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SERIES 4VT (CYCLONE) STEAM BOILER (6-100 HP – HOT WATER 30 & 150 psig) SAMPLE SPECIFICATIONS

The following sample specifications are provided by Hurst Boiler & Welding Co., Inc. to assist you in meeting your customer's specific needs and application. The sample specifications are typically utilized as the base template for the complete boiler specification. Contact your local Hurst Boiler & Welding Co., Inc. authorized representative for information on special insurance requirements, special code requirements, optional equipment, or general assistance in completing the specification.

1.0 – General Boiler Specifications

1.1 - The contractor shall furnish and install Hurst Cyclone steam boiler(s) for firing:

- Natural Gas
- Propane Gas
- #2 Oil
- Combination

1.2 - The unit(s) shall be of the four pass vertical tubeless design and constructed for:

- 15 psig
- 150 psig
- 200 psig
- 250 psig
- 300 psig

Steam pressure. Boiler, burner and trim shall meet the requirements of Underwriters Laboratories, ASME CSD-1, (FM) and (IRI). The boiler(s) shall be registered with the National Board of Boiler and Pressure Vessel Inspectors.

1.3 – Each unit shall be rated as hp, and shall produce mbh or Lbs/hr steam (from 212° F), and shall operate at psi.

1.4 - All specified boiler trim, burner, controls and fuel train must be factory pre-piped, wired, and assembled before shipment. If items are required to be removed for shipment, they shall be field installed by the contractor.

2.0 – Boiler Construction

2.1 - The four pass vertical tubeless boiler is to have the burner mounted in the center of the boiler at approximately mid height so as to provide for easy access for servicing. Mounting of burners at the bottom of the boiler or from the top of the boiler is not acceptable. Adequate hand holes must not be exposed to the fireside of the boiler. Boiler will make use of welded convection fins to enhance heat transfer and to distribute the flow of flue gasses.

2.2 - Fireside heat exchange areas must be accessible from the top and bottom of the boiler. Removable access plates are to be provided with brass nuts. The flow of flue gasses shall not include swirlers, turbulators, or other add-on devices. The use of flame retainers or baffles in the combustion chamber is not acceptable.

2.3 - The boiler furnace crown shall be water-cooled. The burner shall fire into the water-cooled furnace and shall not pass under the bottom mud ring of the boiler. A boiler blowdown connection shall be provided in the bottom of the boiler. The steam chamber shall cover the entire top of the boiler with convection rods for dry steam delivery.

2.4 - Boiler insulation shall consist of a 1.5" ceramic fiber, rated for 2300 d/f and providing for low thermal conductivity. The boiler shall be clad with 22 gauge jacketing with powder coat finish in deep blue. The top and bottom of the boiler's exterior shall be fitted with a 3" stainless steel band. All openings and penetrations through the boiler jacket shall be fitted with cover plates and secured by metal screws for ease of removal. The boiler's skin temperature shall not exceed 50 d/f of the ambient temperature.

2.5 - The entire boiler assembly shall be attached to structural steel skids with brace tubing. A lifting eye shall be provided on the top of the boiler for rigging.

3.0 – Boiler Trim

3.1 - Each boiler shall be fitted with a McDonnell & Miller #157 external float type primary low water cut off and feedwater pump control. This control shall be fitting with a water column gauge glass set with safety ball checks and provided with a plastic gauge glass protector. Provide a 1" ball valve for water column drain

3.2 - Provide a McDonnell & Miller #750 conductance type auxiliary low water level cut off control with manual reset. Provide LED annunciation for: a) on, b) off. Provide a test switch with red indicator light.

3.3 - Provide a steam pressure gauge with stainless steel enclosure and siphon and test cock. Provide a Kunkle safety relief valve set at boiler design pressure.

3.4 - Provide steam pressure controls for sequence of operation as specified. In addition, provide an auxiliary high limit pressure control with a manual reset.

3.5 - Provide feedwater stop and check valves in accordance with ASME code.

3.6 - Provide one quick and one slow opening bottom blowdown valves in accordance with ASME code.

4.0 – Burner

4.1 - The factory assembled boiler package shall include a UL listed automatic burner and control system complying with ASME CSD-1; (FM); (IRI). The burner shall be fitted on the boiler such that combustion takes place within the water-backed furnace.

4.0 – Burner (Continued)

4.2 - The burner shall be set up for firing of:

- Natural Gas
- Propane Gas
- #2 Oil
- Combination

4.3 - The burner assembly shall include the fuel train(s) for the specified fuel(s). Provide a solid-state flame safeguard. The control circuit shall be 115/60/1 with / / provided to the burner.

4.4 - Provide a boiler mounted control panel enclosure for the specified pressure controls.

4.5 - Boiler sequence of operation shall be:

- On/Off
- On/Off with Low Fire Start
- Low/High/Low
- Modulating

5.0 – Other

5.1 - The boiler(s) shall be guaranteed by the manufacturer to provide for a fuel to steam efficiency of not less than % with the conditions provided.

5.2 - Provide a factory test firing of the completed boiler assembly. An ASME manufacturers' data report shall be included with installation, operation and maintenance manual. Provide a wiring schematic in the boiler control panel.

5.3 - The boiler shall be provided with factory-authorized start up and adjustment. A start up report shall be provided to the owner and is to include a stack gas analysis with stack temperature, oxygen, and carbon dioxide data.