

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.

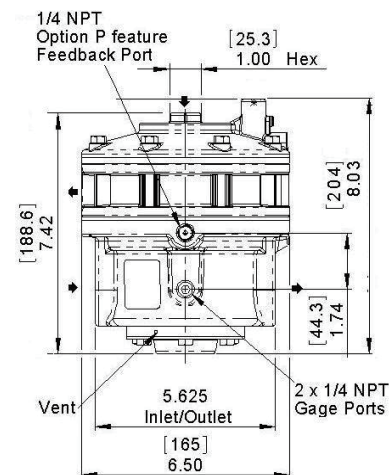
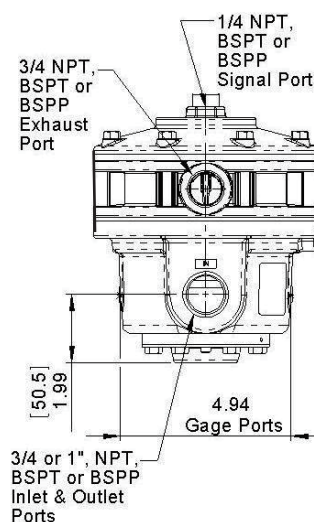
Features

- 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

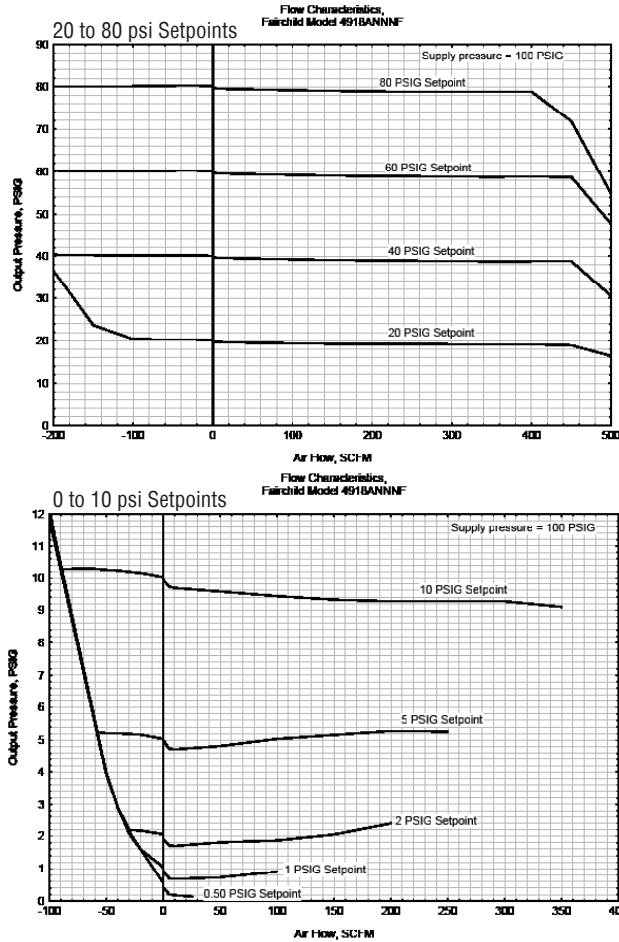
Operating Principles

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.



Technical Information



Specifications (1:1 Ratio)

Maximum Output Pressure	150 psig [10.0 BAR] 1000kPa
Maximum Supply Pressure	250 psig [17.0 BAR] 1700kPa
Cv	9 (Forward) 9 (Exhaust)
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.	100 SCFM 170 m3/hr
Ratio Accuracy % of 100 Psi output span.	0.5%
Supply Pressure Effect for 100 psi [7 BAR] 700 kPa change in supply	0.10 psi [.007 BAR] 0.7 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
 Trim Zinc Plated Steel
 Diaphragm Nitrile on Dacron

Catalog Information

Catalog Number 49 **A**

Ratio
 1:1 1

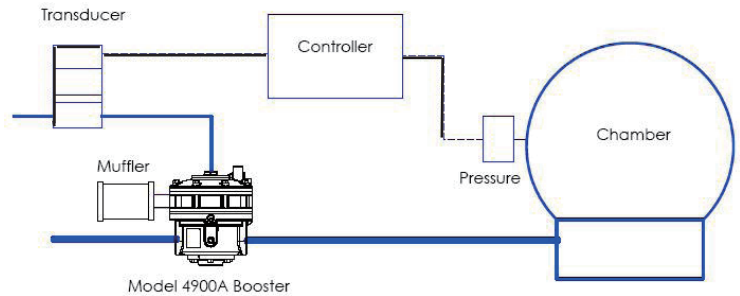
Port Size
 3/4" 6
 1" 8

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.