

*Burkay*  
**GENESIS®**  
**HYDRONIC HEATING BOILERS**

## FEATURES

**84% THERMAL EFFICIENCY** - The absolute highest thermal efficiency possible by a non-condensing boiler.

Low NOx - Precise amounts of gas and air are premixed through special Pre-Jet Orifices and forced through stainless steel burners that provide complete and clean combustion. GB/GBO 1000 through 1850 comply with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements. GW/GWO 2100 and 2500 comply with SCAQMD Rule 1146.1 when field certified by SCAQMD.

**EXCLUSIVE EMC-5000 W/STAGED FIRING** - The EMC-5000 is a complete microprocessor based boiler control. Every electrical boiler function, from starting the blower, to igniting and stage firing the main burner, to controlling the boiler temperature, is controlled and monitored by the onboard computer. A comprehensive display panel includes LEDs that indicate current operating and fault status. A digital LED displays temperature set points, outlet temperature, current inlet/outlet differential ( $\Delta T$ ), loop temperature, and additional numerical fault codes. Precise temperature management is plus or minus 1°. In addition, the EMC-5000 provides true self-diagnostic capabilities, eliminates guesswork, and reveals exactly where the problem is. Troubleshooting has never been easier.

■ iCOMM™ Compatible and can be monitored from remote locations. Call 1.888.WATER02 for more information.



**STAGED FIRING** - All second family Genesis boilers are staged fired. The boiler automatically adjusts its firing rate and Btu output to maintain a precise system temperature control. Each stage is user programmable; allows the boiler to be tailored to the installation and adjusted for optimum boiler performance and overall system efficiency. Models GB-1000 thru GB-1500 have three stages; Models GB-1850 thru GB-2500 have four stages.

**HIGH EFFICIENCY HIGH HEAT TRANSFER** - A. O. Smith's distinctive double-row integral-finned copper heat exchanger provides maximum heat transfer and utilizes a self-baffling staggered tube design, that assures 84% thermal efficiency. Heavy-duty cast iron glasslined headers are standard on all models.

**SECONDARY BOILER PUMP (Optional)** - Units are available with the optional Integral Rear Header Mounted Boiler Pump; eliminates field wiring and secondary pump sizing concerns.

**UNMATCHED VENTING FLEXIBILITY** - Multiple venting options; choose from several conventional or direct venting options. Multiple openings options; choose from exhaust outlet leaving the top of boiler or exhaust outlet-leaving the rear of boiler.

**STACKABLE SPACE SAVING DESIGN** - Up to 5 million BTUs in the space of a single 2.5 million BTU boiler.

**OTHER FEATURES** - CSA Certified and ASME Rated T&P Relief Valve #50 ■ Mounted Flow Switch ■ Remote Loop Sensor ■ Alternate (24V) Thermostat Terminals ■ Manual Reset High Limit ■ Blocked Flue Switch ■ Fan Proving Switch ■ Adjustable Secondary Pump Delay

**OPTIONS** - Code Options: CSD-1, California Code ■ Alarm Bell ■ Outdoor Models ■ Bronze Headers ■ Stack Rack ■ Low Water Cut Off ■ Extended Power Venting Kits ■ Dry Contacts For Any Boiler Failure ■ Direct and Sidewall Vent Terminal Kits ■ Integral Rear Header Mounted Boiler Pump (For Primary/Secondary Piping Systems) ■ EMS converter (Allows Energy Management Controls systems to manage the stage firing.)

## TEN-YEAR LIMITED HEAT EXCHANGER WARRANTY

■ **FACTORY START-UP INCLUDED**-Required for activating warranty and assuring maximum operating performance. Contact your local sales representative or Authorized Start-Up Agent to arrange a FREE Certified Start-Up. ■ For complete information, consult written warranty or contact A. O. Smith

**GB/GBO-1000  
 through  
 GB/GBO-2500**

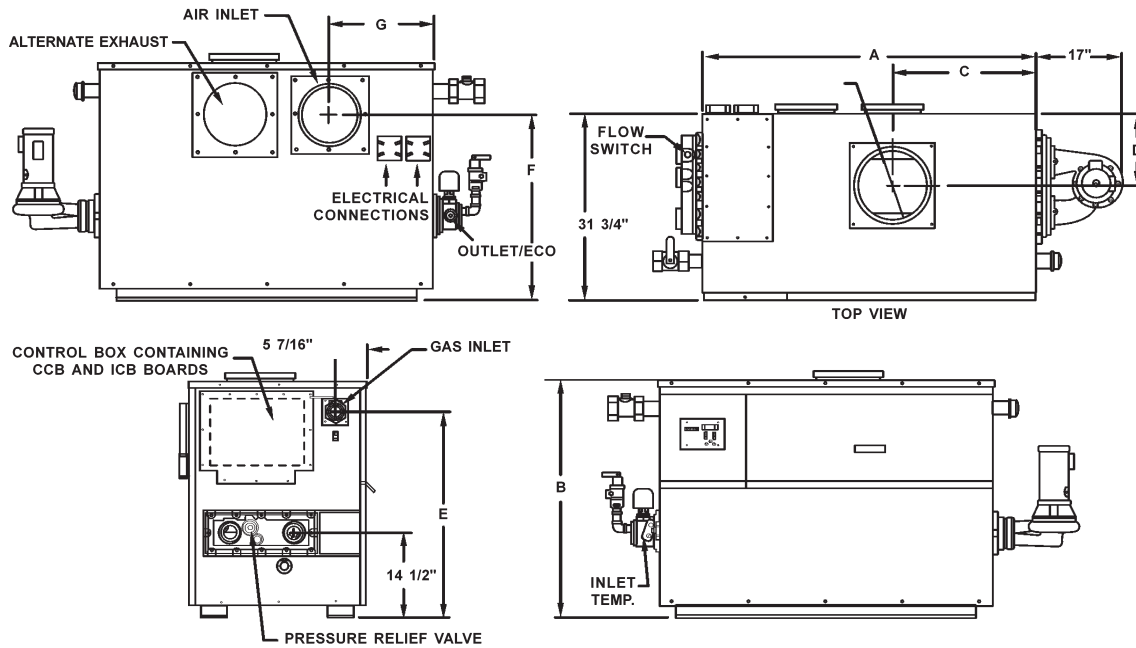


**CRN  
 (OPTIONAL)**





# Hydronic Heating Boilers



Model	All Dimensions in Inches											
	Water Connections	Gas Connections	Vent	InletAir	A Width WO/Pump	B Height	C	D	E	F	G	Width W/Pump
GB-1000	2 1/2	2	10	8	47	40 1/2	14	12 1/2	36 1/4	31 3/4	20 3/4	64
GB-1300	2 1/2	2	12	10	57 1/2	40 1/2	24 3/4	12 1/2	36 1/4	31 3/4	18	74 1/2
GB-1500	2 1/2	2	12	10	64 1/2	40 1/2	30	12 1/2	36 1/4	31 3/4	19 3/4	81 1/2
GB-1850	2 1/2	2 1/2	14	10	78 3/4	43 1/4	27 3/4	11 1/2	35 1/4	32 1/2	34 1/4	95 3/4
GB-2100	2 1/2	2 1/2	14	12	85 1/2	43 1/4	31	11 1/2	35 1/4	32 1/2	35 3/4	102 1/2
GB-2500	2 1/2	2 1/2	16	12	99 1/2	43 1/4	38	10 1/2	35 1/4	32 1/2	42 3/4	116 1/2

Maximum gas supply pressure is 13.8" W.C. for both Natural and Propane Gas.  
 The minimum supply gas pressure is 7" W.C. for Natural Gas.  
 The minimum supply gas pressure for Propane is 11.0" W.C.  
 Requires: 120V, 60 Hz, 30 Amps, Dedicated Breaker.

Hydronic Boiler BTU Input/Output And Flow Rates														
Model	BTU Input/Output		Boiler Rate of Flow and Pressure Drop											
	Input Rating BTU/Hr. Natural & Propane (LP) Gas	Output Rating BTU/Hr. Natural & Propane (LP) Gas	20 Deg. F Rise		30 Deg. F Rise		40 Deg. F Rise		Maximum Flow Rate			Minimum Flow Rate		
			GPM	PD-Ft. Head	GPM	PD-Ft. Head	GPM	PD-Ft. Head	GPM	PD-Ft. Head	Deg.F Rise	GPM	PD-Ft. Head	Deg.F Rise
GB-1000	990,000	831,600	83	5.1	55	2.7	42	1.5	154	12.2	11	42	1.5	40
GB-1300	1,300,000	1,092,000	109	7.2	73	4.2	55	3.2	154	14.5	14	55	3.2	40
GB-1500	1,500,000	1,260,000	126	10.1	84	8.3	64	4.3	154	16.3	17	64	4.3	40
GB-1850	1,850,000	1,554,000	154	19	104	10.1	78	6.4	154	16.5	20	78	6.4	40
GB-2100	2,100,000	1,764,000	N/A	N/A	116	14.5	89	8.3	154	21.3	23	89	8.3	40
GB-2500	2,490,000	2,091,600	N/A	N/A	139	16.5	105	11.6	154	23.2	26	106	11.6	40

Notes:  
 Flow rates and pressure drops shown above are through the boiler only and include no field piping. The field piping must also be considered when sizing system pumps.

The optional factory supplied integral rear header mounted pump (for primary/secondary pumping) is sized for the boiler and up to additional 50 equivalent feet of field piping.

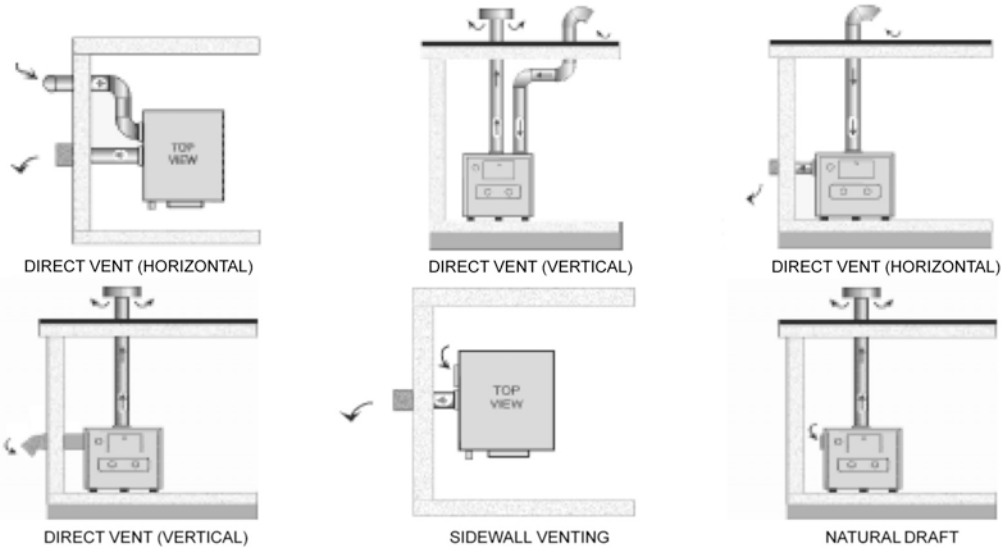
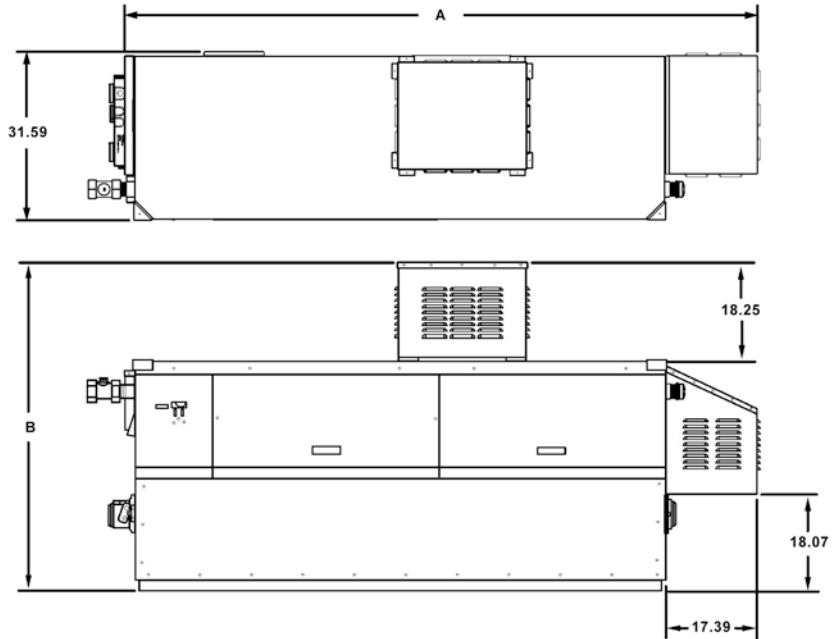
For Technical Information and Automated Fax Service, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.



# Hydronic Heating Boilers

## OUTDOOR MODELS

MODEL	DIM. "A"	DIM. "B"
GBO-1000	66.00	58.67
GBO-1300	76.50	58.67
GBO-1500	83.50	58.67
GBO-1850	97.50	61.37
GBO-2100	104.50	61.37
GBO-2500	118.50	61.37



Venting Distances							
Model	Vent Size	Combustion Air Intake	Natural Draft Max. Distance W/O Barometric Damper / With Barometric Damper	Sidewall Venting*	Sidewall Venting W/Opt. Extended Vent Kit (Power Assisted)	Direct Vent*	Direct Vent W/Opt. Extended Vent Kit (Power Assisted)
GB-1000	10'	8'	35'/70'	70'	110'	35' / 35'	60' / 60'
GB-1300	12'	10'	35'/70'	70'	110'	35' / 35'	60' / 60'
GB-1500	12'	10'	35'/70'	70'	110'	35' / 35'	60' / 60'
GB-1850	10'	12'	35'/70'	35'	110'	15' / 15'	20' / 20'
GB-2100	14'	12'	35'/70'	35'	110'	15' / 15'	20' / 20'
GB-2500	12'	14'	35'/70'	35'	110'	15' / 15'	20' / 20'

See installation manual for additional venting information further details.

Notes: \* Maximum three elbows

\*\* Maximum two elbows -each- Intake/Exhaust

90/45 degree elbows are equivalent to 10/5 feet of vent pipe respectively.

All venting configurations terminating horizontally are Category III and require AL29-4C venting material.

All venting configurations terminating vertically are Category I and can use type B venting material (Except where local codes require AL29-4Csealed venting material.)

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# Hydronic Heating Boilers

## SUGGESTED SPECIFICATION

The hydronic heating boiler(s) shall be an A.O. Smith Genesis Model GB \_\_\_\_\_ having an input rating of \_\_\_\_\_ BTU/hr, and an output rating of \_\_\_\_\_ Btu/hr when fired with (Natural/Propane) \_\_\_\_\_ gas. The boiler shall bear the ASME "H" stamp and shall be National Board registered (CRN in Canada) for 160 PSI working pressure. The boiler(s) shall be equipped with a factory installed 50 PSIG ASME Pressure Relief Valve. The boiler(s) shall be design tested and certified to the ANSI Z21.13 - CSA 4.9 standard and approved by the American and Canadian Gas Associations with a listed thermal efficiency of 84%. The boiler's copper fin tube heat exchanger shall be a horizontal, double row, two pass, 15-tube design. The lower first pass with 8 solid copper tubes, shall have integral extruded copper fins spaced at "5" fins per inch, the upper second pass with 7 solid copper tubes shall have "7" extruded copper fins per inch. The tubes shall be rolled into heavy (Cast Iron CoraShield Lined headers "standard" /or Bronze headers "optional") \_\_\_\_\_. The ASME approved bolted split headers must have a removable face plate that allows full access and inspection of the tubes and internal header surfaces. Non-removable one-piece headers, with small inspection plugs, shall not be acceptable. The heat exchanger shall bear a 10-year manufacturer's limited warranty against failure. The heat exchanger shall be immune to thermal shock. (Optional Secondary Boiler Pump for Primary Secondary Heating Systems) The Boiler(s) shall be provided with the optional factory sized, integrally rear header mounted, pre-wired, bronze fitted, factory-installed pump. The pump shall be controlled by the boiler's EMC-5000 control and include an adjustable time delay, that allows the removal of useable residual heat from the combustion chamber and cools the boiler to an equal system temperature during the stand-by cycle. The combustion chamber shall be fully lined with lightweight, high temperature ceramic fiber insulation, rated to 2,300°F (1260°C). The jacket panels shall be powder coated with a baked-on finish, which is suitable for outdoor service. The jacket shall be of tight construction, and weather and water-resistant. The boiler shall employ a fan induced premixed multi-burner system firing into a pressurized combustion chamber. The "4509" stainless steel/titanium alloy burners shall be fired using Pre-Jet gas orifices that provide precise gas to air mixture for clean combustion and low NOx operation. The pre-Jet gas orifices shall be self-adjusting for altitude, from sea level to 6,000 feet (1,830m). The boiler(s) shall be capable of meeting the current national, state, and local air quality regulations for low NOx. All electrical boiler functions shall be controlled, operated, and monitored by a EMC-5000 microprocessor-based control. The EMC-5000 control shall provide (three "GB-1000 thru GB-1500" /four "GB-1850 thru GB-2500") \_\_\_\_\_ stage operation. Each stage shall be adjustable by the operator to allow the boiler to be adjusted to suit the application and maximize system/boiler efficiency and operation. The microprocessor shall control the boiler temperature and be accurate to within plus or minus 1°F. The hot surface ignition system shall employ a separate flame sensor for each stage to provide maximum safety. The microprocessor-based boiler control shall be tested to ANSI standards and approved by both UL and CSA. The boiler shall be supplied with a remote loop thermistor for controlling the heating loop temperature up to 1,000 feet (300m) away by the EMC-5000 boiler control. Alternate 24V contacts sensing and all also be provided to allow the boiler to be controlled by energy management systems and/or multi-boiler controllers. The microprocessor-based control shall be self-diagnostic and provide 25 LED's that indicate current operating and fault status. In addition to the LED's, a digital LED annunciator shall provide numerical read outs of inlet/outlet, inlet/outlet differential, set point and set point differential temperatures; along with additional numerical failure codes. Factory-mounted and wired flow, blower prover, and blocked flue switches shall be provided. The gas train shall meet the requirements of ANSI Z21.13 - CSA 4.9 and include gas pressure regulator, manual gas cock, redundant safety gas valve, operating control valve, and plugged pressure test tapings. The boiler(s) shall be CSA approved for direct horizontal through the wall venting, or direct vertical venting; in addition to conventional sidewall or conventional vertical venting. The boiler(s) must be field convertible from top mounted venting to rear mounted venting. For maximum floor space optimization, the boiler(s) will have the option of being stacked directly one above the other using a factory designed Stack-Rack as provided by the manufacturer. Boilers with top only vent outlets that cannot be stacked directly one above the other are not acceptable. Boilers should incorporate the iCOMM™ system for remote monitoring, leak detection and fault alert.