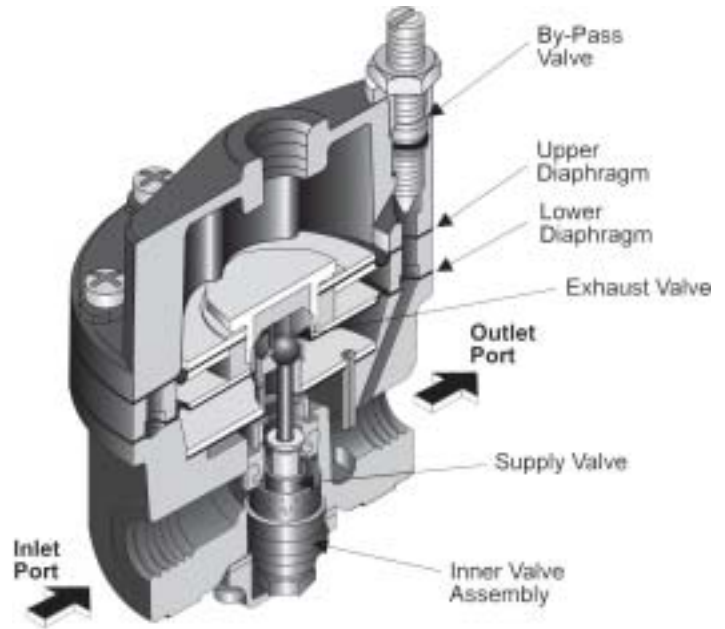


Model 20

Pneumatic Precision Booster

For High Flow and Exhaust Capacities

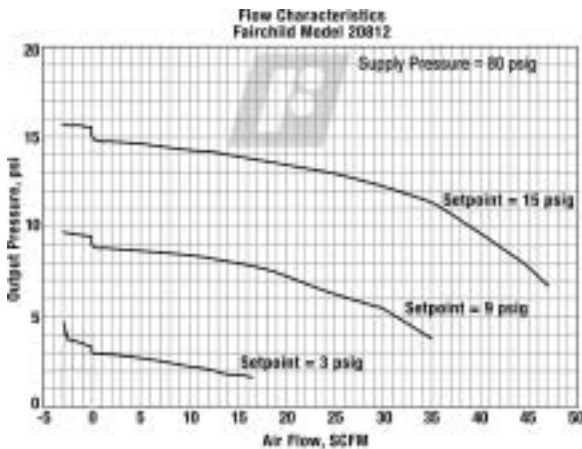


Cross Section

Model 20 Detail Drawing shown with Optional By-Pass Valve.

General Information

- 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
- An Aspirator Tube compensates downstream pressure droop under flowing conditions
- Optional Adjustable By-Pass Needle Valve allows tuning for optimum dynamic response (1:1 ratio only)
- Optional Fixed Negative Bias allows operation with pneumatic devices that cannot be adjusted to zero input 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

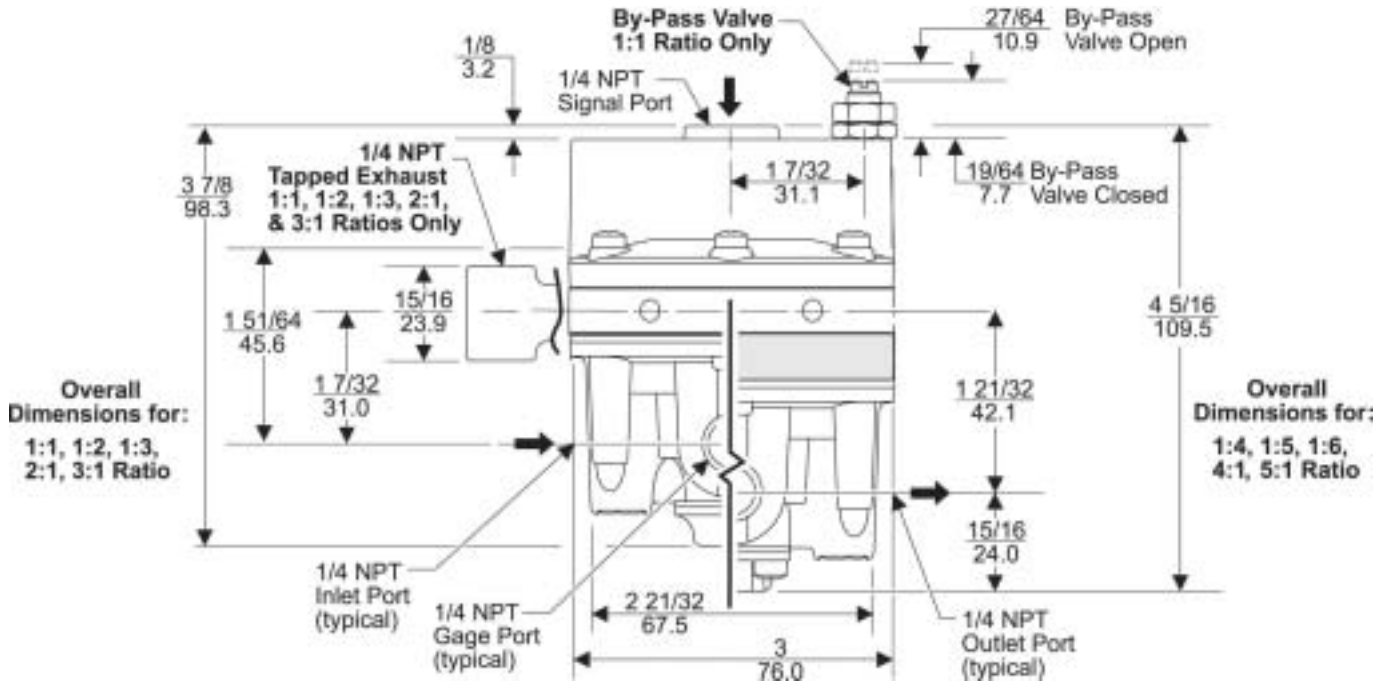


Operating Principles

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. For more information, see cross sectional diagram.

Outline Dimensions

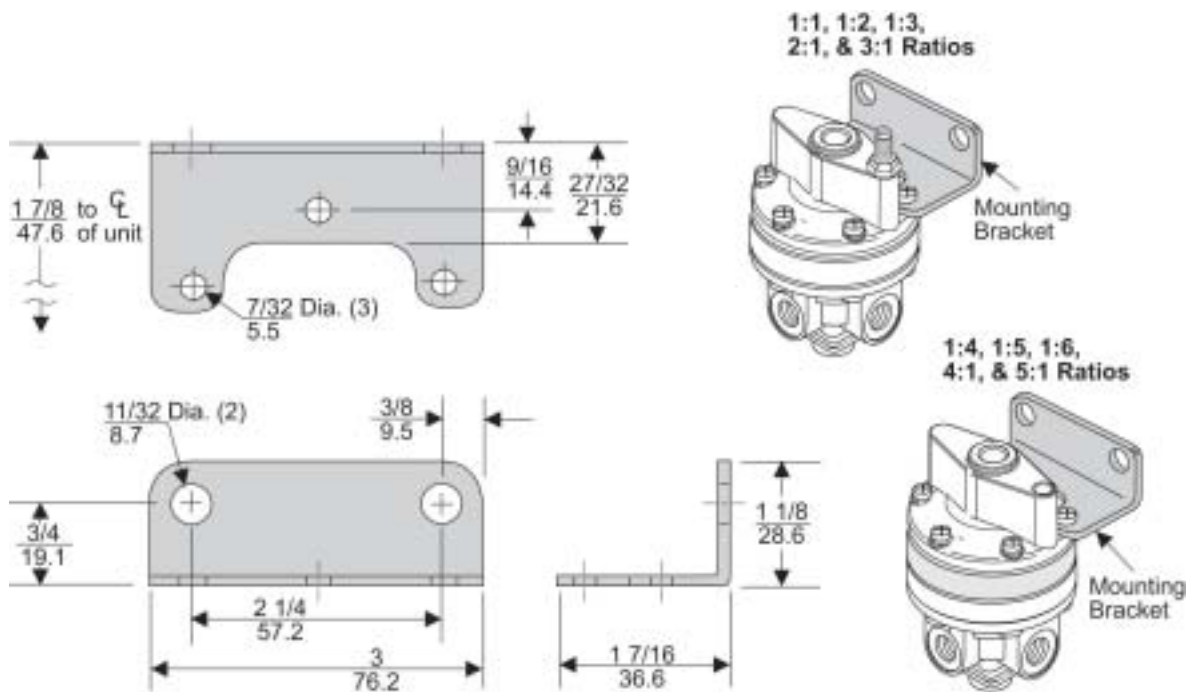


Functional Specifications

| | | SIGNAL:OUTPUT | | | | | | | | | |
|--------------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Ratio | | 1:1 | 1:2 | 1:3 | 1:4 | 1:5 | 1:6 | 2:1 | 3:1 | 4:1 | 5:1 |
| Maximum Output Pressure | psig [BAR] (kPa) | 150 [10.0] (1000) | 150 [10.0] (1000) | 150 [10.0] (1000) | 150 [10.0] (1000) | 150 [10.0] (1000) | 150 [10.0] (1000) | 75 [5.0] (500) | 50 [3.5] (350) | 37.5 [2.6] (260) | 30 [2.0] (200) |
| Maximum Supply Pressure | psig [BAR] (kPa) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) | 250 [17.0] (1700) |
| Flow Capacity SCFM, (m3/HR) | 100 psig, [7.0 BAR], (700kPa) supply, 20 psig, [1.5 BAR], (150 kPa) output. | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) | 45 (76.5) |
| Exhaust Capacity SCFM, (m3/HR) | Downstream Pressure 5 psig, [.35 BAR], (35 kPa) above output pressure set point of 20 psig, [1.5 BAR], (150 kPa). | 11 (18.7) | 11 (18.7) | 11 (18.7) | 7.5 (12.8) | 7.5 (12.8) | 7.5 (12.8) | 11 (18.7) | 11 (18.7) | 7.5 (12.8) | 7.5 (12.8) |

Mounting Bracket

EB-09921 (sold separately)

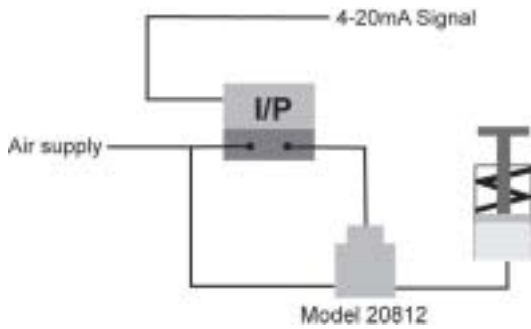


Performance Specifications

| Ratio | SIGNAL:OUTPUT | | | | | | | | | | |
|--|---|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--|
| | 1:1 | 1:2 | 1:3 | 1:4 | 1:5 | 1:6 | 2:1 | 3:1 | 4:1 | 5:1 | |
| Sensitivity (water column) | 1/4" (.64cm) | 1/2" (1.27cm) | 3/4" (1.9cm) | 1" (2.54cm) | 1-1/4" (3.18cm) | 1-1/2" (3.8cm) | 1/2" (1.27cm) | 1/2" (1.27cm) | 3/4" (1.9cm) | 3/4" (1.9cm) | |
| Ratio Accuracy % of 100 psig, [7.0 BAR], (700kPa) output span. | 1.0 | 1.0 | 1.0 | 2.0 | 2.0 | 2.0 | | | | | |
| % of output span with [7.0 BAR], (700kPa) input span. | | | | | | | 2.0 | 2.0 | 2.0 | 2.0 | |
| Supply Pressure Effect for change of 100 psig, [7.0 BAR], (700kPa). | psig [BAR] (kPa) | 0.10 [.007] (0.7) | 0.20 [.014] (1.4) | 0.30 [.021] (2.1) | 0.40 [.028] (2.8) | 0.50 [.034] (3.4) | 0.60 [.041] (4.1) | 0.10 [.007] (0.7) | 0.10 [.007] (0.7) | 0.10 [.007] (0.7) | |
| Ambient Temperature | °F | (-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) | |
| | (°C) | (-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) | |
| Materials of Construction | | Body & Housing Aluminum | | | | | | | | | |
| | | Trim Zinc Plated Steel, Brass | | | | | | | | | |
| | | Diaphragm Nitrile on Dacron Fabric | | | | | | | | | |

Typical Application

In this application, a Volume Booster is used with an I/P Transducer to electronically control cylinder position.



Installation

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

Catalog Information

| | | | | | |
|-----------------------|----------------------------------|-------|----------------------|----------------------|----------------------|
| Catalog Number | 208 | - | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 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 ² | ..... |  |  | A |
| | Tapped Exhaust ¹ | ..... |  |  | E |
| | BSPP (Parallel) ⁵ | ..... |  |  | H |
| | By-Pass Valve ⁴ | ..... |  |  | I |
| | Viton Elastomers | ..... |  |  | J |
| | Non-Relieving ¹ | ..... |  |  | N |
| | BSPT (Tapered) | ..... |  |  | U |
| | Negative Bias ^{1,3} | ..... |  |  | Y |

¹ For 1:1, 1:2, 1:3, 2:1, & 3:1 Ratios Only.

² Maximum Supply Pressure – 75 psig, [5.0 BAR], (500 kPa). For 1:1 Ratio Only.

³ Negative Bias Fixed at 3.5 psig + 0.5 psig.

⁴ Not Available with Y Option. For 1:1 Ratio Only.

⁵ BSPP Threads in Inlet & Outlet Ports Only. Others BSPT.

