

# Model 4900A Pneumatic Volume Booster



**Model  
4900A**

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.
- High capacity exhaust valve provides efficient dynamic reverse flow.
- 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.
- 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
- Tapped exhaust port for exhaust or for incorporation of a silencer.
- 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.

**INSTRUMENTS • CONTROLS • VALVES**

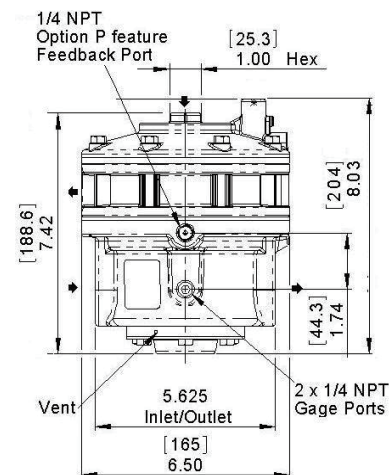
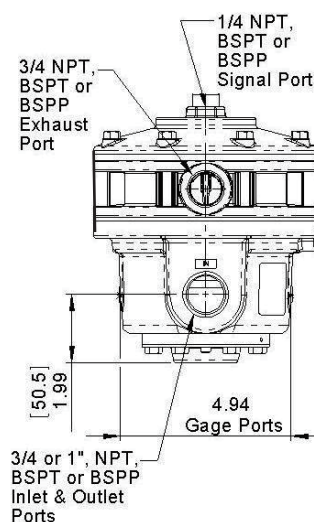
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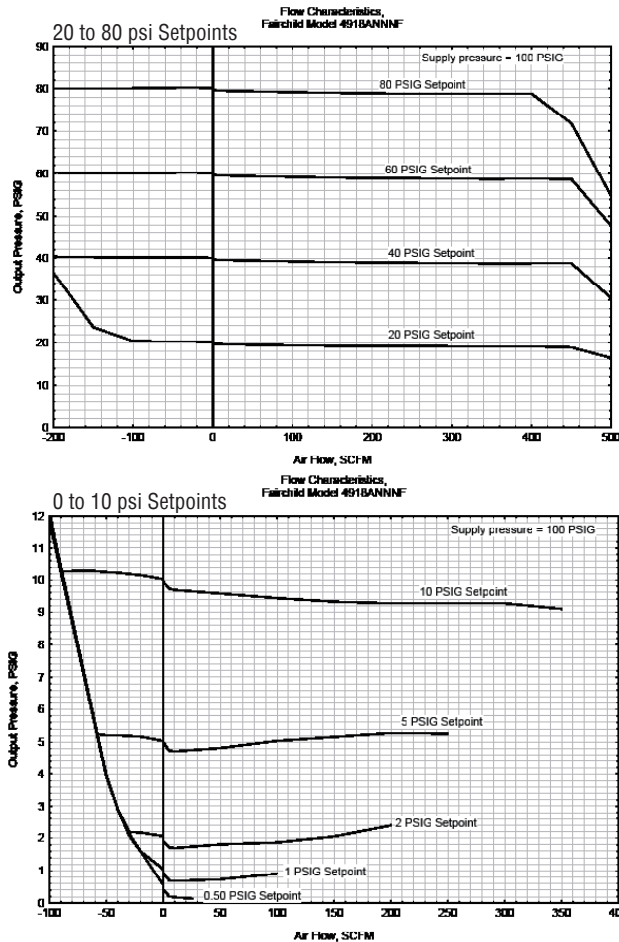
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## Technical Information



## 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  
 Diaphragm . . . . . Nitrile on Dacron

## Catalog Information

**Catalog Number** 49   **A**

**Ratio**  
 1:1 . . . . .  1

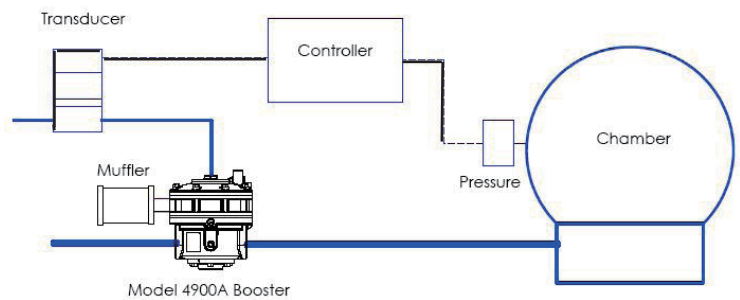
**Port Size**  
 3/4" . . . . .  6  
 1" . . . . .  8

**Port Thread**  
 NPTF . . . . .  N U H  
 BSPT . . . . .  J N  
 BSSP . . . . .  N P

**Elastomer**  
 Fluorocarbon . . . . .  S F  
 Nitrile . . . . .

**Remote Pressure Sensor**  
 No Feedback Port . . . . .   
 Feedback Port . . . . .

**Trim**  
 Stainless Steel . . . . .   
 Zinc Plated Steel . . . . .



Chamber Pressure Control

## Installation

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