



## Keeping the World Flowing for Future Generations

### Features and benefits

- 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 droop under flowing conditions
- Optional adjustable bypass 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



## Model 20

### Pneumatic precision volume booster

#### Operating principles

The Model 20 volume 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.

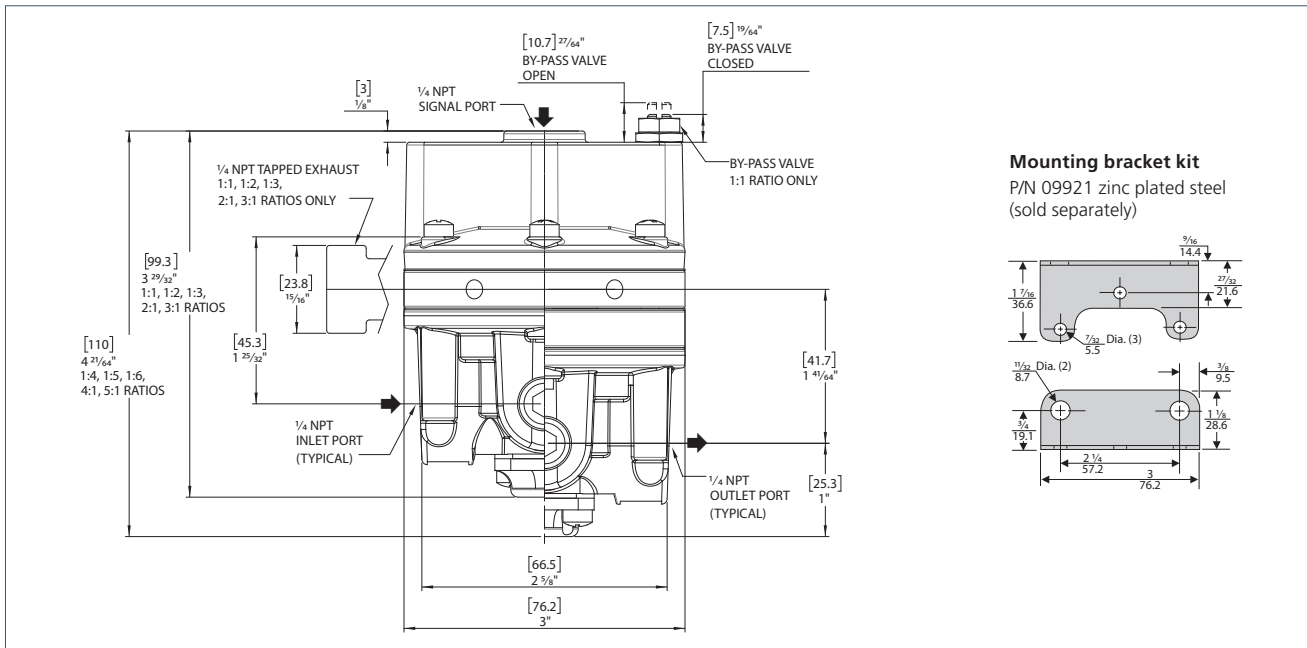
At setpoint, the force due to signal pressure that acts on the top of the upper diaphragm balances with the force due to output pressure acting on the bottom of the lower diaphragm.

### Specifications

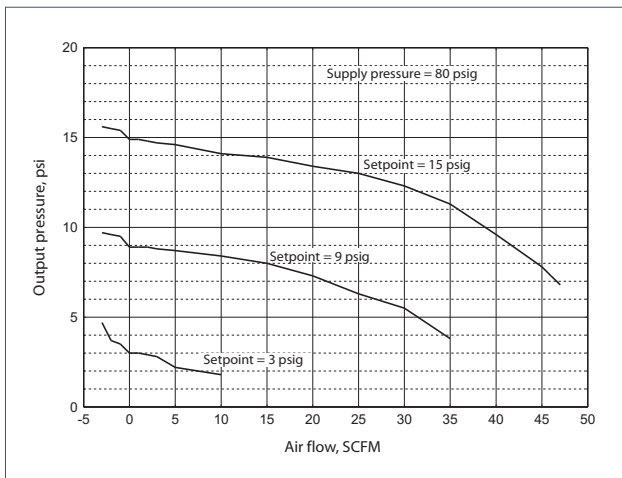
	RATIO	1:1	1:2	1:3	1:4	1:5	1:6	2:1	3:1	4:1	5:1
<b>Maximum output pressure</b>	psig	150	150	150	150	150	150	75	50	37.5	30
	[bar]	[10.0]	[10.0]	[10.0]	[10.0]	[10.0]	[10.0]	[5.0]	[3.5]	[2.6]	[2.0]
	(kPa)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(500)	(350)	(260)	(200)
<b>Maximum supply pressure</b>	psig	250	250	250	250	250	250	250	250	250	250
	[bar]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]	[17.0]
	(kPa)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)	(1700)
<b>Flow capacity</b> 100 psig, [7.0 bar], (700 kPa) supply, 20 psig, [1.5 bar], (150 kPa) output	SCFM	45	45	45	45	45	45	45	45	45	45
	m <sup>3</sup> /hr	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)
<b>Exhaust capacity</b> Downstream pressure 5 psig, [0.35 bar], (35 kPa) above 20 psig, [1.5 bar], (150 kPa) setpoint	SCFM	11	11	11	7.5	7.5	7.5	11	11	7.5	7.5
	m <sup>3</sup> /hr	(18.7)	(18.7)	(18.7)	(12.8)	(12.8)	(12.8)	(18.7)	(18.7)	(12.8)	(12.8)
<b>Sensitivity</b> Water column		¼"	½"	¾"	1"	1-¼"	1-½"	½"	½"	¾"	¾"
	(cm)	(0.64)	(1.27)	(1.9)	(2.54)	(3.18)	(3.8)	(1.27)	(1.27)	(1.9)	(1.9)
<b>Ratio accuracy</b> % of 100 psig, [7.0 bar], (700 kPa) output span % of output span with 100 psig, [7.0 bar], (700 kPa) input span		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> for change of 100 psig, [7.0 bar], (700 kPa)	psig	0.10	0.20	0.30	0.40	0.50	0.60	0.10	0.10	0.10	0.10
	[bar] (kPa)	[0.007] (0.7)	[0.014] (1.4)	[0.021] (2.1)	[0.028] (2.8)	[0.034] (3.4)	[0.041] (4.1)	[0.007] (0.7)	[0.007] (0.7)	[0.007] (0.7)	[0.007] (0.7)
<b>Ambient temperature</b>		-40 to 200 °F (-40 to 93.3 °C)									
<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									
<b>Materials of construction</b>		Body and housing: Aluminum; Trim: Zinc plated steel, brass; Diaphragm: Nitrile on polyester									



### Dimensions



### Flow characteristics (Model 20812)



For installations instructions, refer to the Fairchild Model 20 high capacity volume booster installation, operation and maintenance instructions, IS-20000020.

### Product code

208 1 2 A

#### Ratio

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

#### Pipe size

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

#### Options

A = Silicone elastomers<sup>2</sup>  
E = Tapped exhaust<sup>1</sup>  
H = BSPP (parallel)<sup>5</sup>  
I = By-pass valve<sup>4</sup>  
J = Viton elastomers<sup>1</sup>  
N = Non-relieving<sup>1</sup>  
U = BSPT (tapered)  
Y = Negative bias<sup>1,3</sup>

<sup>1</sup> For 1:1, 1:2, 2:1, 1:3 & 3:1 ratios only.

<sup>2</sup> Maximum supply pressure – 75 psig, [5.0 bar], (500 kPa).

For 1:1 ratio only. Not available with I option.

<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.

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