The Legend 2000® heating boiler suggested specification:

- 90% Efficient, Low NOx Hydronic Heating Boilers

The gas-fired hydronic heating boilers shall be a A.O. Smith Legend 2000® model LB-1000, with an input rating of 1,000,000 BTU/hr and an output rating of 900,000 BTU/hr on natural gas. The boiler shall: 1) Bear the ASME “H” stamp and shall be National Board registered for 160 PSI working pressure. 2) Be heat- and cold-certified at 90% thermal efficiency by CSA International. 3) Meet SCAQMD Rule 1146.2 for low-NOx emissions and air quality standards.

The gas fired water section shall be constructed of 100% copper, brass and bronze. No phenolic lining or cast iron is acceptable.

The heat exchanger shall: 1) Incorporate 5/8˝ I.D. finned copper tubing with 9 fins per inch and an integrated low-NOx emissions and air quality standards. 2) Be circular, encompassing the entire burner and forming the combustion chamber. No gaskets are acceptable in the combustion chamber, burner assembly or the ASME wet section. Combustion chamber tub shall be glass-coated steel to prevent damage by condensation.

The gas burner shall be constructed of Inconel® 625 stainless steel, warranted for 5 years and fire in a radial 360-degree flame pattern. Fuel and gas nozzles shall be placed in the stainless steel pre-mix tube for safety. Pressurized cabinets are unacceptable. Gas orifices shall be replaceable without removal of the burner. Boiler shall have an inner steel frame and jacket panels shall be a baked-on-enamel finish. The unit must be capable of operating with jacketed panels removed for inspection and maintenance. Control panel shall permit easy access and have a protective cover, removable with no tools. All units shall utilize an approved stainless steel vent system to handle condensation. The Dia-Scan® solid-state control system shall monitor and control T, O operating and safety functions. Indicating lights will monitor and include air, transformer, ignition, gas pressure, water flow, gas valves, pressure, pressure, and safety lock outs.

CSA International-certified for installation on combustible floor. Standard operating controls and equipment shall include hot surface electronic ignition, operating switch, control panel, manual reheat hi-limit, automatic main and redundant gas valve, master switch with pilot light, light sensor temperature gauge, ASME safety relief valve, flow switch, heat-resistant glass viewing port and Dia-Scan control system.

The control panel shall be equipped for 120V single-phase 60Hz current. Complete opening and start-up instructions are to be furnished with unit. Units shall meet or exceed ASHRAE/IESNA 90.1-1999.

Connections shall be 24 VAC, including slow-opening main gas valve for soft ignition, redundant safety shutoff gas valve, main and pilot pressure regulators, recycling interment pilot system with one second shutdown in the event of pilot flame failure, automatic recycling high limit, manual reset/ECC limit, main and pilot manual control and manual firing valve and an ASME-rated pressure relief valve. The boiler shall be approved by Factory Mutual (FM).

The boiler shall comply with ASHRAE/IESNA 90.1-1999 standards.
VERSATILE MULTI-VENTING CONFIGURATIONS

DIRECT-VENTING

SIDEWALL VENTING

CONVENTIONAL VENTING

LEGEND 2000® VENTING VERSATILITY

STANDARD-VENT OR DIRECT-VENT FLEXIBILITY

• Standard-venting, vertical or horizontal sidewall
  • Single pipes vent runs up to 180 equivalent feet (90° elbow = 10 equivalent feet, 45° elbow or boot tee = 5 equivalent feet)

• Two-pipe direct-venting vertical and/or horizontal sidewall, with all combustion makeup air drawn from outside the building
  • Air intake and exhaust vent runs permitted up to 90 equivalent feet (90° elbow = 10 equivalent feet, 45° elbow or boot tee = 5 equivalent feet)

Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must have 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. No gaskets are acceptable in the combustion chamber, burner assembly self-baffling tube design. No “V” baffles are acceptable. 2) Be circular, encompassing the entire burner and control permitting easy access and have a protective cover, removable with no tools. All units shall utilize an approved Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must have 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. No gaskets are acceptable in the combustion chamber, burner assembly self-baffling tube design. No “V” baffles are acceptable. 2) Be circular, encompassing the entire burner and control permitting easy access and have a protective cover, removable with no tools. All units shall utilize an approved Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must have 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. No gaskets are acceptable in the combustion chamber, burner assembly self-baffling tube design. No “V” baffles are acceptable. 2) Be circular, encompassing the entire burner and control permitting easy access and have a protective cover, removable with no tools. All units shall utilize an approved Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must have 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. No gaskets are acceptable in the combustion chamber, burner assembly self-baffling tube design. No “V” baffles are acceptable. 2) Be circular, encompassing the entire burner and control permitting easy access and have a protective cover, removable with no tools. All units shall utilize an approved Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must have 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. No gaskets are acceptable in the combustion chamber, burner assembly self-baffling tube design. No “V” baffles are acceptable. 2) Be circular, encompassing the entire burner and control permitting easy access and have a protective cover, removable with no tools. All units shall utilize an approved Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must have 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. No gaskets are acceptable in the combustion chamber, burner assembly self-baffling tube design. No “V” baffles are acceptable. 2) Be circular, encompassing the entire burner and control permitting easy access and have a protective cover, removable with no tools. All units shall utilize an approved
The Legend 2000® series delivers an exceptional 90% thermal efficiency by combining advanced pre-mix burner design and an extruded, self-baffling copper heat exchanger for outstanding efficiency and unsurpassed performance. The heat exchanger design exposes more surface area to the combustion system to maximize heat transfer. Each model features a small footprint with zero side clearance for outstanding adaptability perfect for retrofit. The exclusive Dia-Scan® solid-state self-diagnostic system makes help operation and troubleshooting quick and easy.

ADVANCED HIGH-EFFICIENCY, LOW-Nox COMBUSTION TECHNOLOGY
• Advanced burner design precisely pre-mixes gas and air before ignition, increasing combustion efficiency and reducing emissions
• Delivers optimum burner performance for 90% thermal efficiency
• Meets or exceeds Texas and California SCAQMD Rule 116.2 air quality standards (differential), loop temperature and fault codes

NEW STAINLESS STEEL BURNER DESIGN
• Features metal fiber alloy sheath for consistent heat distribution and reliable performance under all conditions

DIA-SCAN BOILER CONTROL
• Comprehensive display panel includes LEDs with readouts for current operating and fault status
• Precise temperature management of a ±1°F
• Self-diagnostics eliminate guess work and pinpoints problems—trouble shooting has never been easier

EXCLUSIVE, NO-BAFFLE HEAT EXCHANGER DESIGN
• Extruded copper manufacturing process exposes more surface area to the combustion system for increased heat-transfer efficiency
• Unique self-baffling design (patent pending) is a significant improvement over traditional heat-transfer systems

100% ALL NON-FERROUS WATERWAYS
• All waterways 100% copper, brass or bronze for years of reliable performance
• Impervious to thermal shock

GASKETLESS AIRHEAT EXCHANGER
• Superior design assures reliability and long-life performance
• Isolated location offers optimum protection and years of service

OPTIONAL FACTORY MOUNTED AND WIRED PUMP AVAILABLE
• Integral boiler mounted all bronze pump for primary/secondary pumping systems
• Allows for 50 equivalent feet of pipes between boiler and primary loop

COMPACT, LOW-PROFILE DESIGN
• Allows easy entry for modular installations
• Zero clearance on sides for maximum installation versatility

CATEGORY IV LISTED
• Legend 2000® boilers utilize a mechanical forced draft system designed to prevent leakage of flue (vent) gases and condensate

MEETS OR EXCEEDS ASHRAE/IESNA 90.1-1999

TEN-YEAR HEAT EXCHANGER LIMITED WARRANTY
• For complete information, consult written warranty or contact A. O. Smith

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