

# Sample Specification Text

Model: \_\_\_\_\_ HP: \_\_\_\_\_  
Design Pressure: \_\_\_\_\_ Fuel: \_\_\_\_\_  
Operating Pressure: \_\_\_\_\_  
Built to ASME Section: \_\_\_\_\_  
Burner Make: \_\_\_\_\_  
Burner Model: \_\_\_\_\_  
Voltage: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Gas Supply Pressure: \_\_\_\_\_  
No. \_\_\_\_\_ Fuel Oil at \_\_\_\_\_ psig



## Section 1. General Description

Contractor shall furnish and install a \_\_\_\_\_ HP scotch marine fired packaged fully automatic horizontal \_\_\_\_\_ pass \_\_\_\_\_-back type steam boiler. The boiler shall be Series \_\_\_\_\_ type, manufactured by Williams & Davis Boilers.

Each unit shall consist of a horizontal steam boiler complete with fully matched burner and automatic controls. The boiler shall have no less than 5 sq. ft. of heating surface per boiler horsepower. The boiler (with all piping and wiring) shall be completely factory assembled as a functioning unit ready for commissioning prior to shipment from the factory.

Each boiler shall be neatly finished, thoroughly tested and properly packaged for transport to site. The burner and all interconnecting piping and wiring to the control system complete. The boiler shall be designed to ASME Section I or Section IV Pressure Vessel Code and compliant with CSD-1/UL standard. The boiler shall have the following key design features:

- Painted steel cladding
- 2" high density insulation on pressure vessel
- The flue is top mounted in the front
- Access to all flue passes
- ASME stamping in an accessible location

## Section 2. Boiler Size and Ratings

The capacity of each unit at nominal rating shall be to produce \_\_\_\_\_ lb/hr of steam based at 0 psig from 212F feed water or equivalent output rating of \_\_\_\_\_ HP. The flue gas temperature exiting the boiler shall not exceed \_\_\_\_\_ F when the boiler is operated at maximum continuous rating of \_\_\_\_\_ psig. The boiler will have a minimum combustion efficiency of \_\_\_\_\_% at high fire and \_\_\_\_\_ operating pressure.

## Section 3. Boiler Design

The boiler shall be a horizontal \_\_\_\_\_ pass \_\_\_\_\_-back type with a horizontal type furnace.

The boiler shall be designed with hinged front doors. The electrical control panel shall be on the \_\_\_\_\_ hand side when viewed from the front.

The flue shall be top/front mounted. The burner shall fire horizontally into the furnace; the gases shall then pass in reverse back through a bank of tubes prior to passing down convection tubes towards the rear of the boiler. A top manhole will be provided to allow for inspection of the top of the flue pipes. Hand holes will be provided in the sub structure of the boiler for access to the lower bank of tubes and furnace. Cleaning and inspection openings shall be handholes of a minimum size 3" x 4" with two (2) openings on the sub structure of the shell, a minimum of two openings on the front head and one on each side of the boilers furnace.

## Section 4. Boiler Trim

- A. Safety valves will be fitted in accordance of the requirement of the ASME code.
- B. High and low water cutoff water level controls shall be via an internal set of probes in a standpipe configuration.
- C. Feed water pump controls will be via a Pressure Differential Level Transmitter, controller or probes in an external column on the boiler shell. A sight glass will be fitted to each boiler.
- D. Steam pressure gauge shall be a minimum of 3" diameter and located in sight when standing at the front of vessel.
- E. Feed water stop and check valve shall be supplied with the boiler. The feed water to enter the boiler via a removable feed water disperser/baffle.
- F. Additional standard trim shall include a fast and slow opening blowdown valves, water column, and blowdown valves.

## Section 5. Burner

The burner shall be \_\_\_\_\_ forced draft flame retention model \_\_\_\_\_. Each burner shall be capable of burning \_\_\_\_\_ CFH of \_\_\_\_\_ BTU/Cu. Ft. (natural) (propane) (other) \_\_\_\_\_ gas, with a specific gravity of \_\_\_\_\_. Gas pressure applied to the burner gas train supply connection shall be a minimum of \_\_\_\_\_ (in. w.c.) (PSIG) at full high rate and a maximum of \_\_\_\_\_ (in. w.c.) (PSIG) at static conditions. Each burner shall be capable of burning \_\_\_\_\_ GPH of (No. 1, 2 fuel oil) (kerosene) (diesel) or \_\_\_\_\_ fuels with a rating of \_\_\_\_\_ BTU/GAL.

The burner shall be fully matched to the furnace to ensure complete combustion of fuel in the furnace. The burner shall be a modulating type and have digital microprocessor controls.

Burner controls are to be included. PID Type Operating pressure control for automatic start and stop of the burner. High pressure switch with manual reset. Two (2) low water cut off probes to cause shutdown of the burner when water drops to a minimum safe level.

The second low level to require a manual reset. An air safety switch to prevent burner operation until sufficient combustion air is assured shall be installed. A combustion supervision control. The burner motor shall be complete with thermal overload protection.

## Section 6. Ignition System

1. The burner ignition system, which will light either the main gas or oil flame, shall utilize (natural) (propane) gas as the fuel source. The gas pilot system components shall include spark ignited pilot assembly, 6000 Volt ignition transformer, pilot solenoid valve, pilot gas pressure regulator and manual gas shutoff cock. The flame proving system shall incorporate an Ultra-Violet flame detector, which will monitor both the pilot and main flames. The pilot assembly shall fit within the confines of the blast tube - avoiding special burner front plate pilot cut outs.

## Section 7. Tests

Each boiler shall be hydrostatically tested to a minimum of 1.5 times the maximum design pressure in accordance with ASME Code.

## Section 8. Manuals

Instruction for the installation, operation and maintenance of the boiler, operating and maintenance manuals for each sub component shall be contained within a single manual provided by the boiler manufacturer. A wiring diagram shall be affixed to the inside of the control panel cover.

## Section 9. Warranty

The boiler pressure vessel shall have a standard One year warranty.

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