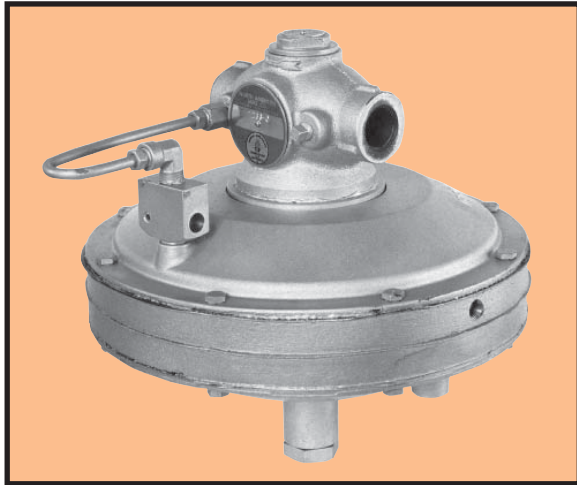


**MULTIPLIES LOW DIFFERENTIAL OR STATIC AIR PRESSURE BY 3 TO 5 TIMES**



**FOR DIFFERENTIAL PRESSURES**

A 7266 Impulse Multiplier converts a low differential pressure signal to a high static impulse pressure, which is then applied to a gas or oil ratio regulator.

The 7266 can be set to multiply a differential signal between 3 and 5 times, e.g., an orifice plate (high fire) differential of 6"wc can be multiplied into a 16 osi (27.7"wc) impulse pressure to a 7216 or 7218 Air/Gas Regulator or a 7052 Air/Oil Ratiotrol.

Used in this way the 7266 enables a pressure-balancing regulator to be used as a flow balancing device, assuming the fuel remains at a constant Btu value and temperature.

A common use is with an orifice plate differential pressure on the inlet (cold air) side of a recuperator. As the recuperator temperature rises, so does the combustion air temperature, resulting in reduced air flow (scfh). With a conventional cross-connected regulator system, the air/fuel ratio would go increasingly rich.

**INSTALLATION/OPERATION**

A 7266 eliminates this problem by responding to actual (cold) air flow across an orifice plate: As combustion air temperature increases, air flow and orifice differential decreases. The 7266 responds by proportionally reducing impulse pressure to the ratio regulator, thereby maintaining air/fuel ratio.

**FOR LOW STATIC PRESSURES**

The 7266 impulse multiplier can be used to multiply a low **static** air signal. Straight cross-connected pressure balancing ratio regulators cannot produce adequate fuel pressures on some burners with low combustion air pressures. The 7266 can multiply the static air signal by 3 to 5 times.

The 7266 Impulse Multiplier is a pressure-balanced regulator that uses an adjustable bleed (about 1 cfm) to obtain the desired multiplied outlet (impulse) pressure: Increased bleed means higher outlet pressure (so inadvertent restriction of the bleed results in lower outlet pressures and leaner air/fuel ratios [a fail-safe situation]).

The 7266 is installed in a 3/4" air line with a supply pressure 4 osi above desired high fire impulse pressure.

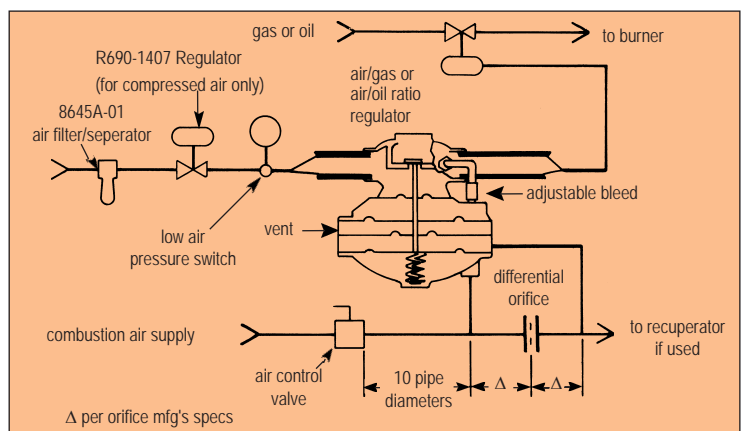
Per the diagram below, an orifice plate pressure differential is applied to the 7266's lower diaphragm. If used for multiplying a low static air signal, the top side of the lower diaphragm is left open to atmosphere.

Supply air to the 7266 can come from either a blower or a compressed air system. An 8645A-01 Filter/Separator is recommended in the supply line. If compressed air is the source, use a regulator (such as North American's R690-1407) to assure constant inlet pressure to the 7266.

One 7266 can serve any number of ratio regulators in the same control zone.

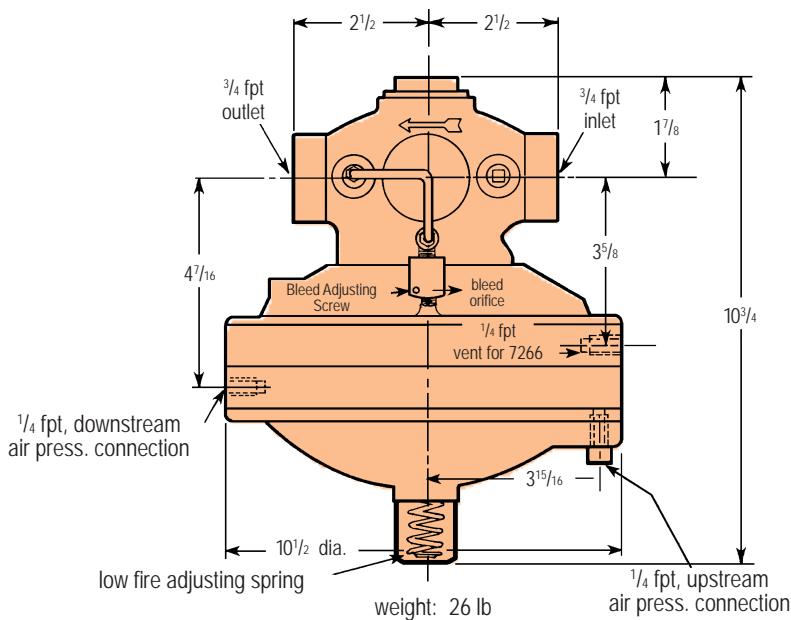
**SPECIFICATIONS**

- Body Size: 3/4" x 3/4" fpt
- Maximum inlet pressure: 4 psi emergency  
2 psi operating
- Maximum outlet pressure: 28 osi
- Operating temperature: 180 F max
- Impulse connections and vent: 1/4" fpt
- Approximate weight: 26 pounds
- Dimensions: See Figure 2
- Materials
  - Body: cast iron
  - Spring case/cover: aluminum
  - Diaphragms: DuPont Fairprene®
  - Diaphragm plate: steel
  - Valve seat: brass
  - Valve facing: Buna
  - Internals: steel, cadmium plated steel, brass

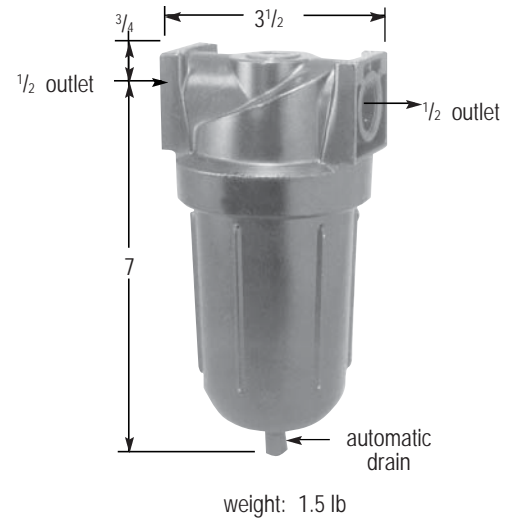


**Figure 1. Typical Installation**

**Figure 2. 7266 Impulse Multiplier  
(dimensions)**



**8645A-01 Air Filter/Separator**



DIMENSIONS SHOWN ARE SUBJECT TO CHANGE. PLEASE OBTAIN CERTIFIED PRINTS FROM FIVES NORTH AMERICAN COMBUSTION, INC. IF SPACE LIMITATIONS OR OTHER CONSIDERATIONS MAKE EXACT DIMENSION(S) CRITICAL.

### ADJUSTING THE 7266 Initial

#### (compressed air and combustion air only -- gas off)

1. Set compressed air regulator (R690-1407) outlet pressure (for 7266 supply air pressure) between a maximum of 2 psi and a minimum of 4 psi above desired high fire impulse pressure.
2. Set combustion air control valve at high fire (for maximum static or differential combustion air pressure).
3. Set impulse pressure for required high fire value (up to  $5 \times$  combustion air static or differential) by adjusting Bleed Adjusting Screw: CW to decrease, CCW to increase.
4. Set combustion air control valve at low fire. A turndown rate of 5:1 is within the capability of the 7266.
5. Set impulse pressure for required low fire value by adjusting the spring on the bottom of the 7266: CW to increase, CCW to decrease. (See example at right).

Example:

$Q_1 = 30,000$  scfh combustion air at high fire

$Q_2 = 6000$  scfh combustion air at low fire (5:1 turndown)

$\Delta P_1 = 6$ "wc combustion air differential pressure at high fire: Adjust **7266 bleed** for up to 30"wc to ratio regulator ( $5 \times 6$ "wc).

$\Delta P_2 =$  combustion air differential pressure at low fire

Using the square root law, determine  $\Delta P_2$  as follows:

$$\frac{Q_2}{Q_1} = \sqrt{\frac{\Delta P_2}{\Delta P_1}} \quad \text{or} \quad \left(\frac{Q_2}{Q_1}\right)^2 \times \Delta P_1 = \Delta P_2$$

$$\left(\frac{6000}{30000}\right)^2 \times 6 \text{''wc } \Delta P = 0.24 \text{''wc low fire combustion air:}$$

Adjust spring for 1.2"wc impulse (for  $5 \times$  multiplication).

### Final

1. Light burners and adjust limiting orifice valves (1807 or 1813) and ratio regulators (7218 or 7052) as in a conventional system.
2. Recheck all settings at low and high fire; readjust as necessary.

### 8645A-01 Air Filter/Separator

Recommended for use with the 7266 Impulse Multiplier. It filters particles down to 0.0156" and automatically drains any water that collects. It has a maximum operating pressure of 250 psi at 175 F.

Element can be changed easily and without tools. Pressure loss through a clean element is minimal (less than 0.1"wc when used with 7266 Impulse Multiplier). See Figure 1 for typical installation.

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of a combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American urges compliance with National Safety Standards and insurance Underwriters recommendations, and care in operation.

Fives North American Combustion, Inc., 4455 East 71st Street, Cleveland, OH 44105 USA, Phone 216.271.6000  
Fax 216.641.7852 email: fna.sales@fivesgroup.com • www.fivesgroup.com/fivesna