

Technical Data Sheet

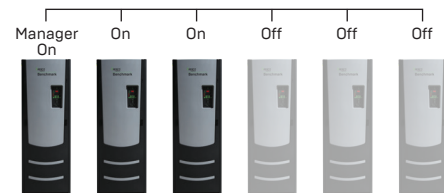
Benchmark 750-6000 Boilers

The AERCO Benchmark (BMK) Water Boiler is designed for condensing application in any closed loop hydronic system. It delivers unmatched burner modulation to match energy input directly to fluctuating system loads to yield the highest possible seasonal efficiencies. And no other product packs as much capacity into such a small footprint.

To minimize emissions, the BMK Series is fitted with a low NOx burner whose emissions will meet the most stringent NOx and CO requirements. The fully modulating burner also maintains AERCO standards for energy efficiency, longevity, reliability and construction quality.

The BMK Series comes standard with AERCO's Patent Pending, Oxygen Level [O₂] monitoring system. This monitoring system, designed to display the O₂ level directly on the unit in real time, can also be remotely monitored via Modbus giving the customer the ability to measure the emissions level and fuel economy of the boiler without traditional combustion calibration devices.

The BMK boilers can be used as an individual unit or in modular arrangements and offers selectable modes of operation. In addition to controlling the boiler according to a constant set point, indoor/outdoor reset schedule or 4-20mA signal, one or more units can be integrated via Modbus communications protocol. For boiler plants ranging from 2-8 boilers, AERCO'S built-in Boiler Sequencing Technology (BST)* can be utilized. For heating plants greater than 8 boilers, AERCO's ACS (AERCO Control System) provides the right solution. Likewise, Benchmark systems can be easily integrated with a facility-wide Energy Management or Building Automation System.



*See BST System technical data sheet for additional system details and capabilities

Features

- Natural Gas, Propane, or Dual Fuel (model dependent)
- 20:1 Turndown Ratio (5%) depending on capacity
- Oxygen Level [O₂] Monitoring Standard
- Stainless Steel Fire Tube heat exchanger
- Capable of variable primary flow Installations
- NOx Emissions capable of 9PPM or less @ all firing rates *depending on capacity
- Compact Footprint
- Precise Temperature Control
- On-board Boiler Sequencing Technology (BST)
- Ducted Combustion Air Capable
- Easy Open Access for Service
- Acceptable vent materials AL29-4C, Polypropylene, PVC, cPVC (model dependent)
- Reliable Quiet Operation
- Controls Options:
 - Constant Setpoint
 - Indoor/ Outdoor Reset
 - Remote Setpoint
 - 4-20mA signal or ModBus

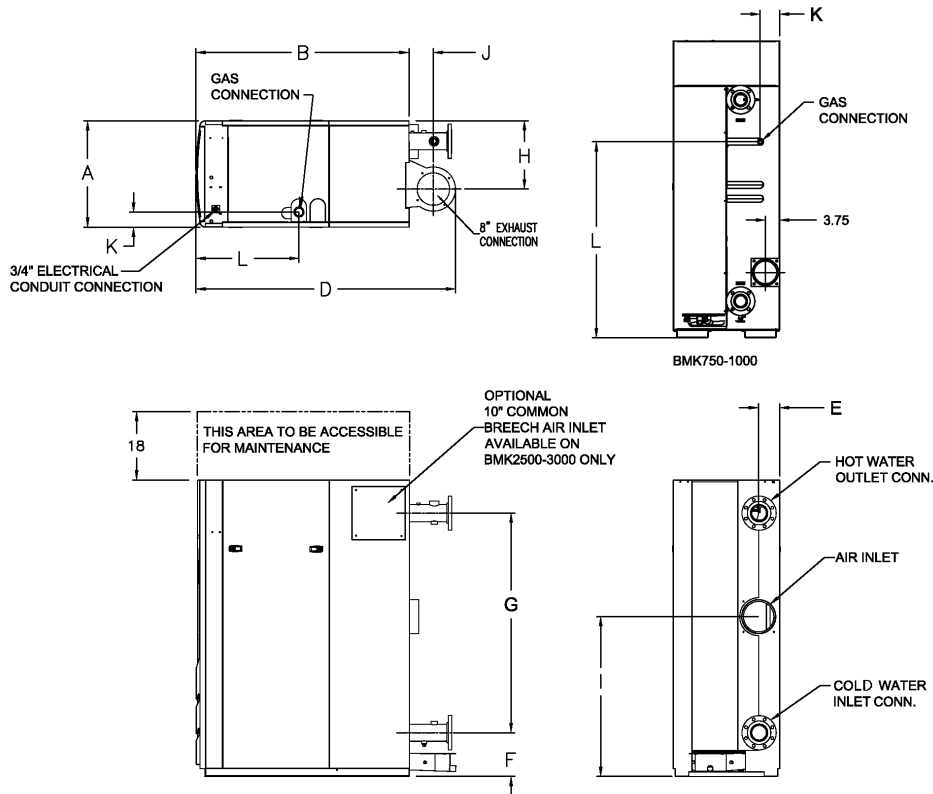
Ratings

| Model | Min Input MBH | Max Input MBH | Max Output ^a MBH | Efficiency Range | Efficiency 80° to 180°F |
|------------|---------------|---------------|-----------------------------|------------------|-------------------------|
| BMK 750 | 50 | 750 | 653-720 | 87%-98% | 95.50% |
| BMK 1000 | 50 | 1000 | 870-960 | 87%-98% | 96.80% |
| BMK 1500 | 75 | 1500 | 1305-1425 | 87%-98% | 94.60% |
| BMK 2000 | 100 | 2000 | 1740-1900 | 87%-98% | 94.60% |
| BMK 2500 | 167 | 2500 | 2175-2360 | 87%-98% | 93.50% |
| BMK 3000 | 200 | 3000 | 2610-2880 | 87%-98% | 93.50% |
| BMK 5000** | 400 | 5000 | 4350-4800 | 87%-98% | 93.90% |
| BMK 6000** | 400 | 6000 | 5220-5670 | 87%-98% | 94.50% |

^aMax output dependent upon application – see efficiency curves

**See separate BMK5000/6000 technical data sheet for additional BMK5000/6000 details

Dimensions



| Model | [Width] A | [Depth] B | [Height] C | D | E | F | G | H | I | J | K | L |
|------------|-----------|-----------|------------|--------|------|-------|-------|-------|-----|------|-------|-------|
| BMK 750 | 28" | 25" | 78" | 34" | 10" | 10" | 53" | 21" | 17" | 4" | 5" | 51.8" |
| BMK 1000 | 28" | 25" | 78" | 34" | 10" | 10" | 53" | 21" | 17" | 4" | 5" | 51.8" |
| BMK 1500 | 28" | 43.6" | 78" | 58.4" | 7" | 11.5" | 57.8" | 18" | 42" | 8.9" | 4.7" | 19.5" |
| BMK 2000 | 28" | 43.6" | 78" | 58.4" | 7" | 11.5" | 57.8" | 18" | 42" | 8.9" | 4.7" | 19.5" |
| BMK 2500 | 28" | 56" | 78" | 68.4" | 5.4" | 11.5" | 57.8" | 18" | 42" | 6.4" | 3.6" | 26" |
| BMK 3000 | 28" | 56" | 78" | 68.4" | 5.4" | 11.5" | 57.8" | 18" | 42" | 6.4" | 3.6" | 26" |
| BMK 5000** | 34" | 89.3" | 79.4" | 108.3" | 6.2" | 42.1" | N/A | 15.6" | N/A | 10" | 28.7" | 23.7" |
| BMK 6000** | 34" | 89.3" | 79.4" | 108.3" | 6.2" | 42.1" | N/A | 15.6" | N/A | 10" | 28.7" | 23.7" |

**See separate BMK5000/6000 technical data sheet for additional BMK5000/6000 dimension details

Specifications

| | BMK 750 | BMK 1000 | BMK 1500 | BMK 2000 | BMK 2500 | BMK 3000 | BMK 5000** | BMK 6000** |
|--|---|----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---|---|
| Boiler Category | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV |
| Gas Connections (NPT) | 1" | 1" | 2" | 2" | 2" | 2" | 2" | 2" |
| Max. Gas Pressure | 14" | 14" | 14" | 14" | 14" | 14" | 2psi | 2psi |
| Min. Gas Pressure ¹ | 4" | 4" | 4" | 4" | 4" | 4" | 14" | 14" |
| Max. Allowed Working Pressure | 160 PSIG | 160 PSIG | 160 PSIG | 160 PSIG | 160 PSIG | 160 PSIG | 80 PSIG/ 150 PSIG Optional | 80 PSIG/ 150 PSIG Optional |
| Electrical Req. 120V/1PH/60Hz ² | 13 FLA | 13 FLA | 16 FLA | 16 FLA | N/A | N/A | N/A | N/A |
| Electrical Req. 208V/3PH/60Hz ² | N/A | N/A | N/A | N/A | 10 FLA | 10 FLA | 19 FLA | 19 FLA |
| Electrical Req. 460V/3PH/60Hz ² | N/A | N/A | N/A | N/A | 5 FLA | 5 FLA | 9 FLA | 9 FLA |
| Electrical Req. 575V/3PH/60Hz ² | N/A | N/A | N/A | N/A | N/A | N/A | 7 FLA | 7 FLA |
| Water Connections (Flanged) | 3" | 3" | 4" | 4" | 4" | 4" | 6" | 6" |
| Min. Water Flow (GPM) | 12 | 12 | 25 | 25 | 25 | 25 | 75 | 75 |
| Max. Water Flow (GPM) | 175 | 175 | 250 | 350 | 350 | 350 | 600 | 600 |
| Water Volume Gallons | 16.25 | 14.25 | 44 | 40 | 58 | 55 | 110 | 110 |
| Water Pressure Drop | 3.0 PSIG @100 GPM | 3.0 PSIG @100 GPM | 3.0 PSIG @170 GPM | 3.0 PSIG @170 GPM | 3.0 PSIG @218 GPM | 3.0 PSIG @261 GPM | 4.0 PSIG @500 GPM | 4.0 PSIG @500 GPM |
| Turndown | 15:1 (7%) | 20:1 (5%) | 20:1 (5%) | 20:1 (5%) | 15:1 (7%) | 15:1 (7%) | 12.5:1 (8%) | 15:1 (7%) |
| Vent/Air Intake Connections | 6 Inch | 6 Inch | 6 Inch | 8 Inch | 8 Inch | 8 Inch | 14 Inch Optional/ 12 Inch Flue Venting | 14 Inch Optional/ 12 Inch Flue Venting |
| Vent Materials | AL29-4C Polypro, CPVC, PVC | AL29-4C Polypro, CPVC, PVC | AL29-4C Polypro | AL29-4C Polypro | AL29-4C Polypro | AL29-4C Polypro | AL29-4C Polypro | AL29-4C Polypro |
| Type of Gas | Natural Gas, Propane | Natural Gas, Propane | Natural Gas, Propane, Dual Fuel | Natural Gas, Propane, Dual Fuel | Natural Gas, Propane, Dual Fuel | Natural Gas, Propane, Dual Fuel | Natural Gas, Dual Fuel | Natural Gas, Dual Fuel |
| NOx Emissions <9ppm Capability* | ✓ | ✓ | ✓ | ✓ | N/A <20 ppm] | N/A <20ppm] | ✓ | ✓ |
| Temperature Control Range | 50°F to 190°F | | | | | | | |
| Ambient Temperature Range | 0°F to 130°F | | | | | | | |
| Standard Listings & Approvals | UL, CUL, CSD-I, ASME, AHRI | | | | | | | |
| Gas Train Operations | FM Compliant or Factory Installed DBB (IRI) | | | | | | | |
| Weight (dry) lbs. | 669 | 700 | 1406 | 1500 | 2,000 | 2,170 | 3,000 | 3,000 |
| Weight (wet) lbs. | 802 | 817 | 1654 | 1760 | 2,332 | 2,580 | 3,920 | 3,920 |
| Shipping Weight lbs. | 862 | 900 | 1606 | 1700 | 2,200 | 2,370 | 3,800 | 3,800 |

**See separate BMK5000/6000 technical data sheet for additional BMK5000/6000 details. ¹ Values are for natural gas FM compliant gas trains only. See Benchmark Gas Components & Supply Design Guide GF-2030 for propane, DBB & dual fuel gas train minimum gas pressure requirements. ² See Benchmark Electrical Power Guide GF-2060 for Service Disconnect Switch amperage requirements.



Notes



Heat | Hot Water | Energy Recovery Solutions

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