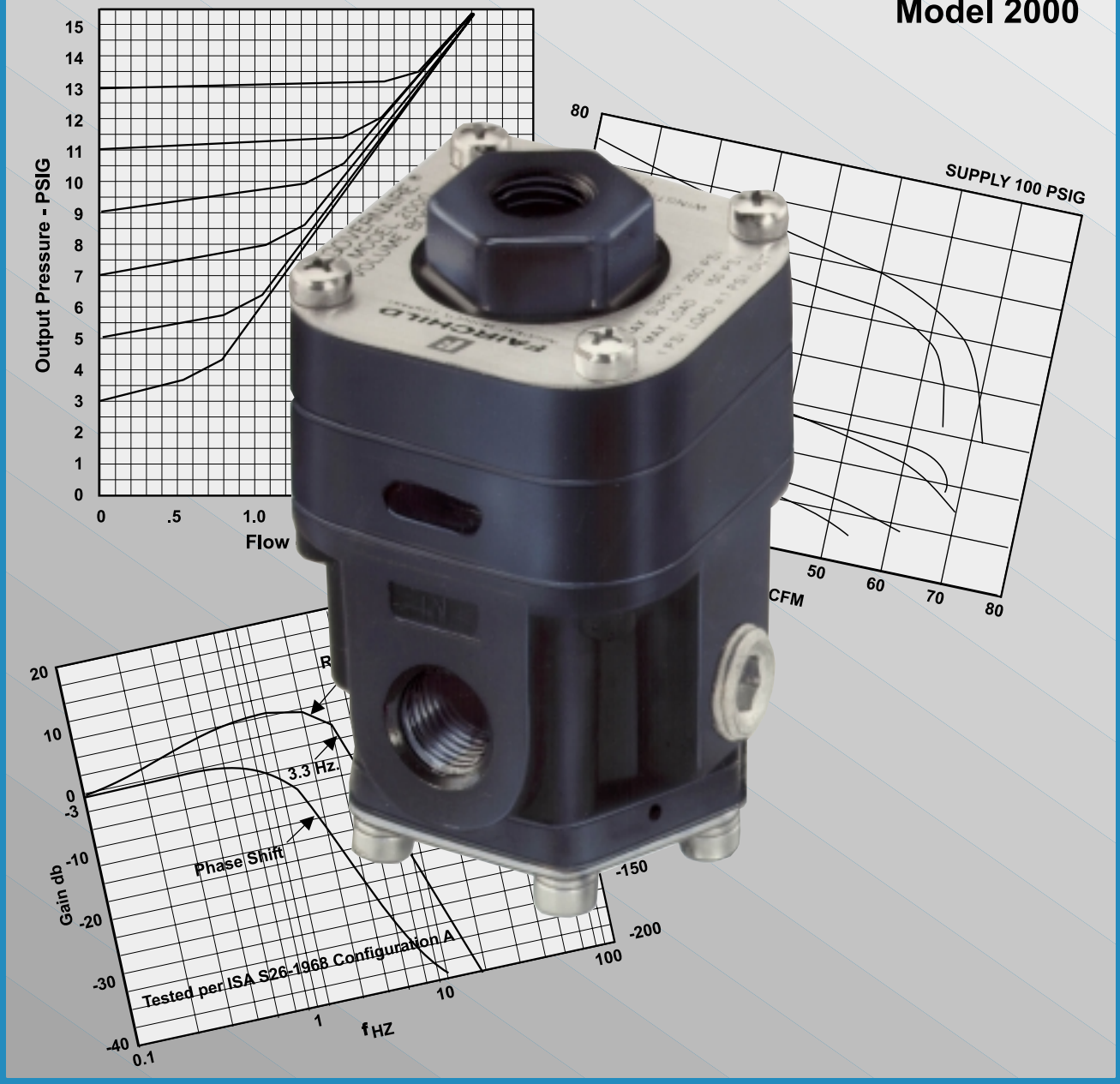
FAIRCHILD

PNEUMATIC VOLUME BOOSTER

Model 2000



FAIRCHILD
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CROSS SECTION

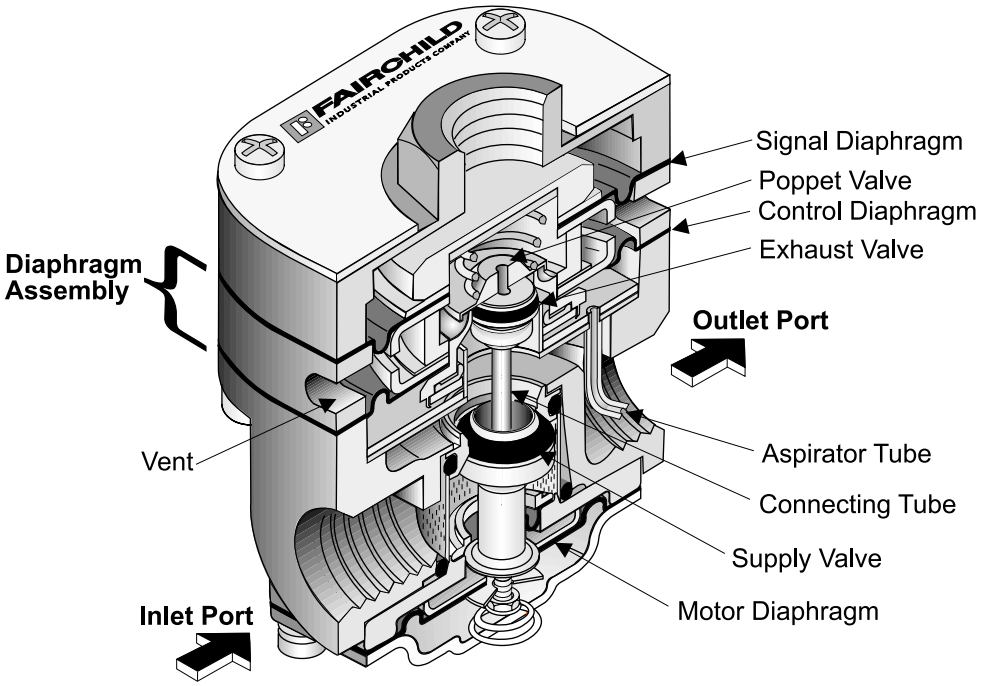

Figure 1. Model 2000 Detail Drawing

GENERAL INFORMATION

The Model 2000 Pneumatic Volume Booster converts a low flow signal to a high flow output. It is ideally suited for a variety of applications including the operation of air systems that require rapid valve or cylinder action.

The Model 2000 has the following features:

- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube minimizes downstream pressure droop under flow conditions.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Seats minimize air consumption.
- Small signal volume assures rapid response to pressure variation.
- A separate Control Chamber isolates the Diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the unit without removing it from the line.

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. For more information, see Figure 1.

OUTLINE DIMENSIONS

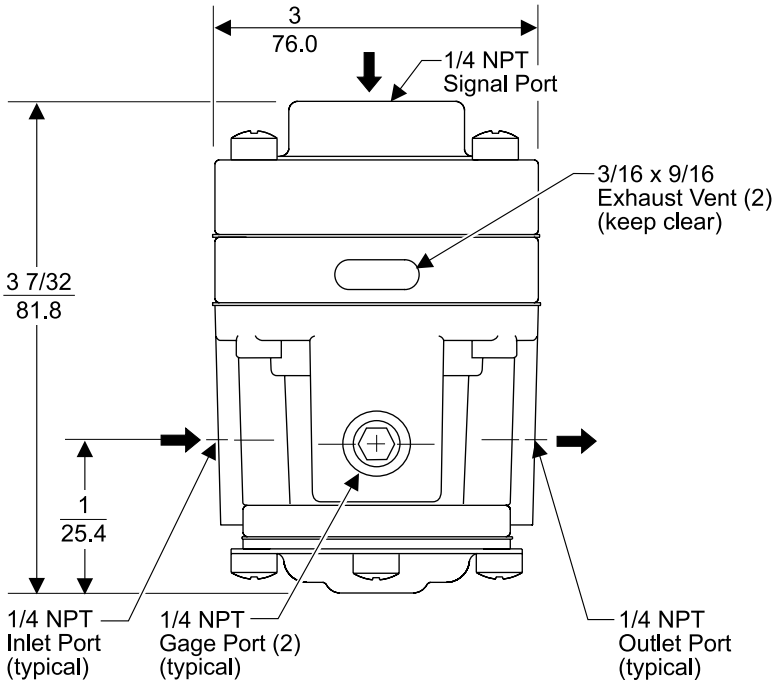

Figure 2. Model 2000 Outline Dimensions

SPECIFICATIONS

FUNCTIONAL SPECIFICATIONS

	Ratio 1:1	1:1.6
Maximum Supply Pressure	250 psig [17.0 BAR] (1700 kPa)	250 psig [17.0 BAR] (1700 kPa)
Maximum Signal or Output Pressure	150 psig [10.0 BAR] (1000 kPa)	150 psig [10.0 BAR] (1000 kPa)
Flow Capacity (SCFM)	40 (68 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) supply & 20 psig, [1.5 BAR], (150 kPa) setpoint.	
Exhaust Capacity (SCFM)	16 (27.2 m^3/HR) where downstream pressure is 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint.	
Ambient Temperature	-40^0 F to $+200^0$ F (-40^0 C to $+93^0$ C)	

PERFORMANCE SPECIFICATIONS

Sensitivity	Less than 1" (2.54 cm) Water Column.
Supply Pressure Effect	Less than 0.1 psig, [.007 BAR], (.7 kPa) for 100 psig, [7.0 BAR], (700 kPa) change in supply pressure.

Materials of Construction

Body and Housing . . . . . Zinc

Diaphragms . . . . . Nitrile on Dacron

TYPICAL APPLICATION

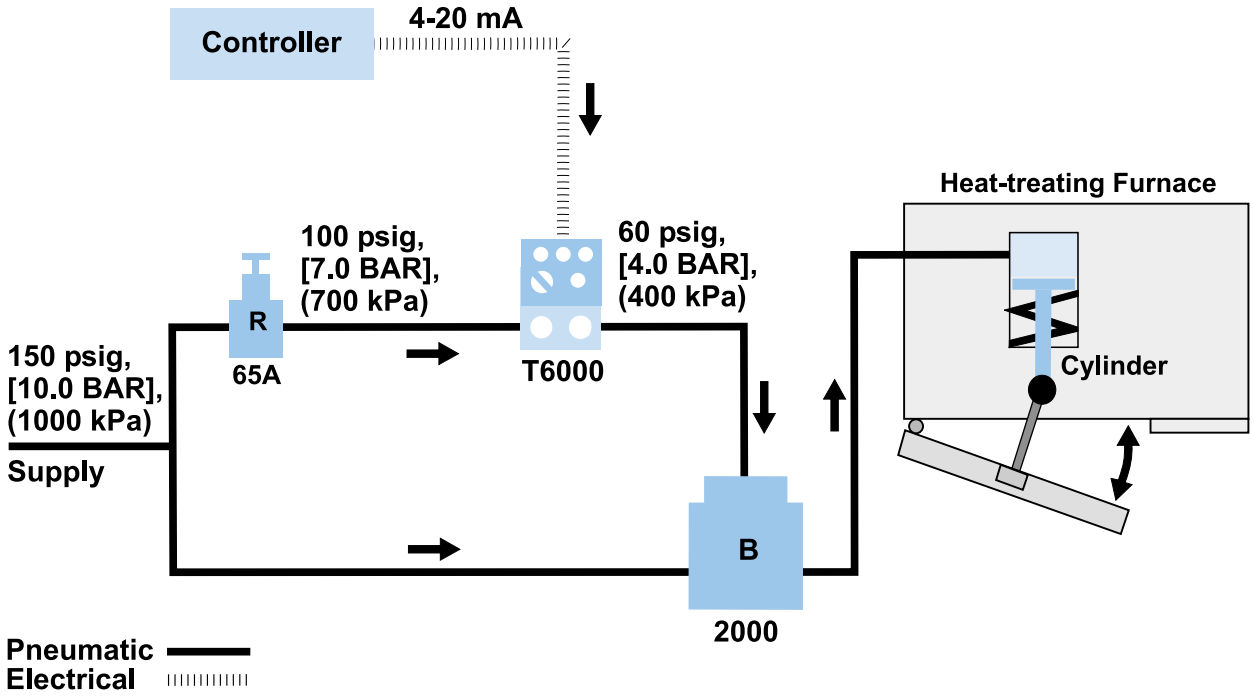

Figure 3. Model 2000 Heat-treating Furnace Application

TYPICAL APPLICATION

The Model 2000 opens and closes the door on a heat-treating furnace. An electronic controller transmits a 4-20 mA signal to the T6000 I/P transducer. A 150 psig air supply is piped directly to the Model 2000 booster. The Model 65A regulator reduces the air supply to 100 psig to the Model T6000 transducer. The transducer sends an output signal to the Model 2000 booster. The booster provides output pressure that extends the arm on the cylinder to close the furnace door. When the heat-treating cycle completes, the signal to the transducer reduces. The reduced signal lets the cylinder arm retract to open the furnace door. For more information, see Figure 3.

INSTALLATION

For installation instructions, see the *Model 2000 Pneumatic Volume Booster IOM,* **IS-20002000.**

ORDERING INFORMATION

Catalog Number **20** ☐ ☐ ☐

Ratio

1:1	**(1)**
1:1.6	**(0)**

Pipe Size

1/4" NPT	**(2)**
3/8 " NPT	**(3)**

Option

BSPT (Tapered)	**(U)**

ISO 9002 Certified

FAIRCHILD
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CS-20002000
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Rev. L 1/01