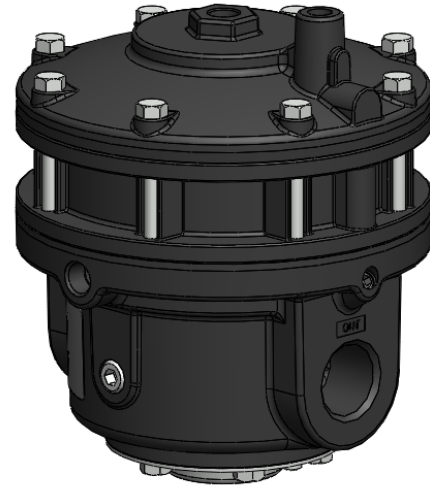


# FAIRCHILD MODEL 4900A PRECISION PNEUMATIC VOLUME BOOSTER

## Installation, Operation and Maintenance Instructions

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.



The Model 4900A volume booster is a rugged precision instrument with key features providing reliable, efficient and stable operation. These include:

- 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.

**Table 1. Specifications**

250 psig 17 Bar 1700 kPa	Maximum Supply Pressure
150 psig 10 Bar 1000 kPa	Maximum Signal Pressure
1:1 +/- 0.5% @ 100 psig Signal	Ratio Accuracy
<0.10 in WC	Sensitivity
-40 to 180°F -40 to 80°C	Ambient Temperature Limits
0.15 psig 0.01 bar 1 kPa	Nominal Deadband
Signal - 1/4" Inlet & Outlet - 3/4", or 1" Exhaust - 3/4" Accessory - 1/4"	Connection Sizes
NPT, BSPT or BSPP	Connection Thread
Supply Valve - 9.0 Exhaust Valve - 9.0 Bypass Valve - 0.75	Maximum Cv
9.5 lb. 4.3 Kg	Weight

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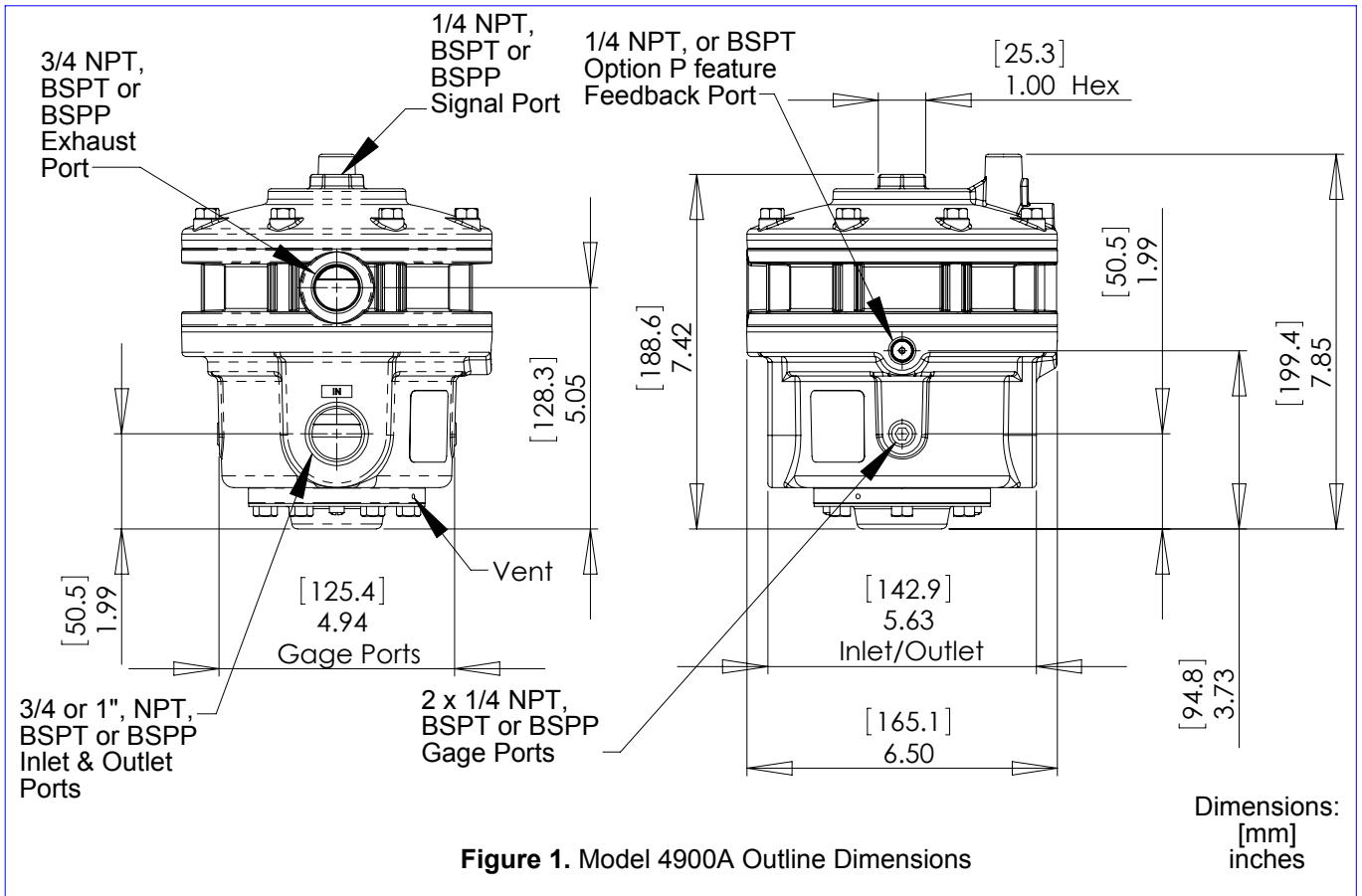


Figure 1. Model 4900A Outline Dimensions

**Table 2. Material of Construction**

Body	Die Cast Aluminum
Supply & Exhaust Valves	Aluminum/Nitrile Aluminum/Fluorocarbon (Optional)
Seal Plate	Zinc Plated Steel
Seats	Aluminum
Diaphragms	Nitrile on Polyester Fluorocarbon on Polyester (Optional)
Seals	Nitrile Fluorocarbon (Optional)
Springs	Stainless Steel
Fasteners	Zinc Plated Steel Stainless Steel (Optional)

### Installation

You can mount the booster in any position without affecting its operation.

Clean all pipelines to remove dirt and scale before installation.

Apply a minimum amount of pipe compound to the male threads of the fitting only. **Do Not use Teflon tape as a sealant.** Start with the third thread back and work away from the end of the fitting to avoid contaminating the booster. install the booster in the air line.

The Inlet and Outlet are labeled "IN" and "OUT". Tighten all connections securely. Avoid oversized fittings that will limit the flow through the booster. For more information, see Figure 1.

**CAUTION - Exhaust Port Restriction**  
Excessive exhaust restriction can damage the diaphragms and valves within the volume booster. High flow capacity exhaust silencers and full size exhaust piping must be used to limit back pressure during the exhaust cycle operation.

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## Model 4900A Typical Applications

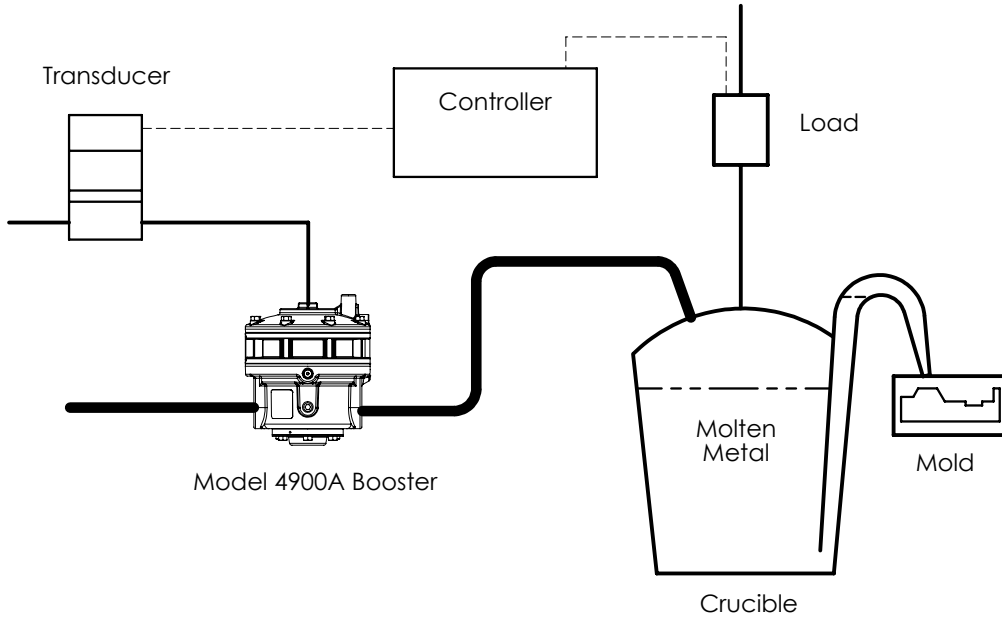


Figure 2. Automated Crucible Despensing

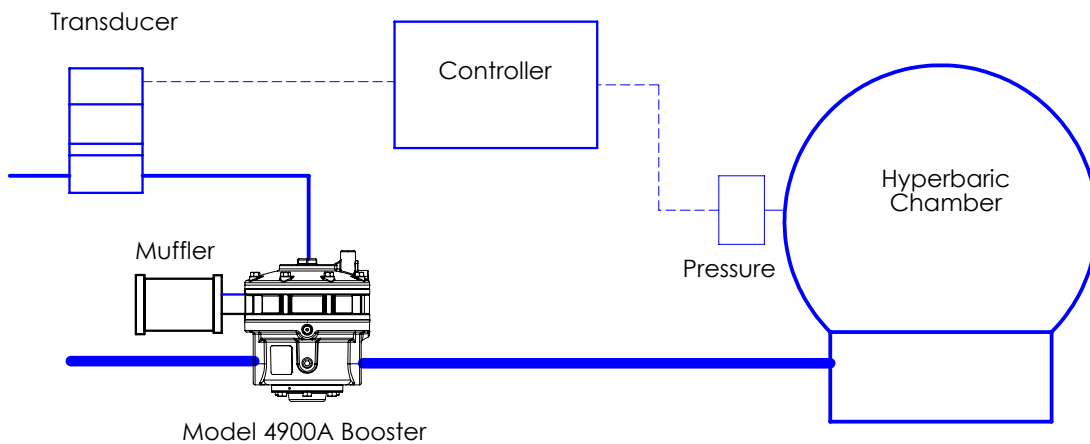


Figure 3. Hyperbaric Chamber Pressure Control

# MAINTENANCE

**WARNING** Shutting off air supply to the volume booster and adjacent equipment can create dangerous system conditions.

To clean the Model 4900A, use the following steps:

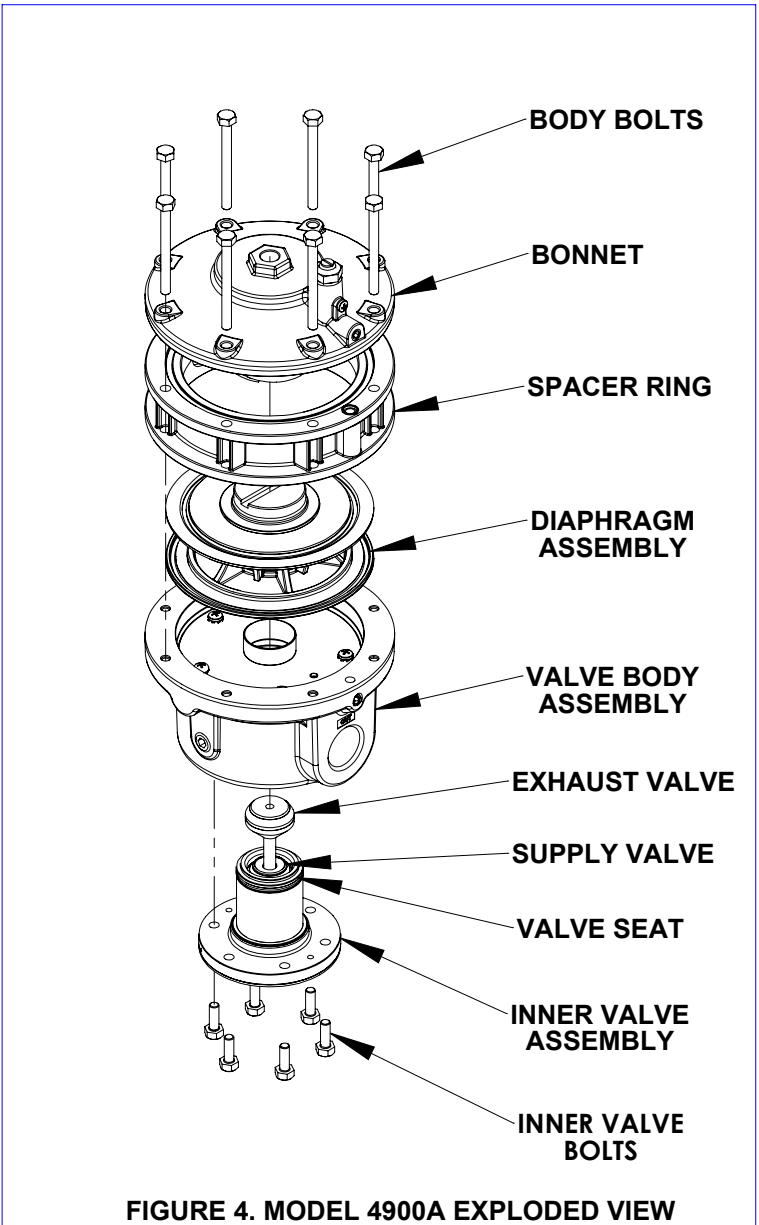
1. Shut off system pressure to the booster and carefully relieve the pressure in all connected lines. It is not necessary to remove the booster from the air line.
2. Remove the six Bolts from the bottom of the unit. For more information, see Figure 4.
3. Remove the Inner Valve Assembly. The Valve Assembly will extract freely for about 1". The Assembly must then be pulled out of the Valve Body to unseat the Valve Seat. For more information, see Figure 4.
4. Wash the Inner Valve Assembly with a solvent. Exercise care to prevent damage to diaphragms and valve facings. **Avoid solvents such as acetone, carbon tetrachloride and trichloroethylene.**
5. Lubricate the o-rings and replace the Valve Assembly carefully. Ensure that the Vent in the exterior part of the Inner Valve Assembly is clear. For more information, see Figure 4.

### Trouble shooting

Problem	Source	Solution
Leakage	Body Bolts	Tighten the Body Bolts
High Bleed	<ul style="list-style-type: none"> <li>• Relief Valve</li> <li>• Supply Valve</li> <li>• Supply Seat</li> </ul>	<ul style="list-style-type: none"> <li>• If contaminated, clean the source and Body.</li> </ul>
	<ul style="list-style-type: none"> <li>• Diaphragm Assembly</li> </ul>	<ul style="list-style-type: none"> <li>• If damaged, install the service kit.</li> </ul>

**NOTE:** If the standard maintenance procedure does not correct the problem, install the appropriate service kit.

- 21151-1N 1:1 Ratio, Nitrile Elastomer
- 21151-1J 1:1 Ratio, Fluorocarbon Elastomer



**FIGURE 4. MODEL 4900A EXPLODED VIEW**

### LEGAL NOTICE:

The information set forth in the foregoing Installation, Operation and Maintenance Instructions shall not be modified or amended in any respect without prior written consent of Fairchild Industrial Products Company. In addition, the information set forth herein shall be furnished with each product sold incorporating Fairchild's unit as a component thereof.



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