

Technical Data Sheet

Benchmark 750-6000 with Edge Controller High Efficiency Boilers

The AERCO Benchmark® (BMK) hot water boiler is designed for condensing applications in any closed loop hydronic system. It delivers burner modulation to match energy input directly to fluctuating system. No other product packs as much capacity into such a small footprint that fits through a standard door and can be transported in a freight elevator.

Benchmark Exclusive Options:

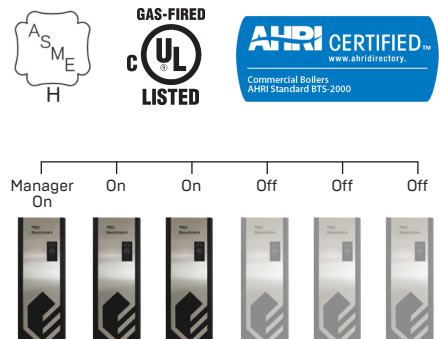
- AERtrim patented O₂ Trim technology combined with air temperature compensation provides precise combustion
- Edge® Controller and Mobile App – advanced features including seven industry-first's (standard)
- Dual Return water connections enable maximum efficiency and application flexibility
- onAER Predictive Maintenance pro-active performance analytics tool
- Industry-leading warranty

Energy Efficient

To minimize emissions, the BMK Series is fitted with a low NO_x burner whose emissions will meet the most stringent NO_x and CO requirements. The fully modulating burner also maintains AERCO standards for energy efficiency, longevity, reliability and construction quality. The BMK Series is available with AERCO's patented AERtrim™ system, an innovative O₂ trim system for condensing boilers, that self-adjusts and maintains air-fuel ratios at optimum levels for peak efficiency, low emissions and maximum uptime reliability in event of any site condition changes (air density, gas pressure, BTU content, etc.) which can be detrimental to efficiency, stability and reliability. Oxygen levels can be directly displayed on the unit in real time or be remotely monitored via onAER®, BACnet or Modbus, giving our customers the ability to measure the emissions level and fuel economy of the boiler without traditional combustion calibration devices.

Application and Plant Design

Benchmark boilers can be used as individual units or in modular arrangements. 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 2-16 boilers, AERCO'S built-in Boiler Sequencing Technology (BST) can be utilized. The built-in Edge control is capable of controlling up to two groups of boilers. It manages a group of heating boilers with lead rotation as well as a group of domestic hot water boilers with their own lead rotation.



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

It also manages a group of swing boilers and their swing valves directing the swing boilers output to heating or domestic loops based on the priority settings. In addition, the Benchmark with Edge control has integrated solutions for multiple Building Management system protocols. BMK models are also available with dual return connections for optimal application flexibility and seasonal efficiency gains of up to 7%.

onAER Predictive Maintenance

BMK boilers come onAER-ready. AERCO's onAER service is a premiere online service which grants the user remote access to view boiler plant operation and status, track performance and efficiency, and set and view alerts such as faults or maintenance. The onAER service can be set to provide alerts to local trained technicians, offering additional peace of mind and ensuring the utmost uptime reliability.

Features

- Natural gas, propane, or dual fuel
- 20:1 turndown ratio (5%) depending on capacity
- 439 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, light weight, freight elevator friendly
- Optional dual return water connections
- Ducted combustion air capable
- Easy open access for service
- Acceptable vent materials AL29-4C, Polypropylene, PVC, cPVC (model dependent)
- Reliable quiet operation
- 10 year heat exchanger warranty
- Lifetime thermal shock warranty
- Optional gas train with VPS (Value Proving System) for BMK Platinum 4000/5000/6000
- Integrated O₂ Alert for critical conditions (if equipped w/ O₂ Monitoring or AERtrim)
- Outdoor solution available

Edge

- AERtrim system (optional)
- TComp O₂/air temp. compensation (standard)
- Precise temperature control
- On-board boiler sequencing technology (BST)
- BST minimum number of open valves
- Equipped with EZ setup
- Integrated BACnet IP, BACnet MS/TP, Modbus TCP and Modbus RTU communication
- System pump lead-lag rotation
- Variable speed pump control
- Communicates to and controls multiple SmartPlates®
- Built-in Bluetooth® for smart devices' app communication
- Simple combination plant setup and control
- Balancing valve control simplifies commissioning
- Controls options:
 - Constant setpoint
 - Indoor/outdoor reset
 - Remote setpoint
 - 4-20mA signal or ModBus

Thermal Efficiency

Benchmark	Min Input MBH	Max Input MBH	Max Output ¹² MBH	Efficiency Range ²
750	50	750	653-720	87%-98%
1000	50	1000	870-960	87%-98%
1500	75	1500	1305-1440	87%-98%
2000	100	2000	1740-1920	87%-98%
2500	167	2500	2175-2400	87%-98%
3000	200	3000	2610-2880	87%-98%
4000	267	4000	3480-3840	87%-98%
5000N	250	4990	4341-4790	87%-98%
5000	400	5000	4350-4800	87%-98%
6000	400	6000	5220-5760	87%-98%

¹Max output dependent upon application – see efficiency curves ²Output and efficiency range based on AERCO's independent tests.

Specifications

	Benchmark										
	750	1000	1500	2000	2500	3000	4000	5000N	5000 ⁴	6000 ⁴	
Boiler Category	ASME Sect.IV										
Gas Connections (NPT)	1”		2”				3”		2 / 3”		
Max. Gas Pressure	14”								2psi/10” ⁴		
Min. Gas Pressure ¹	4”								14 / 4” ⁴		
Max. Allowed Working Pressure	160 PSIG								80PSIG/150 PSIG Op-tional		
Electrical Req. 120V/1PH/60Hz ²	13 FLA		16 FLA		N/A						
Electrical Req. 208V/3PH/60Hz ²	N/A				10 FLA		23 FLA		19 FLA		
Electrical Req. 480V/3PH/60Hz ²	N/A				5 FLA		12 FLA		9 FLA		
Electrical Req. 575V/3PH/60Hz ²	N/A								7 FLA		
Water Connect. (Flanged)	3”		4”				6”				
Min. Water Flow (GPM)	12		25				35		75		
Max. Water Flow (GPM) ⁵	175		250	350			500		600		
Water Volume Gallons	28	26	44	40	60	55	77		110		
Water Pressure Drop	3.0 PSIG @100 GPM		3.0 PSIG @170 GPM		3.2 PSIG @ 250 GPM		5.0 PSIG @475 GPM		4.0 PSIG @500 GPM		
Turndown Ratio	15:1 (7%)	20:1 (5%)			15:1 (7%)	15:1 (7%)	15:1 (7%)	20:1 (5%)	12:1 (8%)	15:1 (7%)	
Vent/Air Intake Connections	6 Inch			8 Inch				12 Inch Vent/ 10 Inch Air Intake		14 Inch/12 Inch Optional Flue Venting	
Vent Materials	AL29-4C Polypro, CPVC, PVC		AL29-4C Polypro								
Type of Gas	Natural Gas, Propane, Dual Fuel										
NOx Emissions <9ppm Capability ³	✓				<13 ppm		✓				
Temp. Control Range	50°F to 190°F										
Ambient Temp. Range	0°F to 130°F										
Standard Listings & Approvals	UL, CUL, CSD-1, ASME										
Gas Train Operations	FM Compliant or Factory Installed DBB (IRI)						FM Compliant or Factory Installed DBB (IRI), VPS (Value Proving System)		FM Compliant, VPS (Value Proving System)		
Sound Rating dbA	65		70		72		75		79		
Weight (dry) lbs.	669	700	1406	1500	2000	2170	2200		3000		
Shipping Weight lbs.	862	900	1606	1700	2200	2300	2350		3800		

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.
3. 9 PPM NOx emissions based on natural gas firing only. BMK5000/6000 operating at standard gas pressure (>14" W.C.) can achieve 9 ppm NOx. 14" ø flue required.
4. BMK5000/6000 low gas pressure option is available as a different style number. It operates between 4" and 10" of gas pressure.
5. Maximum flow specified is for models with single return. For models equipped with dual returns, see Benchmark Application Design Guide TAG-0019 for maximum flow limitations.

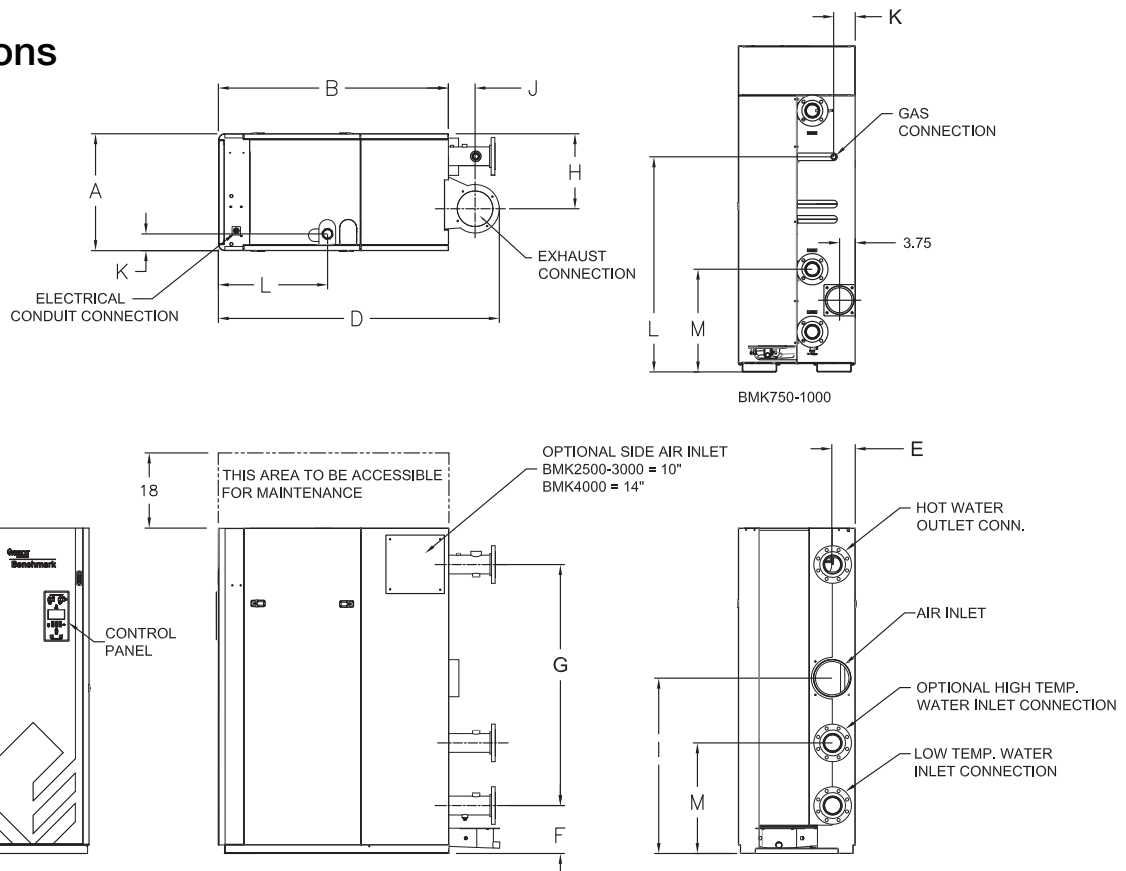
Certified Ratings



BMK	Min Input MBH	Max Input MBH	Gross Output MBH	Net AHRI Rating MBH	Thermal Efficiency	Combustion Efficiency 80° to 180°F
750	50	750	721	627	95.6%	96.2%
1000	50	1000	968	842	96.8%	96.8%
1500	75	1500	1419	1234	94.6%	95.1%
2000	100	2000	1892	1645	94.6%	95.1%
2500	167	2500	2337	2023	93.5%	94%
3000	200	3000	2823	2455	94.6%	94.1%
4000	267	4000	3820	3322	94.1%	95.5%
5000N	250	4990	4730	4113	93.8%	94.8%
5000	400	5000	4760	4139	94.8%	95.2%
6000	400	6000	5680	4930	94.5%	95%

Dimensions

750-4000

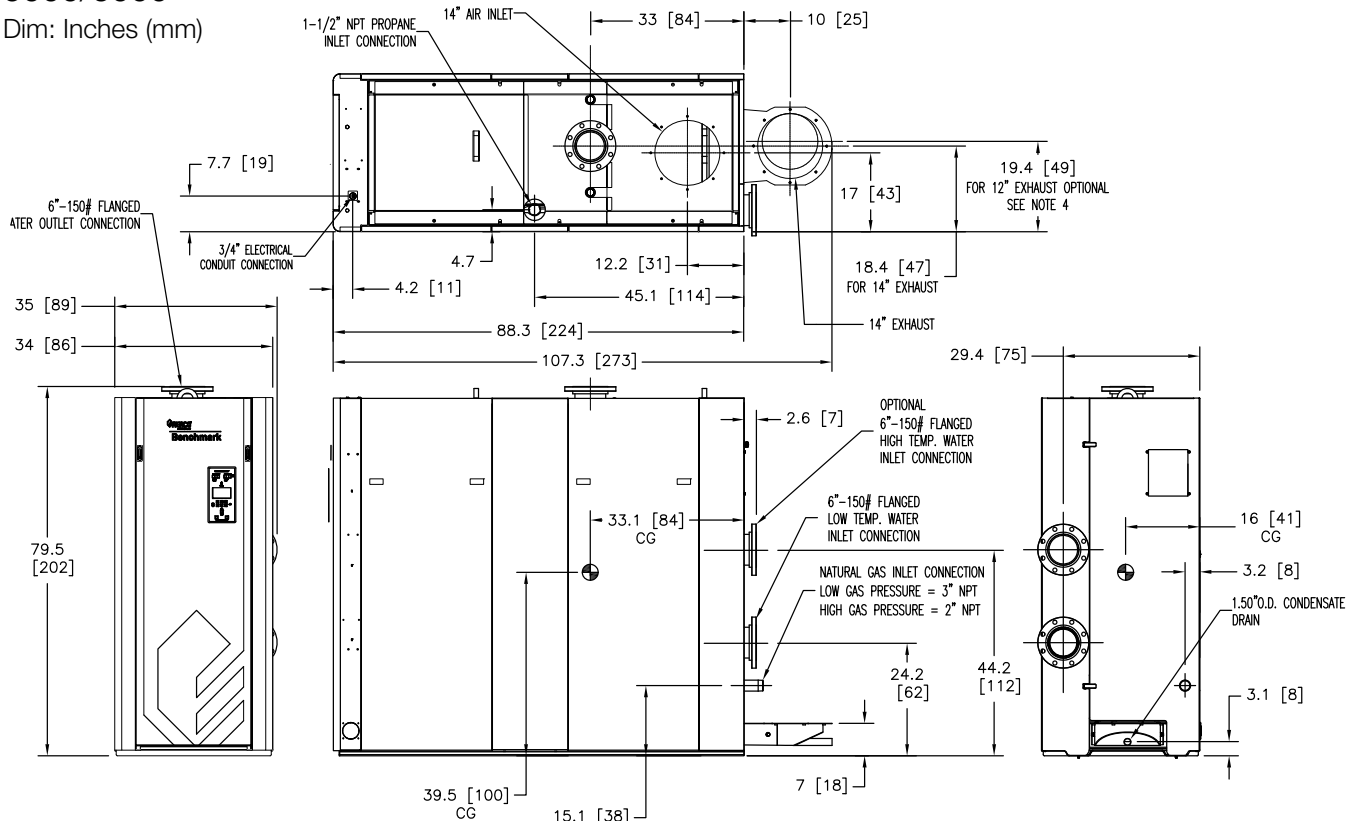


Benchmark	(Width) A	(Depth) B	(Height) C	D	E	F	G	H	I	J	K	L	M
750	28"	23.5"	78"	33"	10.2"	9.6"	53"	21"	17.1"	4.5"	5.1"	50.5"	24.6"
1000	28"	24"	78"	33"	10.2"	9.6"	53"	21"	17.1"	4.5"	5.1"	50.5"	24.6"
1500	28"	42.6"	78"	57.4"	6.6"	11.5"	57.8"	18"	42"	8.9"	4.4"	18.1"	26.5"
2000	28"	42.6"	78"	57.4"	7"	11.5"	57.8"	18"	42"	8.9"	4.4"	18.1"	26.5"
2500	28"	55"	78"	67.4"	5.6"	11.5"	57.8"	18"	42"	6.4"	4.4"	26.1"	26.5"
3000	28"	55"	78"	67.4"	5.6"	11.5"	57.8"	18"	42"	6.4"	4.4"	26.1"	26.5"
4000	34"	62.5"	78.2"	79.6"	6"	12.4"	56"	21.4"	44.4"	9"	5.5"	27.7"	27.4"
5000N	34"	62.5"	78.2"	79.6"	6"	12.4"	56"	21.4"	44.4"	9"	5.5"	27.7"	27.4"

Dimensions

5000/6000

Dim: Inches (mm)



Benchmark	(Width) A	(Depth) B	(Height) C
5000	35"	88.3"	79.8"
6000	35"	88.3"	79.8"



Heating and Hot Water Solutions

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