [1.5 BAR], (150 kPa) supply

### Output Range (1:1 Ratio)

3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

### Supply Pressure Effect

+ 0.3% of Span for a 1 psig, [0.07 BAR], (7 kPa) supply change between 18-22 psig, [1.2-14.5 BAR], (120-145 kPa).

### Shock & Vibration Effect

Negligible up to 2 g's between 5 Hz and 200 Hz

### Terminal Based Linearity

+ 0.50% Full Scale (T5220 only), within 0.6% Output Span (T5222-T5226)

### Independent Linearity

within 0.25% Full Scale (T5220 only), within 0.3% Output Span (T5222-T5226)

### Hysteresis & Repeatability

within 0.1% Full Scale (T5220 only), within 0.1% Times Ratio of Output Span (T5222-T5226)

### Impedance / Input Signal Range OHMS (nominal)

1-5 mA	2000
4-20 mA	120 <sup>2</sup>
10-50 mA	50 <sup>2</sup>
1-5 VDC	375
0-6 VDC	375 <sup>3</sup>
0-12 VDC	2550 <sup>3</sup>
1-9 VDC	2550

<sup>2</sup> Add 332 for CSA Approved Units

<sup>3</sup> Not approved for Intrinsically Safe Ratings

### Ambient Temperature

-40° F to +150° F, (-40° C to +65.5° C)

### Temperature Coefficient

Less than 1% of Span / 50° F (10° C)

### Materials of Construction

Body and Housing..... Aluminum  
Ball and Orifice..... Sapphire, Brass  
Nozzle..... Stainless Steel

## Table 1. Pressure Ranges

Ratio	Standard Output			Negative Bias Output (B) Option		
	psig	[BAR]	(kPa)	psig	[BAR]	(kPa)
1:1 <sup>1</sup>	3-15	[0.2-1.0]	(20-100)	0-12	[0-0.8]	(0-80)
1:2 <sup>2</sup>	6-30	[0.3-2.0]	(30-200)	0-24	[0-1.5]	(0-150)
1:3 <sup>2</sup>	9-45	[0.6-3.0]	(60-300)	0-36	[0-2.5]	(0-250)
1:4 <sup>2</sup>	12-60	[0.9-4.0]	(90-400)	0-48	[0-3.0]	(0-300)
1:5 <sup>2</sup>	15-75	[1.0-5.0]	(100-500)	0-60	[0-4.0]	(0-400)
1:6 <sup>2</sup>	18-90	[1.2-6.0]	(120-600)	0-72	[0-5.0]	(0-500)

<sup>1</sup> Standard unit is configured for common supply to transducer and booster.

<sup>2</sup> Units require 20 psig, [1.5 BAR], (150 kPa) for transducer and a separate supply for booster. A common supply of up to 110 psig, [7.7 BAR], (770 kPa) can be used provided the prefix Z147 is added to the original order, and the supply pressure is noted.

## Catalog Information

**Catalog Number** T     **522**

### Underwriting Group

Factory Mutual ..... F  
Canadian Standard ..... C

### Approval Class

Explosion-Proof<sup>1</sup> ..... XPD  
NEMA 4X/IP65<sup>1</sup> ..... N  
None (leave blank) .....  
Intrinsically Safe<sup>2</sup> ..... I  
None (leave blank) ..... I

### Options

Negative Bias - 3 psig, [0.2 BAR], (20 kPa) ..... B  
High Option<sup>3</sup> ..... HI

### Booster Ratio<sup>4</sup>

1:1 (standard) ..... 0  
1:2 ..... 2  
1:3 ..... 3  
1:4 ..... 4  
1:5 ..... 5  
1:6 ..... 6

### Input

1-5 mA ..... 1  
4-20 mA ..... 4  
10-50 mA<sup>5</sup> ..... 4  
1-5 VDC ..... 5  
0-6 VDC<sup>6</sup> ..... 6  
0-12 VDC<sup>6</sup> ..... 8  
1-9 VDC ..... 9

### Output Pressure Units

psig ..... 0  
[BAR] ..... 1  
(kPa) ..... 2

### Options

Tapped Exhaust - 1:1, 1:2, or 1:3 Ratios Only ..... E

<sup>1</sup> Factory Mutual Approval Only.

<sup>2</sup> Intrinsically Safe Units cannot be set for Reverse Acting Mode in field.

<sup>3</sup> If high flow (SCFM) is required for the standard 1:1 ratio, select HI Option. Separate supply is required.

<sup>4</sup> Refer to Table 1. for Pressure Ranges

<sup>5</sup> Units shipped calibrated 4-20 mA; 10-50 mA units must be calibrated in field.

<sup>6</sup> Not approved for intrinsically safe ratings.

## Installation

For Installation Instructions, refer to the *Fairchild T5220 Series Electro-Pneumatic Transducer Installation, Operation & Maintenance Instructions*, IS-500T5220.



## Features

- Maintains consistent output Pressure under shock and vibration conditions.
- Temperature Compensation provides stable operation over wide operating Temperature Ranges
- Adjustable Positive and Negative Bias permits use with various final control elements.
- High Output Flow meets requirements for most industrial control applications.
- Adjustable Gain allows a single device to cover most industrial and process control requirements.

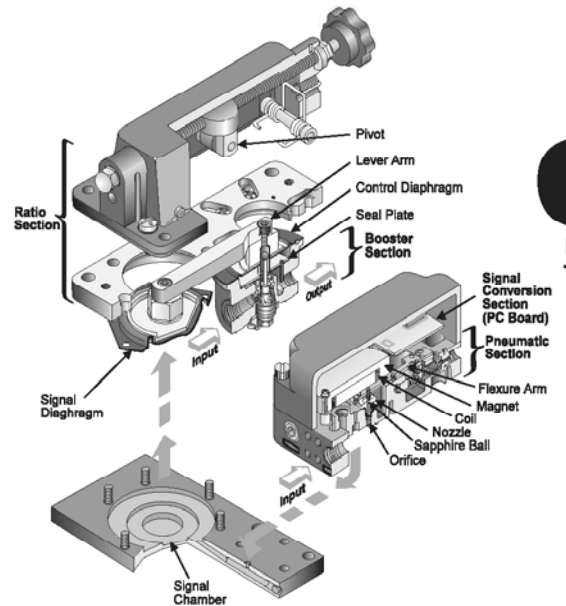
## Operating Principles

The T5221 Transducer is an electro-pneumatic device that converts a DC current or voltage input signal to a proportional output pressure. This device is made up of four sections, the Signal Conversion Section, the Pneumatic Section, the Ratio Section, and the Booster Section.

The Signal Conversion Section (PC Board) accepts a DC current or voltage. This signal current is applied to a Coil which creates a magnetic force that moves a Flexure Arm.

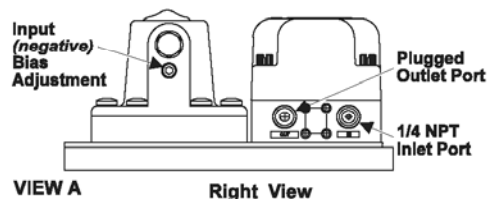
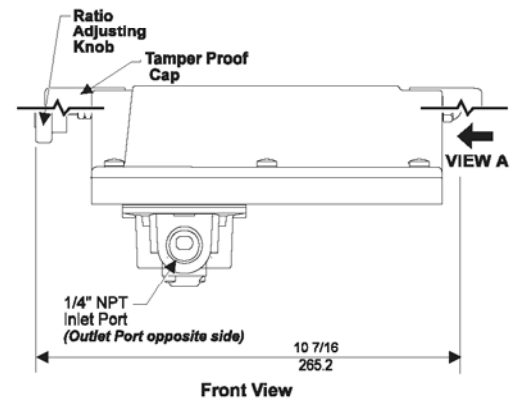
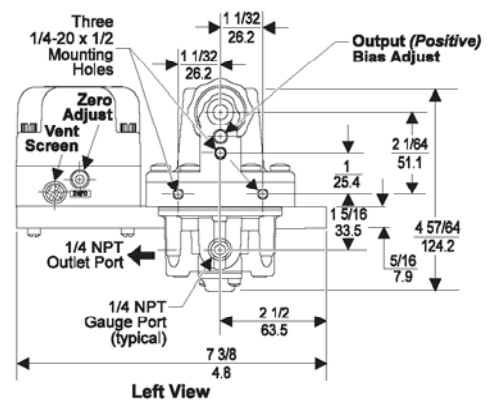
The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force transferred to the Flexure arm by the Coil. Signal pressure from the Pneumatic Section is routed to the underside of the Signal Diaphragm in the Ratio Section. Signal pressure acting on the Signal Diaphragm transmits a force through the lever to the Control Diaphragm of the booster. The output pressure is a function of signal pressure times the ratio of lever arm lengths on either side of the Pivot.

The Booster Section supplies the unit's output pressure. At set point, the lever Arm force acting on the top of the Control Diaphragm is balanced by the force due to the booster output pressure acting on the underside of the Control Diaphragm.



**B**

Model T5221



# Model T5221 Electro-Pneumatic I/P, E/P Transducer

## Hazardous Area Specifications

**B**

**Model  
T5221**

		Intrinsically Safe									
<p><b>Factory Mutual (FM) Approvals</b></p> <p><b>Entity Parameters</b></p> <table border="1" style="width: 100%;"> <tr> <td>Voc<sup>1</sup> = 40 VDC</td> <td>Ca<sup>3</sup> = 0 μ F</td> </tr> <tr> <td>Isc<sup>2</sup> = 200 mA</td> <td>La<sup>4</sup> = 0 mH</td> </tr> <tr> <td><sup>1</sup>Voc = Open Circuit Voltage</td> <td><sup>3</sup>Ca = External Capacitance</td> </tr> <tr> <td><sup>2</sup>Isc = Short Circuit Voltage</td> <td><sup>4</sup>La = External Inductance</td> </tr> </table>	Voc <sup>1</sup> = 40 VDC	Ca <sup>3</sup> = 0 μ F	Isc <sup>2</sup> = 200 mA	La <sup>4</sup> = 0 mH	<sup>1</sup> Voc = Open Circuit Voltage	<sup>3</sup> Ca = External Capacitance	<sup>2</sup> Isc = Short Circuit Voltage	<sup>4</sup> La = External Inductance	<p><b>TFN5221</b> NEMA 4X Enclosure</p>	<p><b>TFI5221</b> Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Fibers; NEMA 3R Enclosure. <i>(Upright Position ONLY)</i></p>	
Voc <sup>1</sup> = 40 VDC	Ca <sup>3</sup> = 0 μ F										
Isc <sup>2</sup> = 200 mA	La <sup>4</sup> = 0 mH										
<sup>1</sup> Voc = Open Circuit Voltage	<sup>3</sup> Ca = External Capacitance										
<sup>2</sup> Isc = Short Circuit Voltage	<sup>4</sup> La = External Inductance										
<p><b>Canadian Standards Association (CSA) Approvals</b></p> <p><i>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</i></p> <p>Rated: 28V Maximum 300 Ohm Minimum</p>		<p><b>TCI5221</b> Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Type 3 Enclosure; Rated 1-5 mA, 4-20 mA, 10-50 mA, 1-5 VDC, 1-9 VDC; Temperature Code T4A.</p>									



## Specifications

### Output Range

Minimum: 10" (25.4 cm) Water Column to 50" (127 cm) Water Column

Maximum: 0-150 psig, [0-10 BAR], (0-1000 kPa)

### Supply Pressure

Transducer: 20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 Kpa)  
Ratio Relay 1: 250 psig, [17 BAR], (1700 kPa)

### Air Consumption

0.36 (0.6 m<sup>3</sup>/HR) Maximum

### Output Capacity (SCFM)

40 (68 m<sup>3</sup>/HR) Maximum with 100 psig, [7 BAR], (700 kPa) Booster supply

### Exhaust Capacity (SCFM)

5.5 (9.4 m<sup>3</sup>/HR) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint.

### Supply Pressure Effect

Transducer: 1 % of Span for a + 2 psig, [.15 BAR], (15 kPa) change.

Ratio Relay: Less than 0.1 psig, [.007 BAR], (.7 kPa) for 100 psig, [7 BAR], (700 kPa) change.

<sup>1</sup> Supply Pressure must be no less than 10 psig, [0.7 BAR], (70 kPa) above max. booster output.

### Terminal Based Linearity

+ 0.50 % Full Scale

### Independent Linearity

+ 0.25 % Full Scale

### RFI/EMI Effect

Less than 0.5% of Span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

### Impedence / Input Signal

Range	OHMS
1-5 mA	2000
4-20 mA	120 (Add 332 OHMS for CSA units)
10-50 mA	50 (Add 332 OHMS for CSA units)
1-5 VDC	375
1-9 VDC	2550

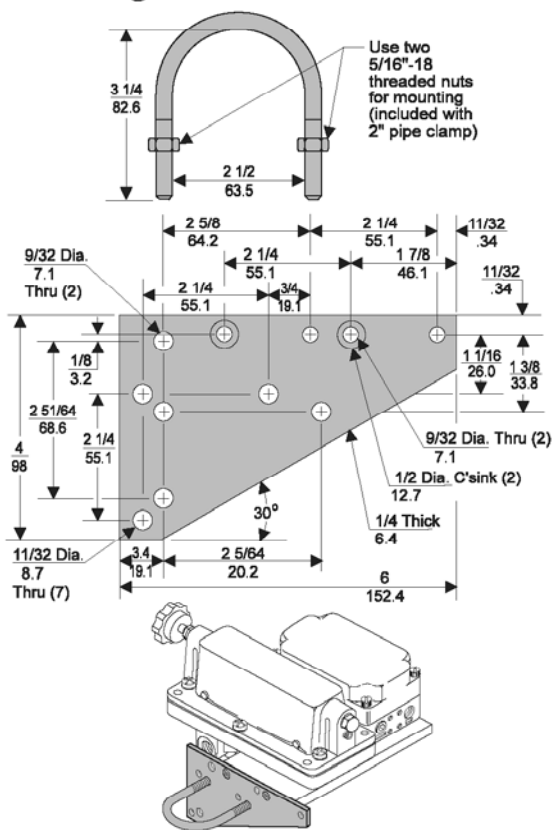
### Ambient Temperature

-40 ° F to + 150 ° F, (-40 ° C to 65.5 ° C)

### Materials of Construction

Body and Housing ..... Aluminum  
Ball and Orifice. .... Sapphire  
Nozzle. .... Stainless Steel

## Mounting Kits



**2" Pipe Mounting Configuration shown with Model T5221**

Mounting Bracket: 15307-1

## Model T5221 Transducer Kits & Accessories

Mounting Bracket Kits ..... 15307-1 (included with unit)

## Catalog Information

<b>Catalog Number</b>	T			<b>5221</b>			
<b>Underwriting Group</b>							
Canadian Standard .....		C					
Factory Mutual .....		F					
<b>Approval Class</b>							
Intrinsically Safe <sup>1</sup> .....			I				
<b>Input</b>							
1-5 mA .....						1	
4-20 mA .....						4	
10-50 mA <sup>2</sup> .....							
1-5 VDC .....						5	
1-9 VDC .....						9	
<b>Output Pressure Units</b>							
psig .....							0
[BAR] .....							1
(kPa) .....							2
<b>Options</b>							
Tamper Proof .....							T

<sup>1</sup> Intrinsically Safe units cannot be set for Reverse Acting Mode in field.  
<sup>2</sup> Units shipped calibrated 4-20 mA; Units must be calibrated 10-50 mA in field.

## Installation

For installation instructions, refer to the *Fairchild T5221 Electro-Pneumatic Transducer Installation, Operation and Maintenance Instructions*, IS-500T5221.

For operation instructions, refer to the *Fairchild T5221 Electro-Pneumatic Transducer Installation, Operation and Maintenance Instructions*, OM-500T5221.

**B**  
**Model T5221**

# Model T5400 Digital-Pneumatic Transducer

**B**

**Model T5400**



## Features

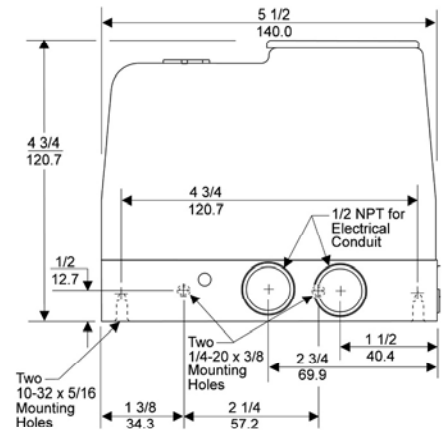
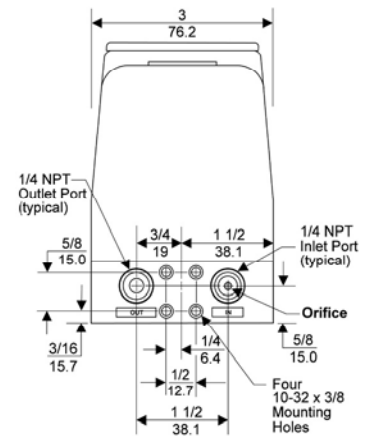
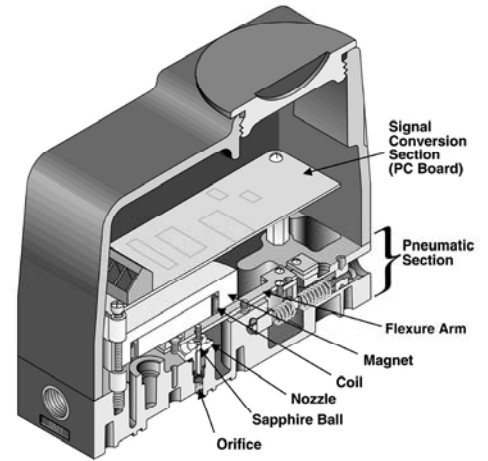
- Fail Safe High or Low will return the output to 3 psig for Direct Acting Mode or to 15 psig for Reverse Acting Mode if the power is lost, regardless of the logic selected.
- Field Reversible Feature provides output which is directly or inversely proportional to the input signal.
- 115 VAC, 230 VAC, and 24 VDC Power Options permit use with most power sources.
- Temperature Compensation provides stable operation over wide operating Temperature Range.
- 5VDC or 15VDC Logic assures compatibility with most digital input systems.
- Vibration Resistance maintains set points, under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- External Zero Adjustment provided for ease of calibration.

## Operating Principles

The T5400 Transducer is a digital-pneumatic device that provides a pneumatic output signal controlled by 8 bit digital data instructions from a central control room, a remote control location, or a local control station. This device is made up of two sections, the Signal Conversion Section and the Pneumatic Section.

The Signal Conversion Section (PC Board) accepts an 8 bit parallel wired digital signal. Full scale output is divided into 255 parts and the output level is based on the logic state (high or low) of the 8 bits. An enable line allows the unit to accept information from a parallel bus. The digital input signal is converted to an analog signal. The signal is then applied to a Coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force of the Flexure arm.







**B**

**Model T5420**



## Features

- The T5420 Digital-Pneumatic Transducer is compatible with most digital systems using TTL and CMOS Logic.
- Fail safe High or Low will return the output to 3 psig for Direct Acting Mode or to 15 psig for Reverse Acting Mode if the power is lost, regardless of the logic selected.
- Field Reversible Feature provides output which is directly or inversely proportional to the input signal.
- Integrated Volume Booster Output meets input requirements of final control elements requiring a higher capability output signal, increased output pressure, and/or increased flows.
- Vibration resistance maintains set points, under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- External Zero Adjustment provided for ease of calibration.

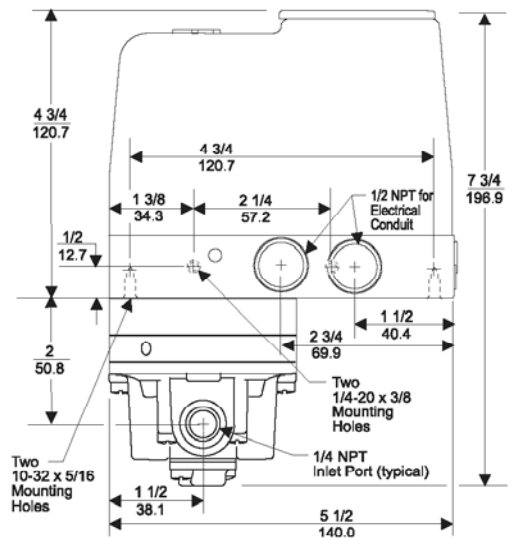
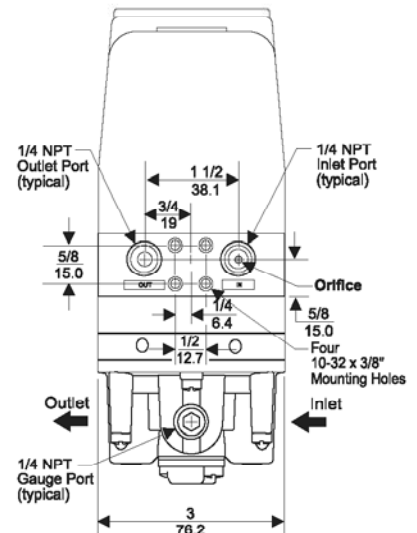
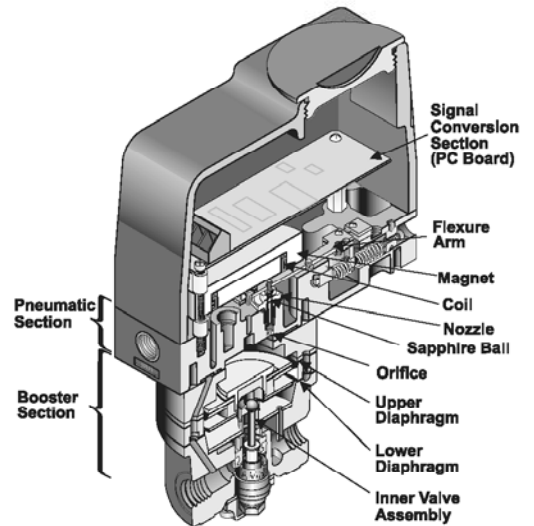
## Operating Principles

The Model T5420 Transducer is a digital-pneumatic device that provides a pneumatic output signal controlled by 8 bit digital data instructions from a central control location. This device is made up of three sections, the Signal Conversion Section, Pneumatic Section and Booster Section.

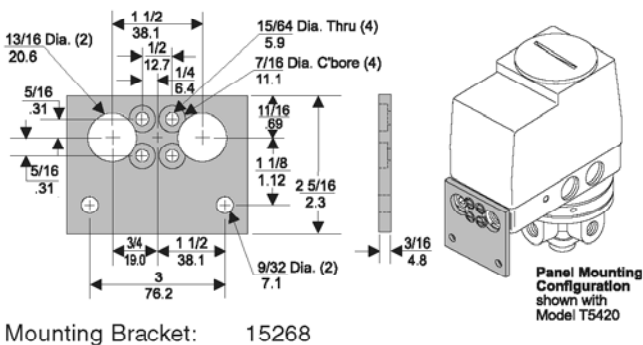
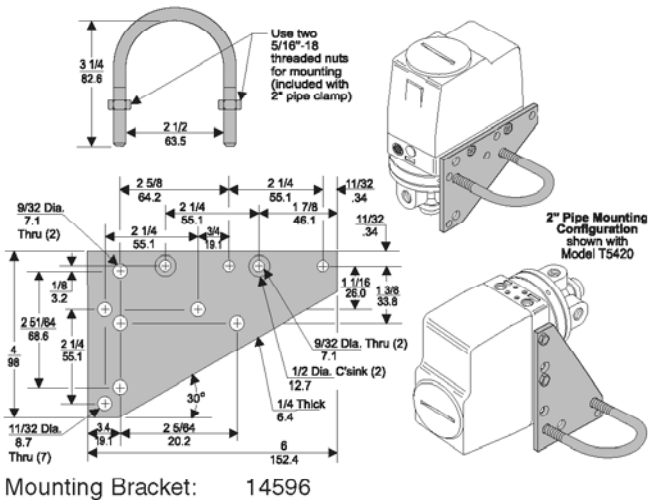
The Signal Conversion Section (PC Board) accepts an 8 bit parallel wired digital signal. Full scale output is divided into 255 parts and the output level is based on the logic state (high or low) of the 8 bits. An enable line allows the unit to accept information from a parallel bus. The digital input signal is converted to an analog signal. The signal is then applied to a Coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice.

The Booster Section amplifies the output pressure of the Pneumatic Section.



Mounting Kits



Model T5420 Transducer Kits & Accessories

Mounting Bracket Kits ..... 15268 (sold separately)  
 14596 (sold separately)

Installation

For Installation Instructions, see the Fairchild Model T5420 Digital Pneumatic Transducer Installation, Operation and Maintenance Instructions, IS-500T5420.

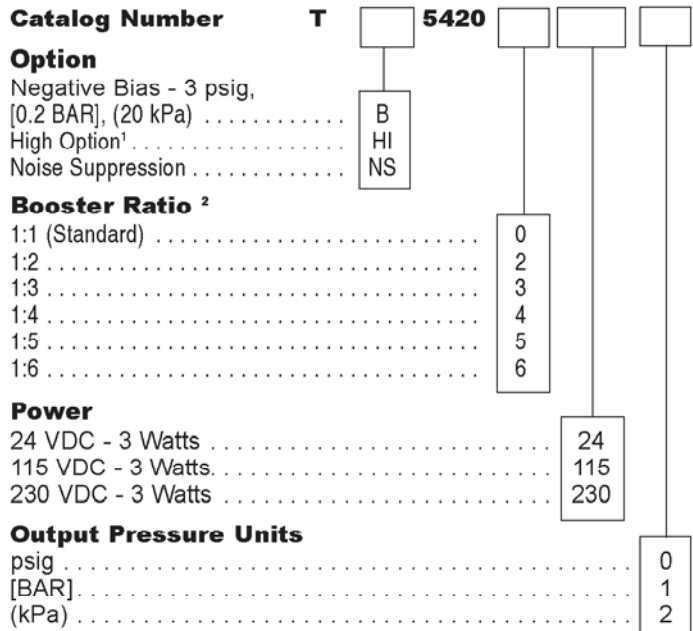
Table 1. Output Pressure Ranges

Ratio	Standard Output psig [BAR] (kPa)	Negative Bias Output psig [BAR] (kPa)
1:1 <sup>1</sup>	3-15 [0.2-1.0] (20-100)	0-12 [0-0.8] (0-80)
1:2 <sup>2</sup>	6-30 [0.4-2.0] (40-200)	0-24 [0-1.5] (0-150)
1:3 <sup>2</sup>	9-45 [0.6-3.0] (60-300)	0-36 [0-2.5] (0-250)
1:4 <sup>2</sup>	12-60 [0.8-4.0] (80-400)	0-48 [0-3.0] (0-300)
1:5 <sup>2</sup>	15-75 [1.0-5.0] (100-500)	0-60 [0-4.0] (0-400)
1:6 <sup>2</sup>	18-90 [1.2-6.0] (120-600)	0-72 [0-5.0] (0-500)

<sup>1</sup> Standard unit is configured for common supply to transducer and booster.

<sup>2</sup> Units require 20 psig, [1.5 BAR], (150 kPa) for transducer and a separate supply for booster. A common supply of up to 110 psig, [7.7 BAR], (770 kPa) can be used provided the prefix Z147 is added to the original order.

Catalog Information



<sup>1</sup> If higher flow (SCFM) is required for the standard 1:1 ratio, select HI Option.  
<sup>2</sup> Refer to Table 1. for Pressure Ranges.

Specifications

- Supply Pressure<sup>1</sup>  
20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 kPa)
- Output Capacity (1:1 Ratio)  
3-15 psig, [0.2-1.0 BAR], (20-100 kPa)
- Air Consumption (SCFM)  
0.16 (0.27 m<sup>3</sup>/HR) Maximum (Dead End) @ 20 psig, [1.5 BAR], (150 kPa) supply
- Output Capacity for Booster (SCFM)  
15 (25.5 m<sup>3</sup>/HR) Maximum @ 20 psig, [1.5 BAR], (150 kPa) supply  
45 (76.5 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) with separate supply
- Supply Pressure Effect  
1% of Span for 2 psig, [0.15 BAR], (15 kPa) supply change
- Voltage Requirement  
115/230 VAC + 10% 50-60 Hz, 24 VDC + 10%
- Input Data<sup>2</sup>  
8 Bit Parallel, 1 Bit Enable (TTL or CMOS compatible)
- Independent Linearity  
+ 0.25% Full Scale (T5420 ONLY), within 0.3% Output Span (T5422-T5426 ONLY)
- Resolution  
0.4% of Span
- Hysteresis & Repeatability  
within 0.1% Full Scale (T5420 ONLY), within 0.1% Times Ratio of Output Span (5422-T5426 ONLY)
- Sinking Current  
5 VDC Logic 0.5 mA per Bit, 15 VDC Logic 1.5 mA per Bit
- Ambient Temperature  
32°F to + 150°F, (0°C to + 65.5°C)
- Materials of Construction  
Body and Housing ..... Aluminum  
Ball and Orifice ..... Sapphire, Brass  
Nozzle ..... Stainless Steel

<sup>1</sup> Supply Pressure must be no less than 10 psig, (0.7 BAR), (70 kPa) above maximum booster output.

<sup>2</sup> Data must be on line 0.5 microseconds before enable strobe and 0.5 microseconds during enable period to start output pressure change.

# Model T5700 Electro-Pneumatic I/P, E/P Transducer

**B**

**Model T5700**

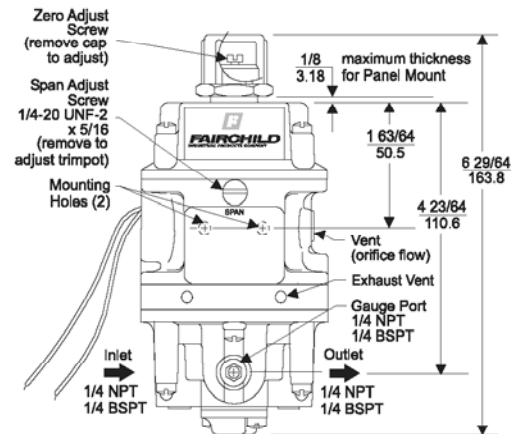
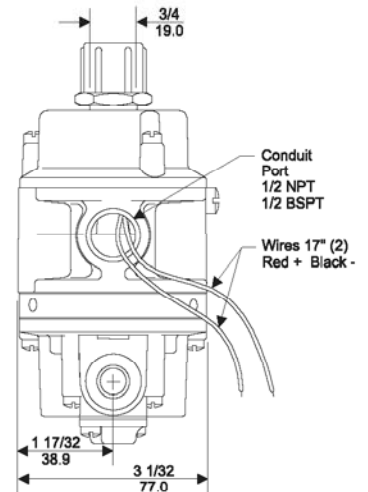
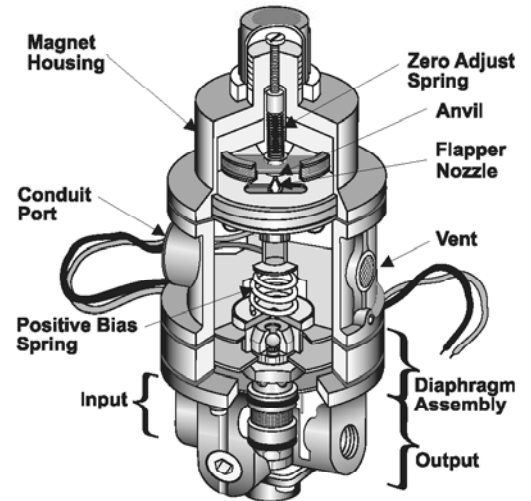


## Features

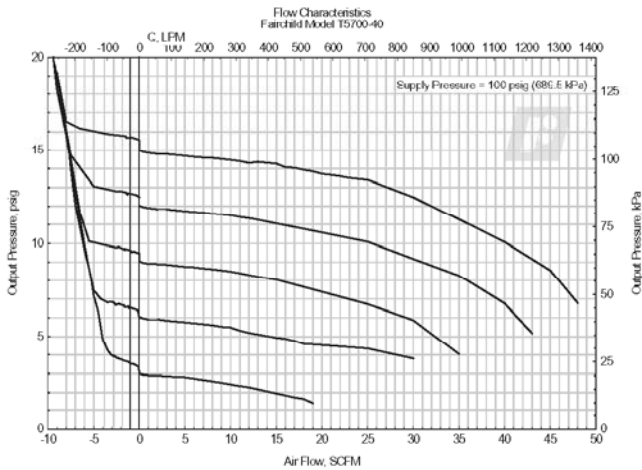
- Low Droop under flow conditions allows improved control of downstream pressure.
- Immunity to Supply Pressure Change permits use of normal plant air.
- Minimal Air Use in dead end service (.05 SCFM) reduces air consumption.
- High Forward and Exhaust Capacity permits increased process speed.
- Transducer can be configured to deliver an output which is directly or inversely proportional to the input.
- Split Range Operation permits two or more functions to be controlled from a common signal source (except 1-5 VDC unit).
- Built in Supply Pressure Regulator eliminates need for a separate regulator.
- Wall or Panel Mounting allows convenient installation.

## Operating Principles

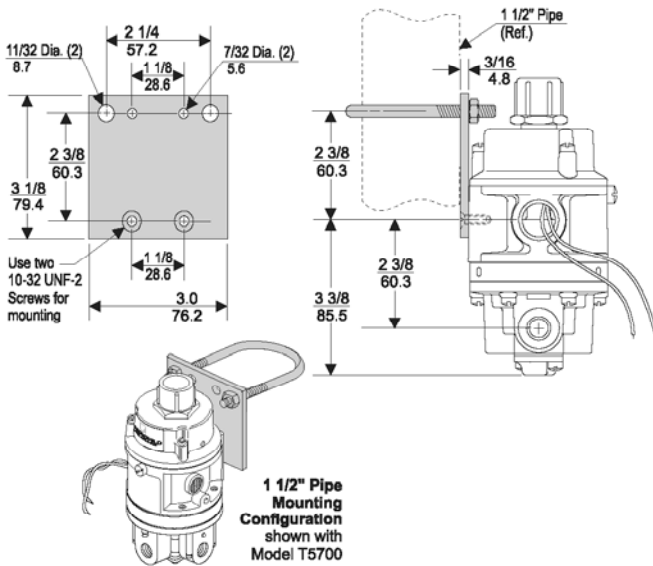
The Model T5700 is an electro-pneumatic device that converts a current signal to a linear pneumatic output. This device uses a force balance system in which a built-in supply regulator also functions as a pneumatic amplifier. Together the flapper and the nozzle work to control the pressure in the intermediate housing. This pressure acts on a diaphragm assembly which in turn controls the output pressure.



## Technical Information



## Mounting Kits



Mounting Bracket: 15396

## Model T5700 Transducer Kits & Accessories

Mounting Bracket Kits ..... 15396 (included with unit)

## Installation

For installation instructions, refer to the *Fairchild Model T5700 Electro-Pneumatic I/P, E/P Transducer Installation, Operation and Maintenance Instructions*,

IS-500T5700.

## Catalog Information

<b>Catalog Number</b>	<b>T5700-</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Input<sup>1</sup></b>	4-20 mA or 10-50 mA .....	4		
	1-5 VDC or 1-9 VDC .....	9		
<b>Output</b>	3-15 psig. ....		0	
	[0.2-1.0 BAR] .....		1	
	(20-100 kPa) .....		2	
<b>Options</b>	BSPT Thread .....			U

**B**

**Model T5700**

<sup>1</sup> Units are factory calibrated for 4-20 mA or 1-9 VDC input, but can be field calibrated for other inputs.

## Specifications

### Output Range

3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

### Supply Pressure

18-150 psig, [1.2-10.0 BAR], (120-1000 kPa)

### Flow Capacity (SCFM)

17 (28.9 m<sup>3</sup>/HR) for 20 psig, [1.4 BAR], (140 kPa)  
47 (79.9 m<sup>3</sup>/HR) for 120 psig, [8.0 BAR], (800 kPa)

### Exhaust Capacity (SCFM)

over 9 (15.3 m<sup>3</sup>/HR) for downstream pressure 5 psig, [.035 BAR], (.35 kPa) above setpoint

### Maximum Air Consumption

0.05 (.08 m<sup>3</sup>/HR) with 20-120 psig, [1.5-8.0 BAR], (150-800 kPa) supply

### Independent Linearity

+0.5% Full Scale

### Supply Pressure Effect

+0.3% Full Scale for +50 psig, [3.5 BAR], (350 kPa) change

### Terminal Base Linearity

+1.0% Full Scale

### Hysteresis & Repeatability

Within 0.1% Full Scale

Input Impedance	Input Range	OHMS
	4-20 mA	62
	10-50 mA	26
	1-5 VDC	510
	1-9 VDC	1020

### Temperature Range

-40°F to +150°F, (-40°C to +65°C)

### Materials of Construction

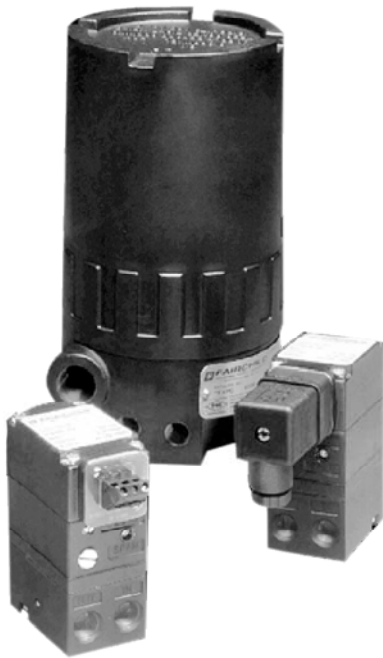
Housing ..... Aluminum

Orifice ..... Sapphire

Diaphragm ..... Buna N Dacron Fabric

**B**

**Model  
T6000**



The T6000 Series is designed for precision applications providing maximum versatility. The modular construction permits any basic unit to be used in the explosion-proof, rack, wall, pipe, panel, DIN rail or 3, 5, 10, or 15 unit manifold configurations. Servicing or calibration is quick and easy.

## Features

- Field reversible feature provides output which is directly or inversely proportional to the input signal.
- RFI/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Six output pressure ranges meet final control element requirements.
- Six input signal ranges meet most process and machine requirements.
- Compact size permits use in space restricted areas.
- Explosion-Proof NEMA 4X, IP65, Type 4 Enclosure available for outdoor and indoor installations.
- Input and Output ports on both front and bottom simplifies pneumatic piping.

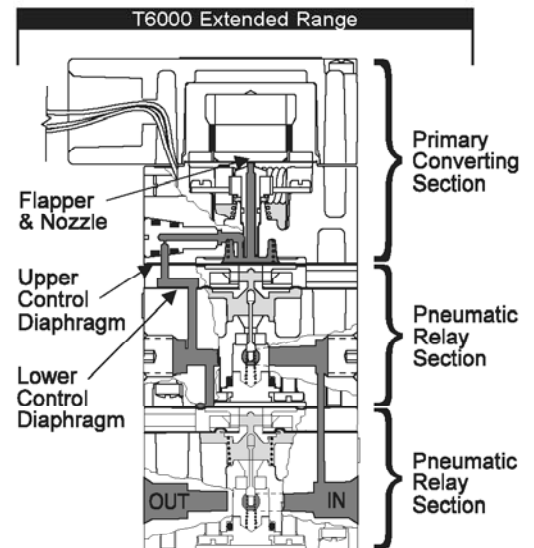
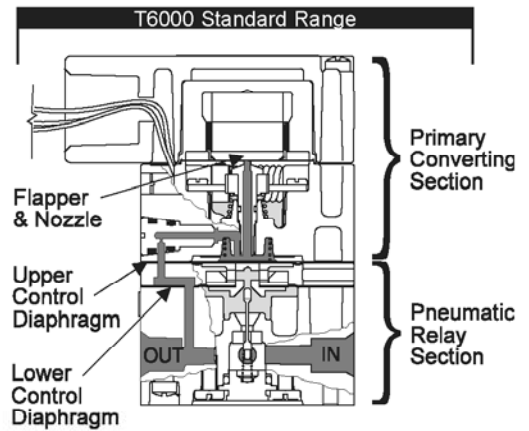
## Operating Principles

### Standard Range

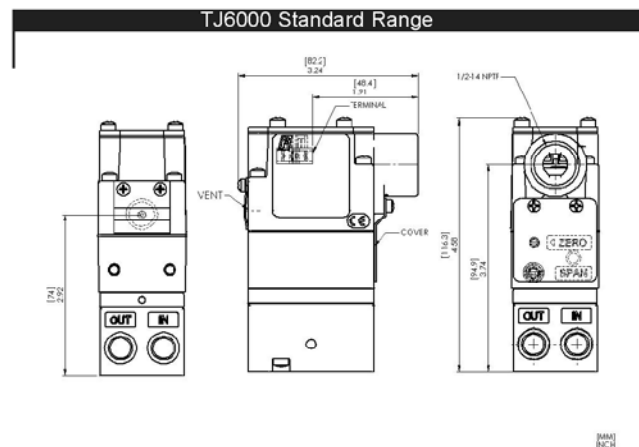
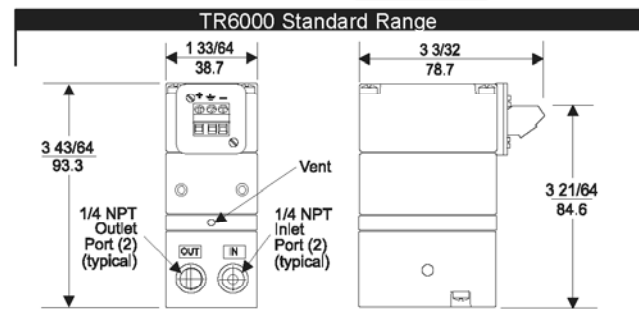
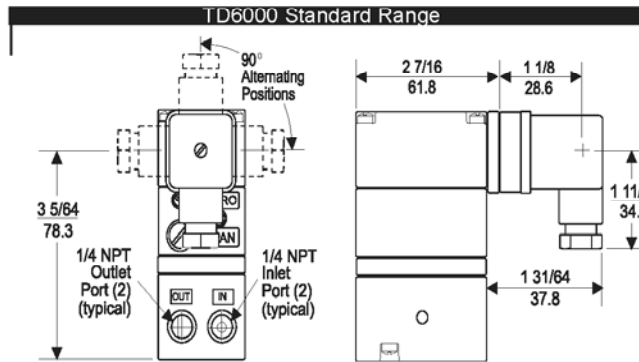
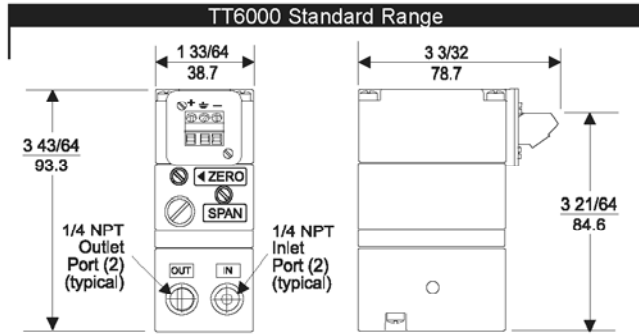
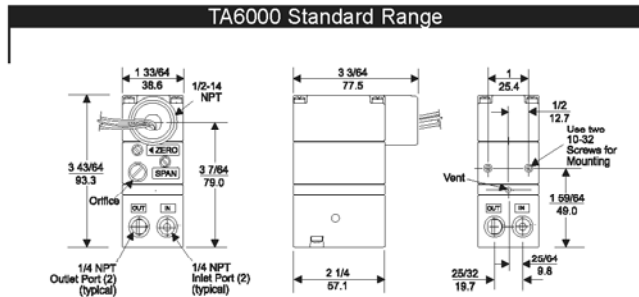
The T6000 Series is an electro-pneumatic device that converts a DC input signal to a pneumatic output. This device is made up of two sections, the Primary Converting Section and the Pneumatic Relay Section. The Coil and Suspension Spring, in the Primary Converting Section, is used as a Flapper. Together the Flapper and Nozzle work to control the signal pressure. The signal pressure acts on the Upper Control Diaphragm, in the Pneumatic Relay Section, which sets the output pressure. The output pressure is sensed by the Lower Control Diaphragm, in the Pneumatic Relay Section, which maintains the output pressure.

### Extended Range

The Extended Unit is made up of three sections, the Primary Control Section, the Pneumatic Relay Section, and an additional Pneumatic Relay Section. The additional Relay Section is used to amplify the output pressure.



# Model T6000 Electro-Pneumatic I/P, E/P Transducer



## Specifications: T6000 Standard Range Transducers

Output Range	psig [BAR] (kPa)	3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)
Supply Pressure <sup>1</sup>	psig [BAR] (kPa)	20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)
Minimum Span	psig [BAR] (kPa)	5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)
Impedance (OHMS) / Input Signal	4-20 mA 10-50 mA 0-5 VDC 0-10 VDC 1-5 VDC 1-9 VDC	197 79 550 1100 500 1000	204 82 532 1064 483 970	204 82 532 1064 483 970
Air Consumption (per ISA S51.1) SCFH		5.0 (.14 m <sup>3</sup> /HR)	6.0 (.17 m <sup>3</sup> /HR)	6.0 (.17 m <sup>3</sup> /HR)
Independent Linearity (per ISA S51.1)		+0.5% FS	+0.5% FS	+0.5% FS
Hysteresis & Repeatability (per ISA S51.1)		0.25% FS	0.25% FS	0.25% FS

**B**  
Model T6000

### Supply Pressure Effect on Output

0.25 psig, [0.17 BAR], (1.7 kPa) for a 25 psig, [1.7 BAR], (170 kPa) supply change

### Flow Rate (SCFM)

2.5 (4.25 m<sup>3</sup>/HR) @ 25 psig, [1.7 BAR], (170 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.  
9.0 (15.3 m<sup>3</sup>/HR) @ 120 psig, [8.0 BAR], (800 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.

### RFI / EMI Effect

Less than 0.5% of Span @ 30 V/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

### Temperature Range (per ISA S51.1)

-20°F to +150°F, (-30°C to +65°C)

### Materials of Construction

Body and Housing . . . . . Aluminum  
Trim . . . . . Zinc Plated Steel  
Diaphragm . . . . . Nitrile  
Orifice . . . . . Nickel Plated Brass

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa) above minimum output.

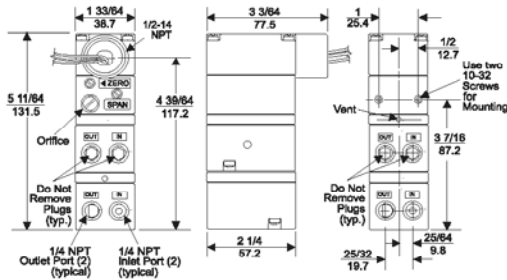
**NOTE:** Model TR6000 Transducer is designed for use with the TR Rack Kit. Physically, it is the same as the TT6000 Unit except that the terminal block has been rotated to the rear.

# Model T6000 Electro-Pneumatic I/P, E/P Transducer

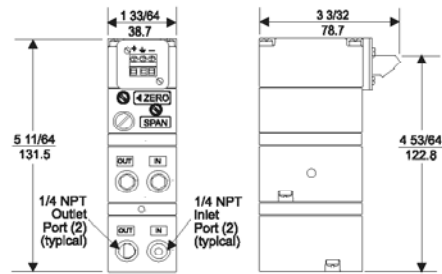
**B**

**Model T6000**

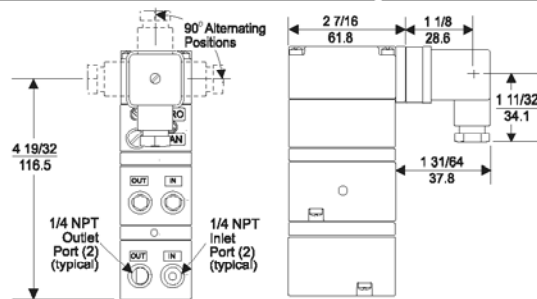
**TA6000 Extended Range**



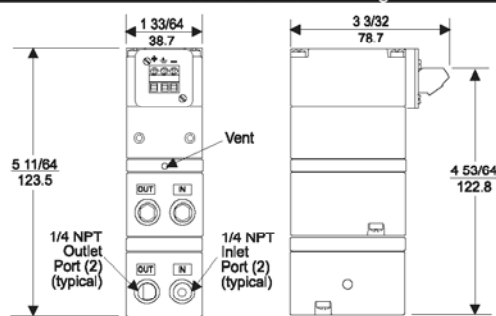
**TT6000 Extended Range**



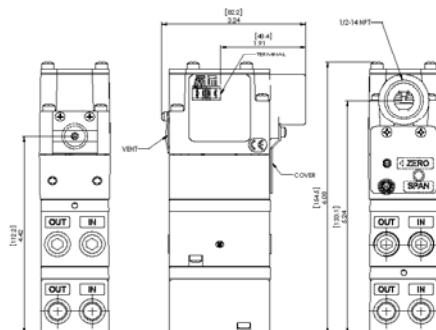
**TD6000 Extended Range**



**TR6000 Extended Range**



**TJ6000 Extended Range**



Specifications:  
T6000 Extended Range Transducers

Output Range	psig [BAR] (kPa)	0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
Supply Pressure <sup>1</sup>	psig [BAR] (kPa)	35-150 [2.5-10.0] (250-1000)	65-150 [4.6-10.0] (460-1000)	125-150 [8.8-10.0] (880-1000)
Minimum Span	psig [BAR] (kPa)	12 [0.8] (80)	25 [1.5] (150)	50 [3.5] (350)
Impedance (OHMS) / Input Signal	4-20 mA 10-50 mA 0-5 VDC 0-10 VDC 1-5 VDC	250 100 439 878 400 800	256 103 469 938 453 750	270 108 446 893 430 714
Air Consumption (per ISA S51.1) SCFH		12.0 (.34 m <sup>3</sup> /HR)	13.0 (.36 m <sup>3</sup> /HR)	17.0 (.48 m <sup>3</sup> /HR)
Independent Linearity (per ISA S51.1)		±0.75% FS	±1.0% FS	±1.0% FS
Hysteresis & Repeatability (per ISA S51.1)		<1.0% FS @ 35 psig, [2.5 BAR], (250 kPa)	<1.0% FS @ 65 psig, [4.6 BAR], (460 kPa)	<1.0% FS @ 125 psig, [8.8 BAR], (880 kPa)
Supply Pressure Effect on Output [BAR] (kPa) For a 25 psig, [1.7 BAR], (170 kPa) supply change	psig [BAR] (kPa)	0.5 [0.03] (4.0)	1.0 [0.07] (7.0)	1.5 [0.1] (10.5)

**Flow Rate (SCFM)**

11 (18.7 m<sup>3</sup>/HR) @ 150 psig, [10 BAR, (1000 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.

**RFI / EMI Effect**

Less than 0.5% of Span @ 30 V/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

**Temperature Range (per ISA S51.1)**

-20 °F to +150°F, (-30°C to +65°C)

**Materials of Construction**




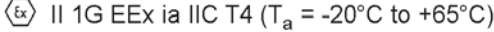
- Body and Housing . . . . . Aluminum
- Orifice . . . . . Nickel Plated Brass
- Trim . . . . . Zinc Plated Steel
- Diaphragm . . . . . Nitrile

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa) above maximum output.

**NOTE:** Model TR6000 Transducer is designed for use with the TR Rack Kit. Physically, it is the same as the TT6000 Unit except that the terminal block has been rotated to the rear.



## Hazardous Area Specifications

	Explosion-Proof	Intrinsically Safe														
<b>Factory Mutual (FM) Approvals</b> 	Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; NEMA 4X Enclosure.	Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G.  <table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: left;"><i>Entity Parameters</i></th> </tr> </thead> <tbody> <tr> <td><math>V_{max}^1 = 40 \text{ VDC}</math></td> <td><math>C_i^3 = 0 \mu\text{F}</math></td> </tr> <tr> <td><math>I_{max}^2 = 125 \text{ mA}</math></td> <td><math>L_i^4 = 3 \text{ mH}</math></td> </tr> <tr> <td><sup>1</sup><math>V_{max} = \text{Max. Voltage}</math></td> <td><sup>3</sup><math>C_i = \text{Capacitance}</math></td> </tr> <tr> <td><sup>2</sup><math>I_{max} = \text{Max. Current}</math></td> <td><sup>4</sup><math>L_i = \text{Inductance}</math></td> </tr> </tbody> </table>	<i>Entity Parameters</i>		$V_{max}^1 = 40 \text{ VDC}$	$C_i^3 = 0 \mu\text{F}$	$I_{max}^2 = 125 \text{ mA}$	$L_i^4 = 3 \text{ mH}$	<sup>1</sup> $V_{max} = \text{Max. Voltage}$	<sup>3</sup> $C_i = \text{Capacitance}$	<sup>2</sup> $I_{max} = \text{Max. Current}$	<sup>4</sup> $L_i = \text{Inductance}$				
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<sup>2</sup> $I_{max} = \text{Max. Current}$	<sup>4</sup> $L_i = \text{Inductance}$															
<b>Canadian Standards Association (CSA) Approvals</b> 	Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; Type 4 Enclosure.	Class I, Division 1, Groups A, B, C and D; Temperature Code T3C. Rated 4-20 mA, 30 VDC Maximum.  <table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: left;"><i>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</i></th> </tr> </thead> <tbody> <tr> <td colspan="2">System Type 1: Single Channel Polarized Rated: 28V Max. 300 Ohm Min.</td> </tr> <tr> <td colspan="2">System Type 2: Dual Channel Polarized Rated: 28V Max. 300 Ohm Min.</td> </tr> <tr> <td colspan="2">System Type 3: a. 28V Max. 300 Ohm Min. &amp; 10V Max. 50 Ohm Min. return. b. 28.5V Max. 300 Ohm Min. &amp; 9V Max. 50 Ohm Min return.</td> </tr> </tbody> </table>	<i>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</i>		System Type 1: Single Channel Polarized Rated: 28V Max. 300 Ohm Min.		System Type 2: Dual Channel Polarized Rated: 28V Max. 300 Ohm Min.		System Type 3: a. 28V Max. 300 Ohm Min. & 10V Max. 50 Ohm Min. return. b. 28.5V Max. 300 Ohm Min. & 9V Max. 50 Ohm Min return.							
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<b>ATEX Approvals</b> 		 II 1G EEx ia IIC T4 ( $T_a = -20^\circ\text{C}$ to $+65^\circ\text{C}$ )  <table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: left;"><i>Transducer Parameters</i></th> </tr> </thead> <tbody> <tr> <td><math>U_{max}^1 = 28 \text{ V}</math></td> <td><math>P_i^3 = 0.653 \text{ W}</math></td> </tr> <tr> <td><math>I_{max}^2 = 93 \text{ mA}</math></td> <td><math>C_i^4 = 0</math></td> </tr> <tr> <td></td> <td><math>L_i^5 = 0</math></td> </tr> <tr> <td><sup>1</sup><math>U_{max} = \text{Max. Voltage}</math></td> <td><sup>3</sup><math>P_i = \text{Max. Power}</math></td> </tr> <tr> <td><sup>2</sup><math>I_{max} = \text{Max. Current}</math></td> <td><sup>4</sup><math>C_i = \text{Capacitance}</math></td> </tr> <tr> <td></td> <td><sup>5</sup><math>L_i = \text{Inductance}</math></td> </tr> </tbody> </table>	<i>Transducer Parameters</i>		$U_{max}^1 = 28 \text{ V}$	$P_i^3 = 0.653 \text{ W}$	$I_{max}^2 = 93 \text{ mA}$	$C_i^4 = 0$		$L_i^5 = 0$	<sup>1</sup> $U_{max} = \text{Max. Voltage}$	<sup>3</sup> $P_i = \text{Max. Power}$	<sup>2</sup> $I_{max} = \text{Max. Current}$	<sup>4</sup> $C_i = \text{Capacitance}$		<sup>5</sup> $L_i = \text{Inductance}$
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<sup>1</sup> ATEX not available for Explosion-Proof.

<sup>2</sup> Intrinsically Safe for Current Inputs Units Only.



B

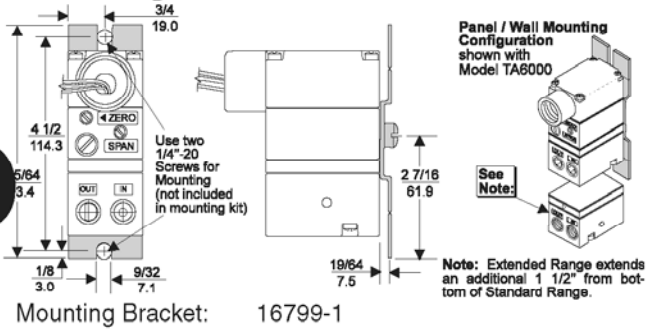
  
**Model T6000**

# Model T6000 Electro-Pneumatic I/P, E/P Transducer

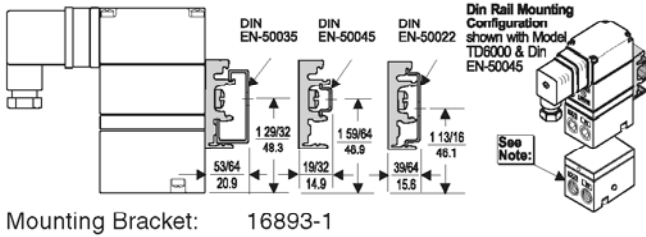
## Mounting Kits

**B**

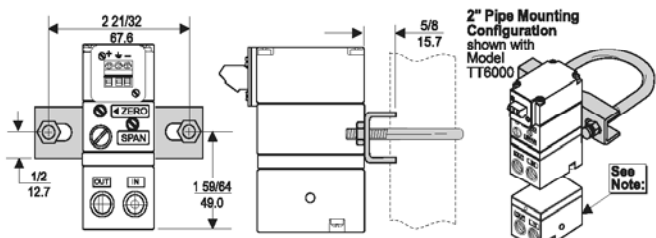
**Model T6000**



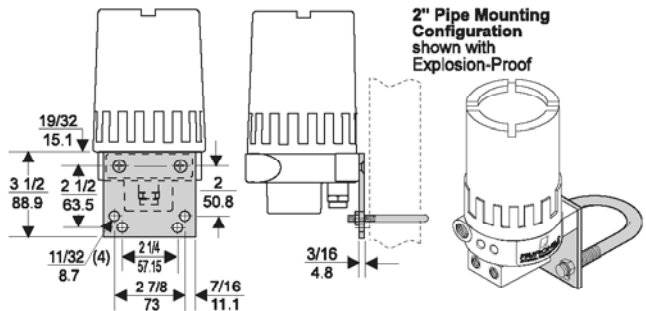
Mounting Bracket: 16799-1



Mounting Bracket: 16893-1



Mounting Bracket: 19254-1



Mounting Bracket: 18187-1

## Model T6000 Transducer Kits & Accessories

- Mounting Bracket Kits . . . . 16799-1 (included with unit)
- 16893-1 (included with unit)
- 19254-1 (sold separately)
- 18187-1 (sold separately)

## Catalog Information

Catalog Number T          6 0 0 0         

### Electrical Connections

- 1/2 NPT Conduit . . . . . A
- Fitting with Pigtail . . . . . D
- DIN43650 Connection . . . . . J
- Junction Box . . . . . R
- Rack Mount . . . . . T
- Terminal Block . . . . . (leave blank if Explosion-Proof)

### Underwriting Group

- Canadian Standards . . . . . C
- ATEX <sup>1</sup> . . . . . E
- Factory Mutual . . . . . F

### Approval Class

- Explosion-Proof . . . . . XPD
- Dust Ignition-Proof (includes NEMA 4X/IP 65)
- Intrinsically Safe<sup>2</sup> . . . . . I
- None (leave blank) . . . . .

### Input

- 4-20 mA . . . . . 4
- 10-50 mA . . . . . 3
- 1-5 VDC . . . . . 5
- 0-5 VDC . . . . . 7
- 1-9 VDC . . . . . 9
- 0-10 VDC . . . . . 0

### Output (Select appropriate psig, [BAR], or (kPa) range.)

- 3-15 psig . . . . . 01
- 3-27 psig . . . . . 02
- 6-30 psig . . . . . 03
- 0-30 psig . . . . . 04
- 0-60 psig . . . . . 05
- 0-120 psig . . . . . 06
- [0.2-1.0 BAR] . . . . . 11
- [0.2-1.8 BAR] . . . . . 12
- [0.4-2.0 BAR] . . . . . 13
- [0-2.0 BAR] . . . . . 14
- [0-4.0 BAR] . . . . . 15
- [0-8.0 BAR] . . . . . 16
- (20-100 kPa) . . . . . 21
- (20-180 kPa) . . . . . 22
- (40-200 kPa) . . . . . 23
- (0-200 kPa) . . . . . 24
- (0-400 kPa) . . . . . 25
- (0-800 kPa) . . . . . 26

### Options

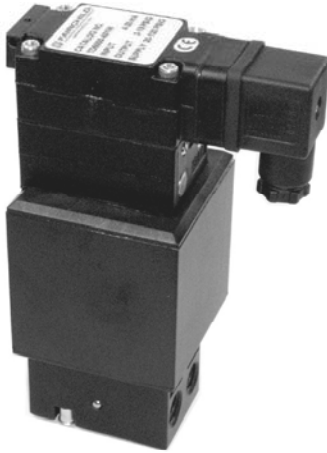
- BSPT Thread<sup>3</sup> . . . . . U
- IP65 Enclosure . . . . . W

<sup>1</sup> ATEX not Available for Explosion-Proof.

<sup>2</sup> Intrinsically Safe for Current Input Units Only.

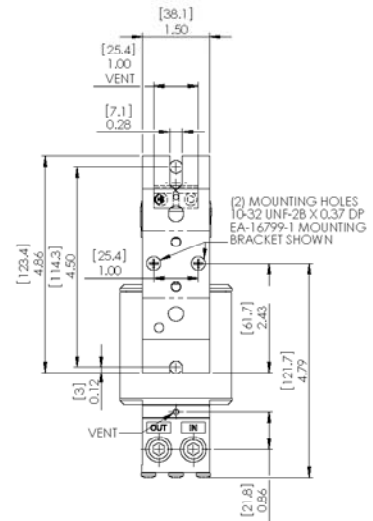
<sup>3</sup> Not Available for CSA Explosion-Proof Units.

# Model T6100 Lock In Place Electro-Pneumatic I/P Transducer



## Features

- Locks in "Last Position" to accurately capture setpoint
- Extremely low drift after power loss permits transducer to maintain set point
- IP65 Rating to handle moist applications
- Single part number makes it easy to specify and cover all your needs
- Superior Construction including a moisture resistant PCB and zinc coated components



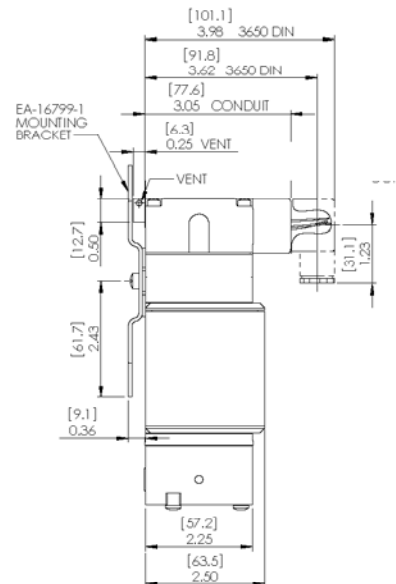
**B**

**Model T6100**

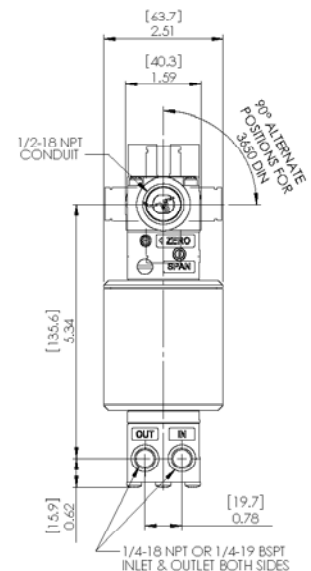
## Operating Principles

Uniquely, the T6100 "Lock in Last Place" feature now provides flexibility, reliability and safety in applications requiring protection from signal failures to critical control system instruments.

Design of the T6100 relies on a proprietary integrated solenoid valve module interposed between the flapper-nozzle pilot and the booster section. Upon signal failure, an electrical charge stored within the active electronic circuit controlling the integrated solenoid valve module maintains the current to the voice coil at its last setpoint. Simultaneously, a high energy pulse closes the solenoid valve, trapping the signal pressure within the signal chamber at the last setpoint. The booster continues to provide its normal forward and exhaust flow, with the constant signal pressure now captured and maintained within the signal chamber.

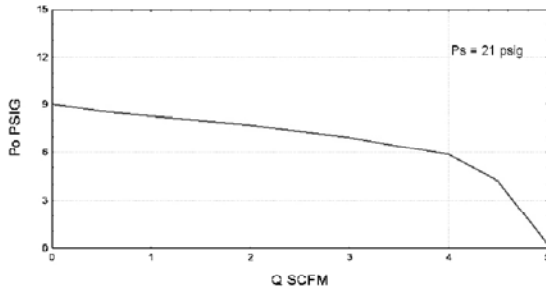


The electronic circuit activates the solenoid valve immediately upon detection of a signal that falls below a base value of 3.5mA. Upon restoration of the signal, the electronic circuit sends a high energy pulse to open the solenoid valve, restoring the pilot section's pressure control of the signal pressure to the booster as in a typical transducer. The electronic detection circuit, in series with the T6100's signal conditioning circuit, merely adds an additional voltage drop to the T6100's normal control loop. Advanced valve orifice design of the T6100 increases its forward flow capacity to a minimum of 5-scfm at 21-psig supply pressure.



# Model T6100 Lock In Place Electro-Pneumatic I/P Transducer

T6100 Transducer  
Flow Characteristics



**B**

Model  
T6100

## Technical Specifications:

<b>Output Range</b>	psig [BAR] (kPa)	3-15 [0.2-1.0] (20-100)
<b>Supply Pressure<sup>1</sup></b>	psig [BAR] (kPa)	20-40 [1.5-2.8] (150-280)
<b>Minimum Span</b>	psig [BAR] (kPa)	5 [0.35] (35)
<b>Impedance</b>	4-20 mA	197
<b>Air Consumption</b> (per ISA S51.1) SCFH		5.0 (.14 m <sup>3</sup> /HR)
<b>Independent Linearity</b> (per ISA S51.1)		+0.5% FS
<b>Hysteresis &amp; Repeatability</b> (per ISA S51.1)		0.25% FS

**Supply Pressure Effect on Output**  
0.25 psig, [0.17 BAR], (1.7 kPa) for a 25 psig, [1.7 BAR], (170 kPa) supply change

**Flow Rate (SCFM)**  
5 (8.5 m<sup>3</sup>/HR) @ 21 psig, [1.7 BAR], (170 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.

**RFI / EMI Effect**  
Less than 0.5% of Span @ 30 V/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

**Temperature Range** (per ISA S51.1)  
-20°F to +150°F, (-30°C to +65°C)

**Materials of Construction**  
Body and Housing ..... Aluminum  
Trim ..... Zinc Plated Steel  
Diaphragm ..... Nitrile  
Orifice ..... Nickel Plated Brass  
Weight ..... 1000 grams  
Mounting ..... Surface Mounting, or 2" pipe mount brkts available  
Mounting Position ..... Vertical Preferred; Other positions re-zero  
Degree of Protection ..... IP 65 Rating

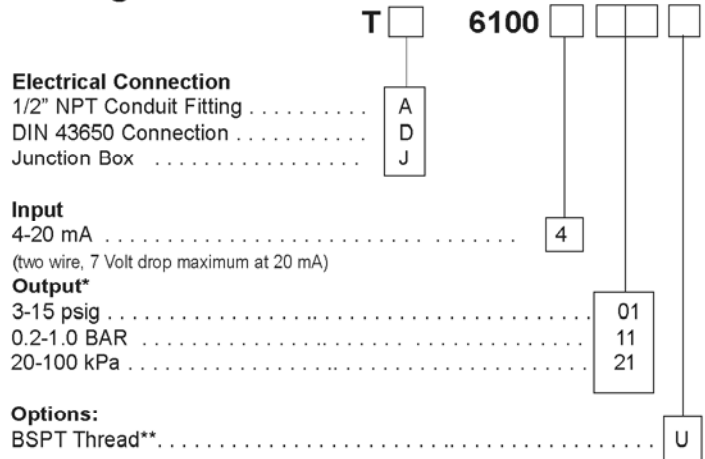
**Failure Mode** - Output Pressure locks at last value when signal fails

**Drift Rate** ..... .2% per hour Maximum

**Electrical Connection** ..... 33mm square DIN 43650 connector  
..... mountable in four directions

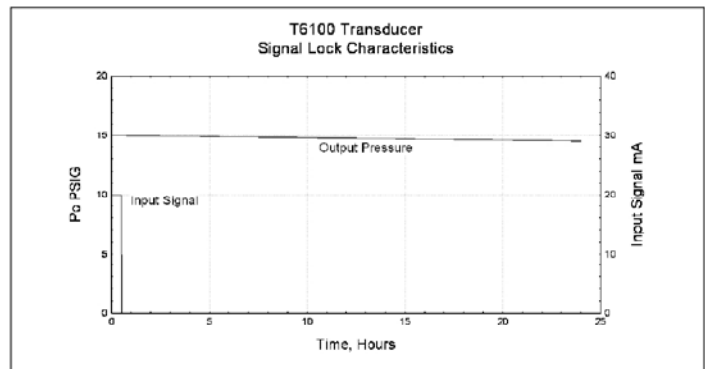
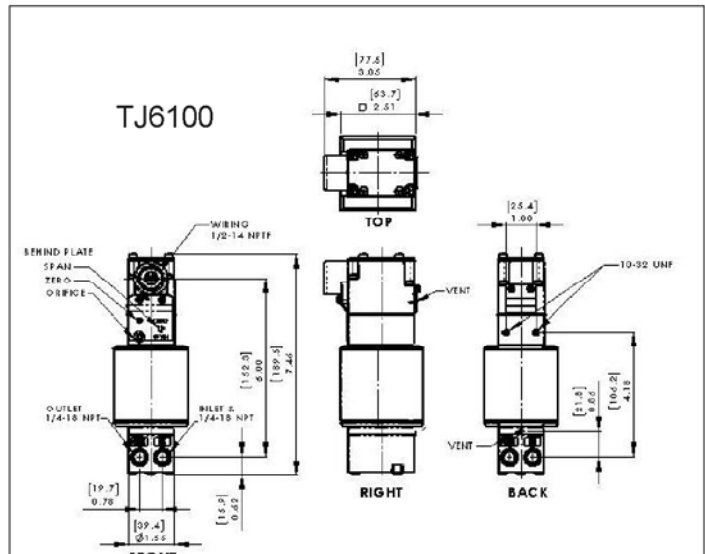
## Ordering Information

Catalog No.:



\* Special Ranges Available Upon Request

\*\* Standard Pneumatic Connections are 1/4" NPT



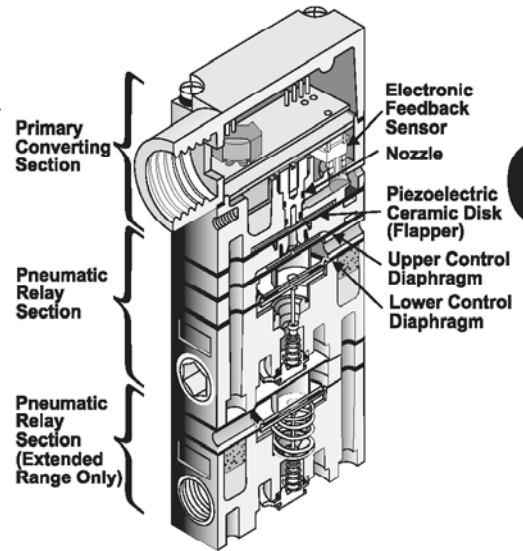
## Installation

For installation instructions, refer to the *Fairchild Model T6100 Lock In Place Electro-Pneumatic I/P, Transducer Installation, Operation and Maintenance Instructions*, IS-10006100.



## Features

- The T7800 Series Transducers provide maximum versatility for precision applications.
- Field Reversible Feature provides output that is inversely proportional to input signal.
- RF/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Internal Electronic Feedback and solid state controlled Piezoelectric Actuator provide precise control of output pressure regardless of vibration or position.
- Damping Adjustment for optimum tuning response.
- Split range operation lets a common signal source control two or more functions.
- Compact size for use in restricted spaces.
- Two temperature range versions available.
- Various mounting configurations allow installation flexibility for most applications.
- NEMA 4X, Type 4 Enclosure and IP65 rated for indoor and outdoor installations.
- Canadian Registration Numbers (CRN) certification for all territories and provinces.



**B**

Model T7800

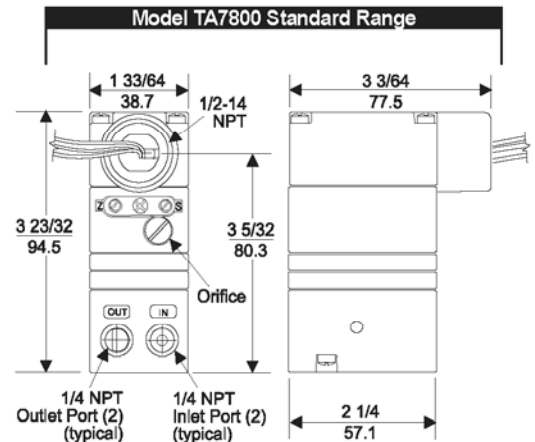
## Operating Principles

### STANDARD RANGE

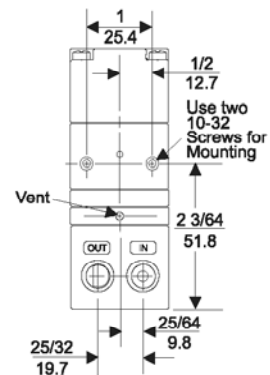
The Model T7800 Series converts a DC input signal to a linear proportional pneumatic output. It includes the Primary Converting Section and the pneumatic Relay Section. The Piezoelectric Ceramic Actuator, in the Primary Converting Section, functions as a Flapper. The Flapper and Nozzle work together to control the signal pressure. The signal pressure that sets the output pressure acts on the Upper Control Diaphragm in the Pneumatic Relay Section. The Lower Control Diaphragm in the Pneumatic Relay Section senses the output pressure.

### EXTENDED RANGE

In the Extended Range units, an additional Relay Section amplifies the output pressure.



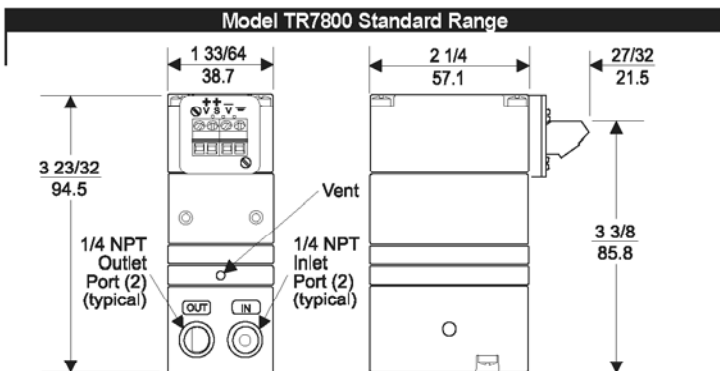
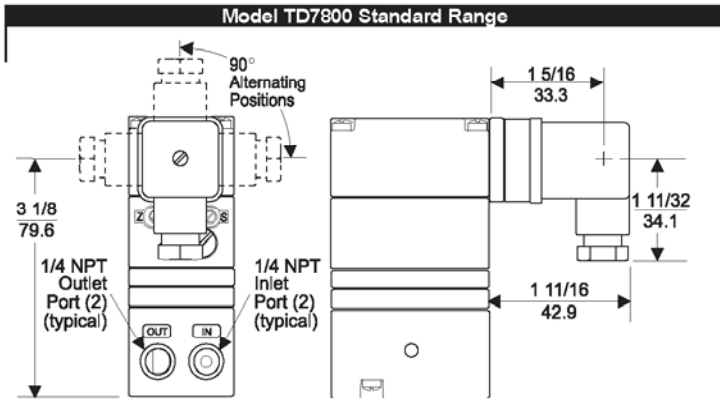
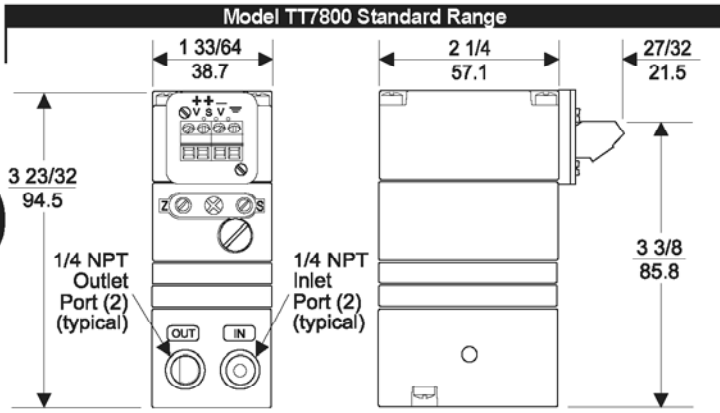
Note: Unused IN and OUT Ports are plugged (typical)



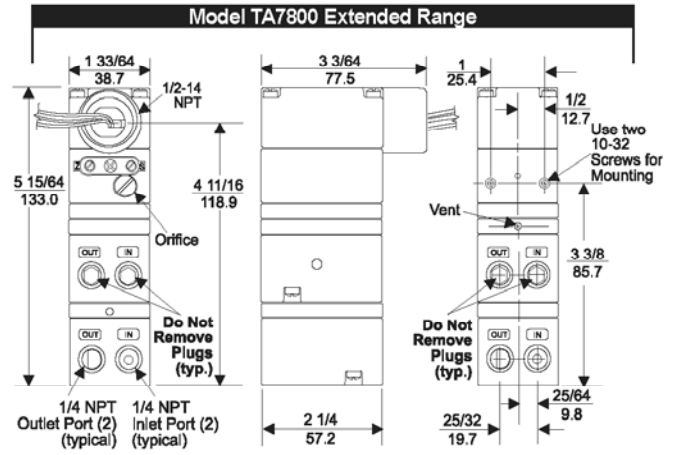
# Model T7800 Electro-Pneumatic I/P, E/P Transducer

**B**

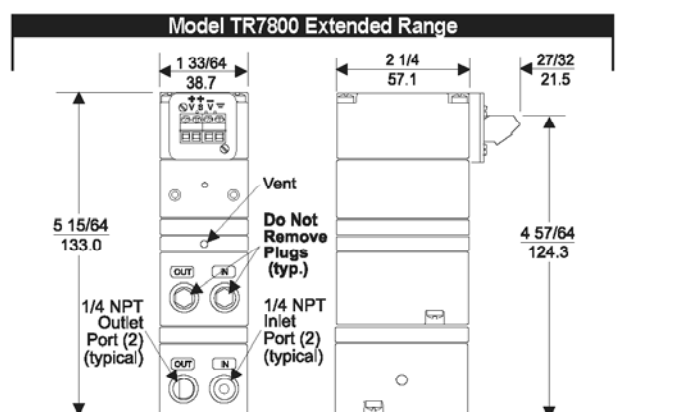
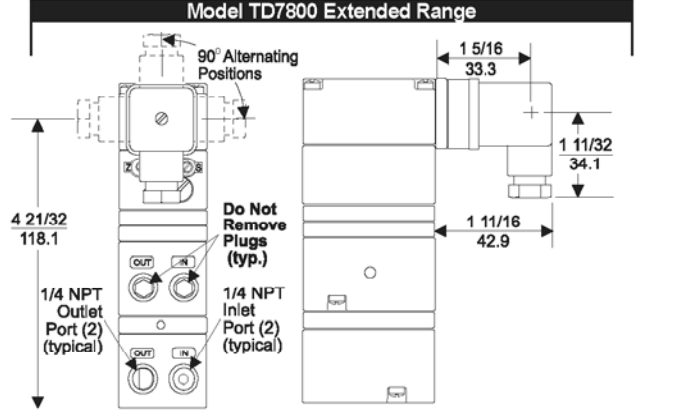
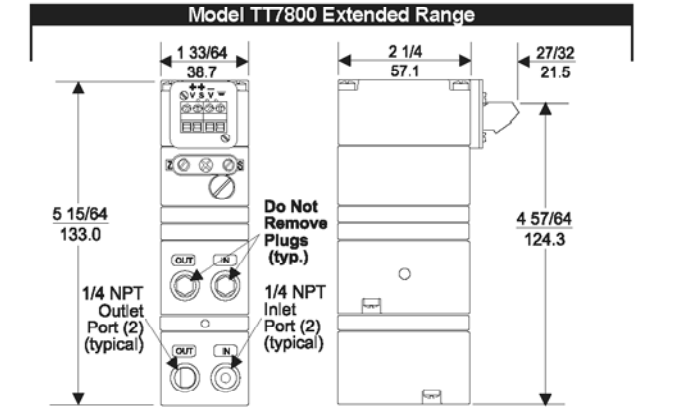
**Model T7800**



Model TR7800 for use with TR Manifold Rack Kit. TR7800 unit same as TT7800 except terminal block is located on rear.



Note: Unused IN and OUT Ports are plugged (typical)



Model TR7800 for use with TR Manifold Rack Kit. TR7800 unit same as TT7800 except terminal block is located on rear.

# Model T7800 Electro-Pneumatic I/P, E/P Transducer

Standard Range Specifications		SET POINT			
		3 [0.2] (20)	9 [0.6] (60)	15 [1.0] (100)	30 [2.0] (200)
Maximum Air Consumption	All Ranges SCFH	3.5 (.10 m <sup>3</sup> /HR)	7.0 (.20 m <sup>3</sup> /HR)	9.5 (.27 m <sup>3</sup> /HR)	13.5 (.38 m <sup>3</sup> /HR)
Flow Rate (SCFM)		2.5 (4.25 m <sup>3</sup> /HR) @ 25 psig, [1.7 BAR], (170 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output		OR	9.0 (15.3 m <sup>3</sup> /HR) @ 120 psig, [8.0 BAR], (800 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output
Temperature Range	Operating Storage	-40°F to + 160°F (-40°C to + 71.2°C) -40°F to + 180°F (-40°C to + 82.2°C)			
Span/Zero Adjustments		Screwdriver adjustments located on front of unit			
Required Operating Voltages		Two Wire Current Input 7.2 VDC @ 20 mA (4-20 mA signal)			
Supply Voltages		Three Wire Voltage Input 7.2-30 VDC, less than 3 mA			
Signal Impedance		Three Wire Voltage Input 10 Kilohms			

		OUTPUT RANGE		
		3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)
Input Range		4-20 mA DC, 0-10 VDC, 1-9 VDC		
Supply Pressure <sup>1</sup>		20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)
Minimum Span		5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)
Frequency Response		-3 db @ 5 Hz per ISA S26.4.3.1 load configuration A.		
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)		0.1% Full Scale		
Deadband		0.02% Full Scale		
Repeatability (ISA S51.1)		0.1% Full Scale		
Position Effect		No Measurable Effect		
Vibration Effect		Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect		Less than 0.5% of span @ 30 $\mu$ m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 $\mu$ m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect		No Measurable Effect		
Temperature Effect		[+0.5% +0.04% / °F Temperature Change] of Span typical		
Materials of Construction		Body and Housing . . . . . Chromate Treated Aluminum Orifice . . . . . Nickel Plated Brass & Sapphire Trim . . . . . Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . Nitrile Finish . . . . . Epoxy Powder Coating		

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output

B

Model  
T7800

# Model T7800 Electro-Pneumatic I/P, E/P Transducer

## Extended Range Specifications

		SET POINT					
		0 [0] (0)	15 [1.0] (100)	30 [2.0] (200)	60 [4.0] (400)	120 [8.0] (800)	
		psig [BAR] (kPa)					
Maximum Air Consumption	0-30 psig SCFH	3.1 (.09 m <sup>3</sup> /HR)	7.8 (.22 m <sup>3</sup> /HR)	11.8 (.33 m <sup>3</sup> /HR)			
	0-60 psig SCFH	1.6 (0.4 m <sup>3</sup> /HR)	4.7 (.13 m <sup>3</sup> /HR)	7.8 (.22 m <sup>3</sup> /HR)	13.3 (.37 m <sup>3</sup> /HR)		
	0-120 psig SCFH	0.5 (.01 m <sup>3</sup> /HR)		3.8 (.11 m <sup>3</sup> /HR)	7.6 (.21 m <sup>3</sup> /HR)	15.1 (.42 m <sup>3</sup> /HR)	
Flow Rate (SCFM)		11.0 (18.7 m <sup>3</sup> /HR) @ 150 psig, [10 BAR], (1000 kPa) supply & midscale output					
Temperature Range	Operating Storage	-40°F to + 160°F, (-40°C to + 71.2°C) -40°F to + 180°F, (-40°C to + 82.2°C)					
Span/Zero Adjustments		Screwdriver adjustments located on front of unit					
Required Operating Voltages		<b>Two Wire Current Input</b> 7.2 VDC @ 20 mA (4-20 mA signal)					
Supply Voltages		<b>Three Wire Voltage Input</b> 7.2 - 30 VDC, less than 3 mA					
Signal Impedance		<b>Three Wire Voltage Input</b> 10 Kilohms					

		OUTPUT RANGE		
		0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
		psig [BAR] (kPa)		
Input Range		4-20 mA DC, 0-10 VDC, 1-9 VDC		
Supply Pressure <sup>1</sup>		35-150 [2.4-10] (240-1000)	65-150 [4.6-10] (460-1000)	125-150 [8.8-10] (880-100)
Minimum Span		12.5 [0.85] (85)	25 [1.5] (150)	50 [3.0] (300)
Frequency Response		-3 db @ 2 Hz per ISA S26.4.3.1 load configuration A.		
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)		0.25% Full Scale		
Deadband		0.02% Full Scale		
Repeatability (ISA S51.1)		0.1% Full Scale		
Position Effect		0.125% @ 90° & 0.25% @ 180°		
Vibration Effect		Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect		Less than 0.5% of span @ 30 $\mu$ m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 $\mu$ m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect		< 0.1 psig change for 10 psig supply change		
Temperature Effect		[+0.5% +0.06% / °F Temperature Change] of Span typical		
Materials of Construction		Body and Housing. . . . . Chromate Treated Aluminum Orifice . . . . . Nickel Plated Brass & Sapphire Trim . . . . . Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . Nitrile Finish. . . . . Epoxy Powder Coating		

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output

**B**

Model  
T7800



## Hazardous Area Specifications

	Intrinsically Safe (4-20 mA Only)	Division 2																		
<p><b>Factory Mutual (FM) Approvals</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: left; padding: 2px;">Entity Parameters</th> </tr> <tr> <td style="padding: 2px;">V<sub>max</sub><sup>1</sup> = 30 VDC</td> <td style="padding: 2px;">C<sub>i</sub><sup>3</sup> = 0</td> </tr> <tr> <td style="padding: 2px;">I<sub>max</sub><sup>2</sup> = 200 mA</td> <td style="padding: 2px;">L<sub>i</sub><sup>4</sup> = 0</td> </tr> <tr> <td style="padding: 2px;"><sup>1</sup>V<sub>max</sub> = Max. Voltage</td> <td style="padding: 2px;"><sup>3</sup>C<sub>i</sub> = Capacitance</td> </tr> <tr> <td style="padding: 2px;"><sup>2</sup>I<sub>max</sub> = Max. Current</td> <td style="padding: 2px;"><sup>4</sup>L<sub>i</sub> = Inductance</td> </tr> <tr> <th colspan="2" style="text-align: left; padding: 2px;">Non-Incendive Field Wiring Parameters</th> </tr> <tr> <td style="padding: 2px;">V<sub>max</sub><sup>1</sup> = 30 VDC</td> <td style="padding: 2px;">C<sub>i</sub><sup>3</sup> = 0</td> </tr> <tr> <td style="padding: 2px;"><sup>1</sup>V<sub>max</sub> = Max. Voltage</td> <td style="padding: 2px;"><sup>3</sup>C<sub>i</sub> = Capacitance</td> </tr> <tr> <td></td> <td style="padding: 2px;"><sup>4</sup>L<sub>i</sub> = Inductance</td> </tr> </table>	Entity Parameters		V <sub>max</sub> <sup>1</sup> = 30 VDC	C <sub>i</sub> <sup>3</sup> = 0	I <sub>max</sub> <sup>2</sup> = 200 mA	L <sub>i</sub> <sup>4</sup> = 0	<sup>1</sup> V <sub>max</sub> = Max. Voltage	<sup>3</sup> C <sub>i</sub> = Capacitance	<sup>2</sup> I <sub>max</sub> = Max. Current	<sup>4</sup> L <sub>i</sub> = Inductance	Non-Incendive Field Wiring Parameters		V <sub>max</sub> <sup>1</sup> = 30 VDC	C <sub>i</sub> <sup>3</sup> = 0	<sup>1</sup> V <sub>max</sub> = Max. Voltage	<sup>3</sup> C <sub>i</sub> = Capacitance		<sup>4</sup> L <sub>i</sub> = Inductance	<p><b>TDFI7800, TAFI7800</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, Fibers; NEMA 4X Enclosure; Temperature Code T5 (-40 °C to +66 °C) T6 (-40 °C to +40 °C)</p>	<p><b>TDFI7800, TAFI7800, TDFN7800, TAFN7800</b> Class I, Division 2, Groups A, B, C and D; Suitable for Class II, Division 2, Groups F and G; Class III, Division 2; NEMA 4X Enclosure; Non Incendive: 4-20 mA, voltage input units; Temperature Code T5 (-40 °C to +66 °C) T6 (-40 °C to +40 °C)</p>
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<p><b>IECEx Approvals</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: left; padding: 2px;">Transducer Parameters</th> </tr> <tr> <td style="padding: 2px;">U<sub>i</sub><sup>1</sup> = 28 V</td> <td style="padding: 2px;">P<sub>i</sub><sup>3</sup> = 0.7 W</td> </tr> <tr> <td style="padding: 2px;">I<sub>max</sub><sup>2</sup> = 100 mA</td> <td style="padding: 2px;">C<sub>i</sub><sup>4</sup> = 12 nF</td> </tr> <tr> <td style="padding: 2px;"><sup>1</sup>U<sub>max</sub> = Max. Voltage</td> <td style="padding: 2px;"><sup>3</sup>P<sub>i</sub> = Max. Power</td> </tr> <tr> <td style="padding: 2px;"><sup>2</sup>I<sub>max</sub> = Max. Current</td> <td style="padding: 2px;"><sup>4</sup>C<sub>i</sub> = Capacitance</td> </tr> <tr> <td></td> <td style="padding: 2px;"><sup>5</sup>L<sub>i</sub> = Inductance</td> </tr> </table>	Transducer Parameters		U <sub>i</sub> <sup>1</sup> = 28 V	P <sub>i</sub> <sup>3</sup> = 0.7 W	I <sub>max</sub> <sup>2</sup> = 100 mA	C <sub>i</sub> <sup>4</sup> = 12 nF	<sup>1</sup> U <sub>max</sub> = Max. Voltage	<sup>3</sup> P <sub>i</sub> = Max. Power	<sup>2</sup> I <sub>max</sub> = Max. Current	<sup>4</sup> C <sub>i</sub> = Capacitance		<sup>5</sup> L <sub>i</sub> = Inductance	<p><b>TAEI7800, TDEI7800</b> EEx ib IIB, T4, Gb T<sub>a</sub> = -40°C to +64°C Ex ib IIB T135°C Db T<sub>a</sub> = -40°C to +55°C IECEx SIR 08.0130 IP65 Enclosure</p>	<p><b>TTEI7800, TREI7800</b> Ex ib IIB, T4, Gb T<sub>a</sub> = -40°C to +64°C IECEx SIR 08.0130</p>						
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B

**Model T7800**

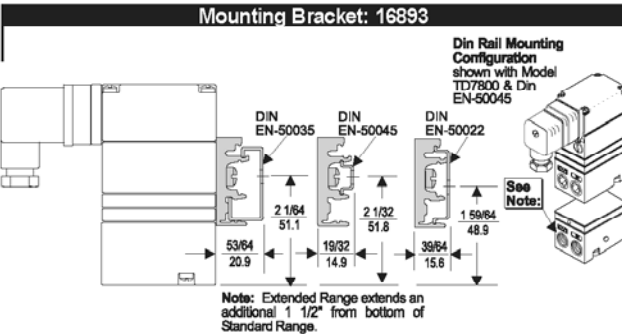
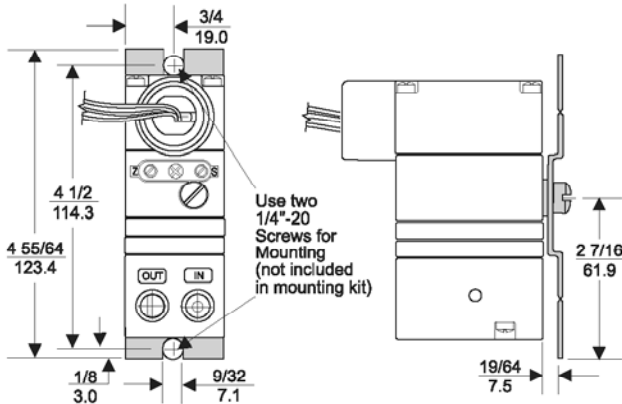
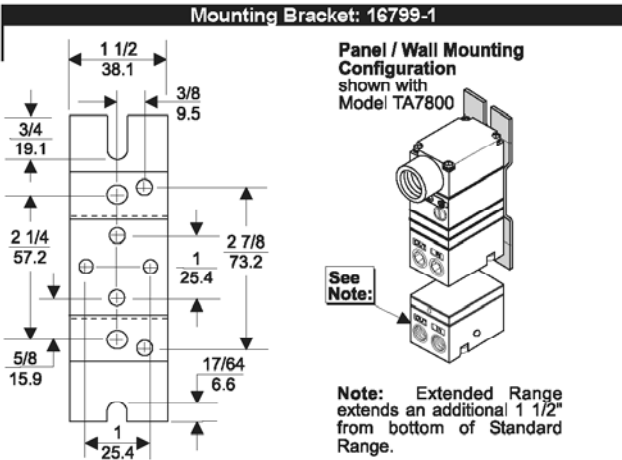


# Model T7800 Electro-Pneumatic I/P, E/P Transducer

## Mounting Kits

**B**

**Model T7800**



## Model T7800 Transducer Kits & Accessories

Mounting Bracket Kits ..... 16799-1 (included with unit)  
 16893 (included with unit)  
 19254-1 (sold separately)

## Catalog Information

**Catalog Number** T    **780**

### Electrical Connections

1/2 NPT Conduit ..... A  
 Fitting with Pigtail ..... D  
 DIN43650 Connection ..... R  
 Rack Mount ..... T  
 Terminal Block ..... T

### Underwriting Group

Canadian Standards ..... C  
 ATEX ..... E  
 Factory Mutual ..... F  
 None (leave blank) ..... F

### Approval Class

Intrinsically Safe<sup>1</sup> ..... I  
 Non-Incendive (Division 2)<sup>2</sup> ..... N  
 None (leave blank) ..... N

### Temperature Range

-40°F to +160°F ..... 0

### Input

4-20 mA ..... 4  
 1-5 VDC<sup>6</sup> ..... 5  
 0-5 VDC<sup>6</sup> ..... 7  
 1-9 VDC ..... 9  
 0-10 VDC ..... 0

### Output

3-15 psig<sup>3</sup> ..... 01  
 3-27 psig<sup>3</sup> ..... 02  
 6-30 psig<sup>3</sup> ..... 03  
 0-30 psig<sup>4</sup> ..... 04  
 0-60 psig<sup>4</sup> ..... 05  
 0-120 psig<sup>4</sup> ..... 06  
 [0.2-1.0 BAR]<sup>3</sup> ..... 11  
 [0.2-1.8 BAR]<sup>3</sup> ..... 12  
 [0.4-2.0 BAR]<sup>3</sup> ..... 13  
 [0-2.0 BAR]<sup>4</sup> ..... 14  
 [0-4.0 BAR]<sup>4</sup> ..... 15  
 [0-8.0 BAR]<sup>4</sup> ..... 16  
 (20-100 kPa)<sup>3</sup> ..... 21  
 (20-180 kPa)<sup>3</sup> ..... 22  
 (40-200 kPa)<sup>3</sup> ..... 23  
 (0-200 kPa)<sup>4</sup> ..... 24  
 (0-400 kPa)<sup>4</sup> ..... 25  
 (0-800 kPa)<sup>4</sup> ..... 26

### Options

BSPT Thread<sup>5</sup> ..... U

<sup>1</sup> Intrinsically Safe Approval includes Non-Incendive (Division 2), available on 4-20 mA units only.

<sup>2</sup> Non-Incendive (Division 2) approval on FM voltage input units only

<sup>3</sup> Standard Range

<sup>4</sup> Extended Range

<sup>5</sup> Available on all units EXCEPT Factory Mutual and Canadian Standards Underwriting Group units.

<sup>6</sup> Limited Availability

## Installation

For installation instructions, refer to the *Fairchild T7800 Standard Range Electro-Pneumatic Transducer Installation, Operation and Maintenance Instructions*, IS-50T7800S and IS-50T7800E.

Optional manifolds are available to mount 3, 5, 10 or 15 transducers. An optional rack kit is available to mount 10 transducers in a standard 19" rack. For more information, see the *Fairchild Manifold and Rack Kit*, CS-4000MRKT.



## Features

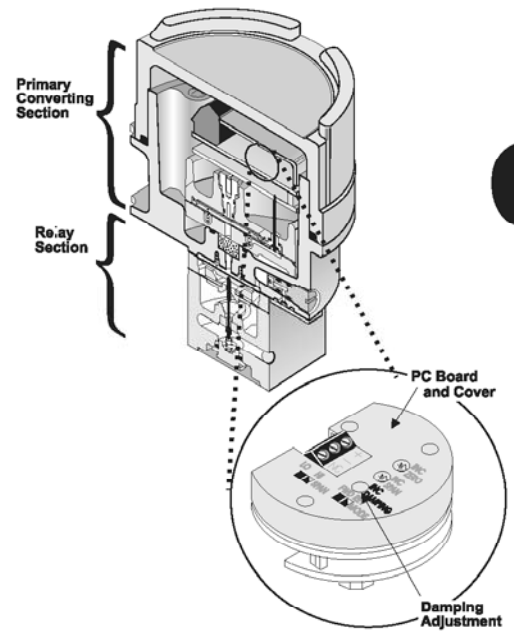
- Internal electronic feedback maintains precise output pressure control.
- Piezoelectric actuator disk provides stability regardless of vibration or position.
- RFI/EMI protection eliminates susceptibility to electromagnetic interference.
- Field selectable outputs in three pressure ranges match final control element requirements.
- Field reversible feature provides output that is directly or inversely proportional to input signal.
- Does not contain copper-based metals.
- Compact size for use in restricted areas.
- -40°F temperature range.
- Damping adjustment allows tuning for optimum response.
- Optional version approved for use with Natural Gas or Industrial Methane as a supply media.
- Explosion-proof NEMA 4X, IP65, Type 4 enclosure for outdoor and indoor installations.
- Optional tapped exhaust port vents exhaust gas.
- Canadian Registration Numbers (CRN) certification for all territories and provinces.

## Operating Principles

The Model TXI7800 Transducer is an electronically controlled pressure sensitive device that converts a current signal to a pneumatic output. This device is composed of the Primary Converting Section and the Relay Section. The Piezoelectric ceramic disk in the Primary Section functions as a flapper. The flapper and the nozzle work together to control the signal pressure in the Relay Section. The signal pressure acts on a diaphragm assembly that controls the pressure in the output chamber.

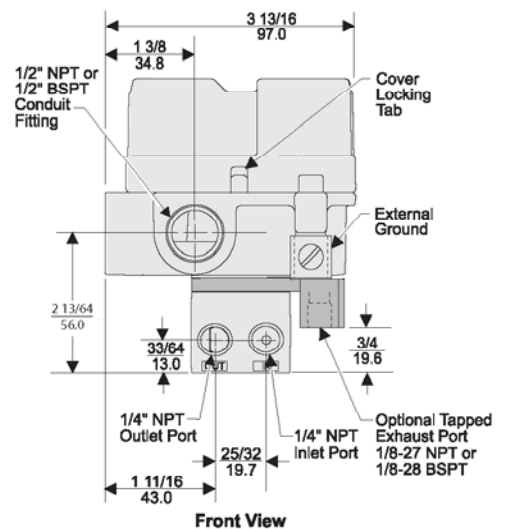
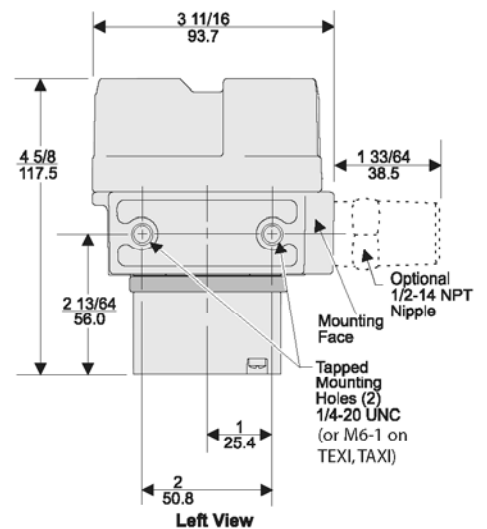
The output pressure is sensed by the lower control diaphragm to maintain the output pressure. The output pressure is also sensed by the feedback control circuit, which compares the output pressure and input signal (setpoint) to maintain constant output pressure.

The Damping Adjustment on the PC Board allows tuning the transducer for optimum response and stability. Large downstream volumes generally require more damping to achieve output pressure stability.



# B

Model  
TXI  
7800



# Model TXI7800 Explosion-Proof Transducer

**B**  
Model  
TXI  
7800

## Specifications

		SET POINT			
		3 [0.2] (20)	9 [0.6] (60)	15 [1.0] (100)	30 [2.0] (200)
Maximum Air Consumption	All Ranges SCFH	3.5 (.10 m <sup>3</sup> /HR)	7.0 (.20 m <sup>3</sup> /HR)	9.5 (.27 m <sup>3</sup> /HR)	13.5 (.38 m <sup>3</sup> /HR)
Flow Rate (SCFM)		2.5 (4.25 m <sup>3</sup> /HR) @ 25 psig, [1.7 BAR], (170 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output		OR	9.0 (15.3 m <sup>3</sup> /HR) @ 120 psig, [8.0 BAR], (800 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output
Temperature Range	Operating Storage	-40°F to + 160°F (-40°C to + 71.2°C) -40°F to + 180°F (-40°C to + 82.2°C)			
Span/Zero Adjustments		Screwdriver adjustments located under cover			
		OUTPUT RANGE			
		3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)	
Input Range		4-20 mA			
Supply Pressure <sup>1,2</sup>		20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)	
Minimum Span		5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)	
Frequency Response		-3 db @ 5 Hz per ISA S26.4.3.1 load configuration A.			
Required Operating Voltages		7.2 VDC @ 20 mA (4-20 mA signal)			
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical			
Hysteresis (ISA S51.1)		≤ 0.1% Full Scale			
Deadband		≤ 0.02% Full Scale			
Repeatability (ISA S51.1)		≤ 0.1% Full Scale			
Position Effect		No Measurable Effect			
Vibration Effect		Less than +1% of Span under the following conditions: 5-15 Hz @ 0.75 inches constant displacement 15-500 Hz @ 10 Gs.			
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.			
RFI/EMI Effect		Less than 0.5% of span @ 30 $\mu$ m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 $\mu$ m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326			
Supply Pressure Effect		No Measurable Effect			
Temperature Effect		[+0.5% +0.04% / °F Temperature Change] of Span typical			
Materials of Construction		Body and Housing . . . . . Chromate Treated Aluminum Orifice . . . . . Aluminum & Sapphire Trim . . . . . Stainless Steel & Zinc Plated Steel Elastomers . . . . . Nitrile Finish . . . . . Epoxy Powder Coating			

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output.

<sup>2</sup> ATEX Approved unit 40 psig, [2.8 BAR], (280 kPa). ATEX Approved unit with "N" option 125 psig, [8.5 BAR], (850 kPa) for air or Group IIA Gases.

# Model TXI7800 Electro-Pneumatic I/P, E/P Transducer

## Extended Range Specifications

		SET POINT				
		0 [0] (0)	15 [1.0] (100)	30 [2.0] (200)	60 [4.0] (400)	120 [8.0] (800)
Maximum Air Consumption	0-30 psig [BAR] (kPa) SCFH	3.1 (.09 m <sup>3</sup> /HR)	7.8 (.22 m <sup>3</sup> /HR)	11.8 (.33 m <sup>3</sup> /HR)		
	0-60 psig SCFH	1.6 (0.4 m <sup>3</sup> /HR)	4.7 (.13 m <sup>3</sup> /HR)	7.8 (.22 m <sup>3</sup> /HR)	13.3 (.37 m <sup>3</sup> /HR)	
	0-120 psig SCFH	0.5 (.01 m <sup>3</sup> /HR)		3.8 (.11 m <sup>3</sup> /HR)	7.6 (.21 m <sup>3</sup> /HR)	15.1 (.42 m <sup>3</sup> /HR)
Flow Rate (SCFM)	11.0 (18.7 m <sup>3</sup> /HR) @ 150 psig, [10 BAR], (1000 kPa) supply & midscale output					
Temperature Range	Operating	-40°F to + 160°F, (-40°C to + 71.2°C)				
	Storage	-40°F to + 180°F, (-40°C to + 82.2°C)				
Span/Zero Adjustments	Screwdriver adjustments located on front of unit					
Required Operating Voltages	<b>Two Wire Current Input</b> 7.2 VDC @ 20 mA (4-20 mA signal)					
Supply Voltages	<b>Three Wire Voltage Input</b> 7.2 - 30 VDC, less than 3 mA					
Signal Impedance	<b>Three Wire Voltage Input</b> 10 Kilohms					

B




Model  
TXI7800

		OUTPUT RANGE		
		0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
Input Range	4-20 mA DC, 0-10 VDC, 1-9 VDC			
Supply Pressure <sup>1</sup>		35-150 [2.4-10] (240-1000)	65-150 [4.6-10] (460-1000)	125-150 [8.8-10] (880-1000)
Minimum Span		12.5 [0.85] (85)	25 [1.5] (150)	50 [3.0] (300)
Frequency Response	-3 db @ 2 Hz per ISA S26.4.3.1 load configuration A.			
Accuracy (ISA S51.1)	0.25% Full Scale Guaranteed 0.15% Full Scale Typical			
Hysteresis (ISA S51.1)	0.25% Full Scale			
Deadband	0.02% Full Scale			
Repeatability (ISA S51.1)	0.1% Full Scale			
Position Effect	0.125% @ 90° & 0.25% @ 180°			
Vibration Effect	Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.			
Reverse Polarity Protection	No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.			
RFI/EMI Effect	Less than 0.5% of span @ 30 <sup>v</sup> /m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 <sup>v</sup> /m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326			
Supply Pressure Effect	< 0.1 psig change for 10 psig supply change			
Temperature Effect	[+0.5% +0.06% / °F Temperature Change] of Span typical			
Materials of Construction	Body and Housing . . . . . Chromate Treated Aluminum Orifice . . . . . Nickel Plated Brass & Sapphire Trim . . . . . Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . Nitrile Finish . . . . . Epoxy Powder Coating			

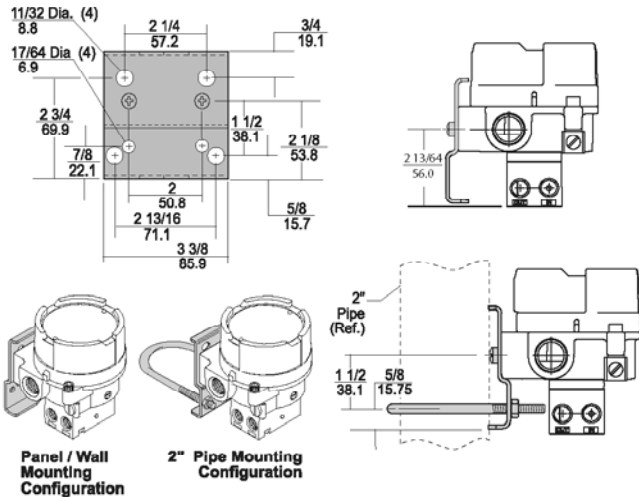
<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output  
<sup>2</sup> ATEX Approved unit 40 psig, [2.8 BAR], (280 kPa). ATEX Approved unit with "N" option 125 psig, [8.5 BAR], (850 kPa) for air or Group IIA Gases.

# Model TXI7800 Explosion-Proof Transducer

## Hazardous Area Classifications

	Explosion-Proof	Intrinsically Safe														
<b>Factory Mutual (FM) Approvals</b>   <b>Model TXI 7800</b>	<b>Air as supply pressure media</b> Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, Fibers; Class I, Division 2, Groups A, B, C and D; Max. Ambient 65°C; Temperature Code T5; NEMA 4X Enclosure.	<b>Air as supply pressure media</b> Class I, Division I, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Fibers; NEMA 4X Enclosure; Temperature Code T4 (Ta -40°C to +66°C). T6 (Ta -40°C to +40°C).														
	<b>Group D gases, including Natural Gas as supply pressure media</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G.	<table border="1"> <thead> <tr> <th colspan="2">Entity Parameters</th> </tr> </thead> <tbody> <tr> <td><math>V_{max}^1 = 30</math> VDC</td> <td><math>C_i^3 = 0</math></td> </tr> <tr> <td><math>I_{max}^2 = 200</math> mA</td> <td><math>L_i^4 = 0</math></td> </tr> <tr> <td><sup>1</sup><math>V_{max}</math> = Max. Voltage</td> <td><sup>3</sup><math>C_i</math> = Capacitance</td> </tr> <tr> <td><sup>2</sup><math>I_{max}</math> = Max. Current</td> <td><sup>4</sup><math>L_i</math> = Inductance</td> </tr> </tbody> </table>	Entity Parameters		$V_{max}^1 = 30$ VDC	$C_i^3 = 0$	$I_{max}^2 = 200$ mA	$L_i^4 = 0$	<sup>1</sup> $V_{max}$ = Max. Voltage	<sup>3</sup> $C_i$ = Capacitance	<sup>2</sup> $I_{max}$ = Max. Current	<sup>4</sup> $L_i$ = Inductance				
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<b>Canadian Standards Association (CSA) Approvals</b> 	<b>Air as supply pressure media</b> Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G. Max. Ambient 65°C Temperature Code T5; Type 4X Enclosure.	<b>Air as supply pressure media</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Temperature Code T4A (Ta -40°C to +66°C); T6 (Ta -40°C to +40°C). Rated 4-20 mA, 30 VDC maximum Type 4X Enclosure														
	<b>Group D gases, including Natural Gas as supply pressure media</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D. Class II, Division 2, Groups E, F and G.	<table border="1"> <thead> <tr> <th colspan="2">Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</th> </tr> </thead> <tbody> <tr> <td>System Type 1:</td> <td>Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min.</td> </tr> <tr> <td>System Type 2:</td> <td>Dual Channel Polarized Rated 28.5V Max. 300 Ohm Min. and 28V Diode return per channel</td> </tr> <tr> <td>System Type 3:</td> <td>Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.</td> </tr> </tbody> </table>	Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:		System Type 1:	Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min.	System Type 2:	Dual Channel Polarized Rated 28.5V Max. 300 Ohm Min. and 28V Diode return per channel	System Type 3:	Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.						
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System Type 2:	Dual Channel Polarized Rated 28.5V Max. 300 Ohm Min. and 28V Diode return per channel															
System Type 3:	Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.															
<b>Explosive Atmospheres Directive (ATEX) Approvals</b>	<b>Flame-Proof</b> <b>Air as supply pressure media</b> Ⓢ II 2 GD EEx d IIB + H <sub>2</sub> , T5 (-20°C to +65°C) Ambient; IP65 Enclosure. 02ATEX1014 <b>Group IIA gases, including Natural Gas as supply pressure media</b> Ⓢ II 2 GD EEx d IIB, T5 (-20°C to +65°C) Ambient; IP65 Enclosure. 02ATEX1014	<b>Intrinsically Safe</b> <b>Air as supply pressure media</b> Ⓢ II 1 G (T4) II1D (T 85°C) EEx ia IIB, T4 (-40°C to +72°C) Ambient; IP65 Enclosure. 02ATEX2013X Vi=28V Ii=100mA Pi=0.7W Ci=0 Li=0														
	<b>IECEx Approvals</b>	<table border="1"> <thead> <tr> <th colspan="3">Transducer Parameters</th> </tr> </thead> <tbody> <tr> <td><math>U_i^1 = 28</math> V</td> <td><math>P_i^3 = 0.7</math> W</td> <td><math>L_i^5 = 0</math></td> </tr> <tr> <td><math>I_i^2 = 100</math> mA</td> <td><math>C_i^4 = 0</math></td> <td></td> </tr> <tr> <td><sup>1</sup><math>U_i</math> = Max. Voltage</td> <td><sup>3</sup><math>P_i</math> = Max. Power</td> <td><sup>5</sup><math>L_i</math> = Inductance</td> </tr> <tr> <td><sup>2</sup><math>I_i</math> = Max. Current</td> <td><sup>4</sup><math>C_i</math> = Capacitance</td> <td></td> </tr> </tbody> </table> <p><b>TEXI7800</b>                      Ex ia IIB T4 Gb (Ta -40°C to 64°C)                      Ex ib IIIC T74°C Db                      IECEx SIR 09.0003 IP65 Enclosure</p>	Transducer Parameters			$U_i^1 = 28$ V	$P_i^3 = 0.7$ W	$L_i^5 = 0$	$I_i^2 = 100$ mA	$C_i^4 = 0$		<sup>1</sup> $U_i$ = Max. Voltage	<sup>3</sup> $P_i$ = Max. Power	<sup>5</sup> $L_i$ = Inductance	<sup>2</sup> $I_i$ = Max. Current	<sup>4</sup> $C_i$ = Capacitance
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<sup>2</sup> $I_i$ = Max. Current	<sup>4</sup> $C_i$ = Capacitance															

## Mounting Kit



## Model TXI7800 Transducer Kits & Accessories

### Mounting Bracket Kits

- 19021-1: TCXI7800, TFXI7800  
(sold separately)
- 19021-2: TEXI7800, TAXI7800  
(sold separately)

## Catalog Information

<b>Catalog Number</b>	T		X	I	7	8	0					
<b>Underwriting Group</b>												
SAA .....	A											
Canadian Standard .....	C											
ATEX .....	E											
Factory Mutual .....	F											

### Temperature Range

-40°F to +160°F .....

0

### Input

4-20 mA .....

4

### Output

- 3-15 psig ..... 01
- 3-27 psig ..... 02
- 6-30 psig ..... 03
- 0-30 psig ..... 04
- 0-60 psig ..... 05
- 0-120 psig ..... 06
- [0.2-1.0 BAR] ..... 11
- [0.2-1.8 BAR] ..... 12
- [0.4-2.0 BAR] ..... 13
- [0-2.0 BAR] ..... 14
- [0-4.0 BAR] ..... 15
- [0-8.0 BAR] ..... 16
- (20-100 kPa) ..... 21
- (20-180 kPa) ..... 22
- (40-200 kPa) ..... 23
- (0-200 kPa) ..... 24
- (0-400 kPa) ..... 25
- (0-800 kPa) ..... 26

### Options

- Tapped Exhaust ..... E
- Natural Gas media approval, Group D gases <sup>4</sup> ..... N
- (Includes Nipple; TCXI, TEXI, TFXI only) <sup>1,2</sup>
- BSPT Thread <sup>3</sup> ..... U

- 20 ft cable length<sup>4</sup> ..... 2
- 50 ft cable length<sup>4</sup> ..... 5
- 100 ft cable length<sup>4</sup> ..... 0

<sup>1</sup> Not approved for Intrinsically Safe.

<sup>2</sup> Tapped Exhaust option required.

<sup>3</sup> Available for ATEX and SAA only. NOT available with "N" Option.

<sup>4</sup> 10 ft cable standard. Longer lengths available. Contact factory for details and availability.

## Installation

For installation instructions, refer to the *Fairchild Model TXI7800 Explosion-proof Electro-pneumatic Transducer Installation, Installation Instructions, II-5TXI7800*.

For operation and maintenance instructions, refer to the *Fairchild Model TXI7800 Explosion-proof Electro-pneumatic Transducer Operation and Maintenance Instructions, OM-5TXI7800*.

**B**

Model  
TXI  
7800

# Model TXI7850 Moisture Resistant Electro-Pneumatic Transducer

**B**

**Model  
TXI  
7850**



## Features

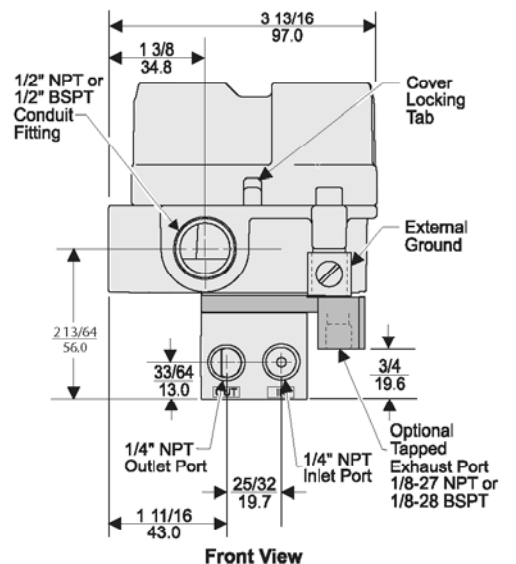
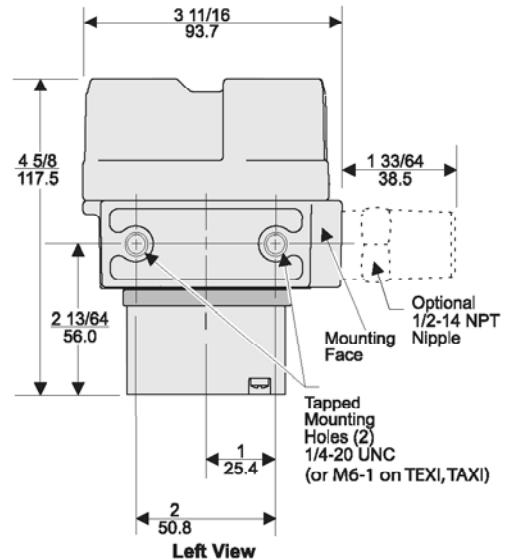
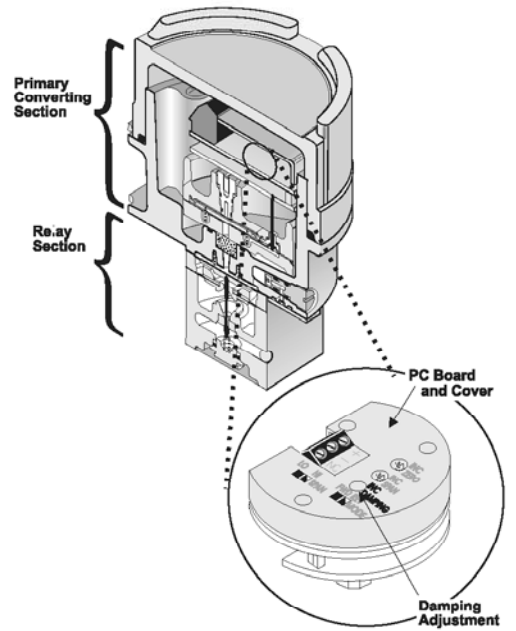
- Explosion-proof NEMA 4X, IP65, Type 4 enclosure for outdoor and indoor installations.
- Optional tapped exhaust port vents exhaust gas.
- Canadian Registration Numbers (CRN) certification for all territories and provinces.
- Does not contain copper-based metals.
- Compact size for use in restricted areas.
- Internal electronic feedback maintains precise output pressure control.
- Piezoelectric actuator disk provides stability regardless of vibration or position.
- RFI/EMI protection eliminates susceptibility to electromagnetic interference.
- Optional version approved for use with Natural Gas or Industrial Methane as a supply media.
- Encapsulated critical components designed to make unit moisture resistant in tough environments

## Operating Principles

The Model TXI7850 Transducer is an electronically controlled pressure sensitive device that converts a current signal to a pneumatic output. This device is composed of the Primary Converting Section and the Relay Section. The Piezoelectric ceramic disk in the Primary Section functions as a flapper. The flapper and the nozzle work together to control the signal pressure in the Relay Section. The signal pressure acts on a diaphragm assembly that controls the pressure in the output chamber.

The output pressure is sensed by the lower control diaphragm to maintain the output pressure. The output pressure is also sensed by the feedback control circuit, which compares the output pressure and input signal (setpoint) to maintain constant output pressure.

The Damping Adjustment on the PC Board allows tuning the transducer for optimum response and stability. Large downstream volumes generally require more damping to achieve output pressure stability.





# Model TXI7850 Moisture Resistant Electro-Pneumatic Transducer

## Specifications

		SET POINT			
		3 [0.2] (20)	9 [0.6] (60)	15 [1.0] (100)	30 [2.0] (200)
Maximum Air Consumption	psig [BAR] (kPa) SCFH	3.5 (.10 m <sup>3</sup> /HR)	7.0 (.20 m <sup>3</sup> /HR)	9.5 (.27 m <sup>3</sup> /HR)	13.5 (.38 m <sup>3</sup> /HR)
Flow Rate (SCFM)		2.5 (4.25 m <sup>3</sup> /HR) @ 25 psig, [1.7 BAR], (170 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output		OR	9.0 (15.3 m <sup>3</sup> /HR) @ 120 psig, [8.0 BAR], (800 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output
Temperature Range	Operating Storage	-40°F to + 160°F, (-40°C to + 71.2°C) -40°F to + 180°F, (-40°C to + 82.2°C)			
Span/Zero Adjustments		Screwdriver adjustments located under cover			
		OUTPUT RANGE			
		3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)	
Input Range	psig [BAR] (kPa)	4-20 mA			
Supply Pressure <sup>1,2</sup>		20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)	
Minimum Span		5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)	
Frequency Response		-3 db @ 5 Hz per ISA S26.4.3.1 load configuration A.			
Required Operating Voltages		7.2 VDC @ 20 mA (4-20 mA signal)			
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical			
Hysteresis (ISA S51.1)		≤ 0.1% Full Scale			
Deadband		≤ 0.02% Full Scale			
Repeatability (ISA S51.1)		≤ 0.1% Full Scale			
Position Effect		No Measurable Effect			
Vibration Effect		Less than ±1% of Span under the following conditions: 5-15 Hz @ 0.75 inches constant displacement 15-500 Hz @ 10 Gs.			
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.			
RFI/EMI Effect		Less than 0.5% of span @ 30 $\gamma$ /m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 $\gamma$ /m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326			
Supply Pressure Effect		No Measurable Effect			
Temperature Effect		[+0.5% +0.04% / °F Temperature Change] of Span typical			
Materials of Construction		Body and Housing . . . . . Chromate Treated Aluminum Orifice . . . . . Aluminum & Sapphire Trim . . . . . Stainless Steel & Zinc Plated Steel Elastomers . . . . . Nitrile Finish . . . . . Epoxy Powder Coating			

B

Model  
TXI  
7850

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output.

<sup>2</sup> ATEX Approved unit 40 psig, [2.8 BAR], (280 kPa). ATEX Approved unit with "N" option 125 psig, [8.5 BAR], (850 kPa) for air or Group IIA Gases.

# Model TXI7850 Moisture Resistant Electro-Pneumatic Transducer

**B**

**Model  
TXI  
7850**

## Extended Range Specifications

		SET POINT				
		0 [0] (0)	15 [1.0] (100)	30 [2.0] (200)	60 [4.0] (400)	120 [8.0] (800)
		psig [BAR] (kPa)				
Maximum Air Consumption	0-30 psig SCFH	3.1 (.09 m <sup>3</sup> /HR)	7.8 (.22 m <sup>3</sup> /HR)	11.8 (.33 m <sup>3</sup> /HR)		
	0-60 psig SCFH	1.6 (0.4 m <sup>3</sup> /HR)	4.7 (.13 m <sup>3</sup> /HR)	7.8 (.22 m <sup>3</sup> /HR)	13.3 (.37 m <sup>3</sup> /HR)	
	0-120 psig SCFH	0.5 (.01 m <sup>3</sup> /HR)		3.8 (.11 m <sup>3</sup> /HR)	7.6 (.21 m <sup>3</sup> /HR)	15.1 (.42 m <sup>3</sup> /HR)
Flow Rate (SCFM)	11.0 (18.7 m <sup>3</sup> /HR) @ 150 psig, [10 BAR], (1000 kPa) supply & midscale output					
Temperature Range	Operating	-40°F to + 160°F, (-40°C to + 71.2°C)				
	Storage	-40°F to + 180°F, (-40°C to + 82.2°C)				
Span/Zero Adjustments	Screwdriver adjustments located on front of unit					
Required Operating Voltages	<b>Two Wire Current Input</b> 7.2 VDC @ 20 mA (4-20 mA signal)					
Supply Voltages	<b>Three Wire Voltage Input</b> 7.2 - 30 VDC, less than 3 mA					
Signal Impedance	<b>Three Wire Voltage Input</b> 10 Kilohms					



		OUTPUT RANGE		
		0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
		psig [BAR] (kPa)		
Input Range	4-20 mA DC, 0-10 VDC, 1-9 VDC			
Supply Pressure <sup>1</sup>	35-150 [2.4-10] (240-1000)	65-150 [4.6-10] (460-1000)	125-150 [8.8-10] (880-1000)	
Minimum Span	12.5 [0.85] (85)	25 [1.5] (150)	50 [3.0] (300)	
Frequency Response	-3 db @ 2 Hz per ISA S26.4.3.1 load configuration A.			
Accuracy (ISA S51.1)	0.25% Full Scale Guaranteed 0.15% Full Scale Typical			
Hysteresis (ISA S51.1)	0.25% Full Scale			
Deadband	0.02% Full Scale			
Repeatability (ISA S51.1)	0.1% Full Scale			
Position Effect	0.125% @ 90° & 0.25% @ 180°			
Vibration Effect	Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.			
Reverse Polarity Protection	No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.			
RFI/EMI Effect	Less than 0.5% of span @ 30 <sup>v</sup> /m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 <sup>v</sup> /m level, to 2 GHz Band per 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326			
EN				
Supply Pressure Effect	< 0.1 psig change for 10 psig supply change			
Temperature Effect	[+0.5% +0.06% / °F Temperature Change] of Span typical			
Materials of Construction	Body and Housing . . . . . Chromate Treated Aluminum Orifice . . . . . Nickel Plated Brass & Sapphire Trim . . . . . Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . Nitrile Finish . . . . . Epoxy Powder Coating			

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output

<sup>2</sup> ATEX Approved unit 40 psig, [2.8 BAR], (280 kPa). ATEX Approved unit with "N" option 125 psig, [8.5 BAR], (850 kPa) for air or Group IIA Gases.

# Model TXI7850 Moisture Resistant Electro-Pneumatic Transducer

## Hazardous Area Classifications

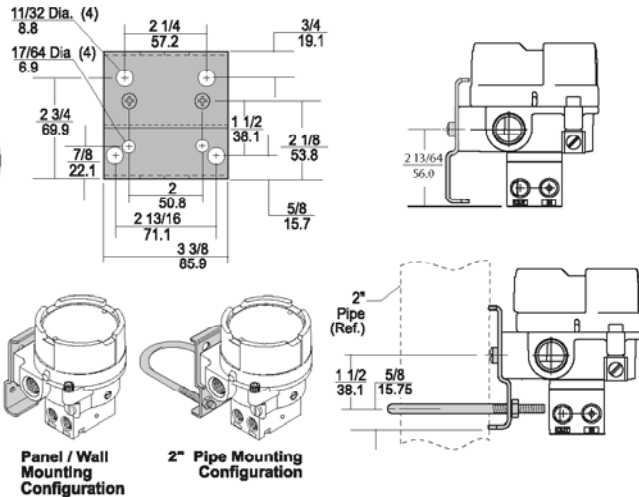
	Explosion-Proof	Intrinsically Safe															
Factory Mutual (FM) Approvals 	<b>Air as supply pressure media</b> Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, Fibers; Class I, Division 2, Groups A, B, C and D; Max. Ambient 65°C; Temperature Code T5; NEMA 4X Enclosure.	<b>Air as supply pressure media</b> Class I, Division I, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Fibers; NEMA 4X Enclosure; Temperature Code T4 (Ta -40°C to +66°C). T6 (Ta -40°C to +40°C)															
	<b>Group D gases, including Natural Gas as supply pressure media</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G.	<table border="1"> <tr> <th colspan="2">Entity Parameters</th> </tr> <tr> <td>V<sub>max</sub><sup>1</sup> = 30 VDC</td> <td>C<sub>i</sub><sup>3</sup> = Zero</td> </tr> <tr> <td>I<sub>max</sub><sup>2</sup> = 200 mA</td> <td>L<sub>i</sub><sup>4</sup> = Zero</td> </tr> <tr> <td><sup>1</sup>V<sub>max</sub> = Max. Voltage</td> <td><sup>3</sup>C<sub>i</sub> = Capacitance</td> </tr> <tr> <td><sup>2</sup>I<sub>max</sub> = Max. Current</td> <td><sup>4</sup>L<sub>i</sub> = Inductance</td> </tr> </table>	Entity Parameters		V <sub>max</sub> <sup>1</sup> = 30 VDC	C <sub>i</sub> <sup>3</sup> = Zero	I <sub>max</sub> <sup>2</sup> = 200 mA	L <sub>i</sub> <sup>4</sup> = Zero	<sup>1</sup> V <sub>max</sub> = Max. Voltage	<sup>3</sup> C <sub>i</sub> = Capacitance	<sup>2</sup> I <sub>max</sub> = Max. Current	<sup>4</sup> L <sub>i</sub> = Inductance					
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Canadian Standards Association (CSA) Approvals 	<b>Air as supply pressure media</b> Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G. Max. Ambient 65°C; Temperature Code T5; Type 4X Enclosure.	<b>Air as supply pressure media</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Temperature Code T4A (Ta -40°C to +66°C) Type 4X Enclosure; T6 (Ta -40°C to +40°C). Rated 4-20 mA, 30 VDC maximum															
	<b>Group D gases, including Natural Gas as supply pressure media</b> Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D. Class II, Division 2, Groups E, F and G. <b>Factory Sealed</b>	<p><b>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</b></p> <table border="1"> <tr> <td>System Type 1:</td> <td>Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min.</td> </tr> <tr> <td>System Type 2:</td> <td>Dual Channel Polarized 28.5V Max. 300 Ohm Min. and 28V Diode return per channel</td> </tr> <tr> <td>System Type 3:</td> <td>Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.</td> </tr> </table>	System Type 1:	Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min.	System Type 2:	Dual Channel Polarized 28.5V Max. 300 Ohm Min. and 28V Diode return per channel	System Type 3:	Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.									
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System Type 3:	Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.																
	<b>Flame-Proof</b>	<b>Intrinsically Safe</b>															
Explosive Atmospheres Directive (ATEX) Approvals	<b>Air as supply pressure media</b> Ⓢ II 2 GD EEx d IIB + H <sub>2</sub> , T5 (-20°C to +65°C) Ambient; IP65 Enclosure. 02ATEX1014	<b>Air as supply pressure media</b> Ⓢ II 1 G (T4) II1D (T 85°C) EEx ia IIB, T4 (-40°C to +72°C) Ambient; IP65 Enclosure.															
	<b>Group IIA gases, including Natural Gas as supply pressure media</b> Ⓢ II 2 GD EEx d IIB, T5 (-20°C to +65°C) Ambient; IP65 Enclosure.	<table border="1"> <tr> <th colspan="3">Transducer Parameters</th> </tr> <tr> <td>U<sub>max</sub><sup>1</sup> = 28 V</td> <td>P<sub>i</sub><sup>3</sup> = 0.7 W</td> <td>L<sub>i</sub><sup>5</sup> = 0</td> </tr> <tr> <td>I<sub>max</sub><sup>2</sup> = 100 mA</td> <td>C<sub>i</sub><sup>4</sup> = 0/C</td> <td></td> </tr> <tr> <td><sup>1</sup>U<sub>max</sub> = Max. Voltage</td> <td><sup>3</sup>P<sub>i</sub> = Max. Power</td> <td><sup>5</sup>L<sub>i</sub> = Inductance</td> </tr> <tr> <td><sup>2</sup>I<sub>max</sub> = Max. Current</td> <td><sup>4</sup>C<sub>i</sub> = Capacitance</td> <td></td> </tr> </table>	Transducer Parameters			U <sub>max</sub> <sup>1</sup> = 28 V	P <sub>i</sub> <sup>3</sup> = 0.7 W	L <sub>i</sub> <sup>5</sup> = 0	I <sub>max</sub> <sup>2</sup> = 100 mA	C <sub>i</sub> <sup>4</sup> = 0/C		<sup>1</sup> U <sub>max</sub> = Max. Voltage	<sup>3</sup> P <sub>i</sub> = Max. Power	<sup>5</sup> L <sub>i</sub> = Inductance	<sup>2</sup> I <sub>max</sub> = Max. Current	<sup>4</sup> C <sub>i</sub> = Capacitance	
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IECEX Approvals	<b>TEXI7850</b> Ex IIB T4 Gb (T4 -40°C to +64°C) Ex IIIC T74°C Db IECEX SIR 09.0003 IP65 Enclosure	<table border="1"> <tr> <th colspan="3">Transducer Parameters</th> </tr> <tr> <td>U<sub>max</sub><sup>1</sup> = 28 V</td> <td>P<sub>i</sub><sup>3</sup> = 0.7 W</td> <td>L<sub>i</sub><sup>5</sup> = 0</td> </tr> <tr> <td>I<sub>max</sub><sup>2</sup> = 100 mA</td> <td>C<sub>i</sub><sup>4</sup> = 0</td> <td></td> </tr> <tr> <td><sup>1</sup>U<sub>max</sub> = Max. Voltage</td> <td><sup>3</sup>P<sub>i</sub> = Max. Power</td> <td><sup>5</sup>L<sub>i</sub> = Inductance</td> </tr> <tr> <td><sup>2</sup>I<sub>max</sub> = Max. Current</td> <td><sup>4</sup>C<sub>i</sub> = Capacitance</td> <td></td> </tr> </table>	Transducer Parameters			U <sub>max</sub> <sup>1</sup> = 28 V	P <sub>i</sub> <sup>3</sup> = 0.7 W	L <sub>i</sub> <sup>5</sup> = 0	I <sub>max</sub> <sup>2</sup> = 100 mA	C <sub>i</sub> <sup>4</sup> = 0		<sup>1</sup> U <sub>max</sub> = Max. Voltage	<sup>3</sup> P <sub>i</sub> = Max. Power	<sup>5</sup> L <sub>i</sub> = Inductance	<sup>2</sup> I <sub>max</sub> = Max. Current	<sup>4</sup> C <sub>i</sub> = Capacitance	
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# B

Model  
TXI  
7850

# Model TXI7850 Moisture Resistant Electro-Pneumatic Transducer

## Mounting Kit



**B**

**Model TXI 7850/7851**

## Model TXI7850 Transducer Kits & Accessories

Mounting Bracket Kits ..... 19021-1: TCXI7850, TFXI7850 (sold separately)  
 19021-2: TEXI7850 (sold separately)

## Catalog Information

**Catalog Number** T  **XI785**   **4**

**Underwriting Group** C  
E  
F

**Temperature Range**  
 -40°F to +160°F ..... 0

**Input**  
 4-20 mA ..... 4

**Output**

3-15 psig .....	01
3-27 psig .....	02
6-30 psig .....	03
0-30 psig .....	04
0-60 psig .....	05
0-120 psig .....	06
[0.2-1.0 BAR] .....	11
[0.2-1.8 BAR] .....	12
[0.4-2.0 BAR] .....	13
[0-2.0 BAR] .....	14
[0-4.0 BAR] .....	15
[0-8.0 BAR] .....	16
(20-100 kPa) .....	21
(20-180 kPa) .....	22
(40-200 kPa) .....	23
(0-200 kPa) .....	24
(0-400 kPa) .....	25
(0-800 kPa) .....	26

**Options**

Tapped Exhaust .....	E
Natural Gas media approval, Group D gases <sup>4</sup> .....	N
(Includes Nipple; TCXI, TEXI, TFXI only) <sup>1,2</sup> .....	
BSPT Thread <sup>3</sup> .....	U

20 ft cable length <sup>4</sup> .....	2
50 ft cable length <sup>4</sup> .....	5
100 ft cable length <sup>4</sup> .....	0

<sup>1</sup> Not approved for Intrinsically Safe.  
<sup>2</sup> Tapped Exhaust option required.  
<sup>3</sup> Available for ATEX only. NOT available with "N" Option.  
<sup>4</sup> 10 ft cable standard. Longer lengths available. Contact factory for details and availability.

## Installation

For installation instructions, refer to the *Fairchild Model TXI7850 Explosion-proof Electro-pneumatic Transducer Installation, Installation Instructions, II-5TXI7850*.  
 For operation and maintenance instructions, refer to the *Fairchild Model TXI7850/7851 Explosion-proof Electro-pneumatic Transducer Operation and Maintenance Instructions, OM-5TXI7850*.

Model T7900 Analog Control  
Model T7900 DeviceNet™  
Communication



## Features

The Model T7900 Series Electro-Pneumatic Transducers include the Model T7900 with Analog Output and the Model T7900D with DeviceNet™ Communication.

The Model T7900 controls pressure in proportion to an analog electrical input signal. An internal feedback sensor monitors output pressure to achieve high accuracy.

The Model T7900D Transducer with DeviceNet™ Communications controls output pressure in response to a digital communication command.

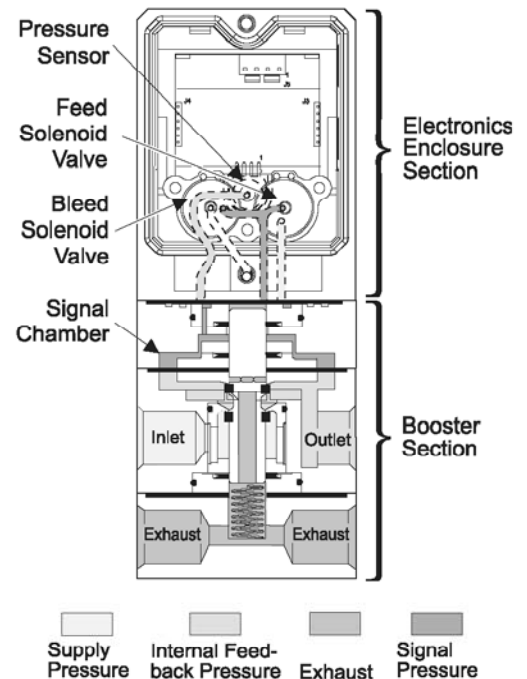
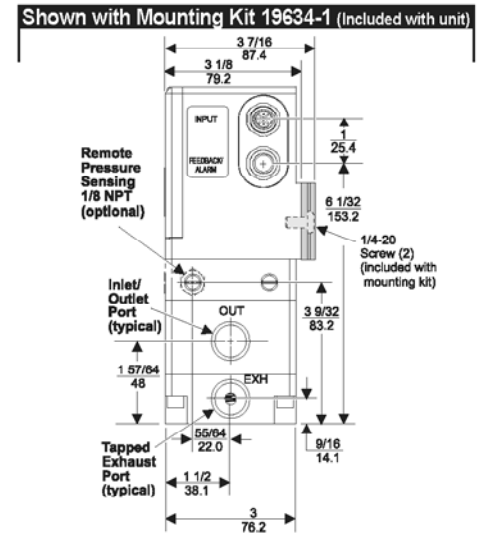
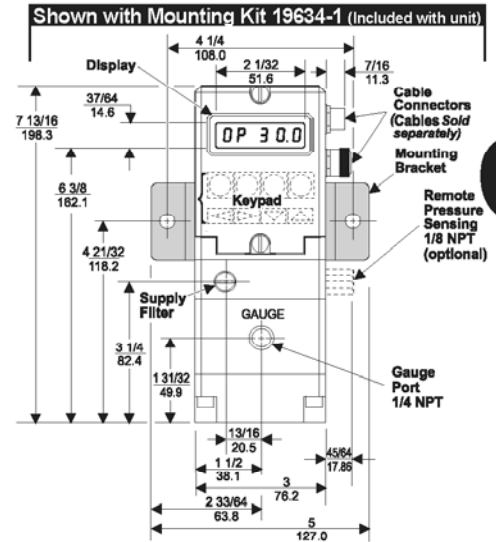
### Common Features of the T7900 & T7900D

- RFI/EMI protection eliminates electromagnetic and radio interference.
- Output pressure displays in psig, BAR, kPa, or user-defined pressure units.
- Reverse acting capability for analog input and output signals.
- Select Current or Voltage mode for input signal or optional analog channels using the keypad.
- Independently adjustable PID tuning coefficients.
- Fully functional keypad and display.
- Backlit Liquid Crystal display screen.

## Operating Principles

The Model T7900 Series Transducers have a closed-loop, integrated, microprocessor control system that regulates outlet pressure. You can control the output from the Model T7900 using the keypad or from an analog control signal. You can control the output from the Model T7900D using the keypad and through DeviceNet™ Communication network.

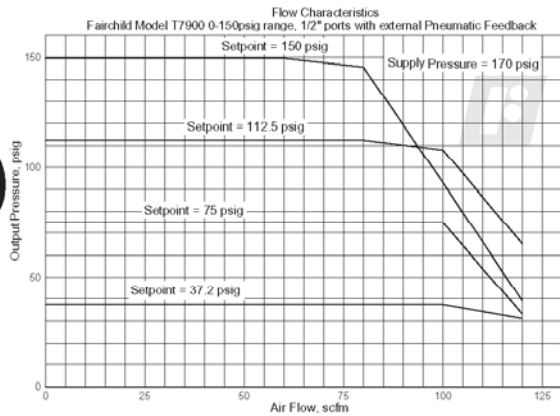
The Feed and Bleed Solenoid Valves control pressure in the Signal Chamber of the Booster Section. A pressure sensor measures the outlet pressure and provides a feedback signal to the Electronics Section. Any variation in pressure between the set-point and the outlet pressure activates the Feed and Bleed Solenoid Valves to change the output pressure.



**B**  
Model  
T7900

# Model T7900 Electro-Pneumatic Transducer

## Technical Information



## Specifications

### Supply Pressure<sup>1</sup>

200 psig, [14 BAR], (1400 kPa) Maximum

Pneumatic Outputs	psig:	0-30	0-75	0-150
	[BAR]:	[0-2]	[0-5]	[0-10]
	(kPa):	(0-200)	(0-500)	(0-1000)

Minimum Span	psig:	12	30	60
	[BAR]:	[0.8]	[2.0]	[4.0]
	(kPa):	(80)	(200)	(400)

### Input Signal

4-20 mA, 0-10 VDC

### Flow Rate (SCFM)

100 (170 m<sup>3</sup>/HR) @ 100 psig, [7 BAR], (700 kPa) supply  
@ 20 psig, [1.5 BAR], (150 kPa) setpoint

### Exhaust Flow (SCFM)

50 (85 m<sup>3</sup>/HR) @ 60 psig, [4 BAR], (350 kPa) downstream  
pressure @ 5 psig, [.35 BAR], (35 kPa) above setpoint

### Air Consumption

0 @ steady state output with Deadband @ 1 % of Full Scale

### Supply Pressure Effect

No Measurable Effect

### Electrical Supply

24 VDC ± 10 %

### Power Consumption

Less than 5 watts

### Analog Output Signal / Impedance

4-20 mA/500 ohms Maximum, 0-10 VDC/400 ohms Minimum

### Deadband (ISA S51.1)

Adjustable from 0 to 10 % of Full Scale

### Unit Accuracy (ISA S51.1)

Less than 0.50% Output Span

### Frequency Response

-3 db @ 1 HZ per ISA S26.4.3.1 load Configuration A

### Vibration Effect

Less than 1 % of Span under the following conditions: 5 - 15  
Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 g's

### RFI/EMI Effect

Less than 0.5%. EMC Directive 89/336/EEC European  
Norms EN 50081-2 & EN 50082-2.

### Temperature Range

0° F to + 160° F, (-18° C to + 71° C)

### Materials of Construction

Body and Housing.....Chromate Treated Aluminum

Cover and Pintle.....Acetel Plastic

Trim.....Zinc Plated Steel

Elastomers.....Fluorocarbon and Silicone

Finish.....Epoxy

<sup>1</sup> Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa) above maximum output.

## Catalog Information

### Catalog Number T7900

#### Input

0-10 VDC .....  
4-20 mA .....  
DeviceNet™ .....  
0  
4  
D

#### Output

0-30 psig ..... 04  
0-75 psig ..... 05  
0-150 psig ..... 07  
[0-2.0 BAR] ..... 14  
[0-5.0 BAR] ..... 15  
[0-10.0 BAR] ..... 17  
(0-200 kPa) ..... 24  
(0-500 kPa) ..... 25  
(0-1000 kPa) ..... 27

#### Pipe Size

1/4" NPT ..... 02  
3/8" NPT ..... 03  
1/2" NPT ..... 04

#### Pipe Thread Type

NPT Thread ..... O  
BSPT Thread ..... U  
BSPP Thread ..... H

#### Option Type

No Option Board ..... N  
0-10 VDC Analog Output ..... 0  
4-20 MA Analog Output ..... 4  
0-10 VDC Feedback Input<sup>1</sup> ..... 5  
4-20 MA Feedback Input<sup>1</sup> ..... 6

#### Option

External Pneumatic Feedback ..... P

<sup>1</sup> Consult factory for availability

### Unique Feature of the T7900D

- DeviceNet™ Communications that connect the Model T7900D to a digital network to increase functional flexibility, installation speed, and reduce system wiring cost.

### Available Options for the T7900D Series Transducer

- Optional analog output channel configured as an output pressure monitor or as a user-defined output.
- External Pneumatic Feedback port to monitor down stream pressure.
- Optional Feedback Input Channel configurable to control setpoint, External process variable, or accept a user defined input. (Consult factory for availability.)

### T7900 Cables and Connectors (sold separately)

Part Number	Description
055-IPI-089-M	Male Connector (Feedback Output)
055-IPI-089-F	Female Connector (Control Input)
032-IPI-009-3M	Male cable with one connector (3 meter)
032-IPI-009-3F	Female cable with one connector (3 meter)

## Installation

For operating instructions, refer to the corresponding *Fairchild Model T7900 Electro-Pneumatic I/P, E/P Transducer Operation and Maintenance Instructions*, OM-500T79F1, OM-500T79AB, OM-500T79AO, OM-500T79DB, OM-500T79DI, OM-500T79DO.

For installation instructions, refer to the *Fairchild Model T7900 Electro-Pneumatic I/P, E/P Transducer Installation Instructions*, II-500T7900.

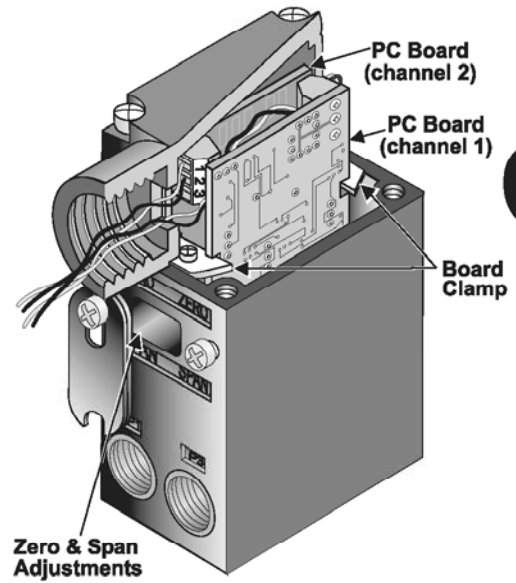
**B**

Model  
T7900



## Features

- Field reversible feature provides output which is directly or inversely proportional to the input signal.
- RFI/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Outputs of 4-20 mA or 10-50 mA cover standard loop outputs.
- Seven input signal ranges cover all standard inputs.
- Compact size permits use in space restricted areas.
- Explosion-Proof NEMA 4X, IP65, Type 4 Enclosure available for outdoor and indoor installations.
- Input and Output ports on both front and rear simplifies pneumatic piping.
- Conduit Fitting, Terminal strip or DIN connectors allow easy wiring to units.
- Various mounting configurations allow installation flexibility for most applications.



**B**

Model T8000



The T8000 Series is designed for precision applications providing maximum versatility. The modular construction permits any basic unit to be used in the explosion-proof, rack, wall, pipe, panel, DIN rail or 3, 5, 10, or 15 unit manifold configurations. Servicing or calibration is quick and easy.

## Operating Principles

### Standard Range

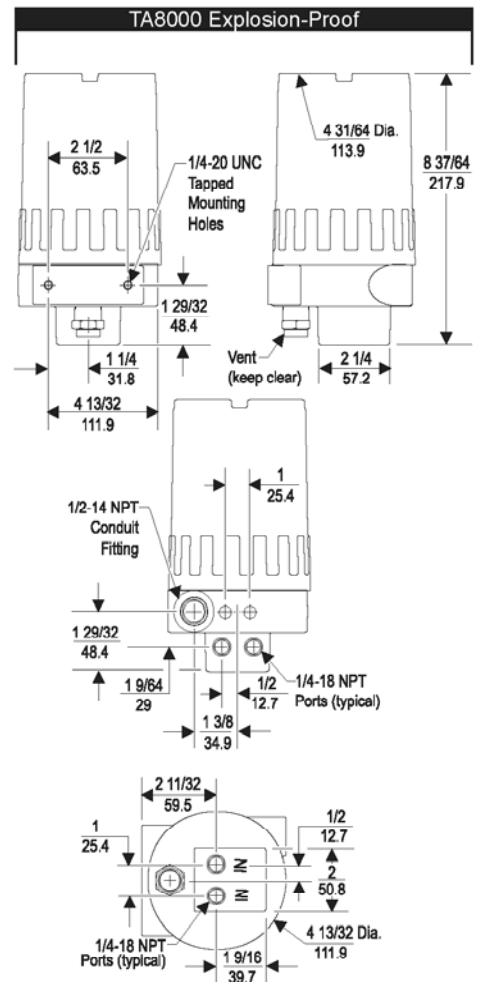
The T8000 Series is a miniature two wire pressure device that converts a pneumatic input signal to a linearly proportional output current.

The PC Board Assembly contains a Piezoresistive Pressure Sensor, which is connected in a Wheatstone bridge configuration. The input air pressure on the Pressure Sensor induces a Piezoresistive change which causes a bridge unbalance. As a result, a differential signal is applied to the current source device which supplies the loop.

The Zero and Span adjustments are easily accessible from the front of the unit. The T8000 Series may be configured as a Single or Dual Channel Unit. The Dual Channel Unit consists of two PC Boards that are enclosed within the same housing and function independently of each other. This unit may be offered in any one of the seven standard input pressure signals or in any combination.

### Explosion-Proof

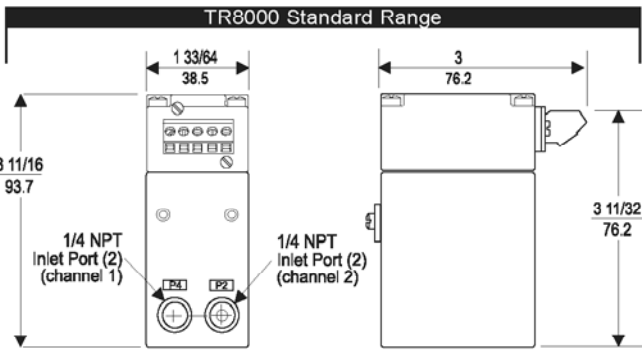
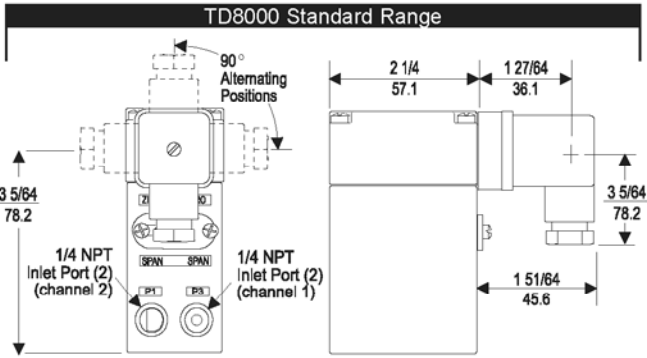
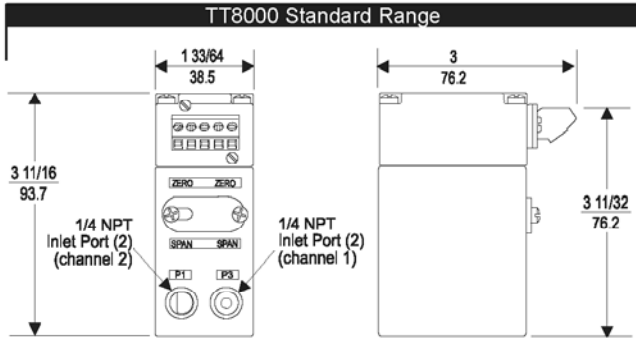
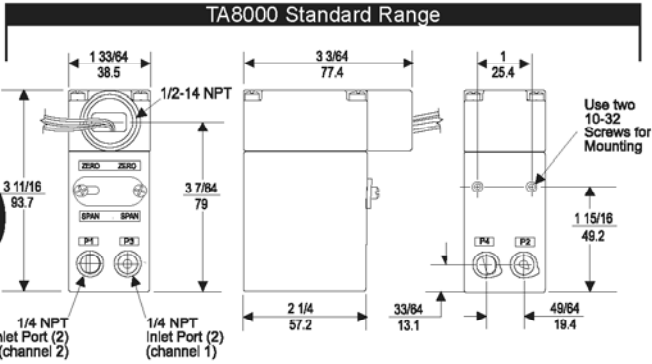
The TX8000 Unit consists of a TT8000 Series Transducer enclosed in an explosion-proof/NEMA 4X (IP65) housing.



# Model T8000 Miniature Two Wire P/I Pressure Transducer

**B**

**Model T8000**



**NOTE:** Model TR8000 Transducer is designed for use with the TR Rack Kit. Physically, it is the same as the TT8000 Unit except that the terminal block has been rotated to the rear.

## Specifications:

### T8000 Standard Range Transducers

	psig, [BAR], (kPa)						
<b>Pneumatic Input Range</b>	0-5 [0-0.3] (0-35)	3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)	0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	1-120 [0-8.0] (0-800)

**Current Output** 4-20 mA or 10-50 mA

**Supply Voltage** 12-50 VDC for 4-20 mA  
12-30 VDC for 10-50 mA

<b>Minimum Output Span</b>	4 [0.28] (28)	12 [0.8] (80)	23 [1.45] (145)	23 [1.45] (145)	23 [1.45] (145)	38 [2.6] (260)	75 [5.0] (500)
<b>Maximum Output Span</b>	10 [0.7] (70)	30 [2.0] (200)	60 [4.0] (400)	60 [4.0] (400)	60 [4.0] (400)	100 [7.0] (700)	200 [14.0] (1400)

**Independent Linearity**  
+0.15% Full Scale

**Hysteresis & Repeatability**  
Less than 0.1% Full Scale

**Resolution**  
Infinite

**Environmental**  
Operating Temperature: -40°F to 176°F (-40°C to 80°C)  
Humidity: 95 % Relative Humidity

**Load - Maximum**  
1900 OHMS @ 20 mA  
360 OHMS @ 50 mA

**Stability**  
Compensated Range: 32°F to 122°F (0°C to 50°C)  
Temperature Compensation:  
Zero ±1% FS - 32°F to 122°F (0°C to 50°C)  
Span ±5% FS - 32°F to 122°F (0°C to 50°C)  
Drift Less than .25% FS/30 Days

**Electrical**  
Calibration:  
Zero -66 to 125% Full Scale  
Span -25 to 200%  
Response time Output less than 10 m-seconds from 10 to 90% input

**Reverse Polarity Protected:**  
Output Ripple Less than 5mV peak to peak  
Damping 7 seconds 10% to 90% FS jumper selectable

**Mechanical**  
Damage Pressure: 3 times rated input or 200 psig, [15 BAR], (1500 kPa) whichever is less. 20 psig, [1.5 BAR], (150 kPa) for 5 psig, [.35 BAR], (35 kPa) range.  
Recalibration Pressure: 2 times rated input  
Vibration: No effect 10-200 Hz@ 2-10 G's

**RFI/EMI Effect**  
Less than 0.1% of Span @ 10 <sup>1</sup>/m class 2 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 <sup>1</sup>/m level 3, 27-500 mHz band per IEC Standard 801-3 1984 (wire in conduit). EMC Directive 89/336 EEC European Norms EN 50081-2 & EN 50082-2.



### Materials of Construction

Body and Housing ..... Aluminum  
Trim ..... Stainless Steel, Brass, Zinc Plated Steel  
Wetted Materials. .... Aluminum, Glass, Ceramic, Delrin,  
..... Nitrile, Silicone, RTV, Nickel  
Material Compatibility ..... Liquids and gases compatible  
..... with wetted materials



# Model T8000 Miniature Two Wire P/I Pressure Transducer

## Hazardous Area Classifications

	Explosion-Proof	Intrinsically Safe										
<b>Factory Mutual (FM) Approvals</b>  	Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; NEMA 4X Enclosure.	<b>TAFI8001, TFXI8001</b> Class I Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; NEMA 4X Enclosure; Temperature Code T5.										
	Non-Incendive											
	<b>TAFI8001</b> Class I, Division 2, Groups A, B, C and D; NEMA 4X Enclosure.	<b>TDFI8001, TTFI8001, TRFI8001</b> Class I Division 1, Groups A, B, C, and D. Class II, Division 1, Groups E, F, and G. Class III, Division 1; Temperature Code T5.										
<b>TDFI8001, TTFI8001, TRFI8001</b> Class I, Division 2, Groups A, B, C, and D.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #333; color: white;"> <th colspan="2" style="text-align: center;">Entity Parameters</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;"><math>V_{max}^1 = 30 \text{ VDC}</math></td> <td style="padding: 2px;"><math>C_i^3 = 0.0132 \mu \text{ F}</math></td> </tr> <tr> <td style="padding: 2px;"><math>I_{max}^2 = 100 \text{ mA}</math></td> <td style="padding: 2px;"><math>L_i^4 = 0 \text{ mH}</math></td> </tr> <tr> <td style="padding: 2px;"><small><sup>1</sup><math>V_{max}</math> = Max. Voltage</small></td> <td style="padding: 2px;"><small><sup>3</sup><math>C_i</math> = Capacitance</small></td> </tr> <tr> <td style="padding: 2px;"><small><sup>2</sup><math>I_{max}</math> = Max. Current</small></td> <td style="padding: 2px;"><small><sup>4</sup><math>L_i</math> = Inductance</small></td> </tr> </tbody> </table>		Entity Parameters		$V_{max}^1 = 30 \text{ VDC}$	$C_i^3 = 0.0132 \mu \text{ F}$	$I_{max}^2 = 100 \text{ mA}$	$L_i^4 = 0 \text{ mH}$	<small><sup>1</sup><math>V_{max}</math> = Max. Voltage</small>	<small><sup>3</sup><math>C_i</math> = Capacitance</small>	<small><sup>2</sup><math>I_{max}</math> = Max. Current</small>	<small><sup>4</sup><math>L_i</math> = Inductance</small>
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Explosion-Proof		Intrinsically Safe										
<b>Canadian Standards Association (CSA) Approvals</b>  	Class I, Division 1, Groups B, C, and D; Class II, Division 1, Groups E, F, and G; Type 4 Enclosure; Rated 4-20 mA or 10-50 mA, 30 VDC Max. Maximum Ambient 65°C.	<b>TACI8001, TCXI8001</b> Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F, and G; Type 4 Enclosure; Rated 4-20 mA, 30 VDC Maximum; Temperature Code T4.										
	Division 2											
	<b>TACI8001</b> Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups E, F, and G; Type 4 Enclosure; Rated 4-20 mA, 30 VDC Max.; Temperature Code T3 C.	<b>TDCI8001, TTCI8001, TRCI8001</b> Class I, Division 1, Groups A, B, C and D; Rated 4-20 mA, 30 VDC Maximum; Temperature Code T5.										
<b>TDCI8001, TTCI8001, TRCI8001</b> Class I, Division 2, Groups A, B, C and D; Rated 4-20 mA, 30 VDC Maximum; Temperature Code T3 C.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #333; color: white;"> <th colspan="2" style="text-align: center;">Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">System Type 1 and 4:</td> <td style="padding: 2px;">Single Channel Polarized Rated: 28V Max. 300 Ohm Min.</td> </tr> <tr> <td style="padding: 2px;">System Type 2 and 5:</td> <td style="padding: 2px;">Dual Channel Polarized Rated 28V Max. 300 Ohm Min. &amp; 28V Diode return per channel.</td> </tr> <tr> <td style="padding: 2px;">System Type 3 Min. &amp; 10V</td> <td style="padding: 2px;">                     .. a. 28V Max. 300 Ohm                      ... Max. 50 Ohm Min. return.                       b. 28.5V Max. 300 Ohm Min. &amp; 9V Max. 50 Ohm Min. return. &amp; 10V Max. 50 Ohm Min. return.                 </td> </tr> </tbody> </table>		Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:		System Type 1 and 4:	Single Channel Polarized Rated: 28V Max. 300 Ohm Min.	System Type 2 and 5:	Dual Channel Polarized Rated 28V Max. 300 Ohm Min. & 28V Diode return per channel.	System Type 3 Min. & 10V	.. a. 28V Max. 300 Ohm ... Max. 50 Ohm Min. return.  b. 28.5V Max. 300 Ohm Min. & 9V Max. 50 Ohm Min. return. & 10V Max. 50 Ohm Min. return.		
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System Type 3 Min. & 10V	.. a. 28V Max. 300 Ohm ... Max. 50 Ohm Min. return.  b. 28.5V Max. 300 Ohm Min. & 9V Max. 50 Ohm Min. return. & 10V Max. 50 Ohm Min. return.											

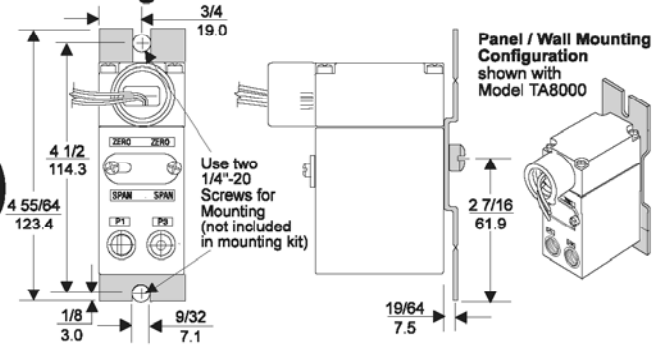
B

Model T8000

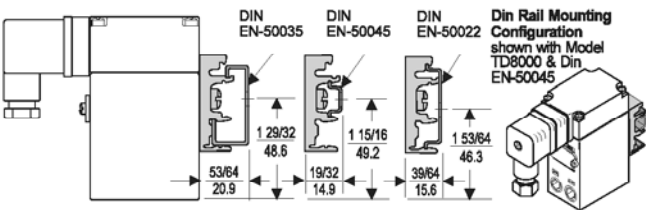


# Model T8000 Miniature Two Wire P/I Pressure Transducer

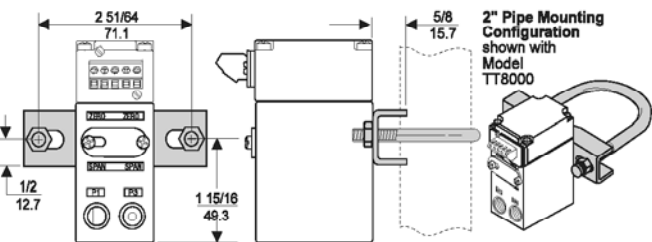
## Mounting Kits



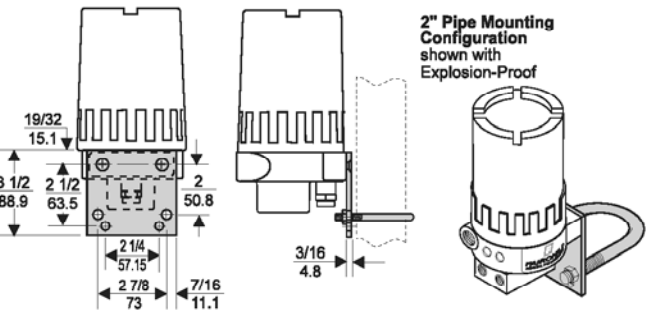
Mounting Bracket: 16799-1



Mounting Bracket: 16893-1



Mounting Bracket: 19254-1



Mounting Bracket: 18187-1

## Model T8000 Transducer Kits & Accessories

- Mounting Bracket Kits . . . . 16799-1 (included with unit)
- 16893-1 (included with unit)
- 19254-1 (sold separately)
- 18187-1 (sold separately)

## Catalog Information

Catalog Number T    8 0 0 1

### Electrical Connections

- 1/2 NPT Conduit . . . . . A
- Fitting with Pigtail . . . . . D
- DIN43650 Connection . . . . . R
- Rack Mount . . . . . T
- Terminal Block . . . . .
- (leave blank for Explosion-Proof) . . . . .

### Underwriting Group

- Canadian Standards . . . . . C
- Factory Mutual . . . . . F

### Approval Class <sup>1</sup>

- Explosion-Proof . . . . . X
- NEMA 4X (IP65) . . . . .
- Intrinsically Safe <sup>2</sup> . . . . . I

### Pneumatic Input Channel 1

(Select appropriate psig, [BAR], or (kPa) range.)

- 0-5 psig . . . . . 00
- 3-15 psig . . . . . 01
- 3-27 psig . . . . . 02
- 6-30 psig . . . . . 03
- 0-30 psig . . . . . 04
- 0-60 psig . . . . . 05
- 0-120 psig . . . . . 06
- [0-0.35 BAR] . . . . . 10
- [0.2-1.0 BAR] . . . . . 11
- [0.2-1.8 BAR] . . . . . 12
- [0.4-2.0 BAR] . . . . . 13
- [0-2.0 BAR] . . . . . 14
- [0-4.0 BAR] . . . . . 15
- [0-8.0 BAR] . . . . . 16
- (0-35 kPa) . . . . . 20
- (20-100 kPa) . . . . . 21
- (20-180 kPa) . . . . . 22
- (40-200 kPa) . . . . . 23
- (0-200 kPa) . . . . . 24
- (0-400 kPa) . . . . . 25
- (0-800 kPa) . . . . . 26

### Current Output Channel 1

- 4-20 mA . . . . . 1
- 10-50 mA . . . . . 2

### If Channel 2 Not Used . . . . . 00 0

If Channel 2 is used, select appropriate psig, [BAR], or (kPa) range from Input Channel 1 above. . . . .

### Current Output Channel 2

- 4-20 mA . . . . . 1
- 10-50 mA . . . . . 2

### Options

- BSPT Thread . . . . . U

<sup>1</sup> Select Approval(s) Required.  
<sup>2</sup> Includes Division 2 Approval.

C

SECTION C



# **PNEUMATIC VOLUME BOOSTERS**

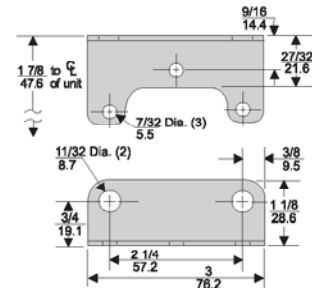
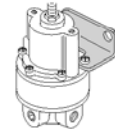
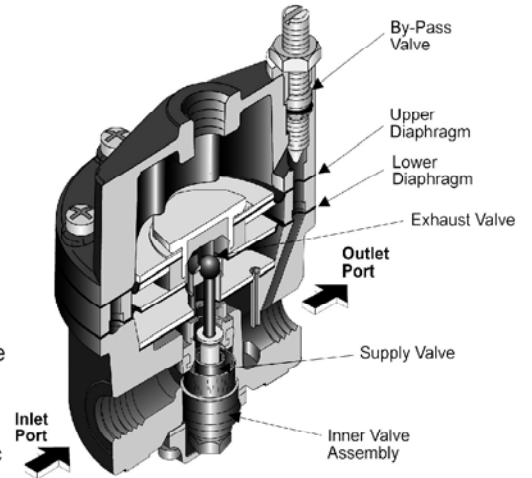
# Model 20 Pneumatic Precision Booster



**C**  
Model  
20

## Features

- The Model 20 Pneumatic High Capacity Volume Booster uses a pneumatic input signal to accurately control output pressure
- A balanced Supply Valve minimizes the effects of supply pressure variation
- Aspirator Tube compensates downstream pressure drop under flowing conditions
- Optional Adjustable By-Pass Needle Valve option includes bubble tight exhaust valve allows tuning for optimum dynamic response (1:1 ratio only) and cycle free operation with valve positioners
- Optional Fixed Negative Bias for pneumatic signal devices that cannot be adjusted to zero signal pressure
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction allows servicing without removal
- Mounting Bracket available
- Canadian Registration Number (CRN) Certification for all territories and provinces

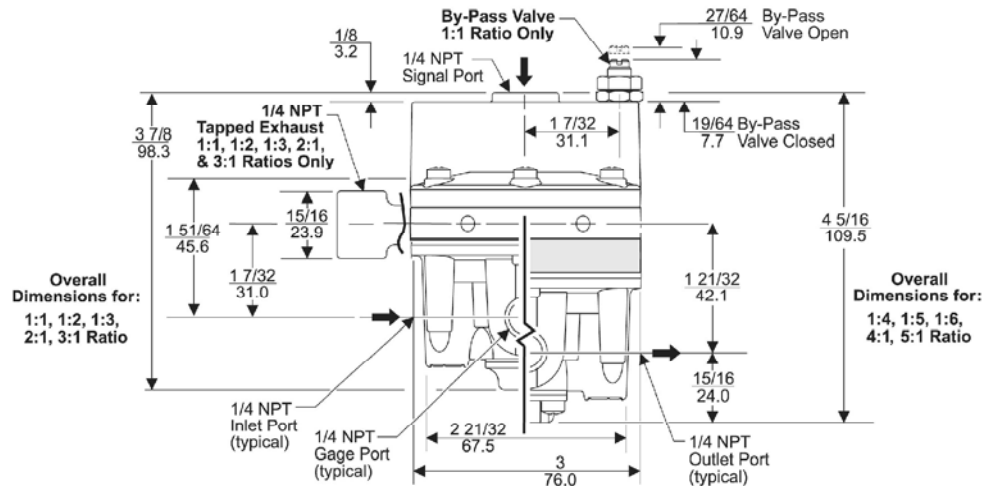


## Operating Principles

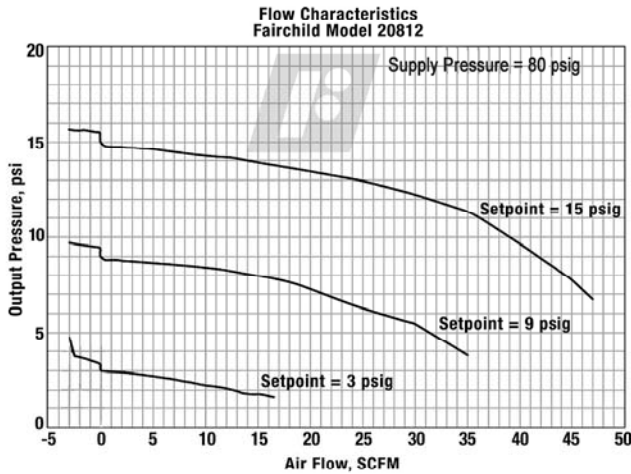
The Model 20 Booster is a pneumatic device capable of high flow and exhaust capacity. This device uses a force balance system to control the movement of the supply and exhaust valves.

At set point, the force due to signal pressure that acts on the top of the Upper Diaphragm balances with the force due to output pressure acting on the bottom of the Lower Diaphragm.

**Model 20 Mounting Bracket Kit**  
P/N 09921 (Zinc Plated Steel)  
(sold separately)



**Technical Information**



**Installation**

For installation instructions, refer to the *Fairchild Model 20 High Capacity Volume Booster Installation, Operation and Maintenance Instructions*, IS-20000020.

- <sup>1</sup> For 1:1, 1:2 & 2:1 Ratios Only.
- <sup>2</sup> Maximum Supply Pressure – 75 psig, [5.0 BAR], (500 kPa). For 1:1 Ratio Only.
- <sup>3</sup> Negative Bias Fixed at 3.5 psig + 0.5 psig.
- <sup>4</sup> Not Available with Y Option. For 1:1 Ratio Only.
- <sup>5</sup> BSPP Threads in Inlet, Outlet, Bonnet & Exhaust Ports Only. Others BSPT.

**Specifications**

Ratio	SIGNAL:OUTPUT										
	1:1	1:2	1:3	1:4	1:5	1:6	2:1	3:1	4:1	5:1	
<b>Maximum Output Pressure</b>	150	150	150	150	150	150	75	50	37.5	30	
	[10.0]	[10.0]	[10.0]	[10.0]	[10.0]	[10.0]	[5.0]	[3.5]	[2.6]	[2.0]	
	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(500)	(350)	(260)	(200)	
<b>Maximum Supply Pressure</b>	250	250	250	250	250	250	250	250	250	250	
	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	
	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	
<b>Flow Capacity SCFM, (m<sup>3</sup>/HR)</b>	45	45	45	45	45	45	45	45	45	45	
	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	
<b>Exhaust Capacity SCFM, (m<sup>3</sup>/HR)</b>	11	11	11	7.5	7.5	7.5	11	11	7.5	7.5	
	(18.7)	(18.7)	(18.7)	(12.8)	(12.8)	(12.8)	(18.7)	(18.7)	(12.8)	(12.8)	
<b>Sensitivity (water column)</b>	1/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"	1/2"	1/2"	3/4"	3/4"	
	(.64 cm)	(1.27 cm)	(1.9 cm)	(2.54 cm)	(3.18 cm)	(3.8 cm)	(1.27 cm)	(1.27 cm)	(1.9 cm)	(1.9 cm)	
<b>Ratio Accuracy</b>	1.0	1.0	1.0	2.0	2.0	2.0	-	-	-	-	
	-	-	-	-	-	-	2.0	2.0	2.0	2.0	
<b>Supply Pressure Effect</b>	0.10	0.20	0.30	0.40	0.50	0.60	0.10	0.10	0.10	0.10	
	[.007]	[.014]	[.021]	[.028]	[.034]	[.041]	[.007]	[.007]	[.007]	[.007]	
	(0.7)	(1.4)	(2.1)	(2.8)	(3.4)	(4.1)	(0.7)	(0.7)	(0.7)	(0.7)	
<b>Ambient Temperature</b>	-40 to 200	-40 to 200	-40 to 200	-40 to 200	-40 to 200	-40 to 200	-40 to 200	-40 to 200	-40 to 200	-40 to 200	
	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	
	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	-40 to 93.3	
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
<b>Materials of Construction</b>	Body & Housing ..... Aluminum										
	Trim ..... Zinc Plated Steel, Brass										
	Diaphragm ..... Nitrile on Dacron Fabric										
<b>Hazardous Locations</b>	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** 208 -

**Ratio**

1:1	1
1:2	2
1:3	3
2:1	4
3:1	5
1:4	6
4:1	7
1:5	8
5:1	9
1:6	10

**Pipe Size**

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

**Options**

Silicone Elastomers <sup>2</sup>	A
Tapped Exhaust <sup>1</sup>	E
BSPP (Parallel) <sup>5</sup>	H
By-Pass Valve <sup>4</sup>	I
Viton Elastomers	J
Non-Relieving <sup>1</sup>	N
BSPT (Tapered)	U
Negative Bias <sup>1,3</sup>	Y



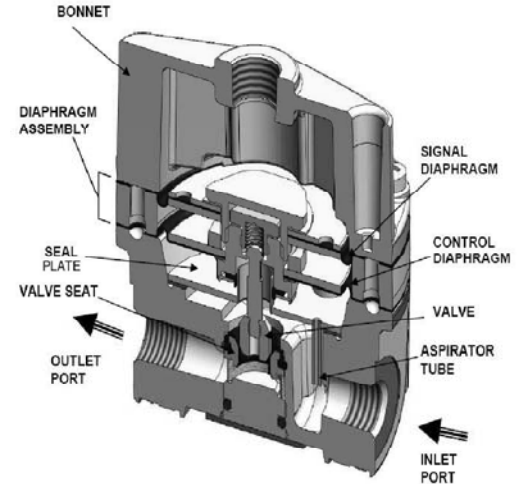
# Model 20BP Pneumatic Precision Back Pressure Booster



**C**  
Model  
20BP

## Features

- The Model 20BP Pneumatic High Capacity Back Pressure Booster uses a pneumatic input signal to accurately control output pressure
- Aspirator Tube compensates pressure droop under flowing conditions
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction allows servicing without removal
- Mounting Bracket available

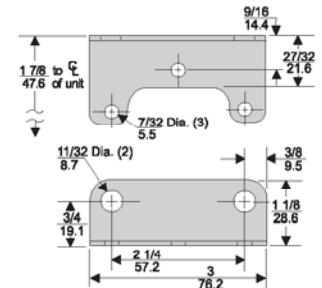


## Operating Principles

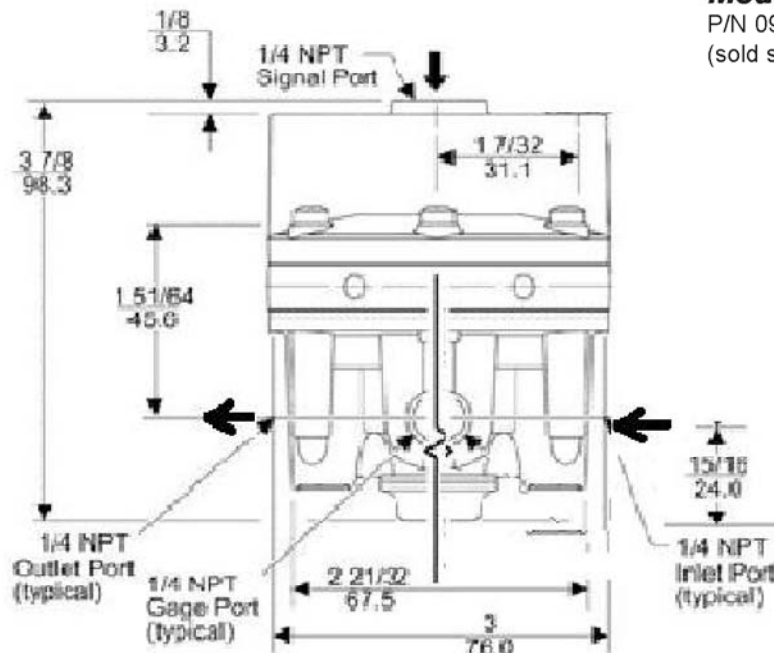
The Model 20BP Back Pressure Booster is a pneumatic device capable of high flow capacity. This device uses a force balance system to open the relief valve and vent system pressure when the set point is exceeded.

When system pressure increase, the force on the bottom of the Diaphragm Assembly increase 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 system air.

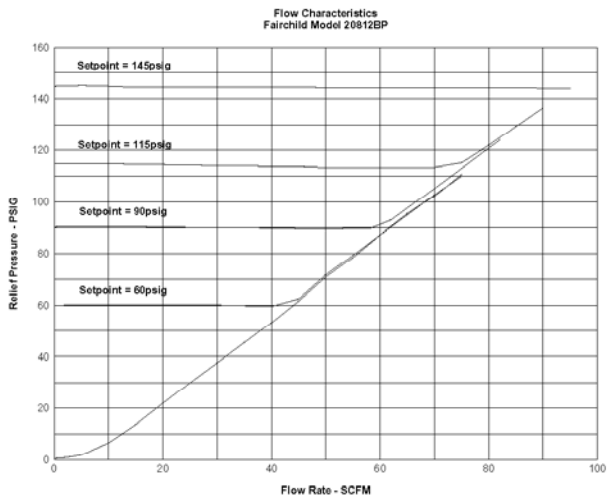
If system pressure decreases below the set point, the assembly moves downward closing the Relief Valve.



**Model 20 Mounting Bracket Kit**  
P/N 09921 (Zinc Plated Steel)  
(sold separately)



**Technical Information**



**Catalog Information**

<b>Catalog Number</b>	208		BP
<b>Ratio</b>	1:1	1	
<b>Pipe Size</b>	1/4" NPT		2
	3/8" NPT		3
	1/2" NPT		4
<b>Options</b>	Silicone Elastomers <sup>1</sup>		A
	BSPP (Parallel) <sup>2</sup>		H
	Viton Elastomers		J
	BSPT (Tapered)		U

<sup>1</sup> Maximum Pressure – 75 psig, [5.0 BAR], (500 kPa).  
<sup>2</sup> BSPP Threads in Inlet, Outlet, Bonnet & Exhaust Ports Only. Others BSPT.



**Specifications**

<b>SIGNAL:OUTPUT (1:1 Ratio)</b>	
<b>Maximum Signal Pressure</b>	150 psig [10.0 BAR] 1000kPa
<b>Maximum System Pressure</b>	250psig [17.0BAR] 1700kPa
<b>Flow Capacity SCFM, @100 psig, [7.0 BAR], (700 kPa) System Pressure</b>	60 SCFM (101.9 m <sup>3</sup> /HR)
<b>Sensitivity (water column)</b>	1/4" (.64 cm)
<b>Ratio Accuracy % of 100 psig, [7.0 BAR], (700 kPa) Input span</b>	1.0
<b>Ambient Temperature</b>	-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 & Housing . . . . . Aluminum  
 Trim . . . . . Zinc Plated Steel, Brass  
 Diaphragm . . . . . Nitrile on Dacron Fabric

**Installation**

For installation instructions, refer to the *Fairchild Installation, Operation and Maintenance Instructions*.

# Model 200 Pneumatic Volume Booster



**Model 200**

The Model 200 Pneumatic Volume Booster reproduces a pneumatic signal in a 1:1 ratio. It is ideally suited for systems that require input isolation or increased forward flow capacity.

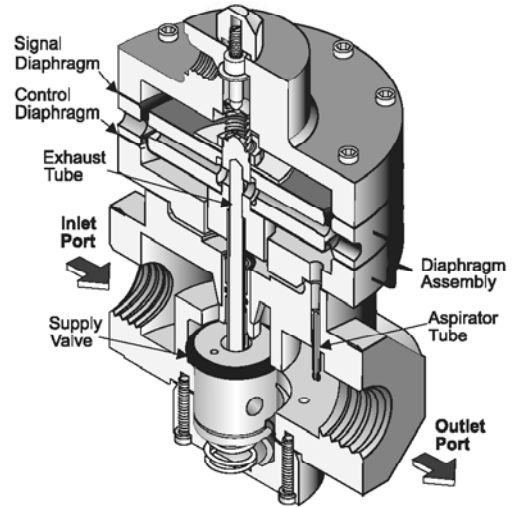
## Features

- Control sensitivity to 1" water column variation.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube minimizes downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Optional Increased Sensitivity configuration with larger Control Diaphragm for more precision control at low setpoints.
- Unit construction lets you service the Model 200 without removing it from the line.
- Mounting Bracket is available

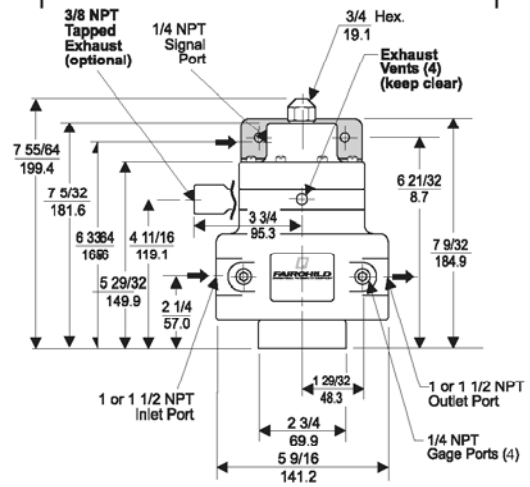
## Operating Principles

When signal pressure on the top of the Signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the downward force of the signal pressure that acts on the top of the Signal Diaphragm balances with the upward force of the output pressure that acts on the bottom of the Control Diaphragm.

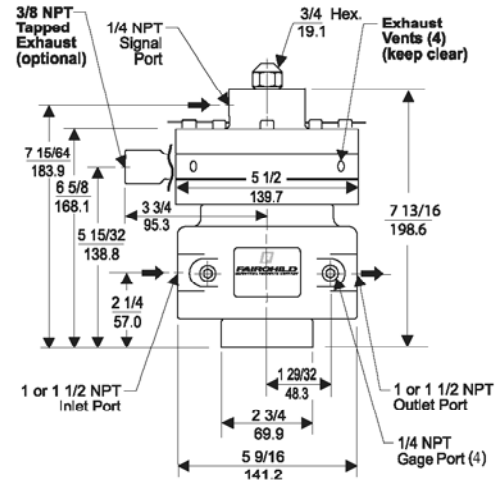
When the output pressure increases above the signal pressure, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Excess output pressure exhausts through the Vents in the side of the unit until it reaches the setpoint.



**Model 200 Standard Unit**

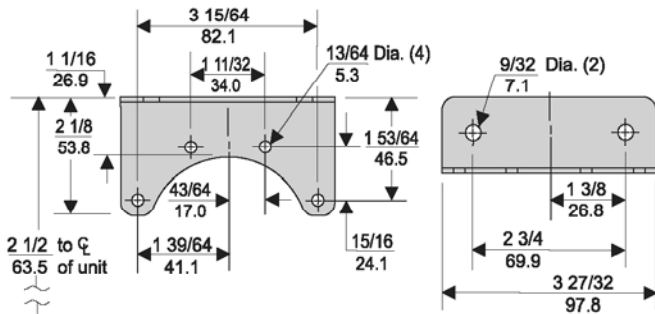


**Model 200 with Increased Sensitivity Option (L)**





**Technical Information**



Mounting Bracket: 10311

**Model 200 Booster Kits & Accessories**

Mounting Bracket Kit ..... 10311 (sold separately).....

**Specifications**

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

**Flow Capacity**  
1800 SCFM (3058 m<sup>3</sup>/HR) @ 150 psig, [10.0 BAR], (1000 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) set point

**Exhaust Capacity**  
65 SCFM (110.5 m<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

**Maximum Signal or Output Pressure**  
150 psig, [10 BAR], (1000 kPa)

**Supply Pressure Effect**  
Less than 0.5 psig, [.035 BAR], (3.5 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 93.3°C)

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

**Catalog Information**

Catalog Number	2 0 0 1	<input type="checkbox"/>	<input type="checkbox"/>
Pipe Size		<input type="checkbox"/>	<input type="checkbox"/>
1" NPT .....		08	
1 1/2" NPT .....		12	
Options			<input type="checkbox"/>
Tapped Exhaust .....			E
Increased Sensitivity .....			L
(for more precision control at low setpoints)			
Non-Relieving .....			N
Viton Elastomers .....			J
BSPP (Parallel) <sup>1</sup> .....			H

<sup>1</sup> BSPP Threads in Inlet and Outlet Ports Only. Others BSPT.

**Service Kit**

For installation instructions, refer to the *Fairchild Model 200 Pneumatic Volume Booster Installation, Operation and Maintenance Instructions, IS-20000200*.



# Model 200XLR Pneumatic Volume Booster



**Model  
200  
XLR**

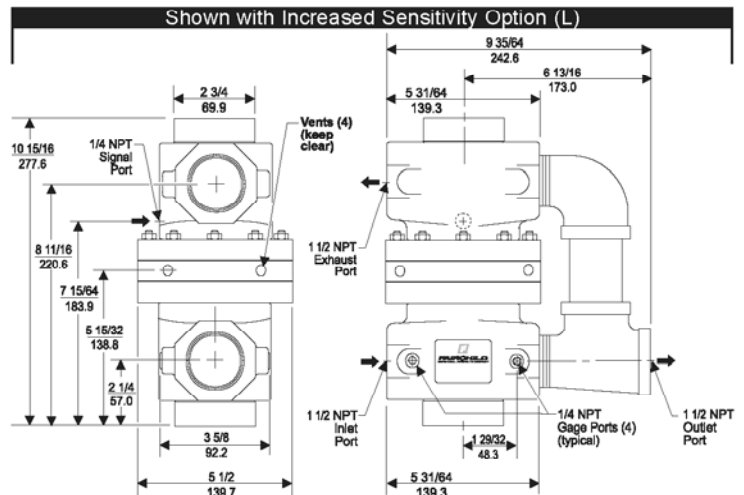
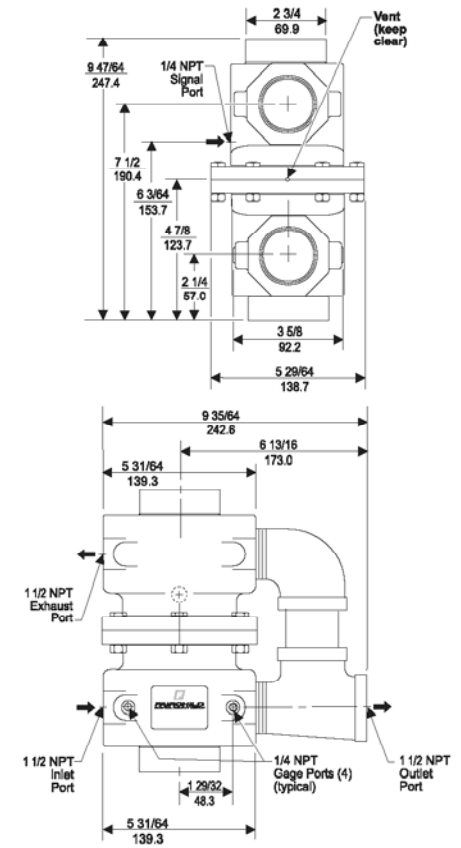
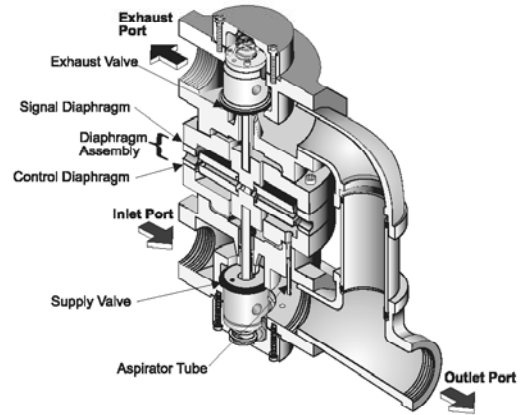
## Features

- The 200XLR Pneumatic Volume Booster produces a pneumatic signal in a 1:1 ratio, ideally suited for input isolation systems.
- Control sensitivity to 1" water column variation (Increased Sensitivity ("L") option for more precision control at low setpoints.)
- Large supply and Exhaust Valves provide high forward and exhaust flows
- An Aspirator Tube minimizes downstream pressure drop under flow conditions.
- Separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Optional Adjustable By-Pass Needle Valve includes bubble tight exhaust valve allows tuning for optimum dynamic response and cycle free operation with valve positioners

## Operating Principles

When signal pressure on the top of the signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the downward force of the signal pressure that acts on the top of the Signal Diaphragm balances with the upward force of the output pressure that acts on the bottom of the Control Diaphragm.

When the output pressure increases above the signal pressure, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Excess output pressure exhausts through the Exhaust Port until it reaches the setpoint.



**Specifications**

**Flow Capacity (SCFM)**

In excess of 1500 (2550 m<sup>3</sup>/hr) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (1500 kPa) setpoint

**Exhaust Capacity (SCFM)**

325 (552.5 m<sup>3</sup>/hr) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

**Supply Pressure**

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

**Supply Pressure Effect**

Less than 0.5 psig, [.03 BAR], (3.4 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

**Signal or Output Pressure**

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

**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 . . . . . Die Cast Aluminum  
 Trim . . . . . Stainless Steel, Brass, Aluminum,  
 . . . . . and Zinc Plated Steel  
 Diaphragms . . . . . Nitrile on Dacron

**Catalog Information**

<b>Catalog Number</b>	<b>2001</b>	<input type="checkbox"/>	<b>XLR</b>	<input type="checkbox"/>
<b>Pipe Size</b>				
1 1/2" NPT . . . . .		<input type="checkbox"/>		
		12		

**Options**

By Pass Valve . . . . .	<input type="checkbox"/>	I
Fluorocarbon (Viton) Elastomers . . . . .	<input type="checkbox"/>	J
Increased Sensitivity . . . . .	<input type="checkbox"/>	L

(for more precision control at low setpoints)

**Installation**

For installation instructions, refer to the *Fairchild Model 200XLR Pneumatic Volume Booster Installation, Operation and Maintenance Instructions, IS-20200XLR.*





Model 2000

## Features

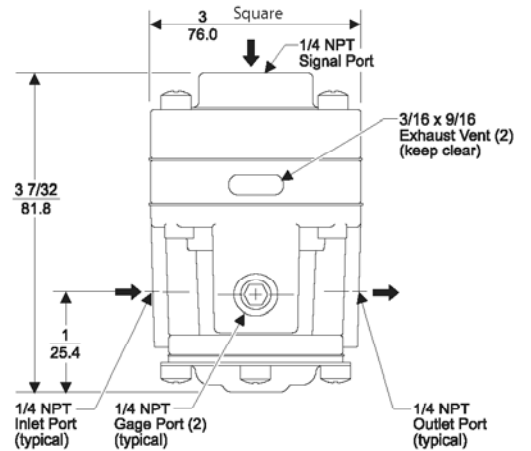
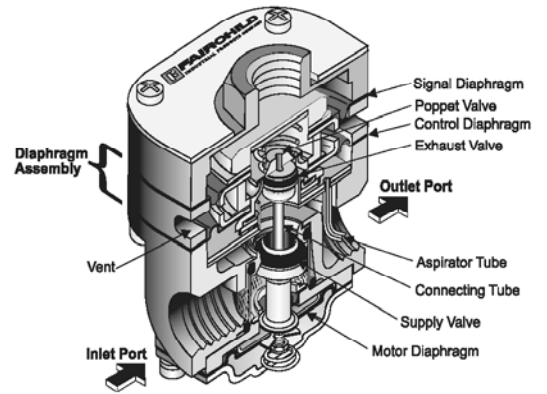
- The Model 2000 Pneumatic Volume Booster converts a low flow signal to a high flow output. It is ideally suited for a variety of applications including the operation of air systems that require rapid valve or cylinder action.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube minimizes downstream pressure droop under flow conditions.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve Seats minimize air consumption.
- Small signal volume assures rapid response to pressure variation.
- A separate Control Chamber isolates the Diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the unit without removing it from the line.

## Operating Principles

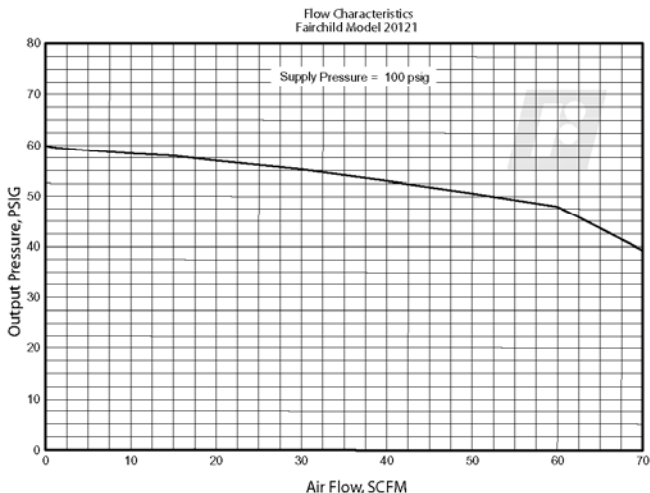
When signal pressure on the top of the Signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens.

Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the force of the signal pressure that acts on the top of the Signal Diaphragm balances with the force of the output pressure that acts on the bottom of the Control Diaphragm to close the Supply Valve.

When the output pressure increases above the signal pressure, 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 excess output pressure exhausts through the vent in the side of the unit until it reaches the setpoint.



**Technical Information**



**Specifications**

**Maximum Supply Pressure**

250 psig, [17.0 BAR], (1700 kPa)

**Flow Capacity (SCFM)**

40 (68 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply & 20 psig, [1.5 BAR], (150 kPa) setpoint

**Exhaust Capacity (SCFM)**

16 (27.2 m<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, 1.5 BAR], (150 kPa) setpoint

**Maximum Signal or Output Pressure**

150 psig, [10.0 BAR], (1000 kPa)

**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**

Less than 1" (2.54 cm) Water Column

**Ambient Temperature**

-40° F to +200°F, (-40° C to +93° C)

**Materials of Construction**

Body and Housing ..... Zinc  
Diaphragms ..... Nitrile on Dacron

**Catalog Information**

**Catalog Number**

2 0

**Ratio**

1:1 .....  1  
1:1.6 .....  0

**Pipe Size**

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

**Option**

BSPT (Tapered) .....  U

**Installation**

For installation instructions, refer to the *Fairchild Model 2000 Pneumatic Volume Booster Installation, Operation and Maintenance Instructions*, IS-20002000.

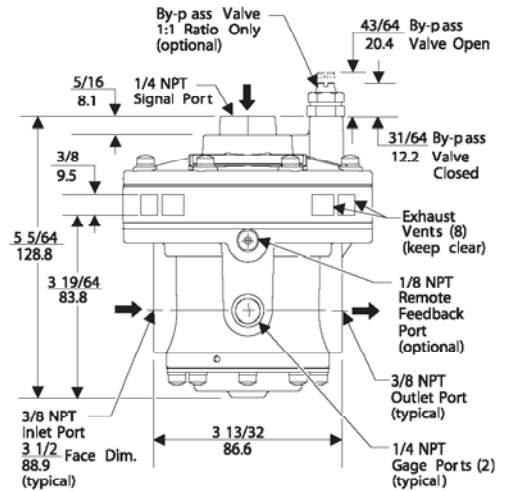
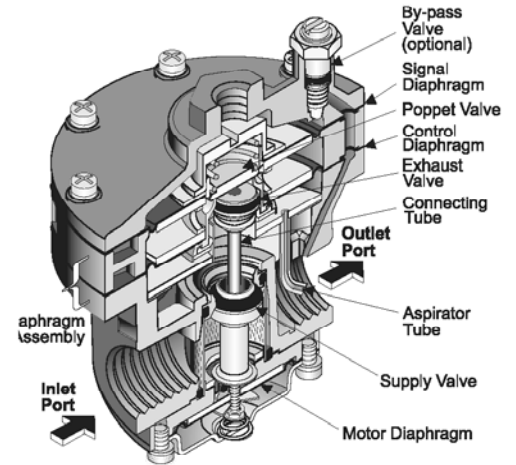




**C**  
Model  
4500A

## Features

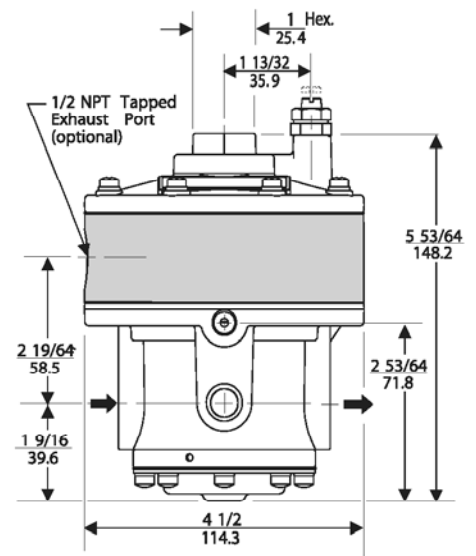
- Five signal to output ratios meet most control element requirements.
- Control sensitivity of 1" water column allows use in precision applications.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve seats minimize air consumption.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube compensates down stream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Optional remote feedback port minimizes pressure drop at final control element under flow conditions.
- Optional Adjustable By-Pass Needle Valve option includes bubble tight exhaust valve allows tuning for optimum dynamic response (1:1 ratio only) and cycle free operation with valve positioners
- Unit construction lets you service the Model 4500A without removing it from the line.
- Canadian Registration Number (CRN) certification for all territories and provinces.



## Operating Principles

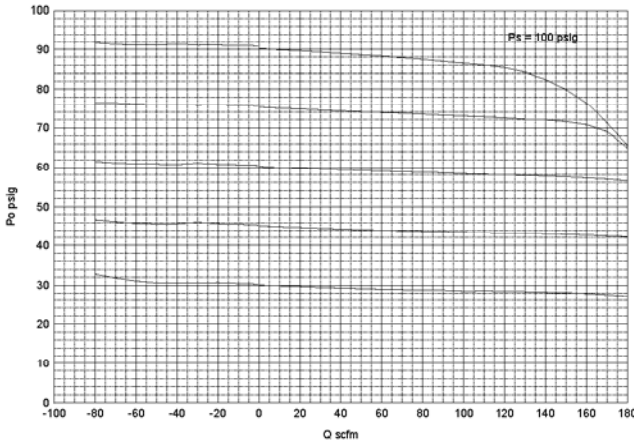
When signal pressure on the top of the Signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the force of the signal pressure that acts on the top of the Signal Diaphragm balances with the force of the output pressure that acts on the bottom of the Control Diaphragm to close the Supply Valve.

When the output pressure increases above the signal pressure, 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 excess output pressure exhausts through the vent in the side of the unit until it reaches the setpoint.



**Technical Information**

Forward & Exhaust Flow Characteristics  
Fairchild Model 4514A



**Specifications**

	<b>RATIO</b>	<b>1:1</b>	<b>1:2</b>	<b>1:3</b>	<b>2:1</b>	<b>3:1</b>
<b>Maximum Output Pressure</b>	<b>psig [BAR] (kPa)</b>	150 [10.0] (1000)	150 [10.0] (1000)	150 [10.0] (1000)	75 [5.0] (500)	50 [3.5] (350)
<b>Maximum Supply Pressure</b>	<b>psig [BAR] (kPa)</b>	250 [17.0] (1700)	250 [17.0] (1700)	250 [17.0] (1700)	250 [17.0] (1700)	250 [17.0] (1700)
<b>Flow Capacity</b> 100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint.	<b>SCFM m<sup>3</sup>/HR</b>	150 (255)	150 (255)	150 (255)	150 (255)	150 (255)
<b>Exhaust Capacity</b> Downstream Pressure 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint.	<b>SCFM m<sup>3</sup>/HR</b>	40 (65.2)	40 (65.2)	40 (65.2)	40 (65.2)	40 (65.2)
<b>Setpoint</b> Water Column	<b>(cm)</b>	1" (2.54)	2" (5.08)	3" (7.62)	2" (5.08)	2" (5.08)
<b>Ratio Accuracy</b> % of 100 psig, [7.0 BAR], (700 kPa) output span.		3.0	3.0	3.0		
% of output span with 100 psig, [7.0 BAR], (700 kPa) input span					3.0	3.0
<b>Supply Pressure Effect</b>	<b>psig [BAR] (kPa)</b>	0.10 [.007] (0.7)	0.20 [.014] (1.4)	0.30 [.021] (2.1)	0.10 [.007] (0.7)	0.10 [.007] (0.7)

**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  
Trim..... Zinc Plated Steel, Brass  
Diaphragm..... Nitrile on Dacron

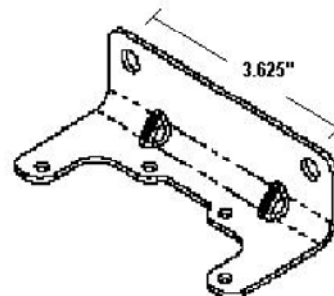
**Catalog Information**

<b>Catalog Number</b>	4 5	<input type="checkbox"/>	<input type="checkbox"/>	A	<input type="checkbox"/>
<b>Ratio</b>	1:1.....	1			
	1:2.....	2			
	1:3.....	3			
	2:1.....	4			
	3:1.....	5			
<b>Pipe Size</b>	3/8" NPT.....		3		
	1/2" NPT.....		4		
	3/4" NPT.....		6		
<b>Options</b>	Tapped Exhaust.....				E
	By-pass Valve <sup>1</sup> .....				I
	Feedback.....				P
	BSPT (Tapered).....				U
	BSPP (Parallel) <sup>2</sup> .....				H
	Viton Elastomers <sup>3</sup> .....				J

<sup>1</sup> For 1:1 Ratio Only  
<sup>2</sup> BSPP Threads in Inlet, Outlet, Exhaust & Bonnet Ports Only. Others BSPT  
<sup>3</sup> Available on 1:1, 1:2 and 2:1 Only

**Installation**

For installations instructions, refer to the corresponding *Fairchild Model 4500A Pneumatic Volume Booster Instruction, Operation and Maintenance Instructions, IS-2004500A.*



**Model 4500A Mounting Bracket Kit P/**  
N 20555-1 zinc plated (sold separately)



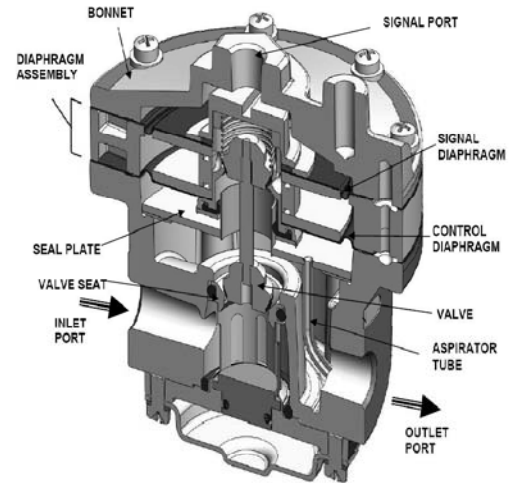
# Model 4500ABP Pneumatic Back Pressure Booster

## Features

- Control sensitivity of 1" water column allows use in precision applications.
- Large Exhaust Valve provides high exhaust flows.
- An Aspirator Tube compensates 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 4500ABP without removing it from the line.



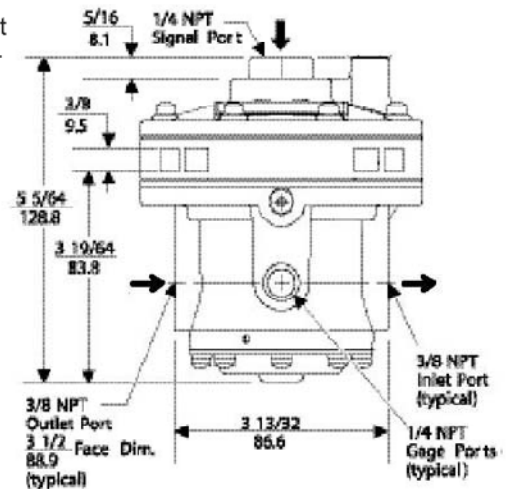
**C**  
Model  
4500ABP



## Operating Principles

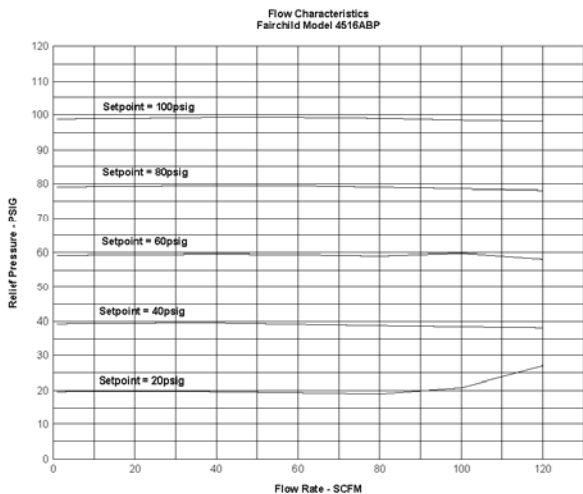
The Model 4500ABP Booster is a pneumatic device capable of high flow capacity. This device uses a force balance system to open the relief valve and vent system pressure when set point is exceeded. When system pressure increases, the force on the bottom of the Diaphragm Assembly increases beyond the set point, the assembly moves upward, lifting the Relief Valve from its seat and vents the system air.

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





**Technical Information**



**Specifications**

	<b>RATIO</b>	<b>1:1</b>
<b>Maximum Signal Pressure</b>	psig [BAR] (kPa)	150 [10.0] (1000)
<b>Maximum System Pressure</b>	psig [BAR] (kPa)	250 [17.0] (1700)
<b>Flow Capacity</b> AT 100 psig, [7.0 BAR], 700 kPa) System Pressure,	SCFM m <sup>3</sup> /HR	150 (255)
<b>Setpoint</b> Water Column	(cm)	1" (2.54)
<b>Ratio Accuracy</b> % of 100 psig, [7.0 BAR], (700 kPa) input span.		3.0

**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  
Trim ..... Zinc Plated Steel, Brass  
Diaphragm ..... Nitrile on Dacron

**Catalog Information**

**Catalog Number**

45   ABP

**Ratio**

1:1 .....  1

**Pipe Size**

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

**Options**

BSPT (Tapered) .....  
BSPP (Parallel)<sup>1</sup> .....  
Viton Elastomers .....

U  
 H  
 J

**Actuator**

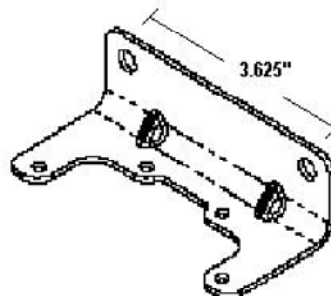
Knob .....  K  
Tamperproof .....  T



<sup>1</sup> BSPP Threads in Inlet, Outlet, Exhaust & Bonnet Ports Only. Others BSPT

**Installation**

For installations instructions, refer to the corresponding *Fairchild Model 4500ABP Pneumatic Volume Booster Instruction, Operation and Maintenance Instructions.*



**Model 4500ABP** Mounting Bracket  
Kit P/N 20555-1 zinc plated (sold separately)

## Features

The Model 4800 volume booster is a rugged precision instrument with key features providing reliable, efficient and stable operation. These include:

- Fixed deadband between the operation of the supply valve and exhaust valve providing accurate and stable final positioning of the valve.
- Integral bypass needle valve to optimize response time and stability.
- Soft seat supply and exhaust valves provide efficient leak free operation and prevents hunting when used with modern electronic feed & bleed type positioners
- Pressure balanced supply valve maintains deadband specification preventing changes in control characteristics when supply pressure changes.
- Damped diaphragm control chamber protects valves from damaging oscillation under high flow conditions.
- Two accessory ports connected to the outlet chamber provide convenient access to the outlet for additional control accessories and pressure monitoring.
- Tapped exhaust port for collecting exhaust air or for incorporation of a silencer.

## Operating Principles

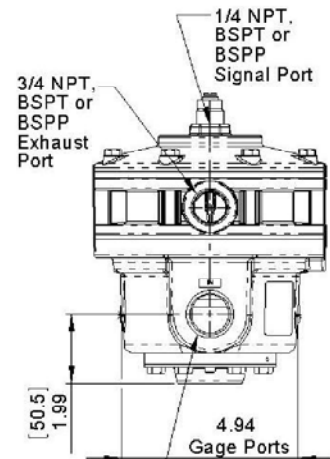
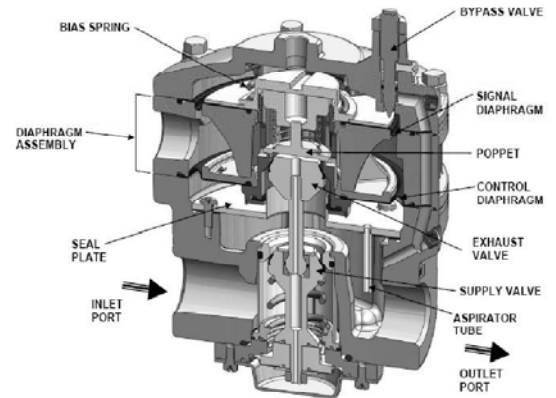
When signal pressure on the top of the Signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the force of the signal pressure that acts on the top of the Signal Diaphragm balances with the force of the output pressure that acts on the bottom of the Control Diaphragm to close the Supply Valve.

When the output pressure increases above the signal pressure, 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 excess output pressure exhausts through the vent in the side of the unit until it reaches the setpoint.

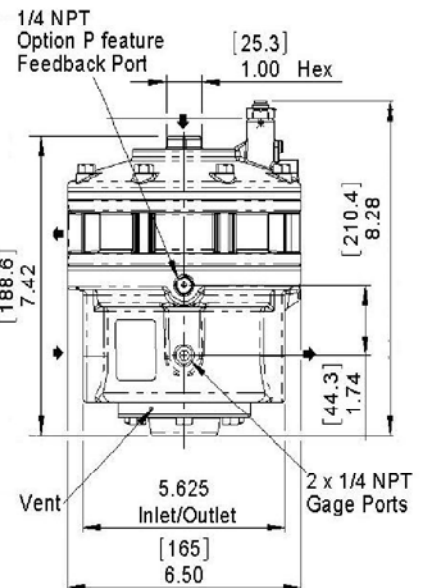


Model 4800A

The Fairchild Model 4800 volume booster is specifically designed to be used in conjunction with valve positioners on large control valve actuators to provide faster response than possible with the valve positioner alone. Deadband within the operation of the volume booster allows the positioner to make small incremental valve positioner changes in a highly stable manner without activating the volume booster valves. The integral bypass valve provides a means to control the response of the booster to match variations in valve positioner and actuator sizes.

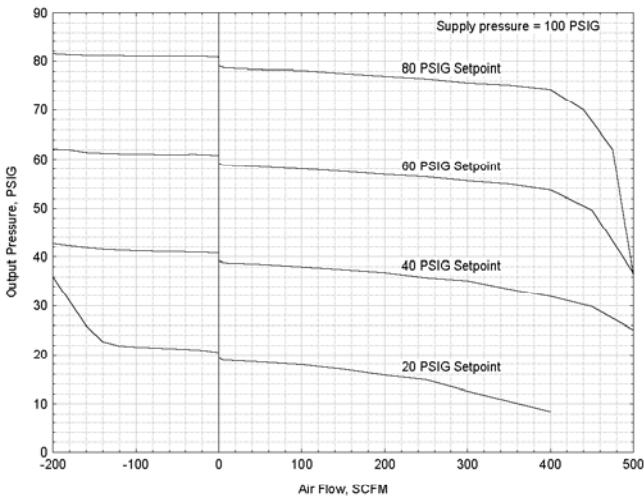


3/4 or 1", NPT, BSPT or BSPP Inlet & Outlet Ports



**Technical Information**

Flow Characteristics,  
Fairchild Model 4818ANNF



**Specifications (1:1 Ratio)**

<b>Maximum Output Pressure</b>	150 psig [10.0 BAR] 1000kPa
<b>Maximum Supply Pressure</b>	250 psig [17.0 BAR] 1700kPa
<b>Cv</b>	<b>9 (Forward) 9 (Exhaust)</b>
<b>Flow Capacity @ 100 psig, (700 kPa) supply, 20 psig, (1.5 BAR), (150 kPa) setpoint.</b>	500 SCFM 850 m3/hr
<b>Exhaust Capacity @ Downstream Pressure 5 psig, (.35 BAR), (35 kPa) above 20 psig, (1.5 BAR), (150 kPa) setpoint.</b>	100 SCFM 170 m3/hr
<b>Ratio Accuracy</b> % of 100 Psi output pan.	0.5%
<b>Supply Pressure Effect</b> for 100 psi [7 BAR] 700 kPa change in supply	0.10 psi [.007 BAR] 0.7 kPa
<b>Ambient Temperature</b>	-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  
Trim . . . . . Zinc Plated Steel, Brass  
Diaphragm . . . . . Nitrile on Dacron

**Catalog Information**

**Catalog Number 48**

**Ratio**

1:1 . . . . . 1

**Port Size**

3/4" . . . . . 6

1" . . . . . 8

**Port Thread**

NPTF . . . . . N U H

BSPT . . . . . N U H

BSPF . . . . . N U H

**Elastomer**

Fluorocarbon . . . . . J N

Nitrile . . . . . J N

**Remote Pressure Sensor**

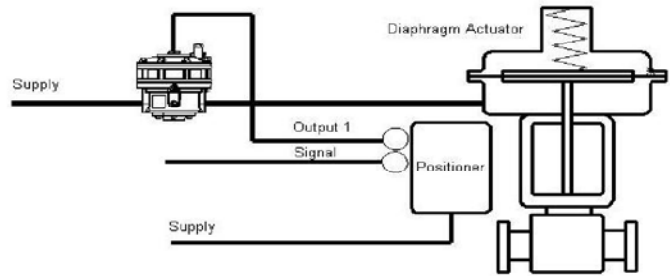
No Feedback Port . . . . . N P

Feedback Port . . . . . N P

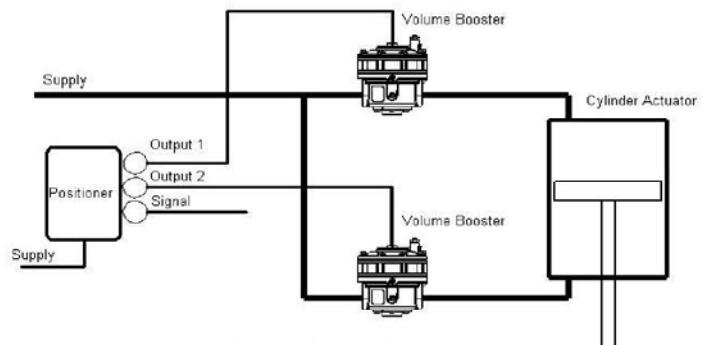
**Trim**

Stainless Steel . . . . . S F

Zinc Plated Steel . . . . . S F



**Typical Volume Booster with Single Acting Positioner and Diaphragm Actuator**



**Typical Volume Booster with Double Acting Positioner and Cylinder Actuator**

# Model 4900A Pneumatic Volume Booster



The Fairchild Model 4900A volume booster is a precision pneumatic valve designed for demanding applications requiring the ultimate in sensitivity, accuracy, and flow capacity. The booster is designed with very low deadband between the operation of the supply valve and exhaust valve and achieves superb pressure control characteristics between forward flow and exhaust flow conditions. The high capacity exhaust valve is very useful in dynamic dual flow direction applications producing high reverse flow conditions.

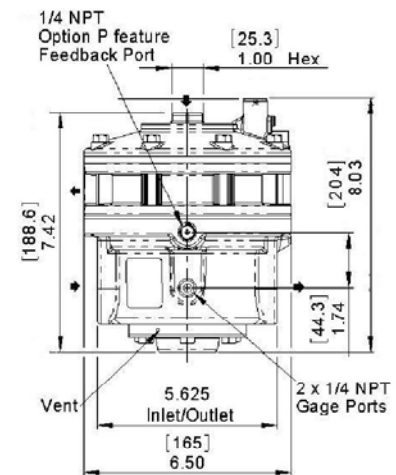
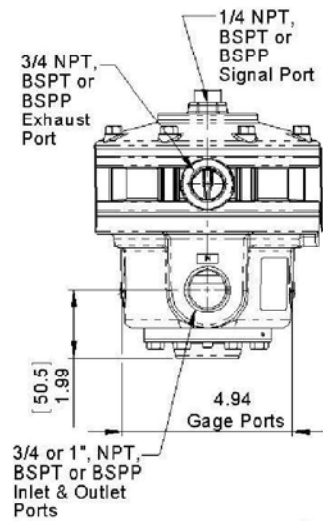
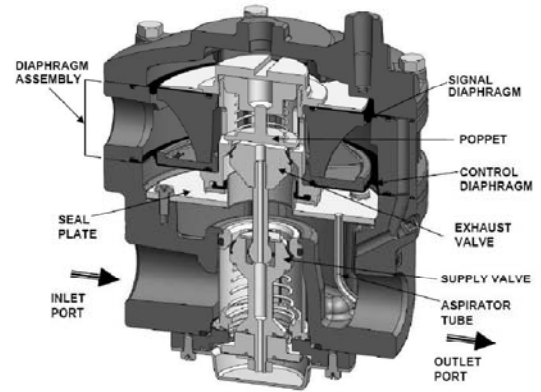
## Features

- Very low deadband between the operation of the supply valve and exhaust valve provides excellent pressure control.
- High capacity exhaust valve provides efficient dynamic reverse flow characteristics.
- Large area diaphragms provide high accuracy, sensitivity and excellent low pressure performance.
- Soft seat supply and exhaust valves provide efficient leak free operation.
- Pressure balanced supply valve prevents changes in control characteristics when supply pressure changes.
- Damped diaphragm control chamber provides stable operation and protects valves from damaging oscillation under high flow conditions.
- Two accessory ports connected to the outlet chamber provide convenient access to the outlet for additional control accessories and pressure monitoring.
- Tapped exhaust port for collecting exhaust air or for incorporation of a silencer.

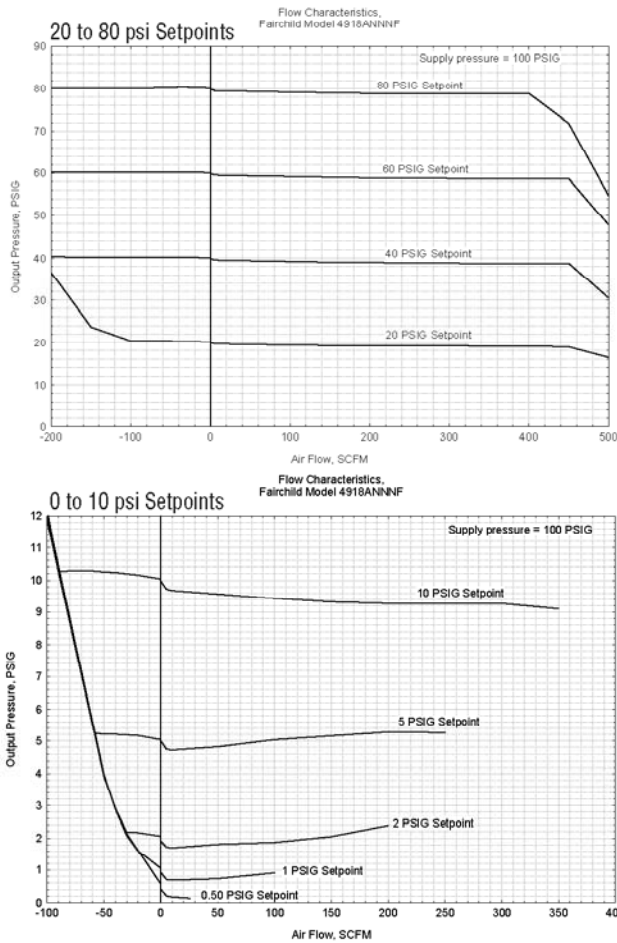
## Operating Principles

When signal pressure on the top of the Signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the force of the signal pressure that acts on the top of the Signal Diaphragm balances with the force of the output pressure that acts on the bottom of the Control Diaphragm to close the Supply Valve.

When the output pressure increases above the signal pressure, 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 excess output pressure exhausts through the vent in the side of the unit until it reaches the setpoint.



**Technical Information**



**Specifications (1:1 Ratio)**

<b>Maximum Output Pressure</b>	150 psig [10.0 BAR] 1000kPa
<b>Maximum Supply Pressure</b>	250 psig [17.0 BAR] 1700kPa
<b>Cv</b>	<b>9 (Forward) 9 (Exhaust)</b>
<b>Flow Capacity @ 100 psig, (700 kPa) supply, 20 psig, (1.5 BAR), (150 kPa) setpoint.</b>	500 SCFM 850 m3/hr
<b>Exhaust Capacity @ Downstream Pressure 5 psig, (.35 BAR), (35 kPa) above 20 psig, (1.5 BAR), (150 kPa) setpoint.</b>	100 SCFM 170 m3/hr
<b>Ratio Accuracy</b> % of 100 Psi output span.	0.5%
<b>Supply Pressure Effect</b> for 100 psi [7 BAR] 700 kPa change in supply	0.10 psi [.007 BAR] 0.7 kPa
<b>Ambient Temperature</b>	-40°F to 200°F, (-40°C to 93.3°C)

**Hazardous Locations**

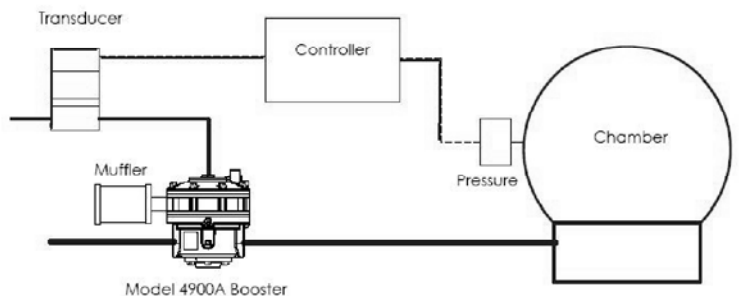
Acceptable for use in Zones 1 and 2 for gas atmosphere; Groups IIA and IIB and Zones 21 and 22 for dust atmospheres

**Materials of Construction**

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

**Catalog Information**

<b>Catalog Number</b>	49						
<b>Ratio</b>	1:1	1					
<b>Port Size</b>	3/4"		6				
	1"		8				
<b>Port Thread</b>	NPTF				N		
	BSPT				U		
	BSPB				H		
<b>Elastomer</b>	Fluorocarbon					J	
	Nitrile					N	
<b>Remote Pressure Sensor</b>	No Feedback Port						N
	Feedback Port						P
<b>Trim</b>	Stainless Steel						S
	Zinc Plated Steel						F



Chamber Pressure Control

**Installation**

For installations instructions, refer to the corresponding *Fairchild Model 4900A Pneumatic Volume Booster Instruction, Operation and Maintenance Instructions, IS-2004900A.*



**D**

**SECTION D**



# **PNEUMATIC RELAYS**

# Model 14 Positive and Negative Bias Relay



## Features

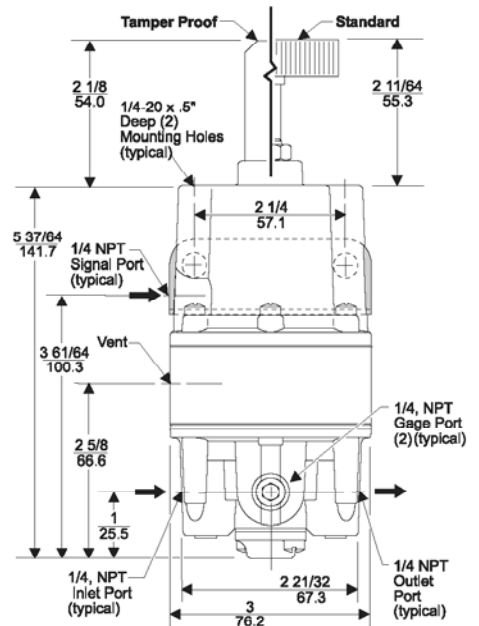
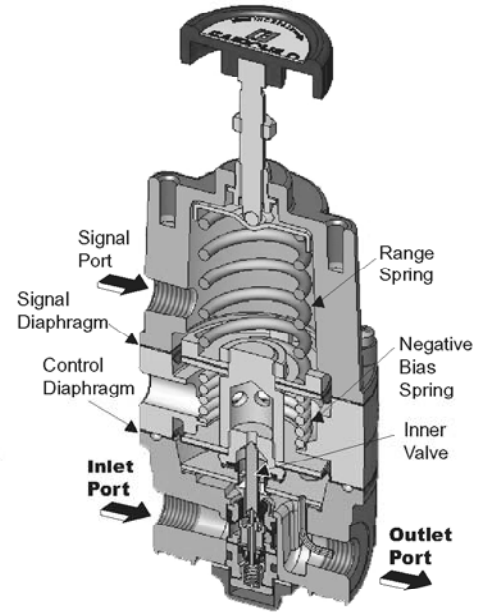
- Control sensitivity of 1/2" water column allows use in precision applications.
- A balanced Supply Valve minimizes the effects of supply pressure variation.
- An Aspirator Tube minimizes downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Mounting Bracket is available
- Canadian Registration Number (CRN) certification for all territories and provinces.

## Operating Principles

The output of the relay is the sum of the spring bias, set with the Range Screw, plus a pneumatic input signal. ( $P_o = P_s \pm K$ ); where  $P_o$  is output pressure,  $P_s$  is signal pressure, and  $K$  is the combined spring constant. The signal pressure exerts a force against the top of the Signal Diaphragm that creates a downward force on the Diaphragm Assembly and 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 that acts on the bottom of the Control Diaphragm balances with the force that acts on the top and bottom of the Signal Diaphragm.

When the output pressure increases above the setpoint, the increase is transmitted through the Aspirator Tube to the Control Diaphragm. The increased pressure that acts on the Control Diaphragm moves the Diaphragm Assembly upward to seat the Supply Valve, move the Relief Seat away from the Relief Valve, and let downstream air exhaust through the port in the Ring Spacer.



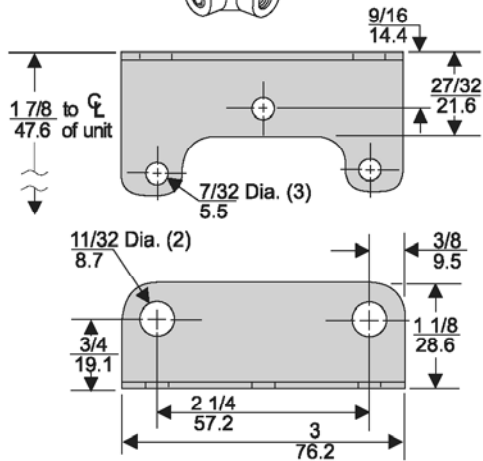
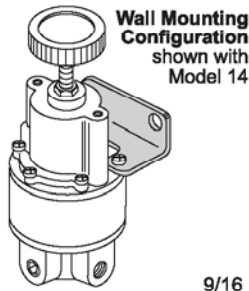
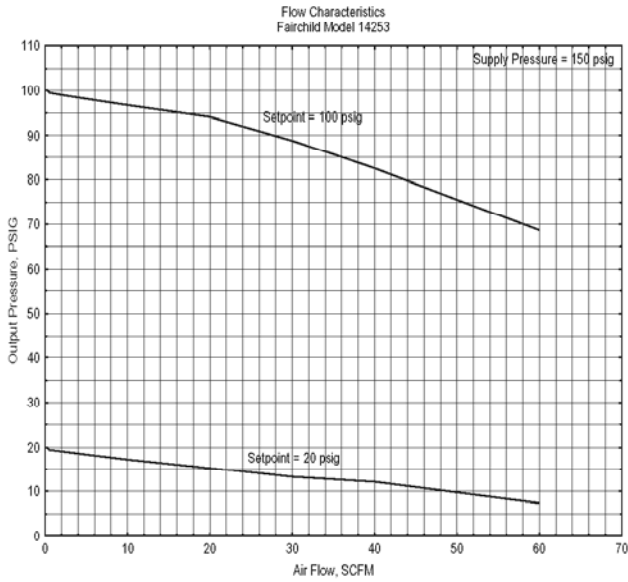
**D**

Model 14

The Model 14 Positive and Negative Bias Relay is designed for applications that require an output pressure that is the sum of a controlled input signal plus or minus a fixed bias.



## Technical Information



Mounting Bracket: 09921

## Model 14 Relay Kits & Accessories

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

## Service Kit

A Service Kit is available for the Model 14, refer to the *Fairchild Model 14 Positive / Negative Bias Relay Instruction, Operation and Maintenance Instructions, IS-30000014*.

## Catalog Information

Catalog Number 1 4 2

### Pressure Range

psig	[BAR]	(kPa)
-18 to 2	[-1.2 to .15]	(-120 to 15)
-18 to 10	[-1.2 to .7]	(-120 to 70)
-18 to 30	[-1.2 to 2]	(-120 to 200)
-18 to 100	[-1.2 to 7]	(-120 to 700)

### Pipe Size

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

### Options

Silicone Elastomers <sup>1</sup> .....	A
Tapped Exhaust .....	E
Fluorocarbon Elastomers .....	J
Non-Relieving .....	N
Tamper Proof .....	T
BSPT (Tapered).....	U

<sup>1</sup> Maximum Supply Pressure 75 psig, [5.0 BAR], (500 kPa)

## Specifications

### Supply Pressure

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

### Flow Capacity (SCFM)

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

### Exhaust Capacity (SCFM)

5.5 SCFM (9.35 m<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

### Signal or Output Pressure

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

### 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

Less than 1/2" (1.27 cm) 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  
Trim ..... Stainless Steel, Brass, Zinc Plated Steel  
Diaphragms ..... Nitrite on Dacron



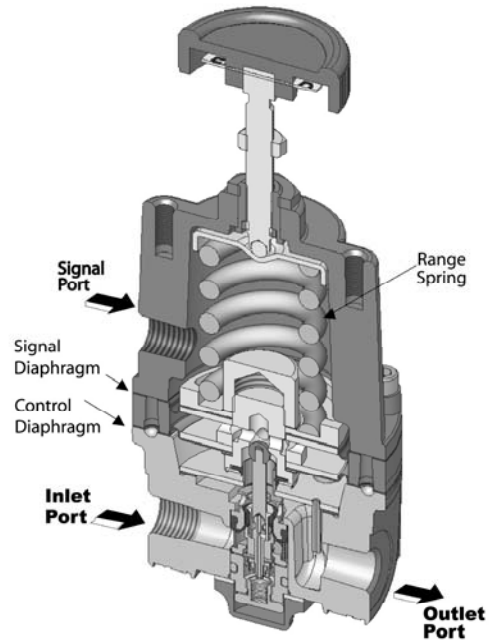
## Features

- The Model 15 is sensitive to 1/4" Water Column variation which permits use in precision applications.
- A Balanced Supply Valve minimizes the effects of supply pressure variation.
- Aspirator Tube minimizes downstream pressure drop under flow conditions.
- Flow of up to 40 SCFM with 100 psig Supply at 20 psig Setpoint allows use in applications requiring high flow capacity.
- A Separate Control Chamber isolates the diaphragm from the main flow, eliminating hunting and buzzing.
- Mounting Bracket available

## Operating Principles

The Model 15 Positive Bias Relay provides an output pressure that represents the input signal pressure plus a preset bias. Mathematically  $P_o = P_s + K$  where  $P_o$  is output pressure,  $P_s$  is signal pressure and  $K$  is the spring constant. This unit, available in several bias range configurations to meet a variety of output requirements, offers excellent sensitivity and high flow capacity in a small volume.

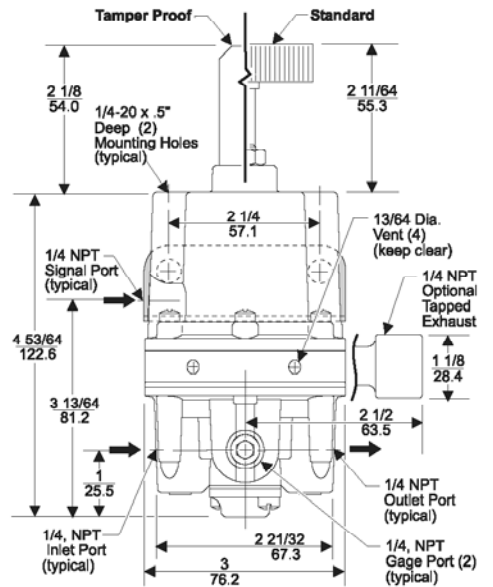
The unit is well suited to a variety of control applications, including range shifting, and tension control, and pressure control from a remote location.



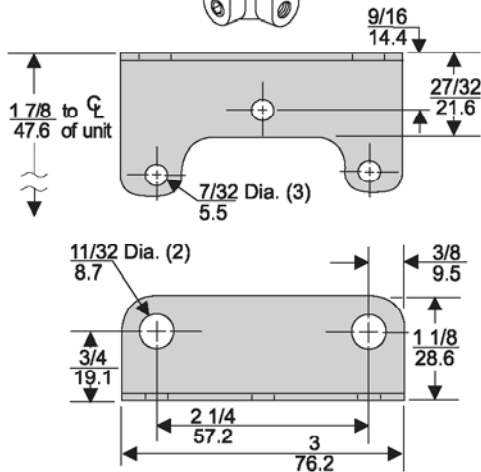
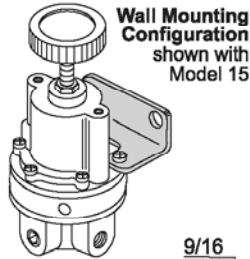
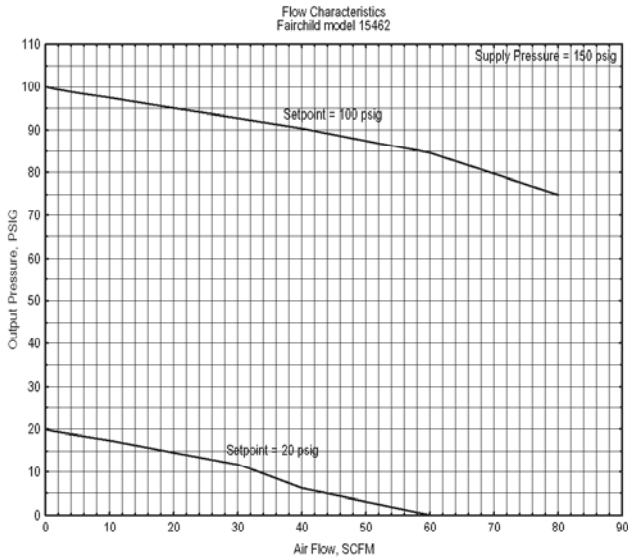
**D**

**Model 15**

The Model 15 Positive Bias Relay is designed for applications that require an output pressure that is the sum of a controlled input signal plus a fixed bias.



**Technical Information**



Mounting Bracket: 09921

**Model 15 Relay Kits & Accessories**

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

**Service Kit**

A Service Kit is available for the Model 15, refer to the corresponding *Fairchild Model 15 Positive Bias Relay, Instruction, Operation and Maintenance Instructions*, IS-300000015.

**Catalog Information**

Catalog Number 1 5 4

**Pressure Range**

psig	[BAR]	(kPa)	
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
2-150	[0.15-10]	(15-1000) .....	6

**Pipe Size**

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

**Options**

Silicone Elastomers <sup>1</sup> .....	A
Tapped Exhaust .....	E
Viton (Fluorocarbon) Elastomers .....	J
BSPP (Parallel) <sup>2</sup> .....	H
Tamper Proof .....	T
BSPT (Tapered) .....	U

<sup>1</sup> Maximum Supply Pressure -75 psig, [5.0 BAR], (500 kPa)  
<sup>2</sup> BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.



**Specifications**

- Supply Pressure**  
250 psig, [17.0 BAR], (1700 kPa) Maximum
- Flow Capacity (SCFM)**  
40 SCFM (68 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply and 20 psig, [1.5 BAR], (150 kPa) setpoint
- Exhaust Capacity (SCFM)**  
5-1/2 SCFM (9.4 m<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint
- Signal or Output Pressure**  
150 psig, [10.0 BAR], (1000 kPa) Maximum
- 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**  
Less than 1/4" (.64 cm) Water Column

**Mounting**  
Pipe or Panel

**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 Alloy  
Trim ..... Stainless Steel, Brass, Zinc Plated Steel  
Diaphragms ..... Buna A and Dacron

# Model 21 Relay



## Features

- Venturi aspiration compensates for downstream pressure losses
- Optional input and output biasing allows versatility in applications
- Adjustable from 30:1 dividing ratio to 1:30 multiplying ratio assures infinite pressure adjustments
- Floating seal ring isolates control chamber which increases stability by reducing effect of high flows.
- Panel or Line Mounting

## Operating Principles

The Model 21 consists of a signal chamber lever arm, a Model 20 output valve body, and pivot assembly for lever adjustment. The ratio of output pressure to signal pressure is infinitely adjustable. The adjustment range permits signal amplification of 1:30 or signal reduction of 30:1 by rotation of the ratio adjustment knob.

The signal pressure acting on the signal chamber diaphragm transmits a force through a lever to the control diaphragm, thus setting output pressure. The lever fulcrum is adjustable.

Output pressure is a function of signal pressure times the ratio of lever arm lengths on either side of the fulcrum. A bias may be introduced by means of the set screws.

The Model 21D is available with both input and output adjustable bias. Maximum input bias is 3 psig, with a maximum output bias of 9 psig. The basic mathematical expression for the bias in this relay is:

$$P_o = (P_s - K_1) R + K_2, \text{ where}$$

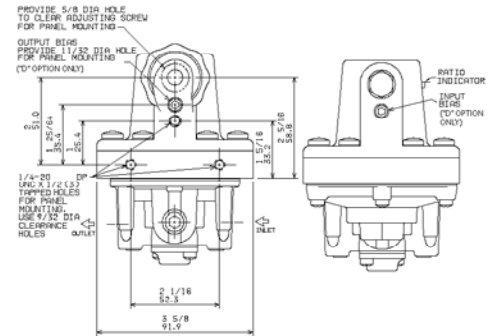
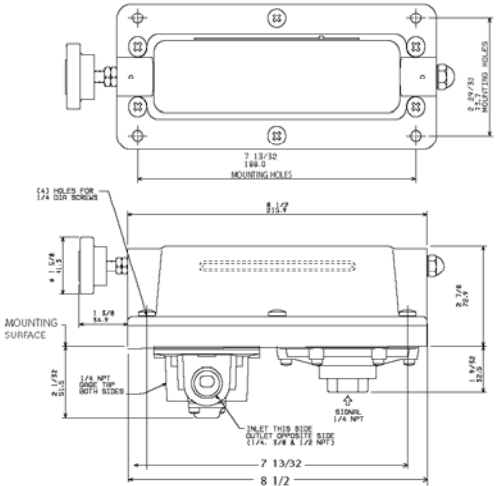
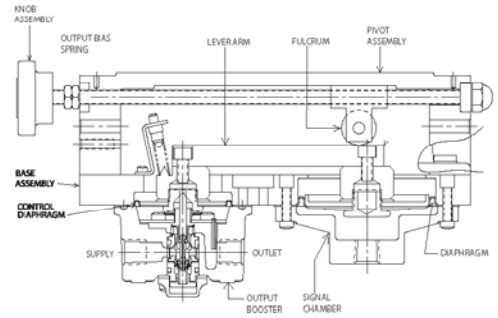
$P_o$  = Output pressure

$P_s$  = Input signal

$R$  = Ratio of setting

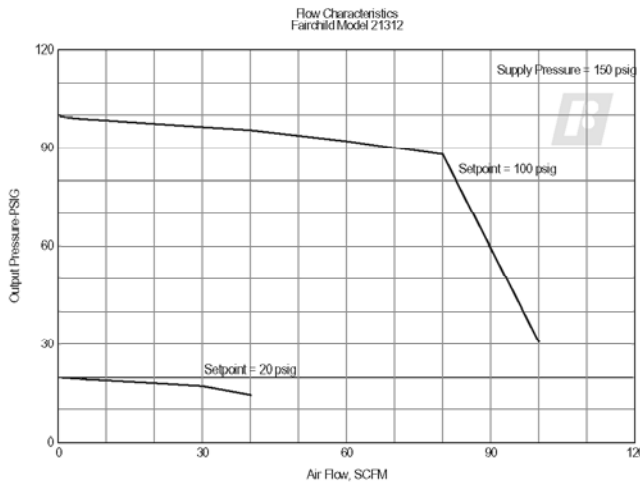
$K_1$  = Input bias, (-) only

$K_2$  = Output bias, (+) only



**D**  
Model  
21

**Technical Information**



**Specifications**

**Flow Capacity**

40 SCFM (68 m<sup>3</sup>/HR) 100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa)

**Exhaust Capacity**

5.5 SCFM (9.4 m<sup>3</sup>/HR) (downstream pressure 5 psig, [.35 BAR], (35 kPa) above set pressure)

**Supply Pressure**

250 psig, [1.7 BAR], (1700 kPa) Maximum

**Supply Pressure Effect**

Less than .1 psig, [.007 BAR], (.7 kPa) for 100 psig, [7.0 BAR], (700 kPa) change

**Signal or Output Pressure**

150 psig, [1.0 BAR], (1000 kPa) Maximum

**Ratio Range**

30:1 through 1:30 (signal pressure: output pressure)

**Operating Pressure (minimum)**

0.5 psig, [0.03 BAR], (3.5 kPa)

**Sensitivity**

0.5" (1.27 cm) Water Column

**Ambient Temperature Limits**

-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 ..... Buna N and Dacron  
 Lever and Fulcrum ..... Hardened Steel

**Catalog Information**

**Catalog Number**

2 1 3 1



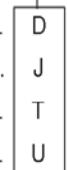
**Pipe Size**

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



**Options**

Bias<sup>1</sup> .....  
 Fluorcarbon Elastomers .....  
 Tamper Proof .....  
 BSPT (Tapered) .....



<sup>1</sup> Maximum Input Bias: -3 psig, [-0.2 BAR], (-20 kPa),  
 Maximum Output Bias: 9.0 psig, [0.6 BAR], (60 kPa)

**Installation**

A service kit is available for the Model 21. Refer to the *Fairchild Model 21 Relay Installation, Operation and Maintenance Instructions*, IS-10000021.





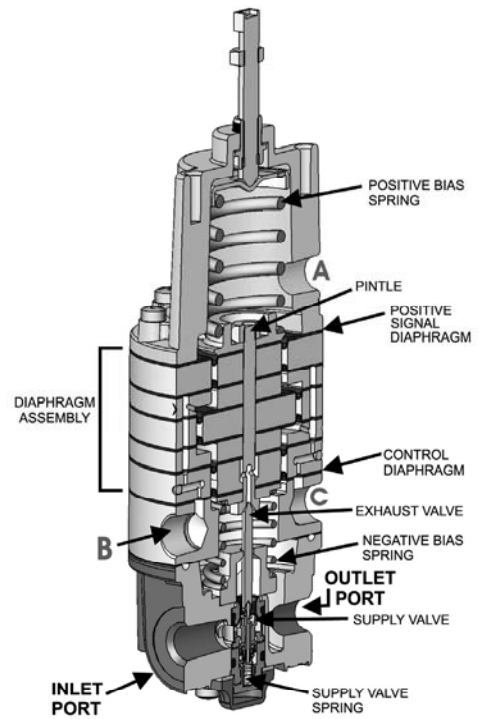
## Features

- Small bleed across relief seat assures fast response to small signals
- Multiple inputs allow versatility in process control
- Adjustable Bias Range from -18 to +15 psig permits variation in output
- Two gauge ports located 90° from supply and outlet ports, allows versatility in installation
- Line or Panel Mounting

## Operating Principles

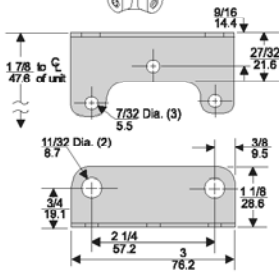
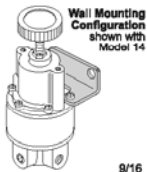
The Model 22 Pneumatic Computing Relay is a highly versatile control valve designed to perform a number of specialized functions, including averaging, differential, inverting, and totalizing. This high quality unit, which offers up to four inputs as well as positive and negative biasing over a broad range, is available in several configurations to meet most application requirements.

The combination of multiple configuration options and accurate response characteristics make the Model 22 the ideal choice in a variety of applications with specific input/output requirements such as override or multi-element control, or as an ON-OFF valve.

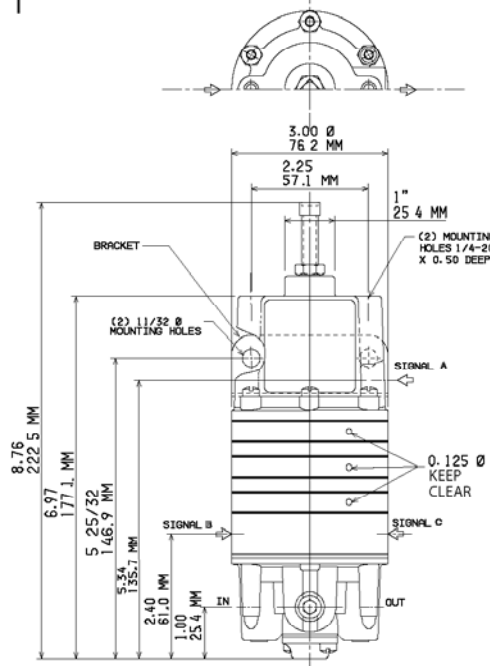


**D**

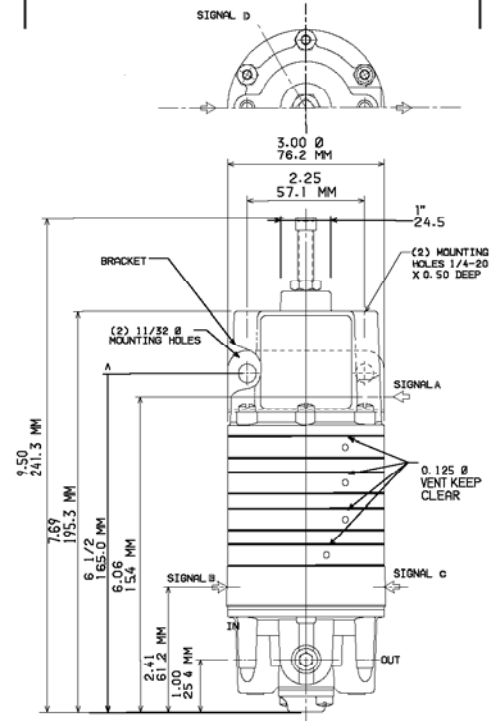
Model 22



For Models: 22112, 22113, 22212, 22213, 22222, 22223, 22312



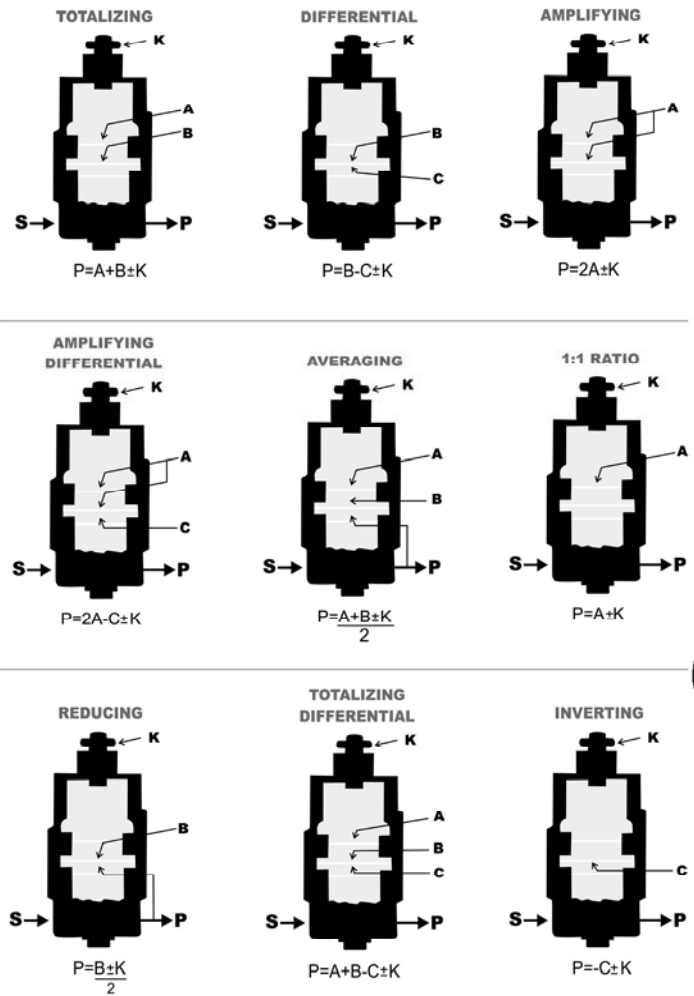
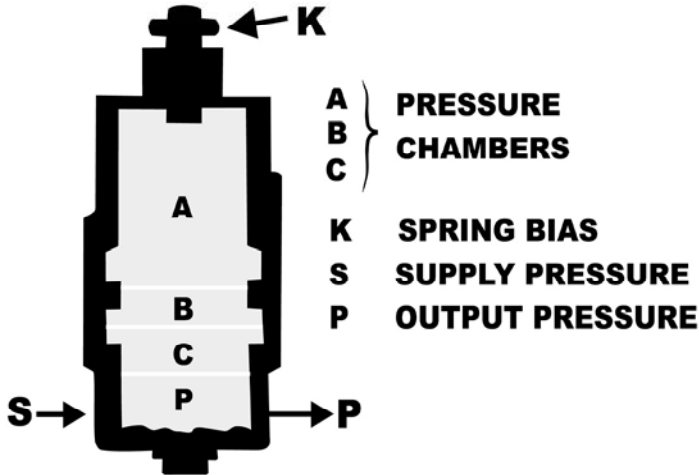
For Models: 22142 & 22422



**Model 22 Mounting Bracket Kit**  
P/N 09921 - zinc plated steel  
(sold separately)

**Cross Section**

The diagrams show some typical functions and modes of operation for the Model 22. In the equation associated with the diaphragms, P=Output Pressure and A, B, and C=Signal Pressures. K, the constant, is provided by the biasing springs, and is adjustable over a range of -18 psig to +30 psig. S=Supply Pressure



**D**  
Model 22

When used as an ON-OFF valve, the Model 22 may open or close a pneumatic circuit, moving rapidly to a full open or a full closed position when signal pressures deviate from set point. In the full open position, the valve passes full supply pressure without modulation or regulation. The function is achieved by connecting output pressure to signal chamber A. This connection forms a feedback loop so that, once flow is started, the valve is driven wide open. The relay always goes full open or full closed when conditions are as shown in the diagrams.

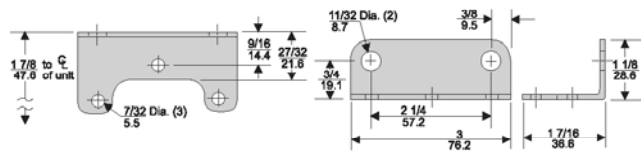
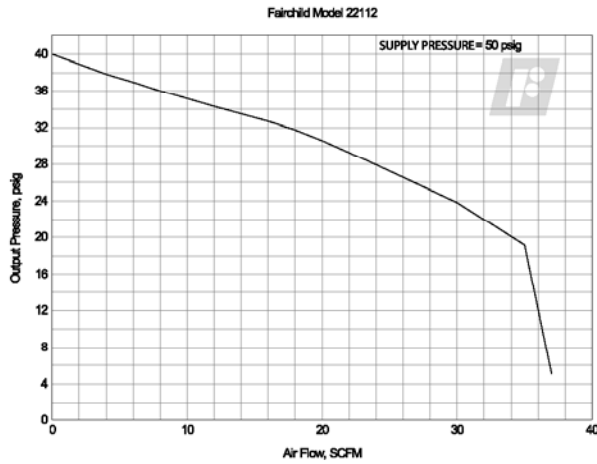
**NOTE:**

Relays reflecting functions identified with prefix numbers 223, 224, 225 and 226 are not shown in this catalog sheet. These units are equipped with additional diaphragms to enable the handling of added signal inputs.

$P=A+B+C+D \pm K$  (not shown)  
 $P=A+B-C+D \pm K$  (not shown)

# Model 22 Computing Relay

## Technical Information



## D Model 22 Relay Kits & Accessories

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

### Specifications

#### Input and Output Pressure

3-15 psig, [.2-1.0 BAR], (20-100 kPa)

#### Normal Supply

20 psig, [1.5 BAR], (150 kPa)

#### Maximum Operating Pressure

**Signal and Output:** 50 psig, [3.5 BAR], (350 kPa)

**Supply:** 150 psig, [10.0 BAR], (1000 kPa)

#### Maximum Over Pressure

**Any Connection:** 100 psig, [7.0 BAR], (700 kPa)

**Supply Connection Only:** 250 psig, [17.0 BAR], (1700 kPa)

#### Minimum Output Pressure

0 psig at any supply pressure

#### Linearity of Output Pressure

Within 0.4% of full range

#### Supply Pressure Effect

A supply pressure change of 5 psig [.35 BAR], (35 kPa) will not change output pressure

#### Air Consumption (in balance of dead end service)

0.06 SCFM (.102 m<sup>3</sup>/HR) maximum at 15 psig, [1.0 BAR], (100 kPa) output

#### Repeatability

For unbalances within the normal pressure range, output pressure will repeat its previous value within 0.5% of full range

#### Output Flow Capacity (Midscale Output)

20 psig, [1.5 BAR], (150 kPa) supply. A forward flow of 2 SCFM (3.4 m<sup>3</sup>/HR) will not cause a drop in output of more than 3% of full range

#### Ambient Temperature Limits

-40°F to 200°F, (-40°C to 93.3°C)

#### Materials of Construction

Valve & Bonnet ..... Die Cast Aluminum  
Diaphragm ..... Buna A  
Range Screws & Fastners ..... Zinc Plated Steel

## Catalog Information

### Catalog Number

2 2

### Function

Totalizing	(P = A+B±K)	11
Differential	(P = B-C±K)	
Amplifying	(P = 2A±K)	
Inverting	(P = -C±K)	
Totalizing Differential	(P = A+B-C±K)	
Amplifying Differential	(P = 2A-C±K)	
1:1 Ratio	(P = A±K)	
Differential On-Off	(P = S if B±K>C) or (P = O if B±K<C)	21
Reverse On-Off	(P = S if K>C) or (P = O if K<C)	
Direct On-Off	(P = S if B+K>O) or (P = O if B+K<O)	
Reducing	(P = $\frac{B±K}{2}$ )	22
Averaging	(P = $\frac{A+B±K}{2}$ )	
Totalizing	(P = A+B+C±K)	31 <sup>1</sup>
Totalizing	(P = A+B+C+D±K)	41 <sup>1</sup>
Totalizing Differential	(P = A+B-C+D±K)	42 <sup>1</sup>

### Pipe Size

1/4" NPT.....

3/8" NPT.....

<sup>1</sup>1/4" NPT Pipe Size Only

### Options

Fluorocarbon Elastomers.....

### SYMBOL KEY

A, B, C, D ..... Signal Pressure  
K ..... ± Spring Bias  
P ..... Output Pressure  
S ..... Supply Pressure

### Service Information

Repair parts are available for servicing the Model 22. Please refer to the *Fairchild Model 22 Installation, Operation and Maintenance Instructions*, IS-30000022.



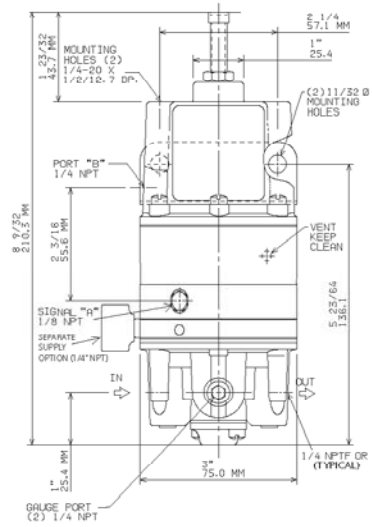


**Features**

- Near Zero Throttling and Pilot Staging result in true snap-action.
- 14 SCFM Flow rate meets requirements for high forward and exhaust capacity applications.
- Pneumatic and mechanical set point allows operation from a remote location.
- Available with Normally Open or Normally Closed Valve Options to meet requirements.

**Operating Principles**

The Model 24 Snap Acting Relay is a highly accurate differential relay with snap-acting switching. The output of the unit will go to supply pressure when the signal is equal to or greater than the setpoint. The signal pressure must fall below the setpoint to return the output to zero.

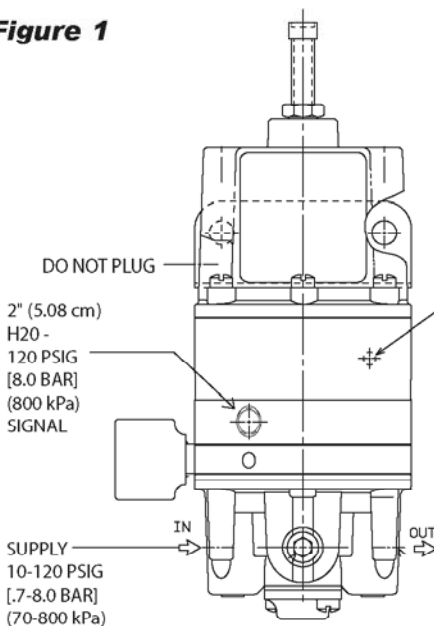


**Chart 1**

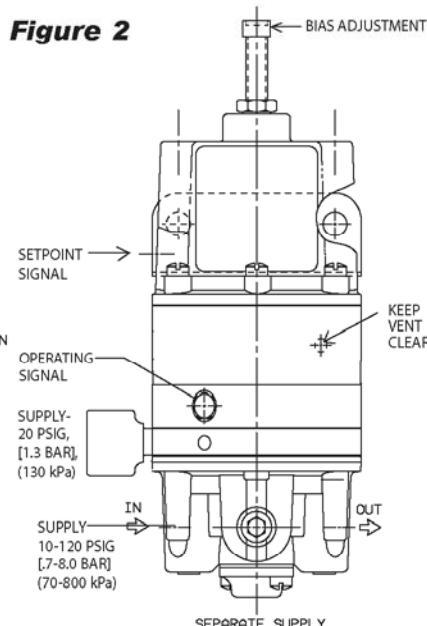
RANGE			CHANGE IN SIGNAL TO OPERATE		
psig	[BAR]	(kPa)	psig	[BAR]	(kPa)
2" W.C. - 10	[2" W.C. - 0.7]	(2" W.C. - 70)	0.2" W. C.		
0.5-30	[.03-2.0]	(3-200)	0.1	[.007]	(.7)
1.0-60	[0.1-4.0]	(10-400)	0.2	[.014]	(1.4)
2.0-120	[.15-8.0]	(15-800)	0.5	[.03]	(3)



**Figure 1**



**Figure 2**

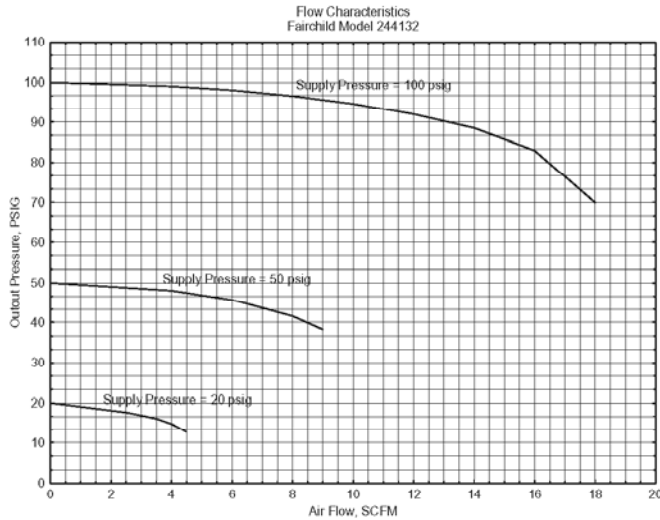


**Figure 1** illustrates a configuration which uses a pneumatic signal for set point which may or may not be biased by the adjusting screw. In this case, the adjustment adds to the pneumatic signal. Should the set point and the operating signal be switched, the bias adjustment would subtract from the set point signal. To determine whether a Normally Open or Normally Closed valve is required, note that when "B" plus spring bias is greater than signal at "A" port, a Normally Open unit has an output, while a Normally Closed unit does not.

In **Figure 2** the unit is shown with a separate supply option (SS) to indicate use of the unit when the supply is a control signal such as 3-15 psig or any pressure less than 10 psig.

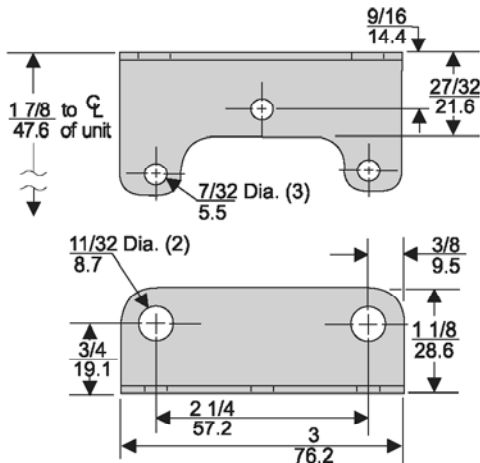
# Model 24 Snap Acting Relay

## Technical Information



**D**

Model 24



Mounting Bracket: 09921

### Model 24 Relay Kits & Accessories

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

## Catalog Information

Catalog Number 2 4 4

### Switch Position

Normally Open ..... 1  
Normally Closed ..... 2

### Pressure Range

psig	[BAR]	(kPa)	
2" W.C. -10	[0.006-0.7]	(0.63-70)	2
0.5-30	[0.03-2]	(3-200)	3
1-60	[0.1-4]	(10-400)	4
2-120	[0.15-8]	(15-800)	6

### Pipe Size

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

### Options

Tapped Exhaust ..... E  
Fluorocarbon Elastomers ..... J  
Knob Adjustment ..... K  
Tamper Proof ..... T  
BSPT (Tapered) ..... U  
Separate Supply to Pilot ..... SS

## Specifications

### Maximum Supply Pressure

120 psig, [8.0 BAR], (800 kPa)

### Minimum Supply Pressure

10 psig, [0.7 BAR], (70 kPa) (use separate supply option if inlet pressure is less than 10 psig, [0.7 BAR], (70 kPa))

### Flow Capacity (SCFM)

14 SCFM (23.8 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply

### Exhaust Capacity (SCFM)

14 SCFM (23.8 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) drop

### Signal Range

2" (5 cm) W.C. to 120 psig, [8.0 BAR], (800 kPa)

### Change in Signal to Operate

See Chart 1.

### Repeatability

0.2" (.5 cm) Water Column

### CV Rating

0.23

### Mounting

Pipe or Panel

### Air Consumption

Less than 0.015 SCFM (.03 m<sup>3</sup>/HR) for 100 psig, [7.0 BAR], (700 kPa) inlet

### Ambient Temperature

-40°F to +200°F, (-40°C to 93.3°C)

### Materials of Construction

Body and Housing ..... Aluminum Casting  
Trim ..... Stainless Steel, Zinc Plated Steel  
Diaphragms ..... Buna N and Dacron



The Model 25 Reversing Relay provides an output which will decrease in direct proportion to an increase in input pressure.

**Features**

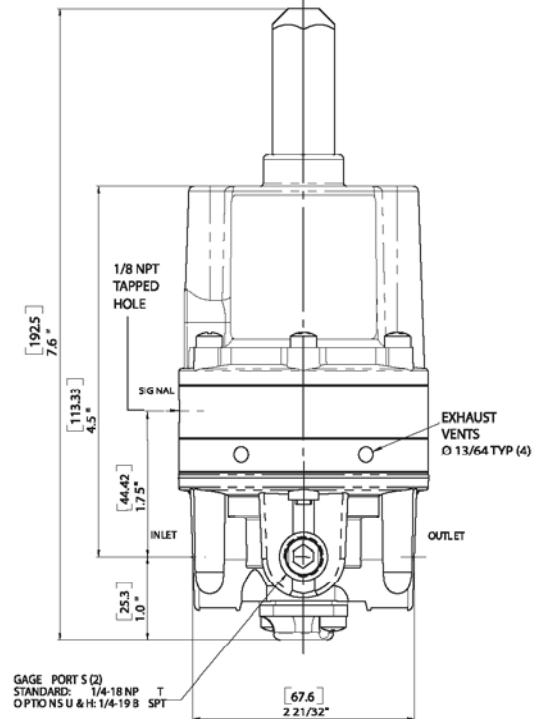
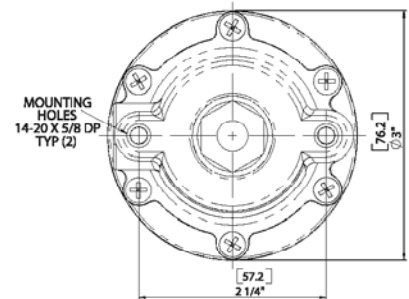
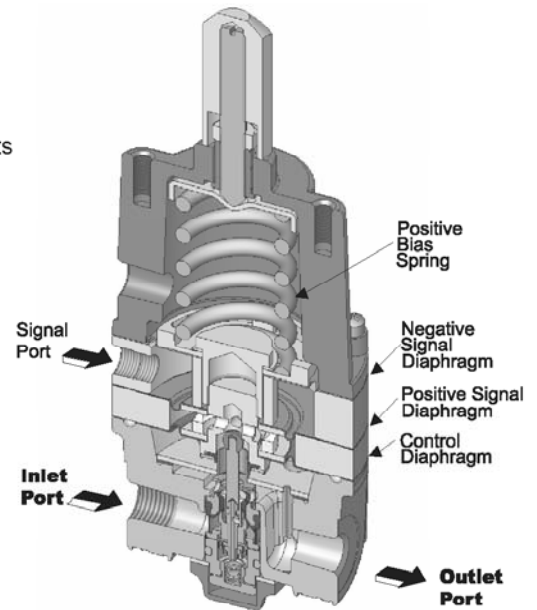
- Control Sensitivity of 1/8" water column for use in precision applications.
- Balanced supply valve minimizes the effects of supply pressure variation.
- Aspirator tube compensates for output pressure droop under flow conditions.
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction allows servicing without removal from air line.

**Operating Principles**

The Model 25 Reversing Relay is designed for applications requiring an output that equals a manually preset spring load minus a variable signal pressure. This high quality unit combines excellent sensitivity with unusually high flow capacity.

The Model 25 is ideally suited for a variety of precision control applications, including converting direct acting valves to reverse action, controlling opposite acting valves from a single transmitter, and cushioning cylinder loads.

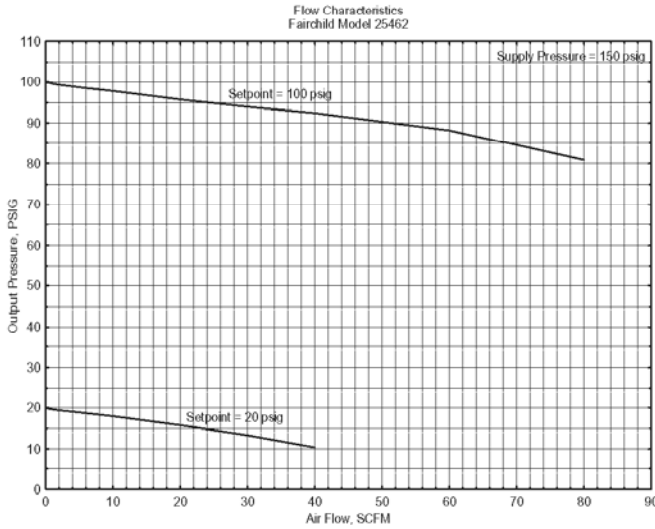
The basic mathematical expression for the Model 25 is  $PO = K - PS$  where PO is output pressure, PS is signal pressure and K is the spring constant.



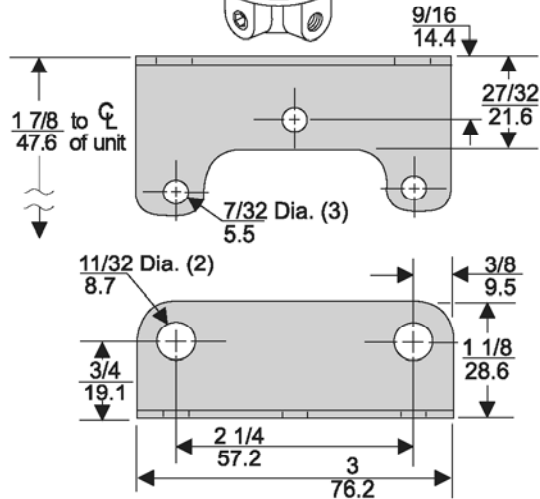
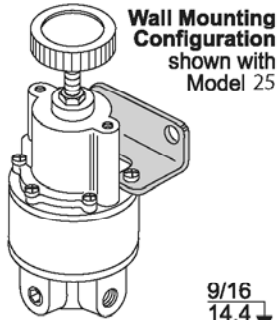
**D**  
Model 25

# Model 25 Reversing Relay

## Technical Information



**D**  
Model  
25



Mounting Bracket: 09921

### Model 25 Relay Kits & Accessories

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

## Catalog Information

Catalog Number 2 5 4

### Pressure Range

psig	[BAR]	(kPa)	
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
2-150	[0.15-10]	(15-1000)	6

### Pipe Size

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

### Options

Tapped Exhaust	E
BSPP (Parallel) <sup>1</sup>	H
Fluorocarbon Elastomers	J
BSPT (Tapered)	U

<sup>1</sup> BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.

### Service Kit

A Service Kit is available for the Model 25 Reversing Relay, refer to the *Fairchild Installation, Operation and Maintenance Instructions*, IS-30000025.

### Specifications

- Maximum Supply Pressure**  
250 psig, [17.5 BAR], (1750 kPa)
- Flow Capacity**  
40 SCFM (68 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint
- Exhaust Capacity**  
11 SCFM (18.7 m<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above setpoint
- Signal or Output Pressure**  
150 psig, [10 BAR], (1000 kPa) maximum

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

**Mounting**  
Pipe or Panel

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

**Materials of Construction**  
Body ..... Aluminum  
Trim ..... Aluminum, Stainless Steel, Brass  
Diaphragms ..... Buna N and Dacron



## Features

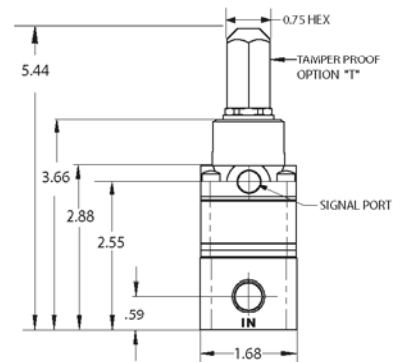
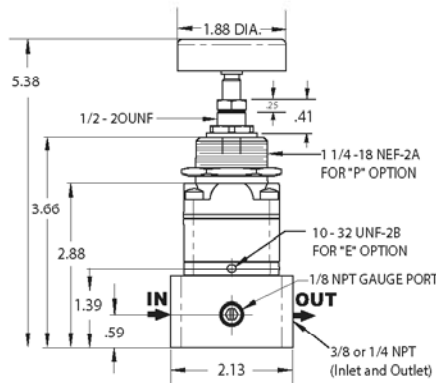
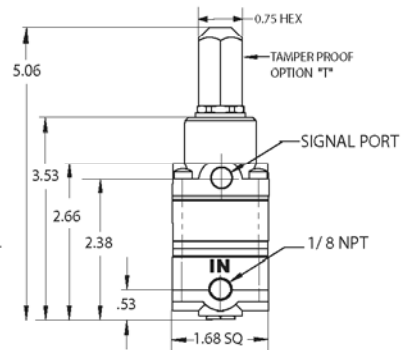
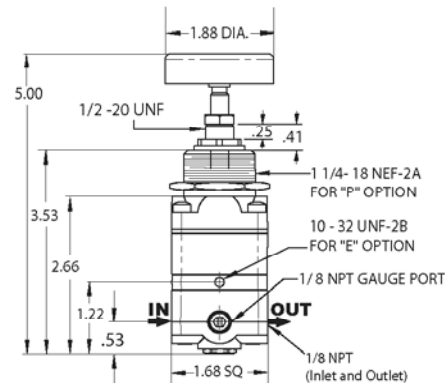
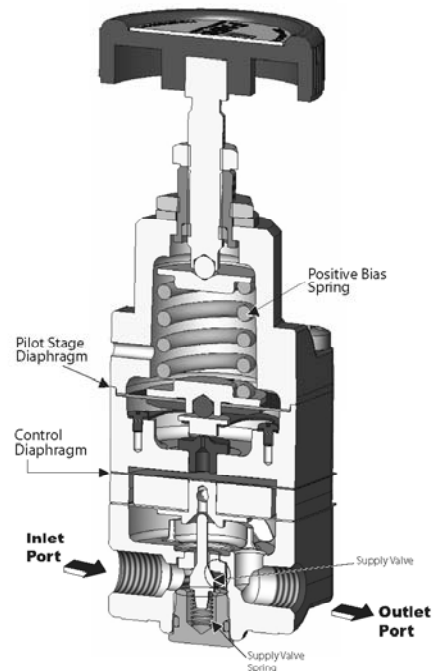
- 2 Stage Pilot Operation allows precise control of set points.
- 14 SCFM flow capacity in a small size unit.
- Low air consumption preserves air and other costly gases.
- Compact size permits installation where space is limited.
- Available in 1/8", 1/4" and 3/8" port sizes.

## Operating Principles

The Model 85D Multi-Stage Biasing Relay is a precision control combining the sensitivity of a precision pressure regulator with positive biasing capability. This compact, pilot-operated device offers unusually high output capacity with minimal air consumption, while providing excellent protection against supply or output pressure variations.

The versatile Model 85D is recommended for use in systems requiring precision pressure maintenance and instrument biasing, in dead end service and instrument panel supply applications.

The basic mathematical expression for the Model 85D is  $PO = PS + K$  where PO is output pressure, PS is signal pressure and K is the spring constant.



# Model 85D Multi-Stage Biasing Relay

## Specifications

### Maximum Supply Pressure

250 psig, [17.5 BAR], (1750 kPa)

### Recommended Operating Supply Pressure

150 psig, [10 BAR], (1000 kPa)

### Maximum Signal or Output Pressure

150 psig, [10 BAR], (1000 kPa)

### Flow Capacity

14 SCFM (23.8 m<sup>3</sup>/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<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above setpoint

### Supply Pressure Effect

Less than 0.2 psig, [.014 BAR], (1.4 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure

### Pressure Change Under Flow Conditions

Less than 0.1 psig, [.007 BAR], (.7 kPa) from dead end service to 10 SCFM (17 m<sup>3</sup>/HR)

(Set pressure 10 psig, [.7 BAR], (70 kPa), supply pressure 100 psig, [7.0 BAR], (700 kPa)

### Air Consumption

Less than .1 SCFM (.17 m<sup>3</sup>/HR)

### Ambient Temperature Limits

-40°F to +200°F, (-40°C to 93.3°C)

### Materials of Construction

Body ..... Aluminum  
 Trim ..... Aluminum, Stainless Steel, Brass  
 Diaphragms ..... Buna N and Dacron

## Catalog Information

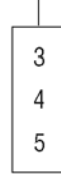
### Catalog Number

8 5 6



### Pressure Range

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



### Pipe Size

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



### Options

Tapped Exhaust .....
Bonnet Mounting .....
Tamper Proof .....
BSPT (Tapered) .....



## Service Kit

A Service Kit is available for the Model 85D Multi-Stage Biasing Relay, refer to the *Installation, Operation and Maintenance Instructions*, IS-3000085D.

**D**

Model  
85D



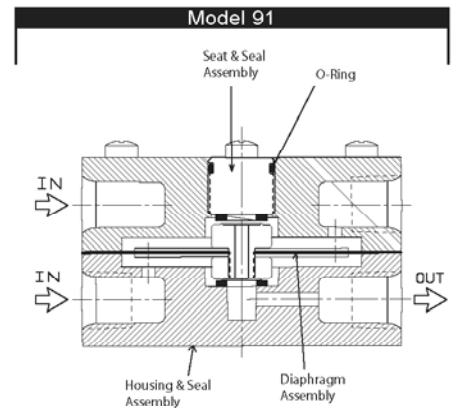
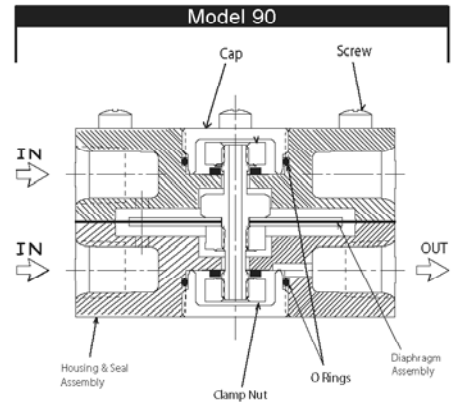
## Features

- Small, rugged design suitable for installation where space is limited.
- Soft seat construction to assure positive shutoff.
- Low selection differential to allow precise control of switching.
- Fast response that is suitable for control in critical loops.
- Automatic switching that eliminates manual monitoring of signal pressure.

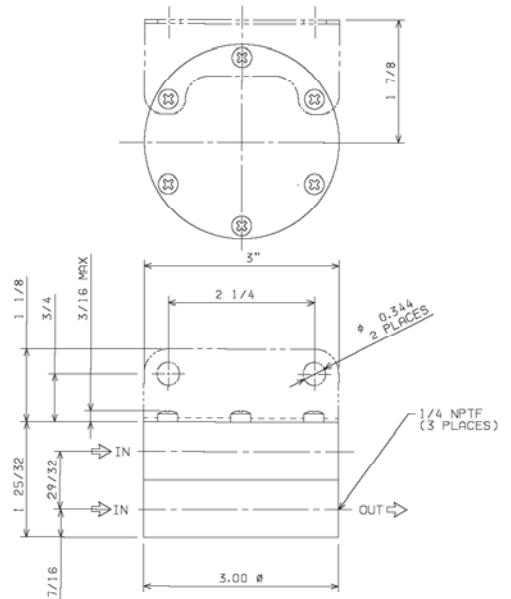
## Operating Principles

The Model 90 Low Pressure Selector Relay is designed to select the lower of two signal pressures to provide a continuous output pressure to a control device. The Model 90 is recommended for dead end or low flow service in critical applications such as control loops requiring precise, automatic monitoring of signal pressures.

The Model 91 High Pressure Selector Relay is designed to select the higher of two signal pressures, and to provide a continuous output pressure (or pressure range) to a controller. The ability to precisely control switching and pressure monitoring make the Model 91 the logical choice in dead end or low flow applications such as precision control loops.

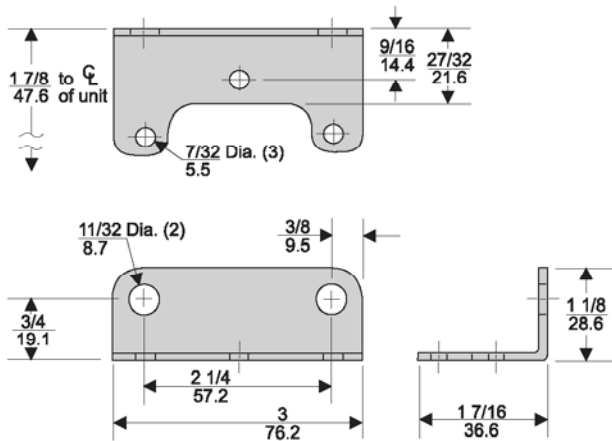
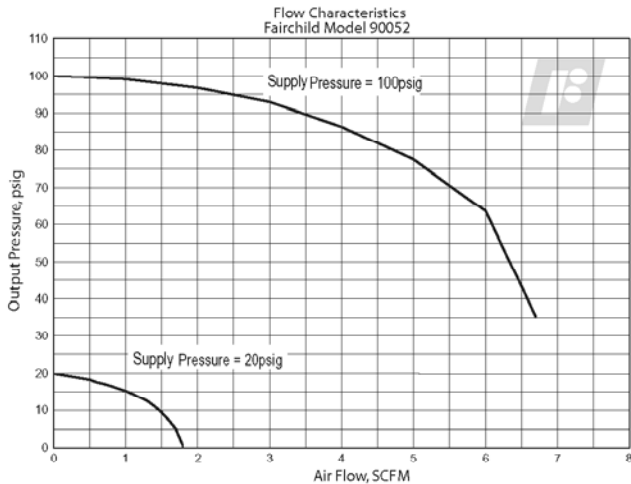


**D**  
Models  
90 & 91



# Models 90 and 91 Low / High Pressure Selector Relay

## Technical Information



**D**

Models 90 & 91

Mounting Bracket: 09921

## Model 90/91 Relay Kits & Accessories

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

## Specifications

### Maximum Signal Pressure

200 psig, [14.0 BAR], (1400 kPa)

### Minimum Switching Differential

Less than .1 psig, [.007 BAR], (.7 kPa)

### Maximum Differential between Signals

100 psig, [7.0 BAR], (700 kPa)

### Ambient Temperature Range

-40°F to +200°F, (-40°C to +93.3°C)

### Materials of Construction

Body ..... Aluminum Alloy  
 Diaphragm..... Dupont Fairprene-coated fabric  
 Trim .....  
 Brass .....

## Catalog Information

Catalog Number 9  05

### Models

90 Low Pressure Selector ..... 0  
 91 High Pressure Selector..... 1

### Pipe Size

1/4" NPT ..... 2

### Options

Fluorocarbon Elastomers ..... J  
 BSPT (Tapered)..... U

## Installation

Service Kits are available for the Model 90 and Model 91. Refer to the *Fairchild Model 90 and Model 91 Installation, Operation and Maintenance Instructions*, IS-30009091.





## Features

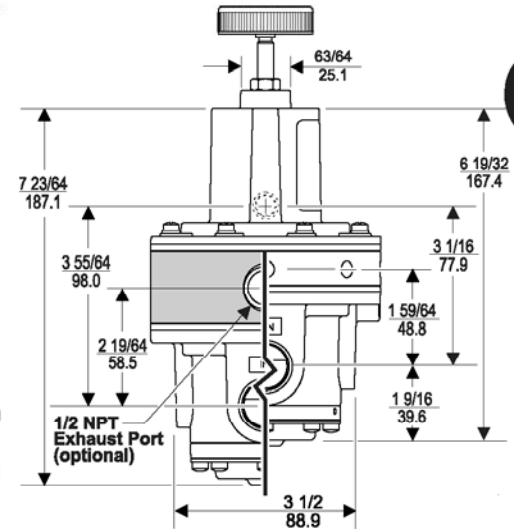
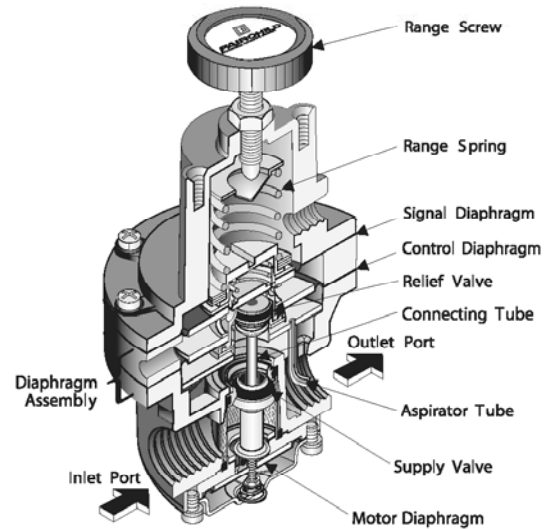
- Control sensitivity of 1" water column allows use in precision applications.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve seats minimize air consumption.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube compensates downstream pressure drop 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 1500A without removing it from the line.

## Operating Principles

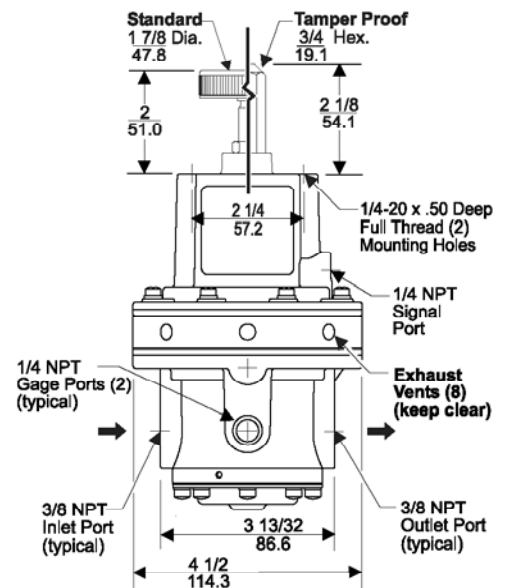
The output of the relay is the sum of the spring bias, set with the Range Screw, plus a pneumatic input signal. ( $P_o = P_s + K$ ); where  $P_o$  is output pressure,  $P_s$  is signal pressure, and  $K$  is the spring constant set by the Range Screw. The signal pressure exerts a force against the top of the Signal Diaphragm that creates a downward force on the Diaphragm Assembly and 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 forces of the signal pressure and the Range Spring that act on the top of the Signal Diaphragm, balance with the force of the output pressure that acts on the bottom of the Control Diaphragm to close 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 Control 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 excess output pressure exhausts through the Vent in the side of the unit until it reaches the setpoint.

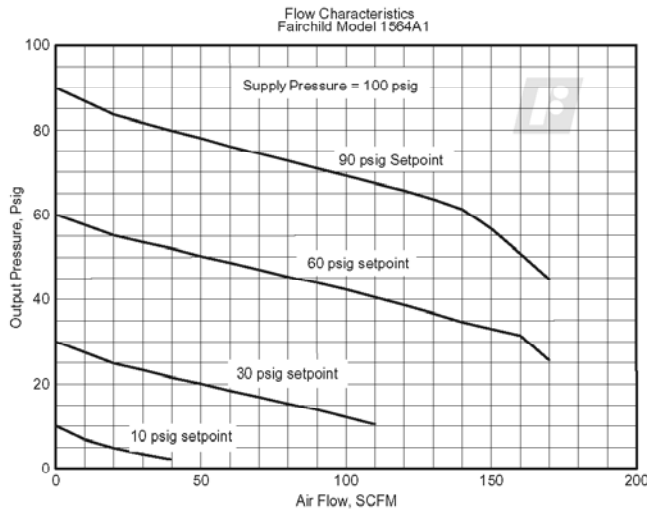


**D**  
Model 1500A



# Model 1500A Positive Bias Relay

## Technical Information



## Specifications

**D**

Model 1500A

### Supply Pressure

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

### Flow Capacity (SCFM)

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

### Exhaust Capacity (SCFM)

40 (68 m<sup>3</sup>/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

### Signal or Output Pressure

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

### 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" (2.54 cm) Water Column

### Ambient Temperature

-40° F to +200° F, (-40° C to +93° C)

### Materials of Construction

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

## Catalog Information

### Catalog Number

1 5 [ ] [ ] A [ ]

### Pressure Range

psig	[BAR]	(kPa)	
0-10	[0-0.7]	(0-70)	2
0.5-30	[0.03-2]	(3-200)	3
1-60	[1-4.0]	(10-400)	4
2-150	[0.15-10]	(15-1000)	6

### Pipe Size

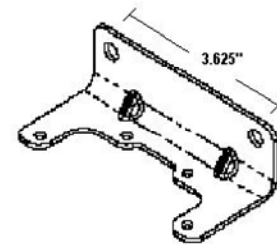
3/8" NPT	3
1/2" NPT	4
3/4" NPT	6

### Options

Tapped Exhaust	E
Tamper Proof	T
BSPT (Tapered)	U

## Installation

For installation instructions, refer to the *Fairchild Model 1500A Positive Bias Relay Installation, Operation and Maintenance Instructions, IS-3001500A*.



### Model 1500A Mounting Bracket Kit

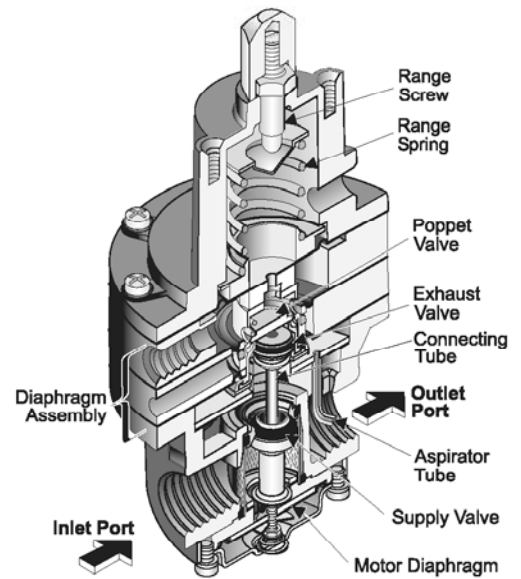
P/N 20555-1 zinc plated (sold separately)



The Model 2500A Bias Reversing Relay provides an outlet pressure that decreases in direct proportion to increases in input signal.

## Features

- 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 2500A without removing it from the line

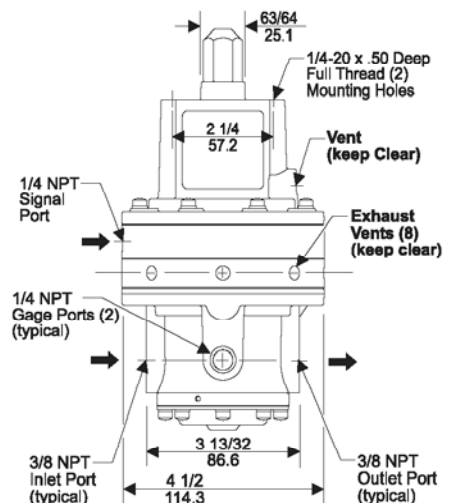
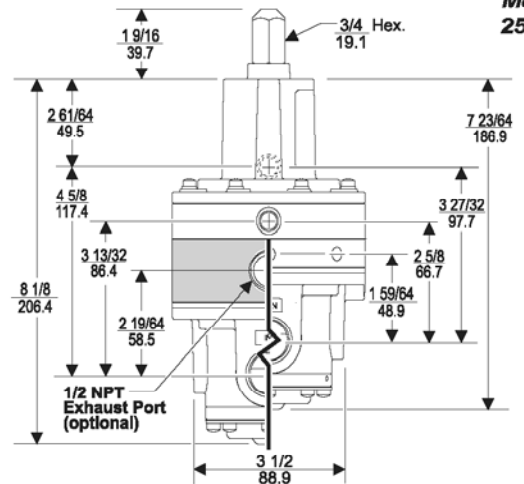


## Operating Principles

When you adjust the Range Screw to a specific setpoint, the Range Spring exerts a force against the top of the Diaphragm Assembly. The increasing input signal that acts on the Diaphragm Assembly opposes the Range Spring force and closes the Supply Valve to decrease output pressure. ( $P_o = K - P_s$ ); where  $P_o$  is output pressure,  $K$  is the spring constant, set by the screw, and  $P_s$  is signal pressure. The output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm.

When the setpoint is reached, the net downward force of the Diaphragm Assembly balances with the upward force of the output pressure that acts on the bottom of the Control Diaphragm to close the Supply Valve.

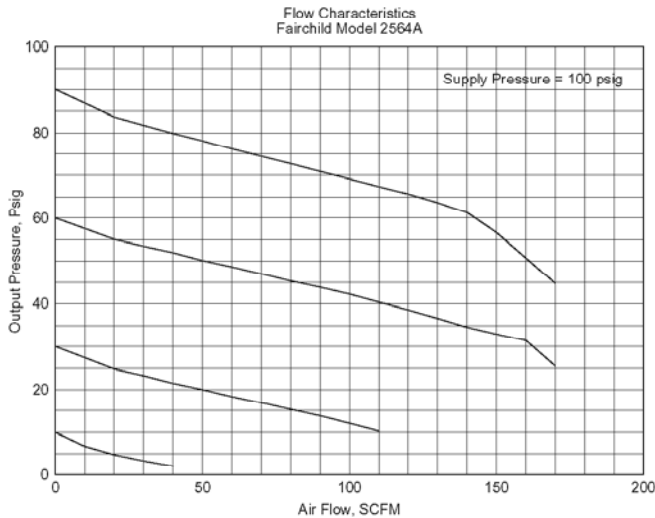
When the output pressure increases above the setpoint, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. When the Poppet Valve is closed, pressure flows down the Control Tube to the bottom of the Motor Diaphragm. This pressure keeps the Supply Valve tightly closed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



Model 2500A

# Model 2500A Biasing Reversing Relay

## Technical Information



## Specifications

### Maximum Supply Pressure

250 psig, [17.0 BAR], (1700 kPa)

### Maximum Signal or Output Pressure

150 psig, [10 BAR], (1000 kPa)

### Flow Capacity

150 SCFM (255 m<sup>3</sup>/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint

### Exhaust Capacity (SCFM)

40 SCFM (68 m<sup>3</sup>/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 93.3°C)

### Materials of Construction

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

## Catalog Information

### Catalog Number

2 5   A

### Pressure Range

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

### Pipe Size

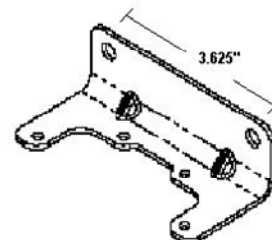
3/8" NPT.....	3
1/2" NPT.....	4
3/4" NPT.....	6

### Options

Tapped Exhaust.....  E

## Installation

For installation instructions, refer to the *Fairchild Model 2500A Multi-Stage Relay Installation, Operation, and Maintenance Instructions*, IS-3002500A.



20555-1

### Model 2500A Mounting Bracket Kit P/N

20555-1 zinc plated (sold separately)

**SECTION E**



**E**

**ACCESSORIES**

## Manifold and Rack Kit

Model T6000  
Model T7800  
Model T7950  
Model T8000

### General Information

#### MANIFOLD KITS

##### T6000, T7800 and T7950 Transducers

Current to Pneumatic (I/P or E/P)



The Manifold Kits for the T6000, T7800 and T7950 Series Transducers are available for mounting 3, 5, 10 or 15 transducer units. These manifolds have a common supply port to all the transducers. Internal check valves in the inlet and outlet ports permit the installation and removal of individual transducers without affecting other units on the manifold.

Supply port connections are provided on the end and rear of the manifold. Outlet ports are located on the rear and bottom of the manifold. Mounting brackets for flush or extended mounting from the back wall are available. These options allow the user to select the combination of supply ports, outlet ports and mounting configurations to maximize usage of available space.

##### T8000 Series Transducers

Pneumatic to Current (P/I)

Manifold kits for the T8000 Series Transducers are also available for mounting 3, 5, 10 or 15 transducer units. All input ports on the manifold have internal check valves to seal off the input signal(s) if a transducer is removed from the manifold.

Since each housing may contain two individual P/I transducers, the quantity of P/I's on the manifold has the capability of doubling. Rear and bottom input port connections and flush or extended mounting brackets allow the user to configure the manifold to maximize the use of available space.

# E

Models  
T6000  
T7800  
T7950  
T8000



#### RACK KITS

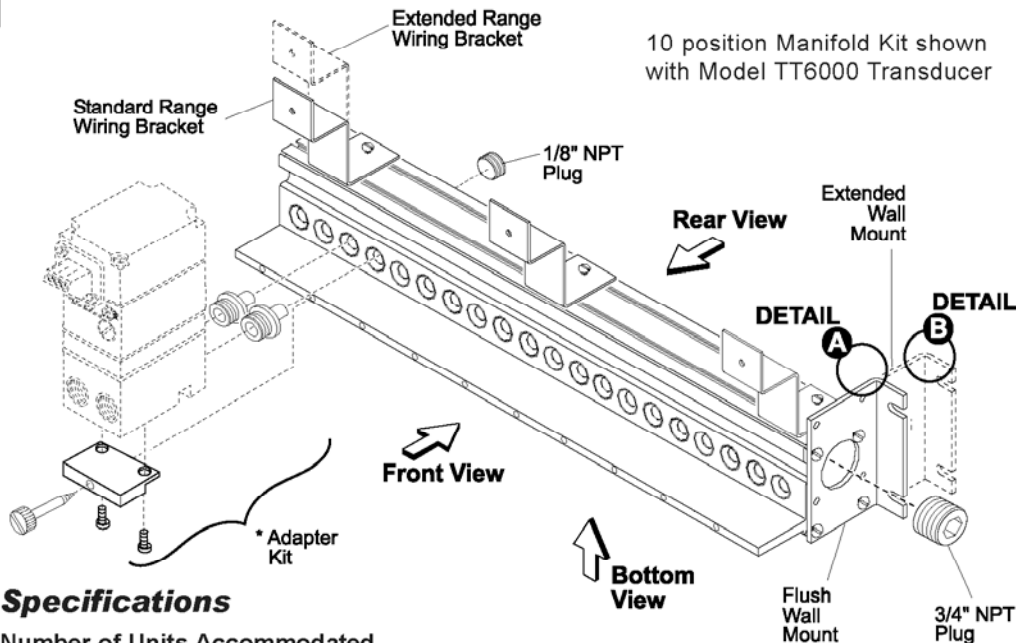
##### T6000, T7800 and T8000 Transducers

All T6000, T7800 and T8000 Rack Kits utilize a 10 unit manifold described in the above manifold kits. The rack kit includes additional hardware to permit installation in a standard 19" Rack.

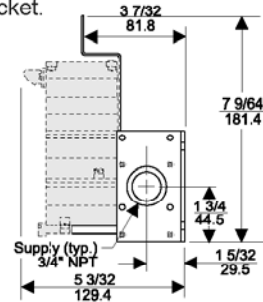
It is suggested that transducers used with rack kits include the "R" option. This option faces the electrical terminal block connector to the rear of the transducer permitting connections to the transducer to be made from the rear of the rack.

Manifold Kits

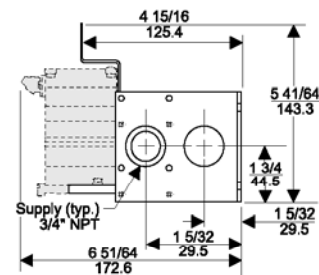
Model T6000, T7950 & T7800 Current to Pneumatic



**Detail A** - Extended Range Unit shown with Flush Wall Mount Bracket.



**Detail B** - Standard Range Unit shown with Extended Wall Mount Bracket.



**Specifications**

Number of Units Accommodated

3, 5, 10 or 15

Check Valves (Internal)

Inlet and outlet ports

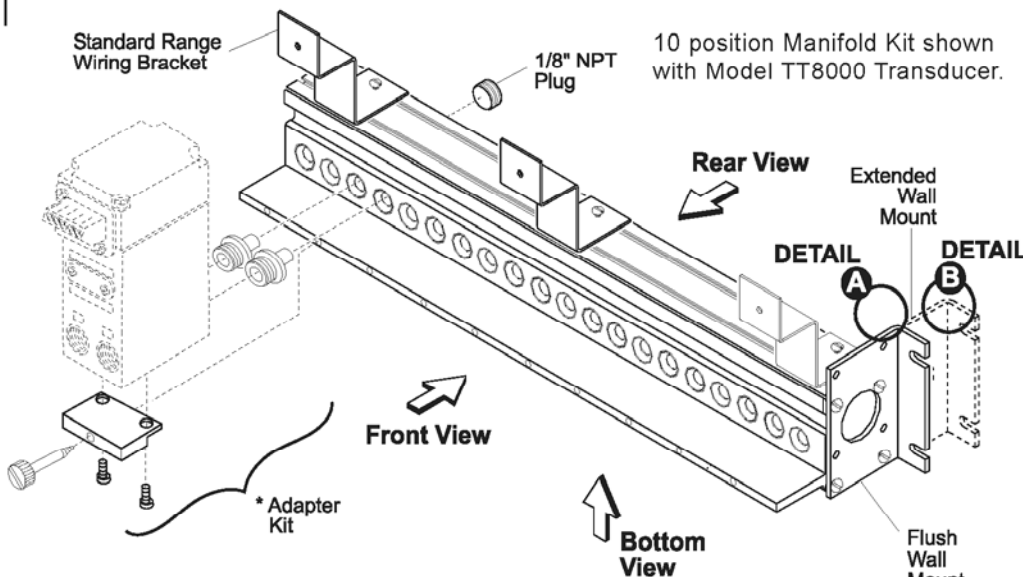
Supply Ports

3/4" NPT on manifold ends (2) 3/8" NPT on rear

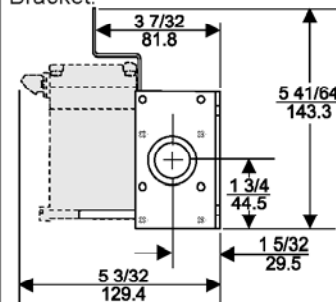
Outlet Ports

1/8" NPT vertically on the bottom, 1/8" NPT horizontally on the rear

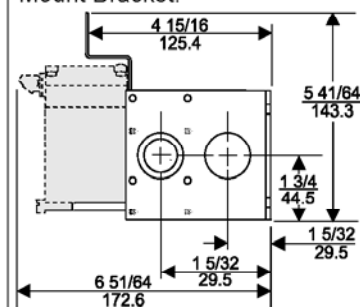
Model T8000 Pneumatic to Current



**Detail A** - Standard Range Unit shown with Flush Wall Mount Bracket.



**Detail B** - Standard Range Unit shown with Extended Wall Mount Bracket.



**Specifications**

Number of Units Accommodated

3, 5, 10 or 15

Check Valves (Internal)

Inlet ports

Inlet Ports

1/8" NPT vertically on the bottom, 1/8" NPT horizontally on the rear

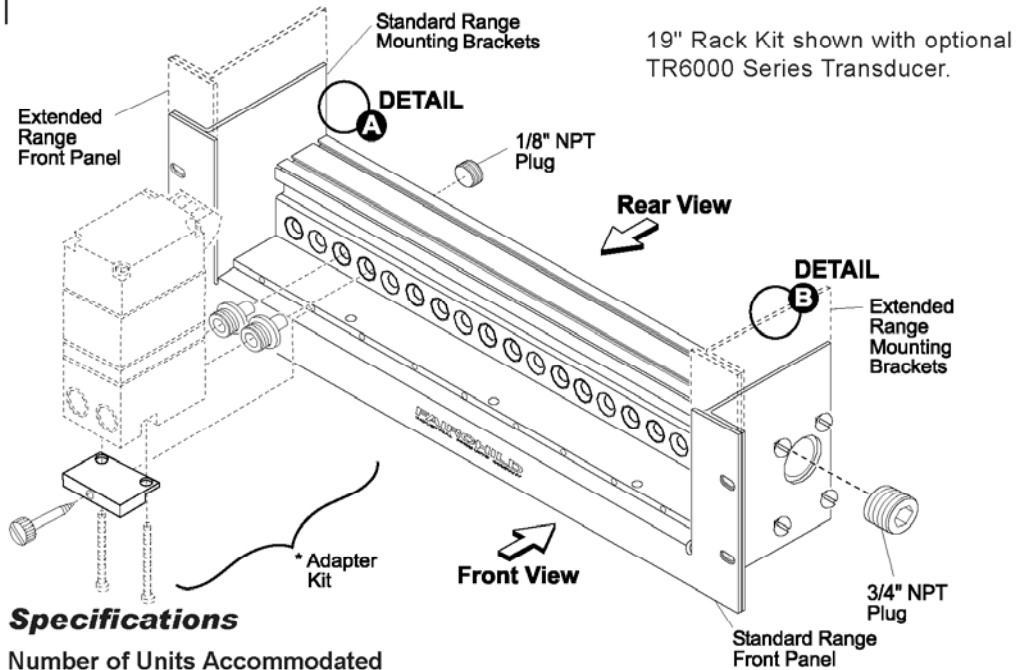


Models  
T6000  
T7800  
T7950  
T8000

# Manifold and Rack Kit

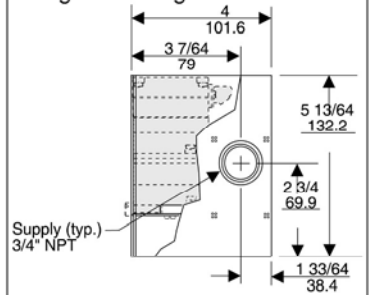
## Rack Kits: Dimensions

Model T6000 & T7800 Current to Pneumatic

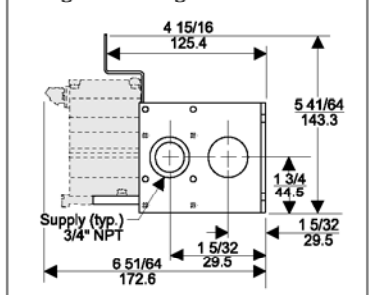


19" Rack Kit shown with optional TR6000 Series Transducer.

**Detail A** - Standard Range Front Panel shown with Standard Range Mounting Brackets



**Detail B** - Extended Range Front Panel shown with Extended Range Mounting Brackets



### Specifications

Number of Units Accommodated

Up to 10

Check Valves (Internal)

Inlet and outlet ports

Supply Ports

3/4" NPT on manifold ends, (2) 3/8" NPT on rear

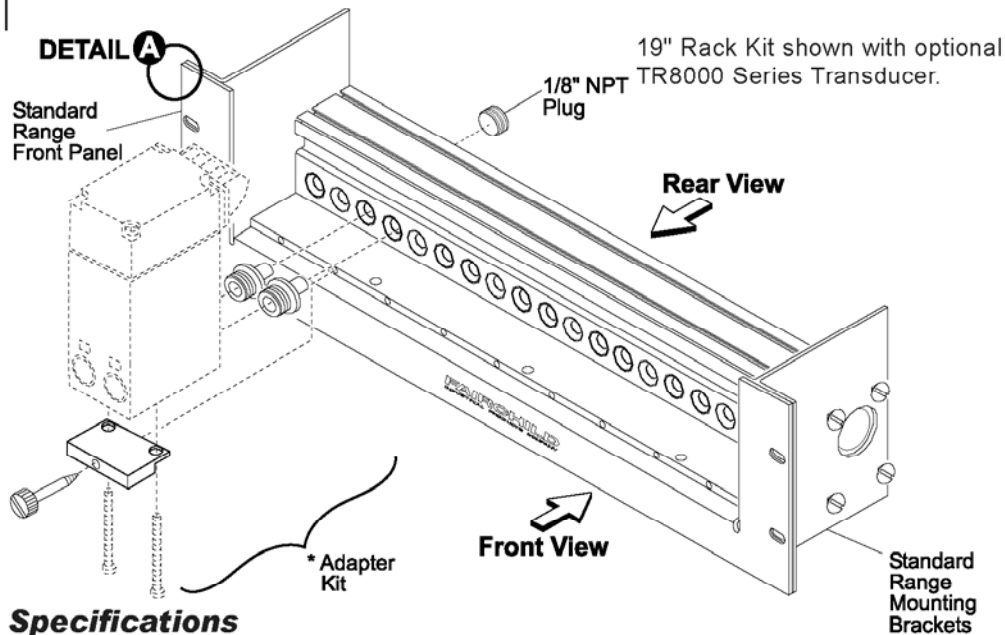
Outlet Ports

1/8" NPT vertically on the bottom, 1/8" NPT horizontally on the rear



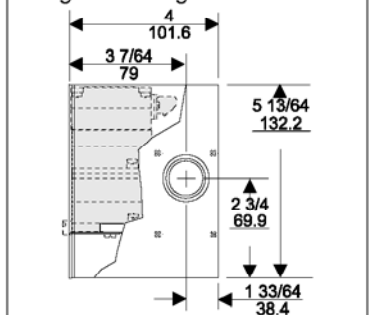
Models  
T6000  
T7800  
T7950  
T8000

Model T8000 Pneumatic to Current



19" Rack Kit shown with optional TR8000 Series Transducer.

**Detail A** - Standard Range Front Panel shown with Standard Range Mounting Brackets



### Specifications

Number of Units Accommodated

Up to 10

Check Valves (Internal)

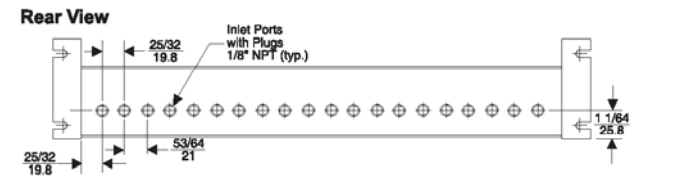
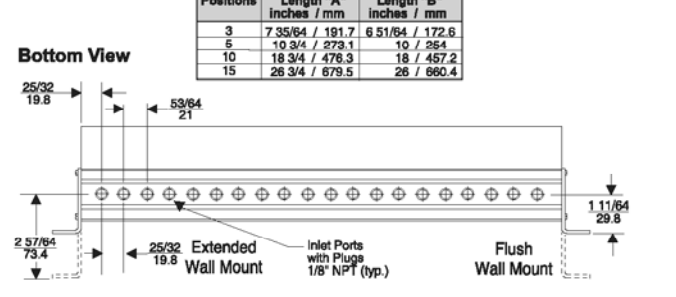
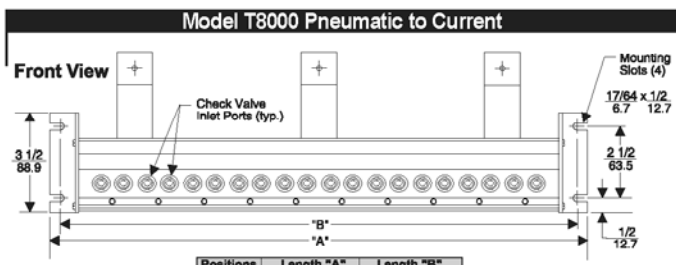
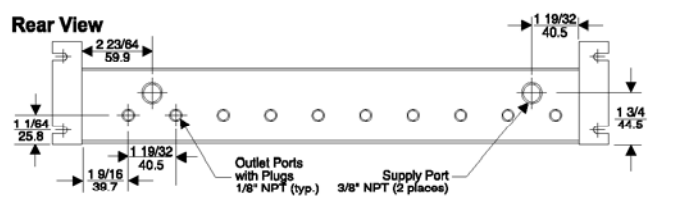
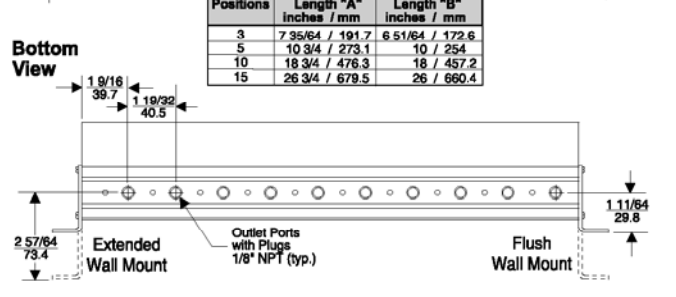
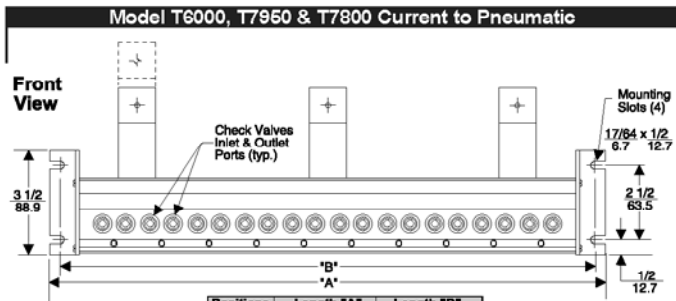
Inlet ports

Inlet Ports

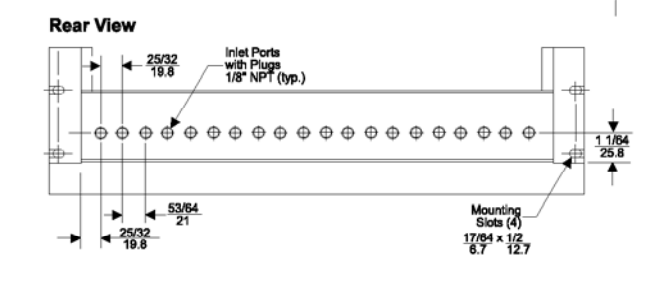
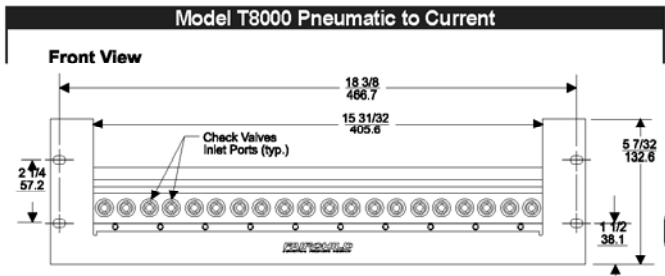
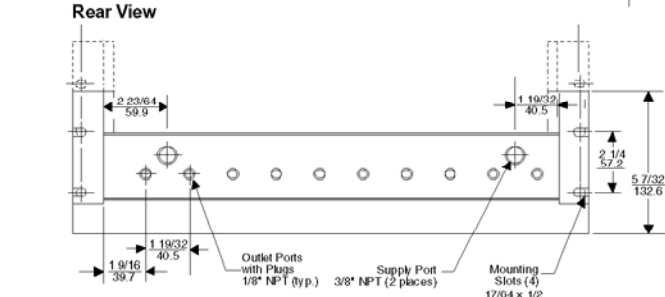
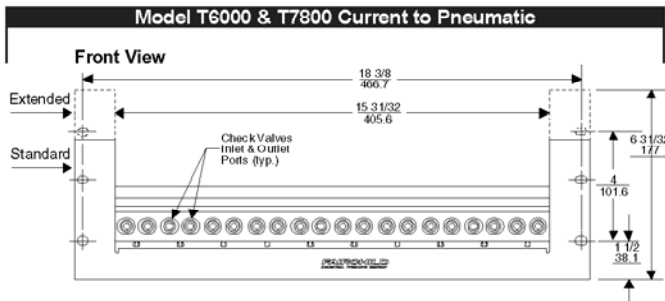
1/8" NPT vertically on the bottom, 1/8" NPT horizontally on the rear



Manifold Kits: Dimensions



Rack Kits: Dimensions



**E**  
Models  
T6000  
T7800  
T7950  
T8000

# Manifold and Rack Kit

## Specifications

### Materials of Construction

Manifold and Brackets.....	Aluminum
Screws.....	Zinc Plated Steel
Check Valves.....	Brass
Elastomers.....	Buna N

## Catalog Information

### MANIFOLD KIT for Model T6000, T7950 & T7800

**Manifold Kit Number** \*1833

**Type of Wall Mount**  
 Flush..... 8  
 Extended ..... 9

**Number of Transducer Positions**  
 Three ..... 3  
 Five..... 5  
 Ten ..... 10  
 Fifteen..... 15

Wire Duct Brackets for Standard and Extended Range Transducers are included.

### MANIFOLD KIT for Model T8000

**Manifold Kit Number** \*1853

**Type of Wall Mount**  
 Flush..... 3  
 Extended ..... 4

**Number of Transducer Positions**  
 Three ..... 3  
 Five..... 5  
 Ten ..... 10  
 Fifteen..... 15

Wire Duct Brackets for Standard and Extended Range Transducers are included.

### RACK KIT for Model T6000 & T7800

**Rack Kit Number**

**Type of Range**  
 Standard..... \* 18340-1  
 Extended (T6000 Only) ..... \* 18368-1

### RACK KIT for Model T8000

**Type of Range**  
 Standard..... \* 18536-1

\* Adapter Kits for Transducers are included.

## Installation

For installation instructions, refer to the *Model T6000/T7800 Series Manifold and Adapter Kit Installation, Operation and Maintenance Instructions, IS-400MFLD6*, the *T6000 Series I/P, E/P Rack Kit Installation, Operation and Maintenance Instructions, IS-400RACK6*, the *T8000 Series Manifold and Adapter Kit Installation, Operation and Maintenance Instructions, IS-400MFLD8* and the *T8000 Series I/P, E/P Rack Kit Installation, Operation and Maintenance Instructions, IS-400RACK8*.

**E**

Models  
**T6000**  
**T7800**  
**T7950**  
**T8000**



**Features**

- Low air consumption reduces air usage and cost.
- Horizontal or vertical gauge scales available to suite master panel layout.
- Mounting brackets attached for easy installation into master panel.

**Operating Principles**

Models MPL-70 and MPLT-70 Mini-panel Loading Stations transmit and monitor a pressure signal for pneumatic instrumentation. These loading stations are ideally suited for applications with limited space.

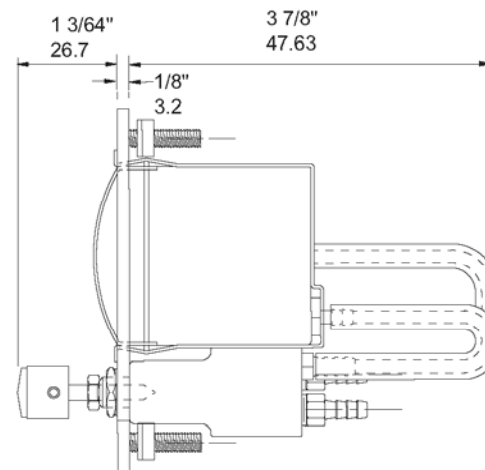
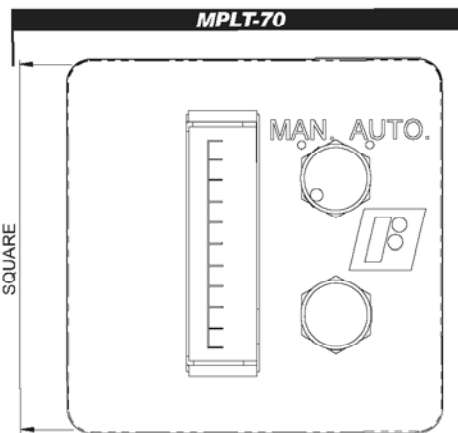
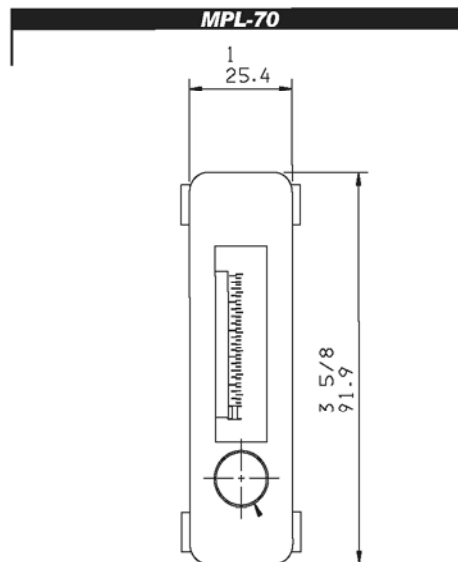
The Model MPL-70 includes a Model 70B Pneumatic Subminiature Regulator and a mini-strip gage to set and read pressure at the panel.

The MPLT-70, with the Transfer Function, includes a Model 70B Pneumatic Subminiature Regulator, an automatic or manual switch, and an additional mini-strip gage to monitor the process in automatic mode or change pressure settings in manual mode.

Turn the adjusting knob in the loading station panel in a clockwise direction to increase output pressure or in a counter-clockwise direction to decrease output pressure.

- MPL fits cutout size 7/8" (+1/8, -0) x 3-3/8" (+1/8, -0)
- MPLT fits cutout size 2-1/2" (+1/2, -0) square per SAMA Standard RC 12-3-1962

Inlet & outlet connections are barbed fittings for 1/8" I.D. tubing.



**E**  
Models  
MPL-70  
MPLT-70

# MPL-70, MPLT-70 Mini Panel Loading Stations

## Specifications

**Minimum Supply Pressure**  
50 psig, [3.5 BAR], (350 kPa)

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

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

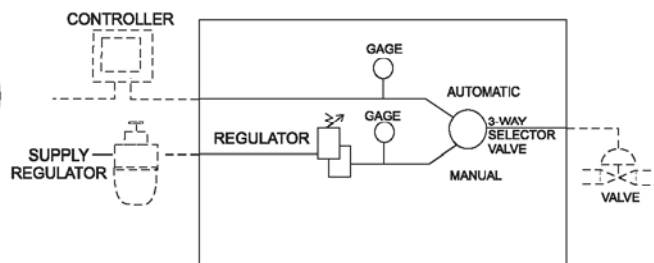
**Supply Pressure Effect**  
0.05 psig, [.003 BAR], (.35 kPa) change in output for 5 psig, [.35 BAR], (35 kPa) change in supply pressure

**Air Consumption**  
0.05 SCFM (.085 m<sup>3</sup>/HR) on dead-end service; 20 psig, [1.5 BAR], (150 kPa) supply; 9 psig, [.6 BAR], (60 kPa) output

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

**Materials of Construction**  
Regulator . . . . . Brass, Viton (Fluorocarbon), Fiberglass  
Three-way Valve . . . . . Brass, Steel,  
Gage . . . . . Zinc Plated Steel, Brass  
Hose . . . . . Plastic

## Model MPLT-70 Schematic Panel Loading Station with Transfer Function



## Service Information

A Service Kit is available for the Model 70B Regulator, refer to the *Fairchild Model 70B Installation, Operation and Maintenance Instructions*, IS-1000070B.

## Catalog Information

**Catalog Number** [ ] [ ] [ ] [ ] [ ] [ ]

**Panel**  
with Transfer Function . . . MPLT<sup>1</sup>  
without Transfer Function . . . MPL

**Regulator**  
Model 70 . . . . . 70

**Gage Type**  
Single (MPLT Only) . . . . . S  
Dual (MPLT Only) . . . . . D  
Leave Blank for MPL . . . . .

**Gage Type**  
Plain Vertical . . . . . PV  
Plain Horizontal . . . . . PH  
Receiver Vertical<sup>2</sup> (Graduated 0-100%) . . . . . RV  
Receiver Horizontal<sup>2</sup> (Graduated 0-100%) . . . . . RH

**Regulator Range<sup>3</sup>**  
15 psig [1.0 BAR] (100 kPa) . . . . . 15  
30 psig [2.0 BAR] (200 kPa) . . . . . 30  
60 psig [4.0 BAR] (400 kPa) . . . . . 60  
100 psig [7.0 BAR] (700 kPa) . . . . . 100

**Gage Range**  
15 psig [1.0 BAR] (100 kPa) . . . . . 15  
30 psig [2.0 BAR] (200 kPa) . . . . . 30  
60 psig [4.0 BAR] (400 kPa) . . . . . 60  
100 psig [7.0 BAR] (700 kPa) . . . . . 100

<sup>1</sup> MPLT Only available in 15 psig, [1 BAR], (100 kPa) and 30 psig, [2 BAR], (200 kPa) ranges.  
<sup>2</sup> 0-100% scale for 3-15 psig, [0.2-1.0 BAR], (20-100 kPa) range.  
<sup>3</sup> To avoid gage damage, the regulator range should be equal to or less than the gage range.



# Models PL-5, PLT-8 Panel Loading Stations

## Specifications

### Gage Accuracy

Lower Third.....	± 3%
Mid Scale.....	± 2%
Upper Third.....	± 3%

Model NO.	psig	Range [BAR]	(kPa)	Flow SCFM (m <sup>3</sup> /HR)	Sensitivity W.C. cm
10	0-20	[0-1.5]	(0-150)	40 (68)	0.125 .31
	.5-30	[0.03-2.0]	(3.0-200)		
	1-60	[0.1-4.0]	(10-400)		
	2-150	[0.15-10.0]	(15-1000)		
30	.5-30	[0.03-2.0]	(3.0-200)	30 (51)	0.250 .63
	1-60	[0.1-4.0]	(10-400)		
	2-100	[0.15-7.0]	(15-700)		
64A	.5-30	[0.03-2.0]	(3.0-200)	22 (37.4)	1.0 2.54
	1-60	[0.1-4.0]	(10-400)		
	2-200	[0.15-14.0]	(15-1400)		
65A	.5-30	[0.03-2.0]	(3.0-200)	22 (37.4)	1.0 2.54
	1-60	[0.1-4.0]	(10-400)		
	2-100	[0.15-7.0]	(15-700)		
81	0-20	[0-1.5]	(0-150)	50 (85)	less than .25
	.5-60	[0.03-4.0]	(3.0-400)		
	.5-100	[0.03-7.0]	(3.0-700)		

### Ambient Temperature

10, 30, 81.....	-40°F to 200°F (-40°C to 93.2°C)
64A, 65A.....	-40°F to 180°F (-40°C to 82.2°C)

Model	Panel Opening* (Width by Height)	
PL5	4-1/8" x 4-9/16"	105 mm x 116 mm
PLT8	8" x 8"	203 mm x 203 mm

\* All Dimensions + 1/8", -0 (+.3 mm - 0) PL5 fits ISA RPC Cutouts

"A & B" Inlet and Outlet connections are 1/4" NPT

## Catalog Information

### Catalog Number



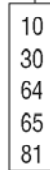
### Panel

with Transfer Function ...  
without Transfer Function .



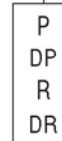
### Regulator

Model 10.....  
Model 30.....  
Model 64A.....  
Model 65A.....  
Model 81.....



### Gage Type

Single Plain.....  
Dual Plain (PLT8 Only).....  
Single Receiver <sup>1</sup> (Graduated 0-100%).....  
Dual Receiver (PLT8 Only).....



### Regulator Range <sup>2</sup>

psig	[BAR]	(kPa)	
20 <sup>3</sup>	[1.5]	(150)	20
30 <sup>4</sup>	[2.0]	(200)	30
60 <sup>5</sup>	[4.0]	(400)	60
100 <sup>6</sup>	[7.0]	(700)	100
150 <sup>7</sup>	[10.0]	(1000)	150

### Gage Range

psig	[BAR]	(kPa)	
15	[1.0]	(100)	15
30	[2.0]	(200)	30
60	[4.0]	(400)	60
100	[7.0]	(700)	100
160	[11.0]	(1100)	160

<sup>1</sup> 0-100% scale for 3-15 psig, [0.2-1.0 BAR], (20-100 kPa) range.

<sup>2</sup> To avoid gage damage, the regulator range should be equal to or less than the gage range.

<sup>3</sup> For Models 10 & 81 Only.

<sup>4</sup> For Models 10, 30, 64A, & 65A Only.

<sup>5</sup> For Models 10, 30, 64A, 65A, & 81.

<sup>6</sup> For Models 30, 64A, 65A, & 81.

<sup>7</sup> For Model 10 Only.

## Service Information

For installation instructions, refer to the *Model PL-5, PLT-8 Panel Loading Stations Installation, Operation, and Maintenance Instructions, IS-4PL5PLT8*. For more information, refer to the Installation, Operation, and Maintenance Instructions for the appropriate Regulator:

- Model 10 - IS-10000010
- Model 30 - IS-10000030
- Model 64A,65A - IS-1064A65A
- Model 81 (PL-5 only) - IS-10000081



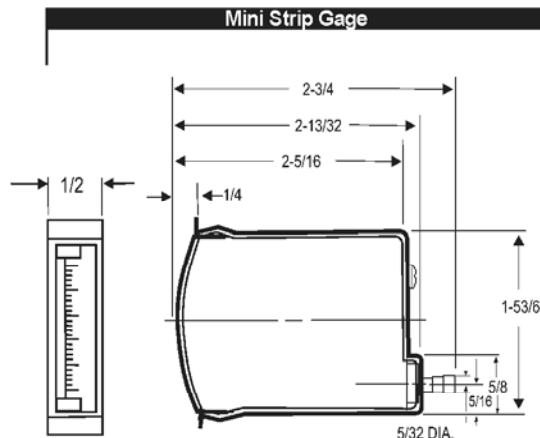
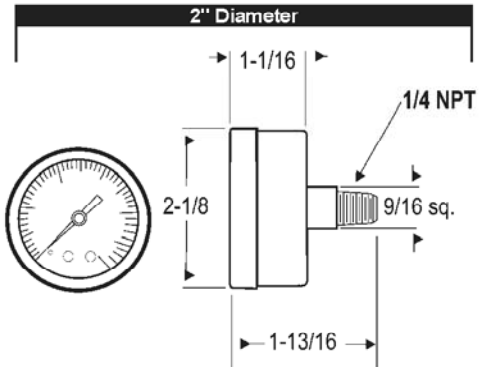
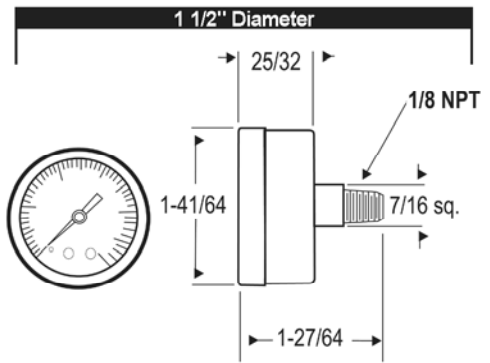
**Features**

- Round Gages are available in 7 ranges with a maximum of 400 psig.
- Mini Strip Gages are available in 4 ranges with a maximum of 100 psig.
- Receiver Gages are graduated from 0 to 100% for a 3 to 15 psig transmission range.
- 1 1/2" Gages have a 1/8" NPT center back connection.
- 2" and 3 1/2" Gages have a 1/4" NPT center back connection.
- 1/2" Mini Strip Gages have a 1/8" hose barb connection.

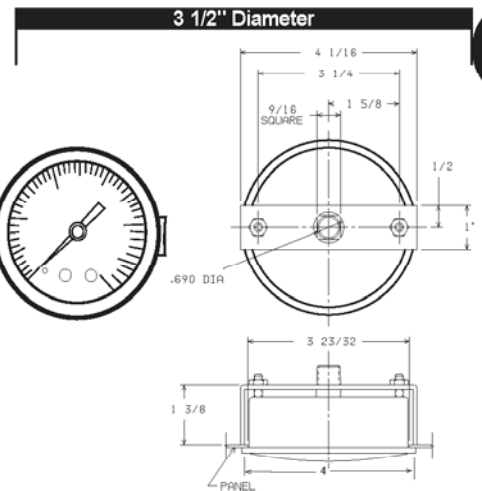
**Operating Principles**

The Fairchild line of 1 1/2", 2", and 3 1/2" diameter gages are designed for general use in applications that use gas or liquid medium that is compatible with the brass and brass alloy components in the gage.

Mini Strip Gages are designed for use in small panel mount applications. Both gage styles include a receiver gage configuration designed for the pneumatic transmission of process variables.



NOTE: Panel cutout dimension 1.87 x .515



NOTE: Panel cutout dimension 3-23/32 dia.



# Pressure Gages

## Specifications

### Gage Accuracy

#### Round Gages

Lower Third.....	± 3%
Mid Scale.....	± 2%
Upper Third.....	± 3%
Mini Strip Gages.....	5% full scale

#### Standard Gages

Diameter	1-1/2"	2"	3-1/2"
Connection	1/8" NPT	1/4" NPT	1/4" NPT
Mounting	Direct	Direct	Panel

#### Mini-Strip Gages

Connection	1/8" Hose
Mounting	Panel (Vertical or Horizontal)

#### Materials of Construction

Standard Gages ..... Aluminum, Phosphur Bronze & Stainless Steel  
 Mini-Strip Gages ..... Zinc Plated Steel & Brass

### WARNING:

In order to reduce the risk of injury or damage resulting from improper use or application of pressure gages, persons selecting and installing these devices should consult ANSI B40, which can be obtained from ASME (American Society of Mechanical Engineers). When selecting a gage, consider the following factors:

- PRESSURE** - Gage range should be about twice the intended operating pressure. Do not apply pressure beyond top of scale.
- VIBRATION** - Isolate the gage from excessive vibration, which could cause movements wear and loss of accuracy.
- PULSATION** - Considers a pulsation dampening device or a liquid-filled gage to protect against fatigue failure of the pressure element or rapid movement wear.
- TEMPERATURE** - Do not position the gage near sources of extreme heat, which might cause long term creep of soldered joints and eventually failure.
- PROCESS** - Materials and parts under pressure should be resistant to the process fluid. This may require a diaphragm seal or a different pressure element material.

Consult the recommendations of ANSI B40 when selecting gages for high pressure gas or potentially hazardous services, such as Oxygen. Use only aluminum socket gages on air or oil.

## Catalog Information

<b>Catalog Number</b>	G				
1-1/2", 2", 3-1/2" Diameter ..	G				
<b>Gage Size</b>					
1-1/2" .....		15			
2" .....		20			
3-1/2" .....		35			
<b>Pressure Range</b>					
<b>psig</b>	<b>BAR</b>	<b>(kPa)</b>			
0-15 <sup>1,2,3</sup>	[0-1.0]	(0-100).....	2		
0-30 <sup>1,2,3</sup>	[0-2.0]	(0-200).....	3		
0-60 <sup>1,2,3</sup>	[0-4.0]	(0-400).....	4		
0-100 <sup>1,2,3</sup>	[0-7.0]	(0-700).....	5		
0-160 <sup>2,3</sup>	[0-11.0]	(0-1100).....	6		
0-300 <sup>2</sup>	[0-21.0]	(0-2100).....	7		
0-400 <sup>2</sup>	[0-28.0]	(0-2800).....	8		
<b>Pipe Size</b>					
1/8" NPT <sup>1</sup> .....				1	
1/4" NPT <sup>2,3</sup> .....				2	
<b>Gage Type</b>					
Receiver <sup>3,4</sup> (Graduated 0-100%).....					R

<sup>1</sup> Available on 1-1/2" Gages.

<sup>2</sup> Available on 2" Gages.

<sup>3</sup> Available on 3-1/2" Gages.

<sup>4</sup> Available on 15 psig, [1.0 BAR], (100 kPa) Only.

<b>Catalog Number</b>	GS10			
Mini Strip .....	GS10			
<b>Pressure Range</b>				
<b>psig</b>	<b>BAR</b>	<b>(kPa)</b>		
0-15	[0-1.0]	(0-100).....	2	
0-130	[0-2.0]	(0-200).....	3	
0-60	[0-4.0]	(0-400).....	4	
0-100	[0-7.0]	(0-700).....	5	
<b>Connection</b>				
1/8" Hose .....			2	
<b>Gage Type</b>				
Plain Vertical.....				PV
Plain Horizontal.....				PH
Receiver Vertical <sup>1</sup> (Graduated 0-100%).....				RV
Receiver Horizontal <sup>1</sup> (Graduated 0-100%).....				RH

<sup>1</sup> Available on 15 psig, [1.0 BAR], (100 kPa) Only.







**Features**

The Fairchild Automatic Drain Filter Series is designed for use in systems that require clean, oil-free air. This series consists of a particulate filter and two coalescing filters with automatic drains. You can easily replace all filter elements.

Automatic Drain Filters are highly effective in removing oil and liquid-borne particulate matter. These units are recommended for use when clean air or inert gas environments are required in laboratory air, process control, instrument and compressed air systems. Automatic Drain Filters have the following features:

- Pre-filters remove water and dirt particles from air lines up to a maximum size of 5 microns.
- Coalescing filters are available in 0.3 micron and 0.01 micron sizes to remove 99.9% of oil mist.
- Maximum operating pressure of 150 psig.
- Differential pressure automatic drain provided on 1/4" port, 5-micron pre-filter. Float type automatic drain provided on all others.
- Easily replaceable filter element saves service time.
- Die cast aluminum or zinc body with Polycarbonate bowl and metal guard assures safety and durability.

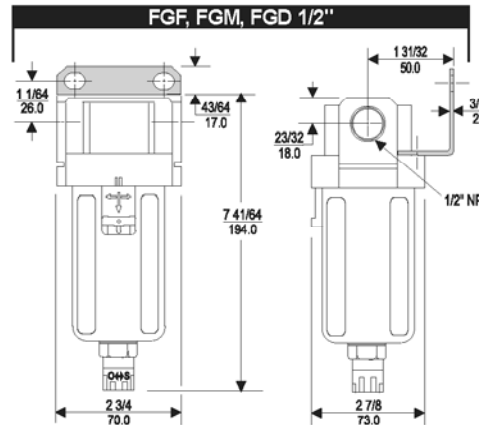
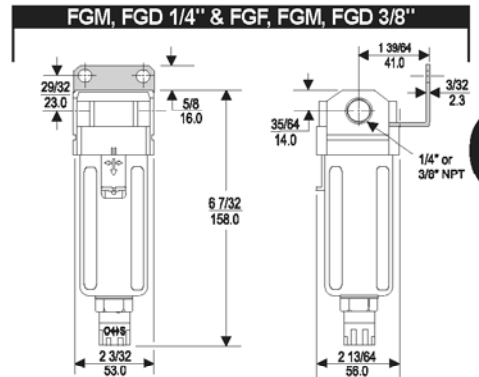
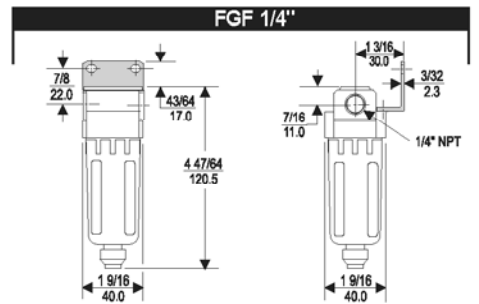
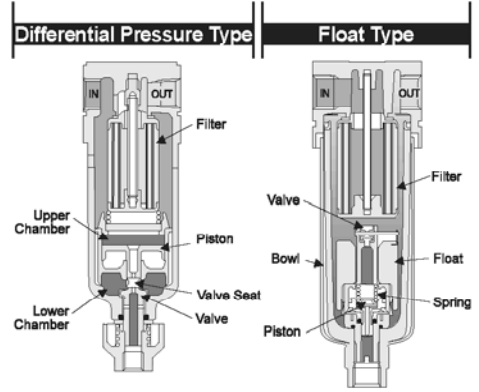
**Operating Principles**

**Differential Pressure Type**

Before air is supplied to the Filter, the Piston rests against the Valve Seat. When air pressure greater than 15 psig is supplied to the Filter, air pressure in the Upper Chamber acts against the Piston to bring the Valve Seat against the Valve. As air withdraws from the Filter, pressure in the Upper Chamber decreases to create a pressure differential between the Upper and Lower chambers. The Piston moves upward to open the Valve and drain the collected fluid. As the fluid drains, pressure in the Lower Chamber decreases. The higher pressure in the Upper Chamber acts against the Piston to bring the Valve Seat against the Valve. When the air flow through the Filter is constant, the pressures in the Upper and Lower chambers are equal and the Valve remains closed.

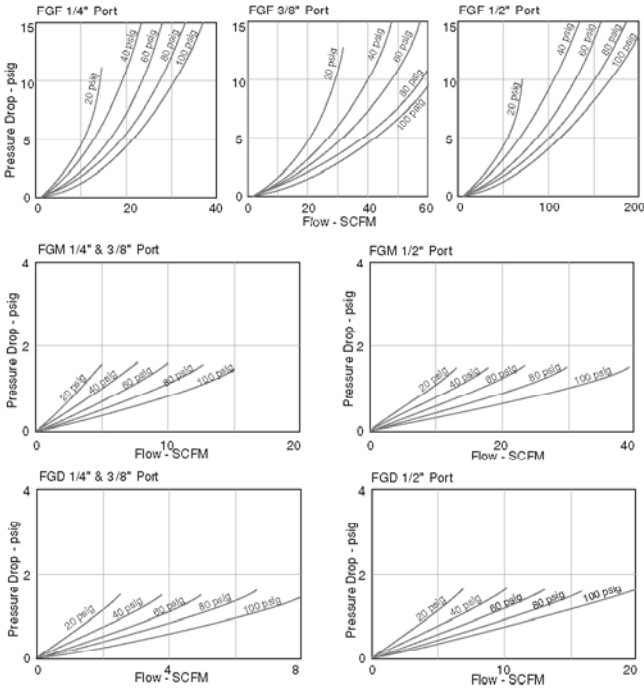
**Float Type**

Before air is supplied to the Filter, the Spring force holds the Piston open. The Float, in its lowest position, closes off the Valve. When air is supplied to the Filter, the force of air pressure acting on the bottom of the Piston overcomes the Spring force that holds the Piston open and closes the drain passage. As fluid collects in the Bowl, the Float rises and opens the valve. The force of air pressure that acts on the top of the Piston is greater than the force of the air pressure that acts on the bottom of the Piston. This force drives the Piston down, opens the passage, and allows the Bowl to drain.



# FGF, FGM, FGD Automatic Drain Filter Series

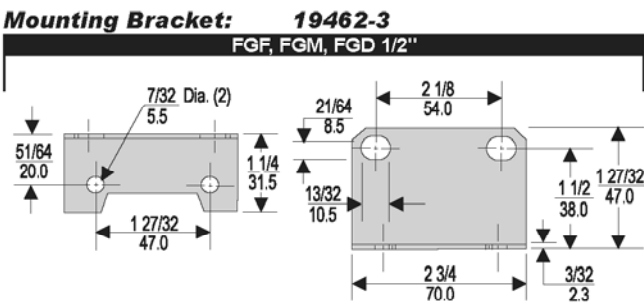
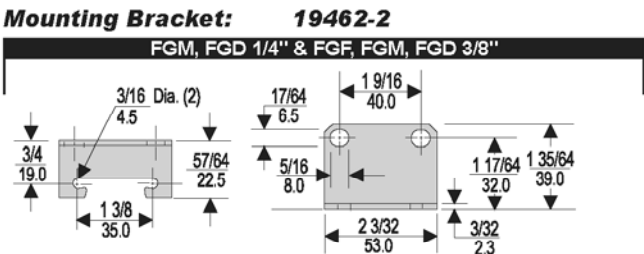
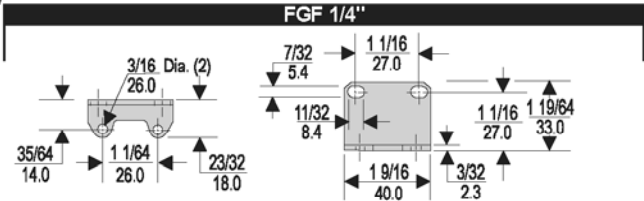
## Flow Characteristics



## Models FGF, FGM & FGD Accessories

Mounting Bracket..... 19462-2 (sold separately)  
 19462-3 (sold separately)  
 19462-4 (sold separately)

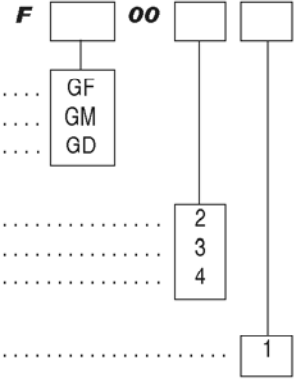
**E**  
 Models  
 FGF  
 FGM  
 FGD



Mounting Bracket: 19462-4

## Catalog Information

### Catalog Number



### Type

Filter, 5.0 micron ..... GF  
 Mist separator, 0.3 micron ..... GM  
 Micro-mist separator, 0.01 micron ..... GD

### Port Size

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

### Thread Type

NPT ..... 1

## Installation

For installation instructions, refer to the *Fairchild Automatic Drain Filter Series Installation, Operation and Maintenance Instructions*, IS-40GFGMGD.

## Specifications

	FGF	FGM	FGD
Minimum Operating Pressure	15 psig, [1.0 BAR], 100 kPa		
Maximum Operating Pressure	150 psig, [10 BAR], (1000 kPa)		
Auto Drain Type	Differential Pressure <sup>1</sup>	Float Type	
Ambient Temperature	23°F to 140°F (-5°C to 60°C)		
Filtration	5.0 micron	0.3 micron	0.01 micron
Oil Mist Removal Rate	NA	> 99.9%	
Materials of Construction	Body: Die Cast Zinc <sup>2</sup>	Die Cast Aluminum	
	Bowl: Polycarbonate with metal guard		
	Filter Element: Synthetic Fiber and Polyurethane Foam		

<sup>1</sup> FGF 1/4" only, All other sizes, Float Type

<sup>2</sup> FGF 1/4" only, All other sizes, Die Cast Aluminum

### NOTES:

- 1) NOT suitable for flows less than 3.5 SCFM
- 2) Polycarbonate bowls may be damaged and possibly fail if exposed to atmospheres containing synthetic oils, thinner solvents, trichlorethylene, kerosene or other aromatic hydrocarbons. These filters are intended for use in industrial compressed air or inert gas systems only.
- 3) Filter element to be changed after 1 year or when a pressure drop of 15 psig, [1.0 BAR], (100 kPa) is reached.