North American Evenglow Radiant Tube Gas Burners

FEAURES

The 4723 Evenglow radiant tube burner is designed to adapt to most radiant tube applications. Fuel is burned by a combination of diffusion flame and adjustable partial premix combustion. A simple, easy-to-access adjustment screw located on the backplate changes the amount of primary air premixed with the fuel, which lengthens or shortens the flame. This adjustment can be made while the burner is firing, without having to disassemble and adjust any of the burner internal parts.

Evenglow burners include a built-in V-port fuel adjustment plug, multiple observation ports, a flanged air connection, and a gas connection that can be rotated in 90° increments. **Note:** For systems using pulse-fired burner control the threaded backplate gas connection is to remain in-line with burner air connection as shown in 4723 burner graphics above. Ignition is provided by a direct spark igniter or a spark-ignited premix pilot. The ignition device is held in place with a rugged yoke that allows easy switching from one lighting method to the other.

The burner body and backplate are constructed of sturdy cast iron. The flame retainer is a single piece investment casting made from high temperature alloy for longer life.

AIR CAPACITY

Capacities in Table 1 are with the primary air set to 30%. Burners are shipped with the primary air adjusting screw closed, corresponding to 20% primary air and 87.5% of listed capacities. Wide open adjustment of primary air screw increases primary air to approximately 40% and total air capacity to approximately 117% based on Table 1 figures. Table 2 shows the approximate number of turns of the air adjusting screw for 30% and maximum primary air. Installations using greater than 30% primary air should have blower capacity increased accordingly. Primary air screw may require adjustment for smooth operation on some tube configurations. **Note:** The air adjustment valve should be opened one turn prior to lighting and adjusting a new burner.

PREHEATED AIR

The hot air model of the 4723 is suitable for air preheats from 400 to 900 F. The premix pilot requires ambient temperature air. These burners do not include a built-in gas adjustment cartridge; a conventional 1807 Limiting Orifice Valve must be used instead. Valves should be piped as close to the burner as possible. To order a burner for hot air add ”/H” to designation. **Example:** 4723-5-E/H.
Table 1. CAPACITIES and TUBE SIZES. Capacities shown are with 30% primary air (+70% secondary air). For capacities in Btu/hr, multiply cfm air capacity by 100. Apply correction factor from Table 2 for 20% or 40% primary air operation.

<table>
<thead>
<tr>
<th>Burner designation</th>
<th>cfm Air Capacity with Air Pressure across the burner of</th>
<th>Radiant Tube inside diameter†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2 osi 0.5 osi 1 osi 4 osi 9 osi 16 osi</td>
<td></td>
</tr>
<tr>
<td>4723-2-E or -G</td>
<td>240 375 585 1480 1880 2380</td>
<td>3½&quot; min to 4½&quot; max</td>
</tr>
<tr>
<td>4723-3-E or -G</td>
<td>345 565 890 1685 2565 3420</td>
<td>3¼&quot; 5¼&quot;</td>
</tr>
<tr>
<td>4723-4-E or -G</td>
<td>581 965 1365 2785 4270 5740</td>
<td>4½&quot; 6½&quot;</td>
</tr>
<tr>
<td>4723-4B-E or -G</td>
<td>800 1325 2005 3905 5960 7785</td>
<td>5&quot; 6¾&quot;</td>
</tr>
<tr>
<td>4723-5-E or -G</td>
<td>1420 1930 2530 5015 7500 9925</td>
<td>5¾&quot; 7½&quot;</td>
</tr>
<tr>
<td>4723-6-E or -G</td>
<td>1695 2235 3235 7115 10840 14535</td>
<td>5¾&quot; 8½&quot;</td>
</tr>
</tbody>
</table>

† Consult Fives North American product manager if your tube diameters are not within limits shown.

Table 2. Primary Air Screw Adjustments Required for 20%, 30% and 40% Primary Air

<table>
<thead>
<tr>
<th>Adjusting Screw Turns Open</th>
<th>4723-2</th>
<th>4723-3</th>
<th>4723-4</th>
<th>4723-4B</th>
<th>4723-5</th>
<th>4723-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% Primary Air, 87.5% rated capacity</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30% Primary Air, 100% rated capacity</td>
<td>3½</td>
<td>3½</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>40% Primary Air, 117% rated capacity</td>
<td>10+</td>
<td>10+</td>
<td>5+</td>
<td>†</td>
<td>6½+</td>
<td>*</td>
</tr>
</tbody>
</table>

* 30% maximum primary air for -6 size.
† 32% maximum primary air for -4B size, minimum primary air is 15%.

BLOWER SIZING

Because the primary air adjustment may be opened to 40%, the blower should have 117% (from Table 2) of the rated total burner capacity.

LIGHTING ARRANGEMENTS

4723- -E Direct Spark Ignited Burners. The igniter is included with the burner. The main flame is ignited by a simple electrode located behind the flame front for cool long-life operation. The spark should be turned on before the burner gas valve is opened. During the ignition period, a continuous 6000 volt spark is required. Spark distributor systems cannot be used with 4723- -E burners. After the burner is ignited, the spark must be turned off for proper burner operation.

4723- -G Burners include a pilot and spark plug. A 6000 volt transformer is required. After lighting, the spark should be turned off to prolong electrode life. Spark distributor systems can be used with this burner. The pilot has 15,000 Btu/hr capacity at the maximum allowable mixture pressure of 6”wc and requires a 4031 Mixer.

CONTROL AND ADJUSTMENT

Burner must be ignited at low fire (4 osi air pressure max.). Refer to Sheets 4723-3 and 4723-4 for additional instructions and requirements. Accurate air/gas ratios can be determined by using 8697 Metering Orifices in the fuel and air lines, or by flue gas analysis.

Biasing the ratio regulator to run the burner with more excess air at low fire will reduce CO. The optional air jet will allow the burner to maintain 2-3% O₂ throughout the entire turndown range while maintaining low CO emissions.

PROPANE

Evenglow burners are suitable for use with propane gas, but the primary air must be adjusted wide open and ratio set slightly leaner to avoid soot formation. The presence of propylene in any quantity can increase soot formation in burner and tube. Zero propylene content should be specified for best operation.

U. V. FLAME SUPERVISION

Refer to Bulletin 8832, page 3, for choices of flame detectors and adapters. The UV sensor should be mounted to the center location on the backplate for best results. The "Y" adapter allows for use of the center port for UV and observation.

EXTRA LONG "L" DIMENSION

Special L dimensions, for mounting in various wall thickness and special tubes, are offered in 1" increments from 12" to 24". To request an extra length stabilizer, order 4723- -_/L with "L" dimension. Example: If a burner with a 15" "L" is wanted, order: 4723- -_/15.

ADDITIONAL 4723 DATA SHEETS

4723-1 Dimensions & Spare Parts
4723-2 Engineering Data, Air Flow, Excess Air Charts
4723-3 Control System & Installation Instructions
4723-4 Basic Operation
**ORDERING INFORMATION**

**4723** - \[\square\] - \[\square\]

**Capacities (scfh)**

<table>
<thead>
<tr>
<th>Air pipe size</th>
<th>@ 30% primary setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 = 1-1/4&quot;</td>
<td>2 380</td>
</tr>
<tr>
<td>-3 = 1-1/2&quot;</td>
<td>3 420</td>
</tr>
<tr>
<td>-4 = 2&quot;</td>
<td>5 740</td>
</tr>
<tr>
<td>-4B = 2-1/2&quot;</td>
<td>7 785</td>
</tr>
<tr>
<td>-5 = 2-1/2&quot;</td>
<td>9 925</td>
</tr>
<tr>
<td>-6 = 3&quot;</td>
<td>14 535</td>
</tr>
</tbody>
</table>

**Ignition type**

- E = Direct Spark Igniter
- G = Premix Pilot

**Optional Jet**

- \(J\) = Use "J" to include Jet (See Sheet 4723-4 for details)

**Limiting Orifice Cartridge**

- \(H\) = Use "H" to delete gas cartridge (Hot Air version) and add stainless air adjusting plug and high temperature gaskets with air preheat above 400°F

**"L" Dimension**

- 12-24 = Use "L" dimension for custom length in 1" increments

**Add "/" and options or leave blank for standard burner**

**To order, specify:** 4723-(code for pipe size) - (ignition type) / (options).

*Examples:*
- 4723-4-E Burner complete with direct spark igniter, standard length stabilizer, gas cartridge built into burner, no jet.
- 4723-3-G/16J Burner complete with pilot, 16 inch "L" dimension, gas cartridge built in, with jet.

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of any 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 160°F in operation and present a contact hazard. Fives North American Combustion, Inc. urges compliance with National Safety Standards and Insurance Underwriters' recommendations, and care in operation.

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