**HOT AIR BURNERS**

**Bulletin 4825**

May 2013

1200 F construction handles cover annealer preheated air with ample safety factor.

**4825 Hot Air Gas Burners feature:**

- Heat resistant cast iron body
- Alloy internal parts
- Lightweight vacuum-formed ceramic insulation
- Capacities 140,000 to 2,800,000 Btu/hr
- Choice of standard or thin wall tile

4825 Burners will handle 1200 F preheated combustion air fitting car bottom, aluminum melting, forging, glass melting, heat treating, and other furnaces where standard 4422 or 4425 Burners would be used if combustion air were not preheated.

Burners provide stable combustion in cold tight furnaces on stoichiometric ratio, with large quantities of excess air, or on moderately fuel-rich ratios. Air is evenly distributed around the gas stream, creating uniform combustion and a well-defined flame pattern throughout a wide turndown range.

Flames are clear to semi-luminous dependent on air temperature, firing rate, and air/fuel ratio.

**CONTROL**

Mass flow control systems with air temperature compensation provide the most reliable fuel efficiency.

Fully metered flow control arrangements on the cold air side--such as 7288 Regulators or 8096 Combustion Controllers--are satisfactory for the vast majority of installations.

Because 4825 Burners are capable of lean starts on cold air, standard cross connected regulators can be used on many batch operations, as well as on continuous furnaces with constant preheated air temperatures.

<table>
<thead>
<tr>
<th>Burner designation</th>
<th>Main Air pipe size†</th>
<th>Main Air Capacity, scfh at 16 osi</th>
<th>Required Jet Air§ scfh at 8 osi</th>
<th>Approx. Flame Lengths with 16 osi Main Air</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ambient</td>
<td>1000 F</td>
<td></td>
</tr>
<tr>
<td>4825-2</td>
<td>4”</td>
<td>2,560</td>
<td>1,420</td>
<td>50</td>
</tr>
<tr>
<td>4825-3</td>
<td>4”</td>
<td>3,990</td>
<td>2,370</td>
<td>70</td>
</tr>
<tr>
<td>4825-4</td>
<td>4”</td>
<td>6,150</td>
<td>3,930</td>
<td>145</td>
</tr>
<tr>
<td>4825-5</td>
<td>4”</td>
<td>10,600</td>
<td>6,450</td>
<td>165</td>
</tr>
<tr>
<td>4825-6</td>
<td>4”</td>
<td>16,700</td>
<td>10,050</td>
<td>—</td>
</tr>
<tr>
<td>4825-7-A</td>
<td>6”</td>
<td>27,400</td>
<td>17,100</td>
<td>175</td>
</tr>
<tr>
<td>4825-7-B</td>
<td>6”</td>
<td>34,100</td>
<td>21,000</td>
<td>—</td>
</tr>
<tr>
<td>4825-8-A</td>
<td>6”</td>
<td>44,200</td>
<td>27,900</td>
<td>—</td>
</tr>
</tbody>
</table>

† Smaller main air piping can be used in most cases. Use standard sizing methods for air temperature and pressure available. Minimum main air pressure at the burner is 0.2 osi.

§ Ambient temperature jet air is required at all firing rates for burner stability and flame integrity.

**JET AIR**

The burner uses a small amount of ambient air to insure good flame thrust at low fire. Some burners lose all discharge velocity on applications that require wide turndown. Jet air on the 4825 solves that problem. Additionally, jet air cools internal parts and prevents the cracking of fuel at low fire caused by hot combustion air.

Burner sizes -2 thru -5 require jet air at 8 osi pressure while sizes -6 thru -8-A require 16 osi. Regardless of firing rate, jet air flow is constant at about 2 percent of high-fire air rate (ambient temperature) for -5 and smaller burners, and 1 percent for -6 and larger burners.

**RECOUPERS**

4825 Burners are compatible with almost all recuperators, including Fives North American 8483, 8485, and 8486 units.

**IGNITION/FLAME SUPERVISION**

A 4011-12 pilot set is recommended for individual burner ignition. When multiple burners share a single pilot pre-mix header, a 4021-12 pilot tip per burner with an appropriately sized air/gas mixer is recommended.

For higher ambient temperatures specify a Honeywell C7035A UV with an 8837-F Adapter, which includes a Honeywell heat block #136733 (R130-5849) and a ¼" fpt for 100 cfh cooling air.

**CONSTRUCTION**

Heat resistant cast iron burner bodies including air connections are lined internally with vacuum-formed ceramic fiber insulation. Burner tiles are 3000 F castable with or without self-supporting construction and are easily replaceable in the field. Burner air tubes, of high temperature alloy, are protected by a refractory radiation shield.
Main Air Conn. (both models)

R–ID vacuum formed

Designation V W X Wt, lb

4825-2

Burner

4825-8-A
4825-7-B
4825-5

‡ Increase dimension 1/8" for minimum opening in furnace shell.

§ Ambient temperature jet air is required at all firing rates for burner stability and flame integrity.

Companion flange by customer (ANSI). Use flat face companion flanges and full face gaskets when installing this equipment. Raised face flanges may damage mating flange.

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