

## SlimFit™ High Efficiency Gas Boiler

### Models 1,000 – 2,000 MBH Series 2

#### I. General Requirements

- A. Furnish and install \_\_\_\_\_ (qty.) packaged, modulating, sealed combustion, power-vented, high efficiency gas-fired boiler(s) with cast aluminum sectional heat exchangers that use outside or inside air for combustion
- B. Install packaged boiler unit(s) according to manufacturer's installation instructions. All work to be done in a neat and workmanlike manner.
- C. \_\_\_\_\_ (quantity) Weil-McLain® SlimFit - \_\_\_\_\_ (size), \_\_\_\_ (L or R) packaged boiler(s) capable of burning natural gas.
- D. Boiler(s) shall have an AHRI gross output at 100% fire rate of \_\_\_\_\_ MBH per boiler.
- E. Boiler(s) shall be 95+% minimum AHRI certified thermal efficient as required by BTS 2000
- F. Boiler(s) shall have an independent laboratory rating of \_\_\_\_\_ for Oxides of Nitrogen (NOx) to meet the requirements of South Coast Air Quality Management District in Southern California and the requirements of Texas Commission on Environmental Quality.
- G. Boiler shall be capable of full modulation firing with a turn down of up to 6 to 1
- H. Boiler(s) shall be manufactured by ISO 9001 registered company to conform to Section IV of the ASME Boiler and Pressure Vessel Code
  - 1. Sectional cast aluminum block to be fire tested and hydrostatically pressure tested at factory in accordance with ASME requirements
  - 2. Maximum allowable working pressure 100 PSIG water as listed on the rating label
  - 3. Boiler(s) and controls to comply with applicable regulations
  - 4. Boiler(s) shall be fully factory packaged in acceptance with ASME CSD-1

#### II. Product

- A. Acceptable boiler manufacturer(s) include(s)
  - 1. As specified in Part I, Paragraph C
  - 2. Other manufacturer or other Weil-McLain boiler(s) must comply with specifying engineer's requirements, including:
    - (a) Full intent of these specifications
    - (b) Provide complete submittal including literature, manuals, wiring diagrams, fuel piping diagrams, and a list of similar installations. Any alternate must be of similar size and footprint, piping configuration, clearance requirements and heating surface
    - (c) Submittal presented to engineer at least seven working days before bid opening for approval. Substitutions are not permitted after contract is awarded
- B. Boiler Construction
  - 1. Boiler(s) heat exchanger:
    - (a) Cast aluminum sectional block
  - 2. Factory assembled, completely packaged, wired, pre-programmed and factory tested (include boiler specific factory test certificate)
  - 3. Boiler(s) main components:
    - (a) The boiler shall have the ability to be assembled in both a left-handed and right-handed orientation. In multiple boiler systems, this will allow two boilers, one right-handed and one left-handed, to be installed side-by-side. This orientation will allow easy access for cleaning and maintenance, as well as placing all gas and water connections for the two boilers directly next to one another
    - (b) The combustion chamber will be sealed and located at the top of the block casting which will be of counter flow design
    - (c) The burner shall be premix combustion type, made with stainless steel and a woven metal fiber outer covering to provide a wide range of modulating firing rates

- (d) Boiler(s) shall be supplied with a gas valve designed with negative pressure regulation (fan venturi effect "pulls" gas through valve rather than gas pressure "pushing" gas through valve). Negative pressure regulation enables the boiler to operate in a safe condition at 3.0" W.C. inlet gas pressure. The inlet (natural) gas pressure to the boiler gas valve should be a minimum of 3.0" W.C. and a maximum of 14" W.C. If inlet gas pressure exceeds 14" W.C., a 100% lock-up type gas pressure regulator of adequate size must be installed in gas supply piping and adjusted to prevent pressure in excess of 14" W.C.
- (e) The boiler shall be equipped with a variable speed blower system capable of modulating the boiler firing rate from 100% to 16.7 %
- (f) The boiler shall be equipped with a device capable of controlling the air/fuel ratio through a 6 to 1 turndown ratio
- (g) The control system shall have a 3.5" LCD color coded, display for boiler set-up, boiler status, and boiler diagnostics

C. Venting and Combustion Air

- 1. Boiler(s) must be capable of using outside air piped directly to boiler for combustion. Inlet and termination of these pipes must be connected to either through-the-roof or sidewall terminations as recommended by the manufacturer
- 2. The boiler shall be direct vent or direct exhaust using PVC, CPVC, PP or AL29-4C approved venting systems

D. Boiler Trim

- 1. All electrical components to be of a high quality and UL rated
- 2. Boiler must be CSD-1 compliant with factory report for ASME CSD-1
- 3. Water boiler(s) controls furnished:
  - (a) High limit temperature control with manual reset, fixed 200 degree F
    - i. Operating Limit with 190 degrees F maximum boiler water temperature set point
  - (b) Combination pressure-temperature gauge. Gauge dial clearly marked and easy to read
  - (c) ASME certified pressure relief valve set to relieve at 30 (optional 50, 80, or 100) PSIG
  - (d) Flue gas, outlet water temperature, and return water temperature sensors
  - (e) Field installable outdoor temperature sensor and system header temperature sensor
  - (f) Low water protection with manual reset
  - (g) High and low gas pressure switches with manual reset and indicator lights
  - (h) Circulator Exercising
  - (i) Built-in freeze protection
  - (j) Warm Weather Shutdown
- 4. Boiler Control to be UL 353 Listed with:
  - (a) 3 pump contacts
  - (b) Fully customizable outdoor reset curve
  - (c) Multiple Boiler System functionality including Lead / Lag capability, as well as lead boiler rotation
  - (d) Ability to control a total of 8 boilers
  - (e) Central Heading and Domestic Hot water priorities. LCD screen to monitor multiple temperatures at one time, including supply, return, header, outdoor, and flue gas temperatures
  - (f) LCD color, coded display
  - (g) Alarm contacts that signify all manual reset lockouts including flame failure, high temperature limits, gas pressure limits, air pressure limit, and low water cut off limit
  - (h) Remote modulation capable of interfacing with Building Automation Systems through Modbus, or an optional Modbus to BACnet or LonWorks translator

E. Boiler Manuals

- 1. The boiler(s) shall be provided with complete instruction manuals, including:
  - (a) Boiler Installation Manual
  - (b) User's Manual
  - (c) Manufacturer's Data Report for ASME CSD-1