



**Mensor Model 73  
Shop Air Booster System  
(750 psi Version)  
April 23, 2012**

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# **Operation Manual Mensor Model 73 Shop Air Booster System**

## **GENERAL INFORMATION**

The Mensor Model 73 Shop Air Pressure Booster generates 325 psi to 750 psi using a 70 psi to 150 psi clean dry shop air source. The Model 73 consists of a single 5 to 1 pressure boost stage with limits for speed control and maximum output pressure control. To achieve the 325 psi output, a minimum supply of approximately 70 psi is required. To achieve 750 psi, a 150 psi supply is required. 150 psi is the maximum input pressure the unit should be subjected to. The unit is purely a mechanical device and has no electrical requirements.

## **WARNINGS AND SAFETY PRECAUTIONS**

- Caution: High Pressure Gas can be extremely dangerous if improperly handled.**
- Caution: Unit should be operated, adjusted and maintained by qualified personnel trained in high pressure pneumatics.**
- Caution: All Tubing, Fittings and connected devices must have a working pressure rating equal to or greater than the maximum required pressure.**
- Caution: All connections should be in good mechanical condition, i.e. good threads on fittings, tubing free of kinks or nicks, etc.**
- Caution: All connections should be properly installed and tightened.**
- Caution: Small articles exposed to the escaping gas can be propelled at ballistic speeds to the endangerment of nearby personnel and equipment.**
- Caution: Under certain conditions the noise level created by gas exiting equipment under high pressure can become dangerously high.**
- Caution: The maximum input pressure to the unit is 150 psi gauge pressure. The input regulator and the input filter are rated for 150 psi maximum.**

## **INITIAL SETUP AND CHECKOUT**

On initial setup, user should check to insure no shipping damage has occurred to the unit or the container it was shipped in. Prior to connecting pressure, check all hoses for kinks and nicks and insure fittings are snug. Verify that the regulator filters are not contaminated with

liquid or particulates. User should verify input pressure (shop air) is within the operating range of the booster and within the range of any test device connected prior to applying the input pressure. Although the regulator pressure settings have been set at the factory, the user should on initial application verify the incoming shop air is 150 psi or less and the input pressure gauge on the rear of the unit is approximately 50 psi or less. The black regulator knob should be used to adjust the input pressure either increasing or decreasing the output pressure as appropriate. The front panel gauge shows the actual output pressure value. Once the system is operational, the black regulator knob should be used to set the final output pressure to match the application and the controller full scale. Some final adjustments may be required to compensate for differences in actual supply pressure.

## PORTS, CONTROLS AND ADJUSTMENTS

There are two pressure ports on the rear of the Model 73 chassis. The input pressure port is designed for a shop air supply which functions as the drive pressure as well as the output media. It should be clean dry compressed air (or Nitrogen) at a pressure of 70 to 150 psi. (Absolute Maximum Input Pressure is 150 psi to the rear mounted pressure filter.) This pressure is regulated down to a typical working pressure of 50 to 150 psi. The second pressure port is the HIGH PRESSURE OUTPUT port. It is designed for a typical output pressure of 325 to 750 psi. The mechanical advantage is derived by using differing piston area sizes to generate high pressures. The output equation is :

$$\text{Output Pressure} = \text{Input Pressure} + (\text{Regulated Pressure} * 4)$$

The input port is a 3/8" Swagelok male type tube fitting mounted on the external pressure filter. The Output port is a 1/4" Swagelok male type tube fitting.

### Input Pressure Port

The input pressure port labeled "INPUT PRESSURE" is used to supply and drive the booster and is intended to be connected to a shop air supply of 70 to 150 psi (150 psi max). The port is a 3/8" male Swagelok type tube fitting mounted on the end of a pressure filter. A 200 psi rear mounted panel gauge provides an indication of the regulated shop air pressure input. If shop air is not present on the gauge the user should check to see if the shop air is present on the input port



and the regulator knob is not fully counterclockwise. The input regulator filter provides basic filtering of large particles and liquids. It should periodically be checked for excessive contamination and emptied of liquids. **Note: The input pressure supply should have**

**sufficient capacity (flow) to maintain the input pressure setting.** Failure to do so may cause the booster to short cycle and not be able to achieve the desired output pressure. If external regulators are in line with the shop air supply, make sure that they do not restrict the input flow. Also use large diameter supply hoses (3/8" or larger) is recommended.

### High Pressure Output Port

The output pressure port is a 1/4" male Swagelok type tube fitting. The actual output pressure can be monitored with the pressure gauge located on the front panel. The output pressure is a combination of the raw input supply pressure plus four times the regulated pressure as read on the Regulator Pressure gauge. It can be adjusted with the black Regulator Adjustment Knob.

## OPERATION

While operation of the booster system is quite simple, high pressure gas is dangerous.

**NOTE: Operation of this unit and maintenance of this unit should be performed by qualified personnel only.**

1. Connect a low pressure supply such as shop air to the "INPUT PRESSURE" port. The system requires a minimum of 60 psi to obtain 300 psi output.
2. Connect the load (pressure controller) to the "HIGH PRESSURE OUTPUT" port. Be careful to use tubing rated for the boosted working pressure.
3. Slowly apply shop air to the "INPUT PRESSURE" port while monitoring the "OUTPUT PRESSURE" gauge on the front of the unit.

For most applications, the booster piston temperatures will not be a problem. However, if a particular application causes the booster piston to operate frequently, the high pressure end of the booster cylinder may overheat. Temperatures in the cylinder above 300 degrees F will considerably shorten the life of the piston seal. Temperatures can be minimized by reducing the drive



speed while still maintaining the output pressure, but at a slower recharge rate. The drive speed is adjusted by removing the top cover and adjusting the yellow ball valve lever. The unit is shipped with this lever in the wide open position. Experience has shown, that under all but the most extreme conditions, temperature problems should be of no concern.

## DISCONTINUE OPERATION

To discontinue operation of the booster system:

1. Valve off any pressure going to the “INPUT PRESSURE” port. Disconnect the supply gas if desired. Alternately, the Regulator Pressure knob can be adjusted until the regulator pressure reads zero.
2. With the input pressure shut off, slowly vent the output pressure by cracking the output connector to let the pressure slowly release or by continually cycling the controller between an acceptable control pressure and vent until pressure is drained. Maintain a safe noise level when venting. Wait until the output gauge reads 0 psi before disconnecting the controller or load.

## **TROUBLESHOOTING**

This section provides simple operational checks. The Haskel AAD-5 manual attached contains additional information.

If the unit does not pump...

1. Verify that the “INPUT PRESSURE” has pressure applied.
2. Verify that the regulator pressure knob is slightly open and the Regulator Pressure gauge reads approximately 50 to 150 psi (just not at zero).

If the unit continually cycles after reaching pressure and the temperature of the gas has stabilized or when cycling occurs when not being used....

1. Check for leaks in the system. Use a leak detector to track down and correct the problem.

## **MAINTENANCE**

**NOTE: High Pressure Gas can be dangerous. Maintenance of this unit should be performed by fully qualified personnel only.**

Booster Unit:

The control valve and the pilot valves on the Haskel Booster may occasionally need re-lubrication on units experiencing a high amount of use. Instructions and a special lubricant are provided in the Haskel manuals in the Appendix.

Drive Pressure Filters

Each booster is equipped with a filter and regulator. The filters should be inspected on a regular basis. Drain any accumulated moisture or sludge through the drain petcock on the base of the filter.

Occasionally, clean the internal filter element inside the filter sediment bowl. To access the element, first disconnect all pressures from the system. Unscrew the filter bowl ring nut by hand and remove the bowl and filter element screw.

Clean the bowl with either soapy water or kerosene. Clean the element with a cleaning solvent. Dry all the parts and reassemble. Make sure that the o-ring seal for the bowl is properly positioned, replace the bowl and tighten the ring nut by hand.

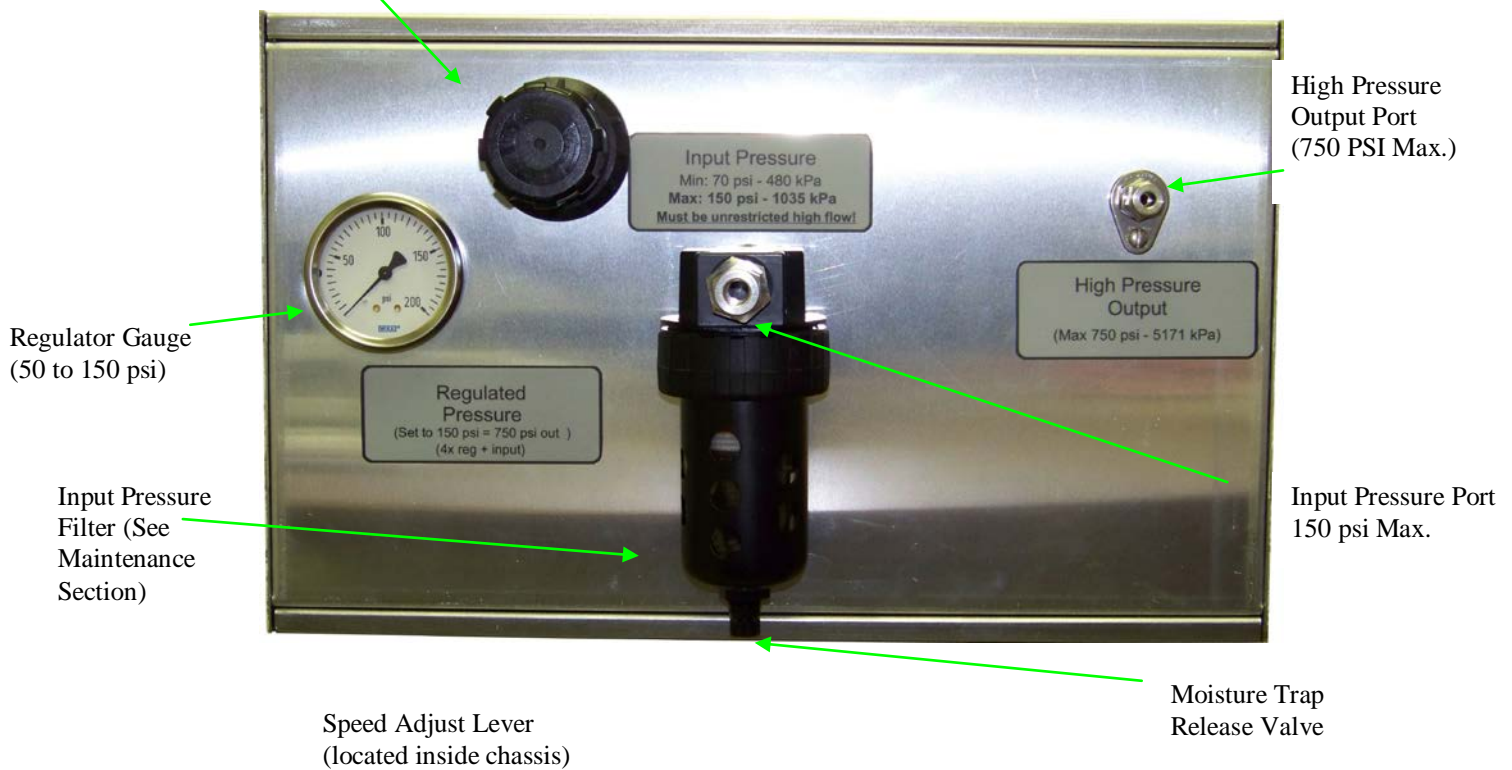
The Haskel recommended maintenance schedule is listed in the appendix.

High Pressure Output Gauge



Front View

Regulator Adjust



Rear View



## **SPECIFICATIONS**

### **Input Pressure:**

Dry Compressed air or Nitrogen at a maximum of 150 PSI (1.03 MPa)

### **Output Pressure:**

Compressed air or Nitrogen up to 750 psi with appropriate supply pressure  
Not to exceed 750 psi maximum.

### **Charge Noise Level:**

Approximately 80 dbA intermittent pulses measured at 1 meter

### **Weight:**

45 lbs or 20.4 kg

### **Size:**

Rack Mounted 7U Chassis,  
19" wide, 10.5" tall, 17.25" deep (482.6 mm x 266.7 mm x 438.15 mm)  
(User accessible filter extends depth by an additional 5" or 127 mm in the rear.)

# **APPENDIX**

Haskel Operating and Maintenance Instructions



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