Performance and Selection Data

Packaged Internal Construction

“EB” External Blower version

Basic MEGAFIRE® Burners include an air control shutter, fuel nozzles, mixing cone, pilot and provision for UV scanner in one compact package.

Combustion air is provided by either an integral centaxial (IB) in-line blower or via an (EB) external blower. A differential air pressure (see page 2604) must be provided for cataloged capacities. IB version is used for negative to balanced combustion chamber pressures. For back pressure or over-fire applications, use EB version and external blower.

Flame discharge is through a stainless steel combustion sleeve (1100°F (593°C) maximum chamber temperature) or a refractory block (1600°F (870°C) maximum chamber temperature) complete with seal and support housing.

Piloting is by an independent, spark-ignited, raw gas pilot.

Burner mounting uses an integral mounting flange, but additional support MUST be provided.

Combustion air control is accomplished with a built-in air shutter, connected via control cable, to a fuel control valve (Maxon MICRO-RATIO® Valve). The “XC” version utilizing external control of air and fuel is also available.

“IB” In-Line Blower version

Suitable fuels include natural gas, propane, or #2 oil at 50 SSU viscosity or less. Atomizing steam or air is required at 60 PSIG for oil firing. Simultaneous gas and oil firing is possible, up to the total rated capacity of a MEGAFIRE® Burner.

A complete system utilizing MEGAFIRE® Burners also includes gas, oil, and atomizing media pipe trains and a control panel.
# Performance and Selection Data

<table>
<thead>
<tr>
<th>MEGAFIRE® Burners</th>
<th>15M</th>
<th>30M</th>
<th>45M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Capacity (Btu/hr)</strong></td>
<td>Natural Gas, Propane, or #2 Oil</td>
<td>15,000,000</td>
<td>30,000,000</td>
</tr>
<tr>
<td><strong>Turndown Ratios</strong></td>
<td>Natural Gas or Propane</td>
<td>15 to 1</td>
<td>15 to 1</td>
</tr>
<tr>
<td></td>
<td>#2 Oil</td>
<td>10 to 1</td>
<td>10 to 1</td>
</tr>
<tr>
<td><strong>Fuel Pressures required at burner inlet</strong></td>
<td>Natural Gas</td>
<td>22° wc</td>
<td>26° wc</td>
</tr>
<tr>
<td></td>
<td>#2 Oil</td>
<td>70 psig</td>
<td>70 psig</td>
</tr>
<tr>
<td></td>
<td>Propane</td>
<td>8.8° wc</td>
<td>10.4° wc</td>
</tr>
<tr>
<td><strong>Pilot Gas Inlet Pressure</strong></td>
<td>(range) 100k – 300 kBtu/hr</td>
<td>0.5 – 5° wc</td>
<td></td>
</tr>
<tr>
<td><strong>Combustion Air</strong></td>
<td>(SCFM) [1]</td>
<td>2750</td>
<td>6000</td>
</tr>
<tr>
<td><strong>Combustion Air Differential Pressure</strong></td>
<td>@ test connection upstream of air shutter</td>
<td>2.9° wc</td>
<td>2.9° wc</td>
</tr>
<tr>
<td>(IB and EB versions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Combustion Air Pressure Required</strong></td>
<td>@ EB transition inlet</td>
<td>4.4° wc</td>
<td>5.1° wc</td>
</tr>
<tr>
<td>(EB version only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Atomizing Media</strong></td>
<td>SCFM Air @ 60 psig</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>(for oil firing option)</td>
<td>lbs/hr Steam @ 60 psig</td>
<td>58</td>
<td>109</td>
</tr>
<tr>
<td><strong>IB Blower Horsepower</strong></td>
<td>Direct Drive 230/460/3/60</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Approximate Flame Dimension</strong></td>
<td>Length (in feet)</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Diameter (in feet)</td>
<td>3.5</td>
<td>4</td>
</tr>
</tbody>
</table>

**Force (pounds) required to open air shutter with combustion air on** (refer to Bulletin 7000-Control Valves for torque required to operate control valve set)

- 40 lbs.
- 50 lbs.
- 60 lbs.

**Noise Levels** (IB burner only) [2] dBA

- 87
- 88
- 89

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1. **Quantity**
2. **Size**
   - 15M = 15,000,000 Btu/hr (maximum)
   - 30M = 30,000,000 Btu/hr (maximum)
   - 45M = 45,000,000 Btu/hr (maximum)
3. **Fuel and atomizing media**
   - **Gas:** If other than natural or propane gas, provide:
     - Specific fuel and/or analysis;
     - Specific gravity, calorific value, and available pressure
   - **Oil:** If other than #2 oil, provide:
     - Specific fluid and/or analysis;
     - Specific gravity, calorific value, viscosity, temperature and available pressure
   - Atomizing media:
     - Air – Volume and pressure
     - Steam – Volume, temperature and pressure
4. **Combustion chamber static pressure condition**
5. **In-Line (IB) or External (EB) Blower version**
   - For “IB” version:
   - Electrical specification for motor
   - For “EB” version:
   - Electrical specification for motor
   - Blower discharge position
   - Blower volume and pressure
   - For “XC” version (EB only):
     - Verify that control of combustion air/fuel gas and/or fuel oil is specified
6. **Discharge options**
   - #310 stainless steel discharge sleeve, or
   - Refractory block with seal and support housing
7. **Control valve options**
   - Standard cam version
   - Packaged control valve arrangement:
     - Right-hand assembly, or
     - Left-hand assembly
8. **Assembly arrangement options**
   - Gas inlet position (Note: pilot/scanner always opposite side from gas inlet)
   - Air inlet position
9. **Accessory options**
   - Connecting base & linkage for specific automatic control motor
   - Atomizing air train
   - Atomizing steam train
   - Light oil train
   - Gas train
   - Shut-off valve(s)
   - Control panel

---

[1] The SCFM shown is based on the IB fan curves at the known differential through the burner with the air shutter fully open. For both IB and EB versions, combustion air must be provided at differential pressure (burner over combustion chamber) for cataloged burner capacities.

[2] Silencers are available to reduce noise levels to below 80 dBA
Performance and Selection Data

Performance Curves

15M MEGAFIRE® – Natural Gas

NOTE: The fuel gas pressures shown are measured at the fuel gas test connection downstream of the control valve at the gas manifold inlet flange.

NOTE: The fuel gas control valve, represented on the x-axis of the above graph is a Maxon 3 inch “-M” style control valve. This valve is supplied in the 15M, 30M and 45M MEGAFIRE® pre-assembled control valve/pipe train package.

15M MEGAFIRE® – #2 Fuel Oil

NOTE: The fuel oil control valve, represented on the x-axis of the above graph is a Maxon 1/2” – O – 100 SYNCHRO oil valve. This valve is supplied in the 15M MEGAFIRE® pre-assembled control valve/pipe train package.
Performance and Selection Data

Performance Curves

30M MEGAFIRE® – Natural Gas

NOTE: The fuel gas control valve, represented on the x-axis of the above graphs is a Maxon 3 inch “-M” style control valve. This valve is supplied in the 15M, 30M and 45M MEGAFIRE® pre-assembled control valve/pipe train package.

NOTE: The fuel gas pressures shown are measured at the fuel gas test connection downstream of the control valve at the gas manifold inlet flange.

30M MEGAFIRE® – #2 Fuel Oil

NOTE: The fuel oil control valve, represented on the x-axis of the above graph is a Maxon 3/4” – O – 200 SYNCHRO oil valve. This valve is supplied in the 30M MEGAFIRE® pre-assembled control valve/pipe train package.
Performance and Selection Data

Performance Curves

45M MEGAFIRE® – Gas

NOTE: The fuel gas pressures shown are measured at the fuel gas test connection downstream of the control valve at the gas manifold inlet flange.

NOTE: The fuel gas control valve, represented on the x-axis of the above graphs is a Maxon 3 inch “-M” style control valve. This valve is supplied in the 15M, 30M and 45M MEGAFIRE® pre-assembled control valve/pipe train package.

45M MEGAFIRE® – Oil

NOTE: The fuel oil control valve, represented on the x-axis of the above graph is a Maxon 1” – O – 400 SYNCHRO oil valve. This valve is supplied in the 45M MEGAFIRE® pre-assembled control valve/pipe train package.
Dimensions

15M EB MEGAFIRE® Combination Burners – Right Hand Arrangement

15M EB MEGAFIRE® Combination Burners – Left Hand Arrangement
Dimensions

15M IB MEGAFIRE® Combination Burners – Right Hand Arrangement

15M IB MEGAFIRE® Combination Burners – Left Hand Arrangement

4" ANSI raised face 150# slip-on welding flange w/2.688 lg. 4" NPT Sch. 40 pipe
Bolt holes to straddle centerline

Main Gas Inlet
Dimensions

30M EB MEGAFIRE® Combination Burners – Right Hand Arrangement

30M EB MEGAFIRE® Combination Burners – Left Hand Arrangement

4” ANSI raised face 150# slip-on welding flange w/2.688 lg. 4” NPT Sch. 40 pipe
Bolt holes to straddle centerline

Main Gas Inlet

Combustion Air Inlet
Dimensions

30M IB MEGAFIRE® Combination Burners – Right Hand Arrangement

30M IB MEGAFIRE® Combination Burners – Left Hand Arrangement

4" ANSI raised face 150# slip-on welding flange w/2.688 lg. 4" NPT Sch. 40 pipe
Bolt holes to straddle centerline

Main Gas Inlet
Dimensions

45M EB MEGAFIRE® Combination Burners – Right Hand Arrangement

45M EB MEGAFIRE® Combination Burners – Left Hand Arrangement

Combustion Air Inlet

Main Gas Inlet

Access Plate

Lifting Lug

Pilot Inlet Plate

Stainless Steel Discharge Sleeve

Combustion Air Inlet

Main Gas Inlet

Combustion Air Inlet

Main Gas Inlet

Alternate Air Inlet Positions

Alternate Air Inlet Positions

25.0 dia.

27.5 dia.

5/16" (.562) drill thru 20 holes

4" ANSI raised face 150# slip-on welding flange w/2.688 lg. 4" NPT Sch. 40 pipe Bolt holes to straddle centerline

5/8" (.625) dia.

3/4" NPT

Pilot Inlet Plate

Gas Pressure Test Connection

3/4" NPT Atomizing Media Inlet

Combustion Air Inlet

Main Gas Inlet

Combustion Air Inlet

Main Gas Inlet
Dimensions

45M IB MEGAFIRE® Combination Burners – Right Hand Arrangement

45M IB MEGAFIRE® Combination Burners – Left Hand Arrangement

4" ANSI raised face 150# slip-on welding flange w/2.688 lg. 4" NPT Sch. 40 pipe
Bold holes to straddle centerline

Main Gas Inlet
Dimensions

Oil Gun Assembly

Lifting lugs to be in upright (or 12 o’clock) position regardless of air, oil or gas inlet rotation

Mounting feet to be in down (6 o’clock) position regardless of air, oil or gas inlet rotation

Atomizing Air/Steam

Blower Lifting Lug

No Gaps

Note: Oil gun assembly must seat solidly against mixing cone

MEGAFIRE® Raw Gas Pilot

UV Scanner Connection

Sight Port

Pilot Gas Connection

Spark Ignitor

Suggested Block Mounting for Seal & Support Blocks

Refractory Cast or Block

Fiber Blanket Wrapping Block 1” minimum

Burner Block with Stainless Support Sleeve

Maximum chamber temperature ratings for discharge options:
SS discharge sleeve – 1100°F (593°C)
Refractory block discharge – 1600°F (870°C)
Dimensions

Refractory Block/Seal & Support Assembly

15M MEGAFIRE® Burner

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>DRG. NO.</th>
<th>REQD QTY</th>
</tr>
</thead>
</table>
| 30M MEGAFIRE® Burner

5/8" (.625)
16 holes

27.656 dia.

29.656 dia.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>DRG. NO.</th>
<th>REQD QTY</th>
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<tbody>
<tr>
<td>34.0</td>
<td>12.0</td>
<td></td>
<td>16.0</td>
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</table>

30M MEGAFIRE® Burner

5/8" (.625)
16 holes

40.312 dia.

42.312 dia.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>DRG. NO.</th>
<th>REQD QTY</th>
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<tbody>
<tr>
<td>5.875</td>
<td>9.875</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.0</td>
<td></td>
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</tbody>
</table>

TM 4646230M

4 FLAT WASHER SAE 40078 16

1 SEAL & SUPPORT 46399 1

2 BURNER BLOCK "FORM" 38217 1

3 HEX NUT (FINISHED AND PLATED) 40028 16
Dimensions

Refractory Block/Seal & Support Assembly

45M MEGAFIRE® Burner

5/8" (.625) holes
16 required

46.781 dia.
44.781 dia.

38.5

11.5
15.5
MEGAFIRE® Burner Accessories
(Dimensions in Inches)

#2 Light Oil Pipe Train

Inlet → ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ①

Flow →

Assembly includes:
① 3/4” ball valves
② 1” filter
③ 3/4” oil pressure regulator
④ 1/4” needle valve
⑤ Oil pressure gauge (0-160 PSIG)
⑥ Low pressure switch (5-150 PSIG)
⑦ 3/4” Series 8730 shut-off valves (ordered separately; assembled into pipe train as shown)
⑧ High pressure switch (5-150 PSIG)

Atomizing Air Pipe Train

Inlet → ① ② ③ ④ ⑤ ①

Flow →

Assembly includes:
① 3/4” ball valves
② 3/4” air filter
③ 3/4” air regulator with (0-160 PSIG) gauge
④ Low pressure switch (5-150 PSIG)
⑤ 3/4” solenoid valve
MEGAFIRE® Burner Accessories
(Dimensions in Inches)

Atomizing Steam Pipe Trains (maximum temperature 300°F)
Note: Field site insulation will be required.

Assembly includes:
1. 1" ball valves
2. 1" strainer
3. Thermometer (30-300°F)
4. 1" pressure regulator
5. Low pressure switch (50-150 PSIG)
6. 1" solenoid valve
7. 1/4" needle valve
8. Steam pressure gauge (0-100 PSIG)

<table>
<thead>
<tr>
<th>Pipe Train</th>
<th>Size</th>
<th>Length</th>
<th>Height</th>
<th>Depth</th>
<th>Minimum Inlet Pressure</th>
<th>Maximum Inlet Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2 Light Oil</td>
<td>3/4&quot;</td>
<td>76&quot;</td>
<td>23&quot;</td>
<td>13&quot;</td>
<td>75 PSIG</td>
<td>150 PSIG</td>
</tr>
<tr>
<td>Atomizing Steam</td>
<td>1&quot;</td>
<td>56&quot;</td>
<td>22&quot;</td>
<td>8&quot;</td>
<td>100 PSIG</td>
<td></td>
</tr>
<tr>
<td>Atomizing Air</td>
<td>3/8&quot;</td>
<td>38&quot;</td>
<td>22&quot;</td>
<td>5&quot;</td>
<td>75 PSIG</td>
<td></td>
</tr>
</tbody>
</table>