



88 SERIES 2 BOILER

SUGGESTED SPECIFICATIONS

I. General Requirements

- A. Furnish and install () low pressure, wet base, cast iron sectional boiler(s) with power burner(s) that pressurize the firebox and operate under forced and balanced draft at a **minimum of 85.6% Oil Thermal efficiency and 83.1% Gas Thermal efficiency.**
- B. Assemble and install boiler-burner unit(s) in compliance with manufacturers installation instructions. All work must be done in a neat and workman like manner.
- C. Weil-McLain (P)(A)(B) L, (P)(A)(B) G, (P)(A)(B) GL- ()88-(W) (S)F boiler(s) with burner(s) capable of burning natural gas at ()" W.C. inlet pressure and/or No. 2 fuel oil.
1. (B) Boiler-burner unit Field assembled (standard).
 2. (A) Boiler-burner unit with factory assembled sections.
 3. (P) Boiler-burner unit completely packaged and fire tested
 4. Natural or LP gas fired and/or No. 2 fuel oil.
 5. Water or steam.
 6. Forced or balanced draft.
- D. Boiler(s) shall have I=B=R Hydronics Institute gross output(s) at 100% firing rate – () MBH per boiler.
- E. 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 sections (and section assembly) to be hydrostatically pressure tested at factory in accordance with ASME requirements.
 2. Maximum allowable working pressure 80 PSIG water and 15 PSIG steam cast as part of section with ASME symbol.
- F. Regulatory Requirements
1. Boiler(s) and controls to comply with applicable regulations.
 2. Provide U.L. labeled burner(s).
 3. Provide add option for local code(s) ie: MASS Code, BAR
- G. Submittals
1. Submit shop drawings and product data.
 2. Submittal packet to include boiler (and burner) manufacturer descriptive literature, installation instructions, operating instructions, and maintenance instructions.

II. Product

- A. Acceptable boiler/burner manufacturer(s) include(s):
1. Weil-McLain only, as specified in Part 1, Paragraph C.
 2. Other manufacturer(s) or other Weil-McLain boiler(s) must comply with specifying engineer's requirements, including:
 - a) Full intent of these specifications, and provide complete submittal including literature, wiring diagrams, fuel piping diagrams, and a list of similar installations.
 - b) Submittal to be presented to specifying engineer at least seven working days for approval before bid opening. Substitutions are not permitted after contract is awarded.
 - c) Burner(s) and Energy Management Control System(s) must be tested and approved for installation with specified boiler-by-boiler manufacturer.
- B. Boiler construction
- Boiler sections
 - Assembled with short, individual draw rods.
 - Cast with sealing grooves for high temperature sealing rope to assure permanent gas-tight seal.
 - Sealed watertight by elastomer sealing rings, not cast iron nipples. Each port opening is machined to completely capture sealing ring between sections.
 - Must be hydro-wall design to provide completely water-cooled combustion chamber.
 - Provided with sufficient tappings to install required controls.
 - Limited 10-year warranty against workmanship and defects to be in writing by manufacturer.
- C. Boiler(s)
- **Provided with HXT bars to maximize heat transfer**
 - Provided with cast-in air elimination to separate air from circulating water.
 - Provided with expansion tank tapping to divert separated air to expansion tank.
 - Constructed to provide balanced water flow through entire section assembly using single supply and return connections for water. No external headers are necessary for water. Steam requires two or more supplies to an external header 24" minimum from the waterline to the bottom of the header.
 - Designed with a low silhouette to provide maximum headroom.
 - Furnished with insulated burner mounting plate having necessary holes and tappings to mount burner. High temperature sealing rope is used to provide permanent gas-tight seal between front section and plate.
 - Furnished with two observation ports (one in front and one in back) to allow visual inspection of the flame.
 - Provided with cast iron flue collar with a built-in adjustable damper capable of being locked into place after adjustment.
 - High temperature sealing rope used to provide permanent gas-tight seal between hood and section assembly.
 - Furnished with heavy gauge steel cleanout plates to cover cleanout openings on the side of the boiler(s).

- Port openings must be of captured seal design – a machined groove assures uniform compression of the sealing ring and protects the seal from contaminants. Elastomer sealing rings are to be used to provide permanent watertight seal between sections. Unlike cast iron or steel push nipples, the elasticity of the seals fills any gaps caused by misalignment or expansion or contraction.
- Shipped with insulated heavy gauge steel jacket(s) with durable powdered paint enamel finish. Jacket designed to be installed after connecting supply and return piping. **Side panels can be removed without tools for easy servicing.**

D. Tankless heaters or indirect water heaters

- Provide () internal tankless water heater(s) inserted into the left hand side of the tankless intermediate (TI) section in the opening provided. Allow 34” minimum clearance on left side of boiler for cleaning and servicing. Tankless openings must be on same side as the flue passage cleanout plates to minimize space requirements.

E. Boiler foundation(s):

- Installer to construct needed support and level concrete foundation(s) where boiler room floor is uneven or will not support the weight of the boiler(s).

F. Boiler trim:

1. All electrical components to be of high quality and bear the U.L. label.
 - a) Water boiler(s) controls furnished:
 - 1) Combination low temperature limit (operating) and **manual reset** high temperature limit control.
 - 2) Low temperature limit set according to system design. High temperature limit set at least 20°F higher than the low limit (240°F is the maximum allowable water temperature).
 - 3) Combination pressure-temperature gauge with dial clearly marked and easy to read.
 - 4) ASME certified pressure relief valve, set to relieve at 30 PSIG. Optional relief valves available up to and including maximum allowable pressure. Side outlet discharge type; contractor to pipe outlet to floor drain or near floor, avoiding any area where freezing could occur.
 - b) Steam boiler(s) standard controls furnished:
 - 1) Low pressure control (operating) and high pressure control set at maximum pressure as a safety control.
 - 2) Steam pressure gauge with dial clearly marked and easy to read.
 - 3) Gauge cock water set with gauge glass, guards and aluminum water level plate.
 - 4) ASME certified pressure relief valve, set to relieve at 15 PSIG. Side outlet discharge type; contractor to pipe outlet to floor drain or near floor, avoiding any area where freezing could occur.
 - c) Low water cut-off for water or steam boiler(s):
 - 1) Boiler(s) to be furnished with U.L. labeled low water cut-off with ASME working pressure rating equal to the ASME rating of the relief valve.
 - 2) Do not use quick-connect fittings on boiler(s).
 - 3) Install cut-off according to manufacturer's instructions.

- 4) Locate so burner shuts down if boiler water level falls below allowable safe waterline (steam boilers, ¼" above bottom of gauge glass).
- 5) Steam boiler primary low water cut-off shall be a float type – auto reset.
- 6) Steam boiler secondary low water cut-off shall be float or probe – manual reset.

III. Burner(s) construction, features and requirements:

1. Burner fuel supply system and burner installation to conform to burner manufacturer's installation instructions and applicable codes.
 2. Burner motor characteristics: 120/60/1, 240/60/1, 208/60/3, 240/60/3, 480/60/3.
 3. Control characteristics 120/60/1.
 4. Burner fuel – natural gas/LP 4.0" W.C. minimum, No. 2 fuel oil.
 5. Code(s) - standard boiler, CSD-1, FM, IRI
 6. Burner(s) to have U.L. label(s) supplied by the burner manufacturer.
 7. Burner(s) designed to ensure high efficiency and good performance under forced draft conditions with 0.1" W.C. positive pressure at the flue collar.
 8. Burner to be adjusted to provide 9.5 to 10.0% CO₂ for gas and/or 11.5 to 12% CO₂ with zero smoke for oil firing.
 9. Burner(s) manufactured by:
 Power-Flame, Riello, Webster, Carlin, Beckett
 10. Burner operating mode: on-off, low-high-off, low-high-low, modulating
- A. Panel options – power on/fuel on light is standard on all burner(s) with panels.
- 1) Call For Heat
 - 2) Ignition On
 - 3) Pilot Failure
 - 4) Low Water
 - 5) Flame Failure
 - 6) Silencing Switch
 - 7) Control Fuse and Holder
 - 8) Post Purge Timer
 - 9) Alarm Bell
- B. Start-up and Service
- The contractor shall obtain the services of a factory-authorized agent to provide burner light off and adjustment. The start-up agent shall provide a burner light-off report as written proof that the burner was adjusted to optimum performance.
 - The authorized agent shall provide a one-year service warranty after start-up.