



# Installation, Operation and Maintenance Instructions

## TYPE-6100 High Flow Capacity Volume Booster

The Type-6100 volume booster is a 1:1 signal to output relay that is utilized in applications that require high forward flow and exhaust capacities. Typically used to increase throttling speed of large volume valve actuators. Suitable for either diaphragm or piston actuators. A fixed deadband and adjustable bypass valve combine to allow small incremental downstream adjustment without opening the main booster valve. The bypass valve is used to adjust dynamic response to provide stable operation over a wide range of actuator sizes.

### 1. SPECIFICATIONS

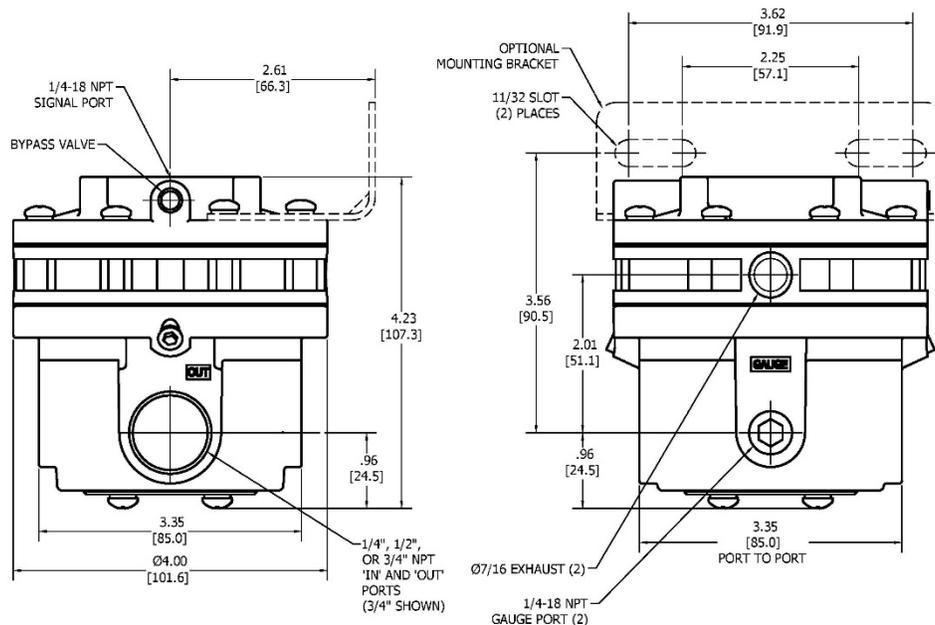
#### Functional Specifications

<b>Signal / Output Ratio</b>	1:1		
<b>Supply Pressure</b>	250 psig (17.0 bar) maximum		
<b>Signal Pressure</b>	150 psig (10 bar) maximum		
<b>Maximum Flow Coefficients (Cv)</b>	<b>Port</b>	<b>Forward</b>	<b>Exhaust</b>
	3/4"	5.0	3.5
	1/2"	4.5	3.5
	1/4"	2.0	2.5
<b>Exhaust Capacity</b> 5 psig (0.35 bar) above 20 psig (1.38 bar) setpoint	3/4"	80 scfm (2,264 NL/min)	
	1/2"	75 scfm (2,123 NL/min)	
	1/4"	35 scfm (991 NL/min)	
<b>Output Accuracy</b>	1.0% of a 100 psig (7.0 bar) output span		
<b>Sensitivity</b>	1"H <sub>2</sub> O (2.54 cm)		
<b>Deadband</b>	Under 0.2 psig (0.01 bar)		
<b>Supply Pressure Effect</b>	0.1 psig (0.007 bar) for a 25 psig (1.7 bar) change		
<b>Temperature Limits</b>	-40 to 200° F (-40 to 93° C)		

#### Physical Specifications

<b>MATERIALS</b> <b>Housing:</b> <b>Bolting:</b> <b>Other Trim:</b> <b>Internal Components:</b> <b>Elastomers:</b>	Aluminum Zinc Plated Steel Aluminum Aluminum Nitrile
<b>Weight</b>	2.5 lbs (1.13 kg)
<b>Signal Port</b>	1/4" NPT
<b>Supply / Output Ports</b>	1/4", 1/2", or 3/4" NPT
<b>Exhaust Ports (2)</b>	Ø 7/16" or 1/4" NPT option
<b>Gauge Ports (2)</b>	1/4" NPT

## 2. DIMENSIONAL DRAWING



(Drawing downloads available at <http://www.controlair.com>)

## 3. INSTALLATION



**WARNING:** Only qualified personnel should install or service a volume booster. Volume Boosters should be installed, operated, and maintained in accordance with international and applicable codes and regulations, and ControlAir instructions. If the booster vents fluid or a leak develops in the system, it indicates that service is required. Failure to take the booster out of service immediately may create a hazardous condition. Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this booster is over pressured or is installed where service conditions could exceed the limits given in the Specifications section, or where conditions exceed any rating of the adjacent piping or piping connections. To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation, or standard) to prevent service conditions from exceeding limits. Additionally, physical damage to the booster could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the booster in a safe location.

### 3.1 Pre-Installation Requirements

- 3.1.1 The Type-6100 requires a source of clean, oil-free dry instrument grade air filtered to 40 microns.
- 3.1.2 Air should be free of all contaminants and hazardous gases, flammable or toxic.
- 3.1.3 Clean all pipelines of dirt and scale prior to installation.

#### NOTE

**Failures attributable to instrument air supply contamination are not covered by the warranty.**

#### CAUTION

**This instrument vents to atmosphere. The use of supply gas other than air can create a hazardous environment.**

- 3.1.4 Apply a minimum amount of pipe compound to the male threads of the fitting only. Do not use thread sealant tape on pipe fittings as it tends to contaminate the valve causing the booster to malfunction.

## 3.2 Installation

3.2.1 Install the booster so that direction of flow is from Inlet to Outlet as labeled "IN" and "OUT" marked on the body. Inlet and outlet porting is 1/4", 1/2" or 3/4" NPT. The signal port is 1/4" NPT. Tighten all connections securely.

3.2.2 Booster can be mounted in any position and is typically nipple-mounted between the pneumatic supply source and the actuator. See Figure 2 for typical installation illustrations.

### CAUTION

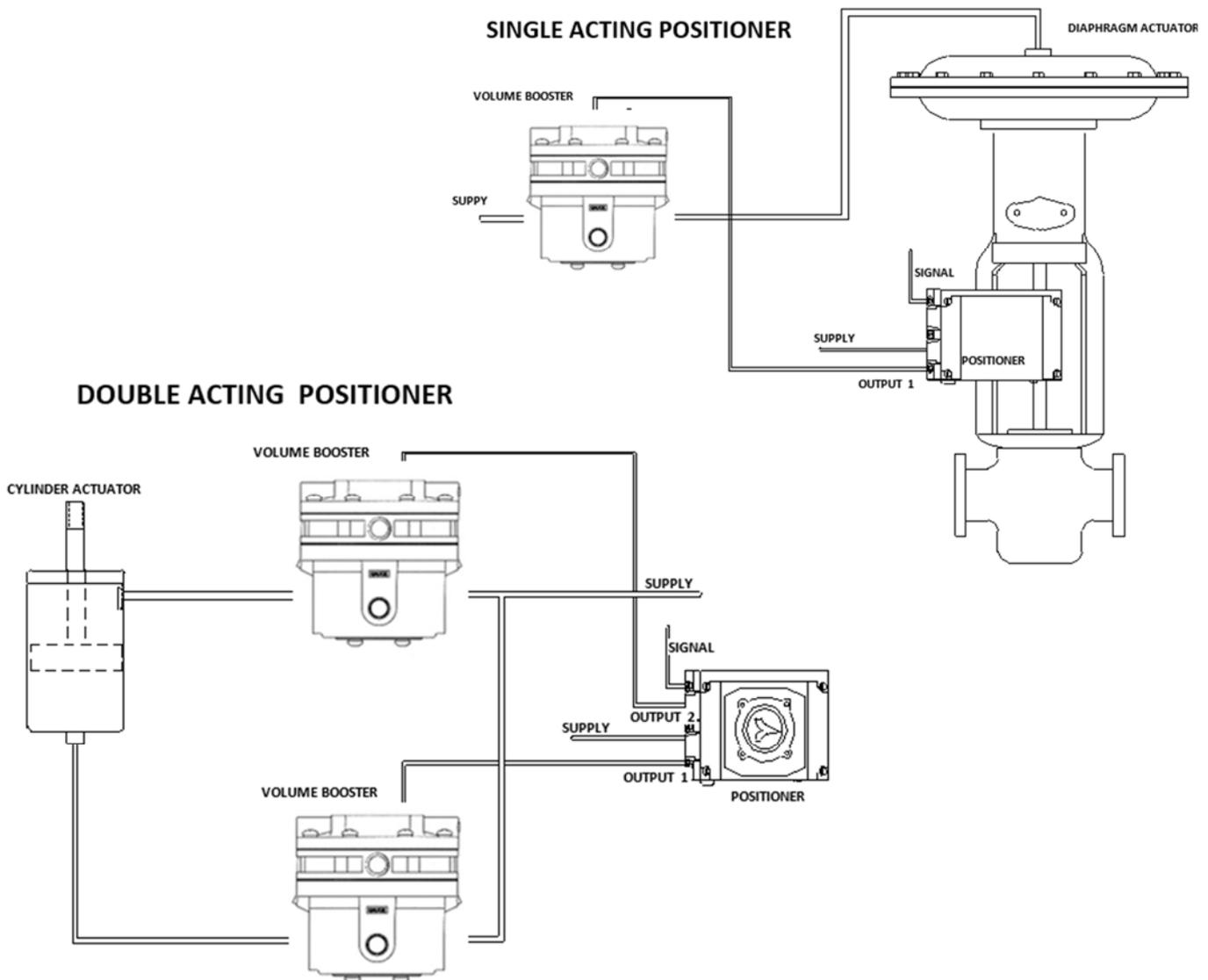
*Do not use separate pressure supplies for the volume booster and associated positioner as this may prevent the booster from exhausting immediately when there is loss of positioner supply pressure, but not loss of booster supply pressure.*

3.2.3 Ensure that piping to and from the booster is of proper size to meet the capacity demands of the booster and that the downstream actuator has properly sized input connections so as not to limit flow.

### CAUTION

*Keep exhaust port free of any obstructions. Excessive exhaust restriction can damage the booster. High flow capacity exhaust silencers and full size exhaust piping must be used to limit back pressure during the exhaust cycle in operation.*

Figure 2 – Typical Installations



## 4. OPERATION

- 4.1 Prior to applying supply pressure to the booster, open the bypass valve approximately one turn by turning counter clockwise. After applying supply pressure, note response of actuator to open and close commands from the positioner. If excessive overshoot or hunting is seen, open bypass valve until stable operation is obtained. If valve becomes too slow to react to signal change from the positioner, close needle valve until more responsive.

Turning the bypass valve clockwise (closing) speeds response but can lead to instability. Turning the bypass valve counter clockwise (opening) aids stability but will slow down the actuator's response. Proper setting provides stable operation and acceptable response time.

## 5. MAINTENANCE AND REPAIRS

### NOTE

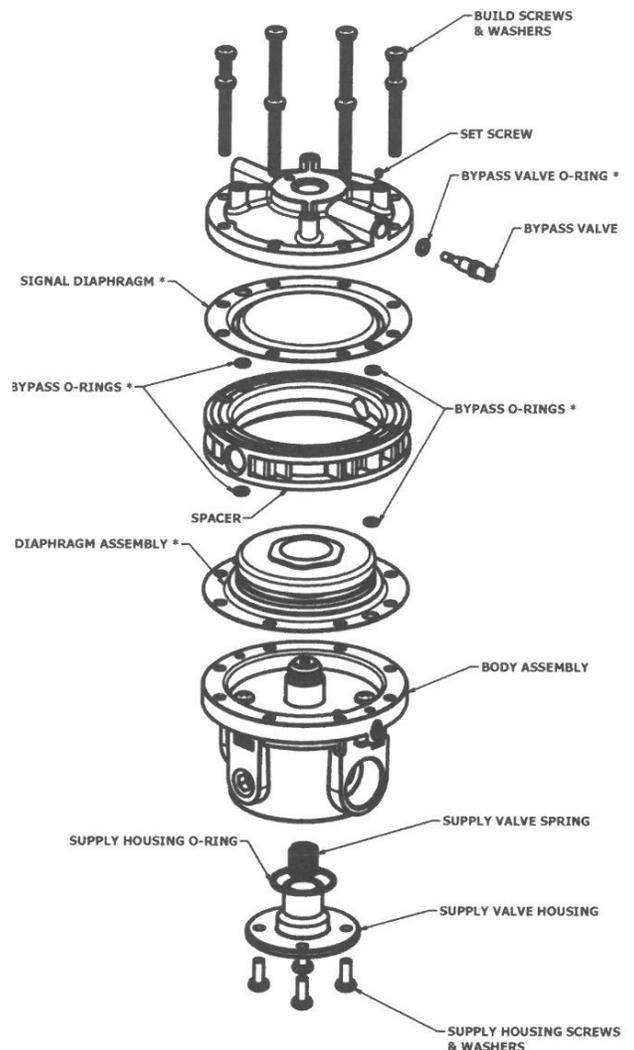
*Under normal circumstances, no maintenance should be required.*

### 5.1 Repairs

- 5.1.1 In the event of unit failure, the Type-6100 can be returned to the factory through point of purchase for warranty repair if the warranty period has not expired.
- 5.1.2 All units returned for repair must be authorized prior to receipt at the factory. Contact a representative at the point of purchase to receive a Return Authorization Number
- 5.1.3 Repair kit for the Type-6100 is available.

Repair Kit P/N: 449-871-138

Repair Kit includes: \* Items



## 6. WARRANTY & DISCLAIMER

ControlAir, Inc. products are warranted to be free from defects in materials and workmanship for a period of eighteen months from the date of sale, provided said products are used according to ControlAir, Inc. recommended usages. ControlAir, Inc.'s liability is limited to the repair, purchase price refund, or replacement in kind, at ControlAir, Inc.'s sole option, of any products proved defective. ControlAir, Inc. reserves the right to discontinue manufacture of any products or change products materials, designs or specifications without notice. Note: ControlAir does not assume responsibility for the selection, use, or maintenance of any product. Responsibility for the proper selection, use, and maintenance of any ControlAir product remains solely with the purchaser and end user.

### WARNING

*These products are intended for use in industrial compressed-air systems only. Do not use these products where pressures and temperatures can exceed those listed under Specification.*