MODEL R

Alpha Combustion Model R burners are designed for high temperature furnace applications. The burner generates a high spin, medium velocity and high momentum flame profile.

Model R burners are force draft, nozzle mix power burners. They are designed to produce a high spin combustion flame by igniting and mixing the fuel inside a burner block. The burner utilizes a proprietary air diffuser that stages combustion air and splits the air flow into two zones. A portion of air is injected into a cup shape diffuser and anchors the base of a flame inside the cup. The remaining air is injected into the flame downstream of the cup. The diffuser anchors and shields the base of the flame generating unsurpassed flame stability over wide operating rage.

### APPLICATIONS
- Heat Treat Furnaces.
- Oxidizers.
- Melting Furnaces.
- Regenerative Thermal Oxidizers (RTO).

### FUEL
- Natural Gas (NG)
- Propane (LP)

**BURNER TURNDOWN**
Up to 50 to 1

**EXCESS AIR**
0 to 15% at high fire conditions.

### BURNER MOUNTING OPTIONS
- Horizontal
- Vertical
- Up or down firing.

### PREHEAT AIR
Burner can be operated with up to 800°F (426°C) preheated combustion air.

### BURNERフレームサイズ
<table>
<thead>
<tr>
<th>Burner Model</th>
<th>Frame Size</th>
<th>Input Size</th>
<th>Burner size</th>
<th>Air SCFM at 3% O2</th>
<th>Flame Length</th>
<th>Air Pressure</th>
<th>Fuel Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>R04-0005-PXX</td>
<td>4</td>
<td>0.50</td>
<td>54</td>
<td>8</td>
<td>203</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>R04-0010-PXX</td>
<td>4</td>
<td>1.00</td>
<td>187</td>
<td>12</td>
<td>305</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>R06-0020-PXX</td>
<td>5</td>
<td>2.00</td>
<td>375</td>
<td>15</td>
<td>406</td>
<td>4</td>
<td>9</td>
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<tr>
<td>R06-0030-PXX</td>
<td>6</td>
<td>3.00</td>
<td>562</td>
<td>20</td>
<td>508</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>R08-0040-PXX</td>
<td>8</td>
<td>4.00</td>
<td>740</td>
<td>30</td>
<td>762</td>
<td>4</td>
<td>10</td>
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<tr>
<td>R08-0080-PXX</td>
<td>8</td>
<td>8.00</td>
<td>1500</td>
<td>40</td>
<td>1016</td>
<td>16</td>
<td>40</td>
</tr>
</tbody>
</table>

Gas input is based on natural gas with 1,000 Btu/cu.ft. and 0.60 gravity.
Rated capacity is shown at neutral furnace pressure, burner can operate at negative furnace pressures.

**Burner Model Selection**
- P-(Packaged), S-(Standalone), XX-(Fuel Type: NG, LP)
- Input size: 0010-(1MMBTU)
- Burner Frame Size

**Material of Construction**

<table>
<thead>
<tr>
<th>Material of Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burner Housing</td>
</tr>
<tr>
<td>Gas nozzle</td>
</tr>
<tr>
<td>Air Diffuser (Orifice Plate)</td>
</tr>
<tr>
<td>Burner Block</td>
</tr>
<tr>
<td>Burner Sleeve (For Applications below 600F)</td>
</tr>
</tbody>
</table>

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www.alpha-combustion.com
## Burner General Dimensions

<table>
<thead>
<tr>
<th>Burner</th>
<th>A (Inch)</th>
<th>B (Inch)</th>
<th>C (Inch)</th>
<th>D (Inch)</th>
<th>E (Inch)</th>
<th>F (Inch)</th>
<th>G (Inch)</th>
<th>GAS INLET</th>
<th>ANSI (NPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
<td>Inch</td>
</tr>
<tr>
<td>Size</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(mm)</td>
<td>(NPT)</td>
</tr>
<tr>
<td>4</td>
<td>12 (305)</td>
<td>10 (254)</td>
<td>6 (152)</td>
<td>3.5 (89)</td>
<td>13.5 (89)</td>
<td>8.5 (216)</td>
<td>11 (280)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>14 (355)</td>
<td>12.4 (315)</td>
<td>7.5 (190)</td>
<td>4 (102)</td>
<td>13.5 (89)</td>
<td>10 (254)</td>
<td>14 (356)</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>15 (380)</td>
<td>12.4 (315)</td>
<td>7.5 (190)</td>
<td>6 (152)</td>
<td>14.25 (114)</td>
<td>16 (406)</td>
<td>19.5 (495)</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Dimension E, F, and G can be changed to fit application requirements.
- Burner can be rotated with blower above the center-line.
Model R Burners are equipped with an integrated piloted design. Pilot shall be used only for ignition of the main flame (interrupted pilot). For a direct spark burner configuration start the burner at low fire settings only. Ideal pilot gas flow rate should be between 60,000BTU/hr to 100,000BTU/hr. Use minimally 5000V ignition transformer for spark generation.

Igniter should spark to the gas tip nozzle only. Arc should create sufficient light to be visible through the observation window. To set the correct gap between the igniter and the gas nozzle (distance X) move the igniter into the burner until the igniter hits the gas nozzle. Mark the location on the ceramic and pull the igniter back 1/8 inch (3.2mm). Tighten the ceramic in place.

Set distance X to 1/8inch (3.2mm)
TYPICAL BURNER GAS TRAIN

TYPICAL BURNER IGNITION SEQUENCE

- Pre-purge the system according to the applicable codes and the installation’s requirements.
  - Make sure air control valve is fully open during the Pre-purge sequence.
- During the ignition sequence combustion air valve shall be in the minimum position and allow minimum combustion air flow to the burner.
- Start ignition spark (energize ignition transformer)
- Open pilot gas and continue to spark the ignitor (typically 5s).
- Stop sparking, continue to power the pilot gas valves and start flame check.
- Check pilot flame stability and pilot flame signal.
- Open main gas.
- Close the pilot gas valves.
- Release to modulation (allow modulation of the burner).
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