

Features



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

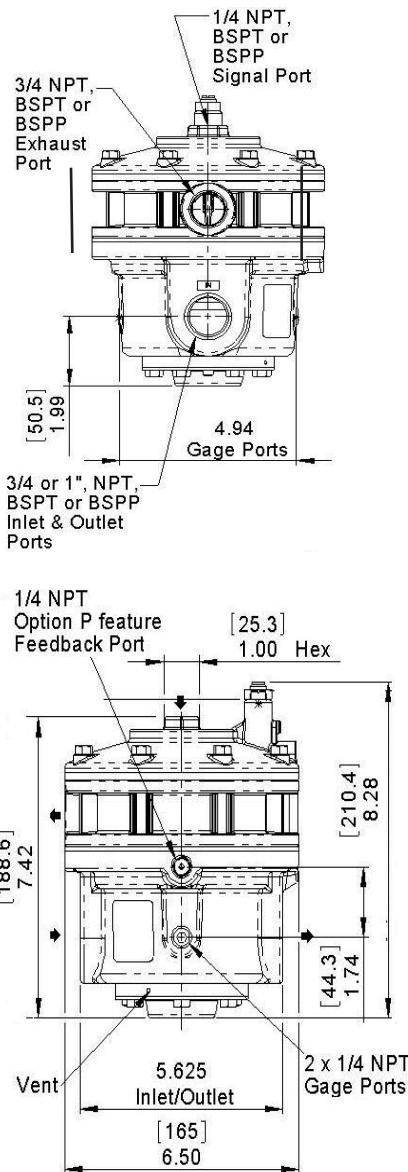
- Fixed deadband between the operation of the supply valve and exhaust valve for accurate and stable valve positioning.
- Integral bypass needle valve to optimize response time and stability.
- Soft seat supply and exhaust valves for leak free operation and prevent hunting with feed & bleed positioners
- Pressure balanced supply valve maintains deadband specification.
- Damped diaphragm control chamber protects valves from damaging oscillation.
- Two accessory ports connected to the outlet chamber.
- Tapped exhaust port for exhaust air or for incorporation of a silencer.
- Canadian Registration Number (CRN) Certification for all territories and provinces

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.

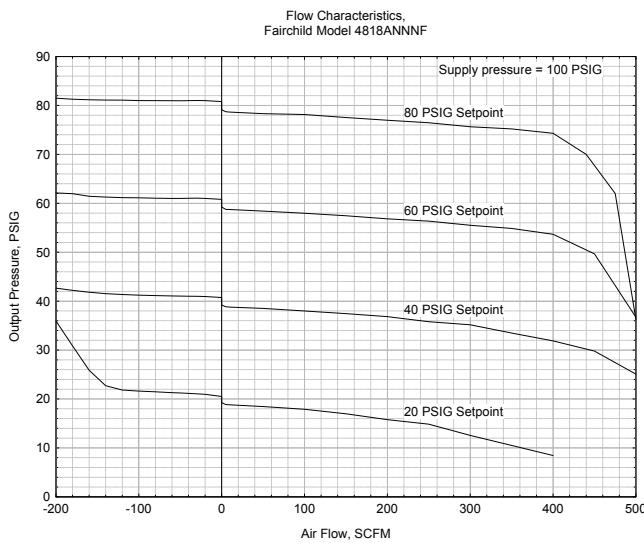
Operating Principles

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



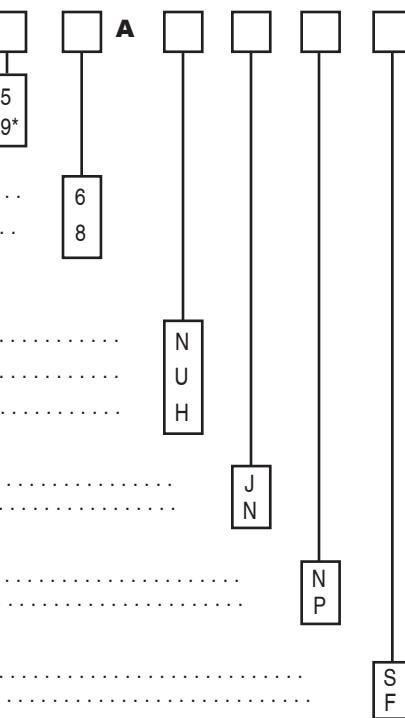
Specifications (1:1 Ratio)

| | | | | | | |
|---|--|------------|------------|--|--|--|
| Maximum Output Pressure | 150 psig [10.0 BAR] 1000kPa | | | | | |
| Maximum Supply Pressure | 250 psig [17.0 BAR] 1700kPa | | | | | |
| Flow Coefficient Chart | | | | | | |
| Flow Option | Port Size | Forward Cv | Exhaust Cv | | | |
| 5 | 3/4" or 1" | 5 | 5 | | | |
| 9 | 1" | 9 | 9 | | | |
| Flow Capacity @ 100 psig, (700 kPa) supply, 20 psig, [1.5 BAR], (150 kPa) setpoint. | | 500 SCFM | 850 m3/hr | | | |
| Exhaust Capacity | @ Downstream Pressure 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint. | | | | | |
| Ratio Accuracy | % of 100 Psi output psig. 0.5% | | | | | |
| Supply Pressure Effect | for 100 psi [7 BAR] 700 kPa change in supply | | | | | |
| 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 | | | | | |
| Diaphragm | Nitrile on Dacron | | | | | |
| Mounting Bracket | 21363-1 | | | | | |

Catalog Information

Catalog Number 48

Flow Capacity
Cv (Forward and Exhaust)



Port Size

3/4"

1"

Port Thread

NPTF

BSPT

BSPP

Elastomer

Fluorocarbon

Nitrile

Remote Pressure Sensor

No Feedback Port

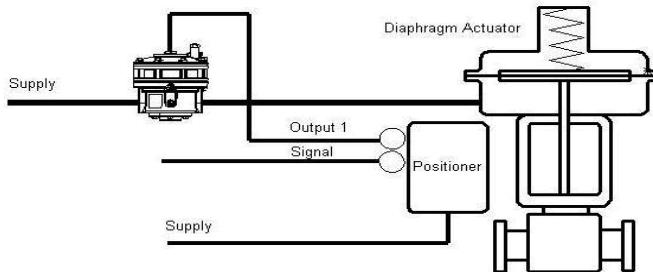
Feedback Port

Trim

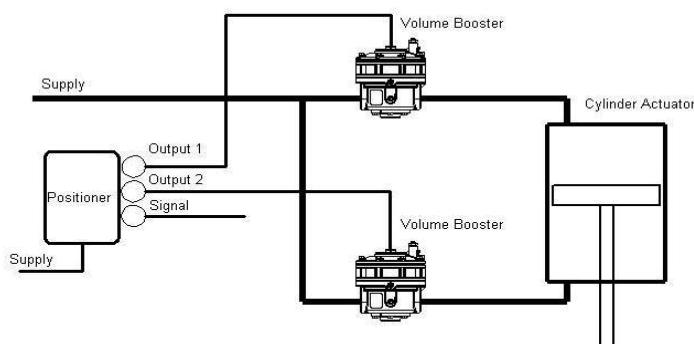
Stainless Steel

Zinc Plated Steel

* Cv of 9 with 1" ports only; 4896 version will have Cv of 7.



Typical Volume Booster with
Single Acting Positioner and Diaphragm Actuator



Typical Volume Booster with
Double Acting Positioner and Cylinder Actuator