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 providing excellent pressure control.
- High capacity exhaust valve provides efficient dynamic reverse flow characteristics.
- 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 when supply pressure changes.
- 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 provide convenient access to the outlet for additional control accessories and pressure monitoring.
- Tapped exhaust port for collecting exhaust air or for incorporation of a silencer.

**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**

**Catalog Information**

**Catalog Number** 49

**Ratio**
1:1

**Port Size**
3/4"

**Port Thread**
NPT
BSPT
BSPP

**Elastomer**
Fluorocarbon
Nitrile

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

**Trim**
Stainless Steel
Zinc Plated Steel

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**Specifications (1:1 Ratio)**

- **Maximum Output Pressure**: 150 psig [10.0 BAR] 1000 kPa
- **Maximum Supply Pressure**: 250 psig [17.0 BAR] 1700 kPa
- **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 [0.007 BAR] 0.7 kPa
- **Ambient Temperature**: -40°F to 200°F, (-40°C to 93.3°C)

**Installation**

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