RECOMMENDED SPECIFICATIONS FOR PARKER DIRECT FIRED HOT WATER BOILERS WITH LOW NOx PREMIX METAL FIBER BURNER SYSTEM, PARKER "L" MODELS

HOT WATER BOILER:

1. **GENERAL:** The Hot Water Boiler shall be Parker Model T - _____L of the flexible, bent steel water tube design as manufactured by Parker Boiler Co. The boiler shall be fired with natural gas or LPG gas fuel(s). Input rating shall be _____ BTUH and it shall be furnished complete and assembled, factory fired and tested with controls and trim mounted and wired.

2. **CODES & STANDARDS:** The boiler shall be manufactured in accordance with the ASME Power and Heating Codes, Sections I & IV and registered with the National Board of Boiler and Pressure Vessel Inspectors for 125 PSI MAWP. Safety Relief Valve & Trim shall be furnished for _____ PSI Pressure*. Operating temperature controls shall be furnished for ❑ 240ºF (or ❑ 350ºF). Minimum heating surface _____ square feet. All controls and trim shall be in compliance with UL Standards and listed as a Gas Fired Boiler Assembly by a Nationally Recognized Test Lab.

3. **LOW NOx BURNER SYSTEM:** The boiler shall incorporate a fan assisted combustion system with a burner bed of multiple Metal Fiber Burners. These burners shall be linked to a single fan through a gas air premix manifold. The premix burners shall provide a high degree of NOx level repeatability once system is adjusted. No filters shall be required.

   The burners shall be capable of generating Low NOx without generating significant CO emissions. NOx emissions are guaranteed less than 30 PPM at 3% O_2 with CO emissions guaranteed less than 125 PPM @ 3% O_2.

   The burners shall consist of a sintered Metal Fiber hot face made from a iron chromium alloy with a bonding Yttrium Element. The Metal Fiber shall be backed by a layer of 430 stainless steel and an additional perforated plate. The Metal Fiber Burners shall provide a high degree of resistance to mechanical and thermal shock, fast cool down and corrosion resistance. Maximum pressure drop through burner at normal firing rates shall be 1.25" W.C.

   On boilers equipped with modulation or two stage firing and units over 970,000 BTUH, a blower mixer which distributes a ratio controlled gas air mixture to the burners shall be utilized. Blower construction shall be non-sparking with totally enclosed motor. The gas air ratio shall be controlled through the throttling range by a characterizable fuel valve supplied as part of the blower mixer.

   On boilers 970,000 BTUH input and below which are on/off fired provide single inlet blower with permanent split capacitor motor. Housing shall be die cast aluminum with forward curve wheel. Gas shall be injected downstream of the blower.

4. **CONSTRUCTION:** The boiler shall be of the bent water tube design with tubes Grade SA-53 steel minimum 1-5/16" O.D. and wall thickness minimum .133" welded to top and bottom headers with high tensile weld metal. End of headers to have accessible inspection openings. Tubing shall be staggered to provide a minimum of 8 pass baffled heating surface and designed with downcomers to provide internal circulation. The tubes shall be of the bent design to permit free expansion and contraction. The boiler shall be mounted on a steel frame and enclosed in a heavy steel cabinet with controls mounted. The boiler cabinet shall consist of an inner and an outer liner of minimum 16-gauge steel insulated with a high temperature thermal fiber insulation minimum 1-1/2" thick. The cabinet shall be finished with an attractive baked enamel, heat resistant finish for long-life protection.

- On hot water boilers the maximum operating pressure should be at least 25% (and 10 PSI minimum) below safety relief valve setting.

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5. **CONTROLS & TRIM:** The boiler shall be furnished complete with controls and trim to provide safe, efficient operation. Standard trim items furnished with the boiler shall include ❑ draft hood or ❑ barometric damper, safety relief valve, temperature and pressure gauge, operating temperature control, manual reset high limit temperature control and Warrick probe type manual reset low water cutoff with test and reset buttons. The boiler shall be furnished with an enclosed boiler control panel with hinged door, boiler controls and main burner switch, and fuse for or circuit breaker for over-current protection. Fan motor starter and Parker-Lite Sequence Indicator System shall be provided with lights for (1) control power, (2) water level safe, (3) limits safe, (4) pilot and (5) main burner.

   Primary electric service shall be 115V - 1 Phase - 60 Cycle for boilers with motors 1/2 H.P. or smaller. Larger units shall be 230/460V - 3 Phase - 60 Cycle. All boiler controls shall be 115 Volts with separate power sources required for 115V - 1 Phase - 60 Cycle and 230/460V - 3 Phase - 60 Cycle.

   Boiler shall be equipped with electronic flame safeguard with electric ignition, Fireye M series or Honeywell 7800 Series, with pre purge and air flow proving switch. Programming flame safeguards where required by UL Standards, shall be Fireye E100 Flame Monitor Controls.

6. **GAS TRAIN:** All controls and trim shall be in compliance with UL Standard 795. The gas manifold shall include dual electric gas valves, gas pressure regulator, a main shut off valve and a leak test cock above 400,000 BTU. The burner shall be for standard natural gas 950 to 1150 BTU content or LPG fuel. Supply gas pressure shall be _____. On boilers over 2.5 million BTUH provide primary motorized gas valve in addition to standard type and high and low manual reset gas pressure switches.

7. **CONTROLS & TRIM OPTIONS:**
   - **A.** California Code Trim
   - **B.** Specify ❑ side or ❑ bottom mounted manifold.
   - **C.** Factory Mutual Trim (FM).
   - **D.** All limit alarm 4" Edwards Bell.
   - **E.** All limit alarm terminals (dry contacts).
   - **F.** Anchor clips, 4 mounted and drilled.
   - **G.** Weather protective cover.
   - **H**. LPG firing.
   - **I.** Additional electronic operating control (and firing rate control if required) with LCD Display of sensed temperature, set point and differential. Remote sensor and adjustable differential from minimum 1°F to Maximum 35°F.
   - **J.** Special fuels or multi fuels.
   - **K.** Air inlet silencer.
   - **L.** Single point electrical connection with transformer and fusing. (option for 3 Phase units)

8. **START UP INSTRUCTION:** Provide Manufacturers Representative startup, adjustment, calibration of equipment and instruction of operating personnel. Provide combustion report after startup.

9. When required, an independent Source Test shall be performed in accordance with the regulations and by an independent certified Agent acceptable to the authority having jurisdiction. Test shall be paid for by others if required.