

# Ultra Boiler

## SUGGESTED SPECIFICATIONS

### I. General Requirements

- A. Furnish and install \_\_\_\_\_ (qty) packaged, modulating, sealed combustion, power-vented, high efficiency gas-fired boiler(s) with cast aluminum heat exchangers that use outside 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. Weil-McLain \_\_\_\_\_ (quantity) Ultra-\_\_\_\_\_ (size), packaged boiler(s) capable of burning natural or propane gas.
- D. Boiler(s) shall have I=B=R Hydronics Institute gross output at 100% fire rate \_\_\_\_\_ MBH per boiler.
- E. Boiler(s) shall be 95.2% minimum DOE efficient as required by National Energy Conservation Act or ASHRAE 90.1. Model 399 to have a minimum combustion efficiency of 91.7%.
- F. Boiler shall be capable of full modulation firing with a turn down of up to 5 to 1.
- G. Boiler(s) shall be manufactured by ISO 9001 registered company to conform to Section IV of the ASME Boiler and Pressure Vessel Code.
  1. Individual cast aluminum mono block to be fire tested and hydrostatically pressure tested at factory in accordance with ASME requirements.
  2. Maximum allowable working pressure 30 PSIG water as listed on the rating label.
- H. Regulatory Requirements
  1. Boiler(s) shall meet or exceed the SCAQD (South Coast Air Quality District of California) Low Nox emission requirement of 40NG/J.
  2. Boiler(s) and controls to comply with applicable regulations.
  3. Boiler(s) shall meet U.S. Environmental Protection Agency and Department of Energy guidelines for "Energy Star" energy efficiency.

### II. Product

- A. Acceptable boiler manufacturer(s) include(s):
  1. Weil-McLain only, 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, and
    - (b) Provide complete submittal including literature, manuals, and wiring diagrams, fuel piping diagrams, and list of similar installations. The 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 mono block heat exchanger.
  2. Boiler(s) main components:

- (a) The combustion chamber will be sealed and located at the top of the mono block casting which will be of counterflow design, to assure that sediment and any lime that might form will fall to the bottom, away from the crown sheet area.
- (b) Boiler(s) shall be supplied with a gas valve designed with negative pressure regulation (fan suction "pulls" gas through valve rather than gas pressure "pushing" gas through valve). This enables the boiler to operate in a safe condition at a derated output, even if the inlet gas pressure should drop to as low as 4 inches W.C. The inlet (natural) (propane) gas pressure to the boiler gas valve should be a minimum of 4" W.C. and a maximum of 13" W.C. If inlet gas pressure exceeds 13" 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 13" W.C.
- (c) The burner shall be premix combustion type, made with stainless steel and a woven metal fiber outer covering providing a wide range of modulating firing rates.
- (d) The boiler shall be equipped with a variable speed blower system, capable of modulating the boiler firing rate.
- (e) The boiler shall be equipped with a device capable of controlling the air/fuel ratio through a 5 to 1 turndown ratio.
- (f) The control system shall have an electronic 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 using Schedule 40 PVC, ABS or CPVC.

D. Boiler Trim

- 1. All electrical components to be high quality manufacture and bear UL label.
- 2. Water boiler(s) controls furnished:
  - (a) High limit temperature control (190 degrees F maximum allowable boiler water temperature).
  - (b) Combination pressure-temperature gauge. Gauge dial clearly marked and easy to read.
  - (c) ASME certified pressure relief valve, set to relieve at 30 PSIG.
  - (d) Flue gas, outlet water temperature, and return water temperature sensors.
  - (e) Low water protection.
  - (f) Built-in freeze protection.
  - (g) 0014 or 2400 Taco circulator.

E. Boiler Manuals

- 1. The boiler(s) shall be provided with complete instruction manuals, including:
  - (a) Boiler Installation Manual.
  - (b) User's Manual.