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SERIES 4VT (CYCLONE) HOT WATER BOILER (6-100 HP – HOT WATER 30-160psig) 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 water 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:

- ☐ 30 psig
- ☐ 60 psig
- ☐ 100 psig
- ☐ 160 psig

Hot water pressure. Boiler, Burner and Trim shall meet the requirements of the Underwriters Laboratories, ASME CSD-1, (FM), (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 [ ] mph. Hot water supply temperature shall be [ ] d/f with a return of [ ] d/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.

1.5 – The boiler design shall be factory guaranteed to provide for "shock free" service with the conditions specified.

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 ease of access for servicing. Mounting of burners at the bottom of the boiler or from the top of the boiler is not acceptable. Adequate handhole openings shall be provided for access to the waterside of the boiler. Handholes 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 drain connection shall be provided in the bottom of the boiler. The hot water storage chamber shall cover the entire top of the boiler for extra thermal capacity.

2.4 - Boiler insulation shall consist of 1.5" ceramic fiber, rated for 2300 d/f and proving for low thermal conductivity. The boiler shall be clad with 22 gauge jacketing with powder coat finish in deep flue. 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 - Provide a McDonnell & Miller #750 conductance type 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.

3.2 - Provide a combination pressure and temperature gauge with stainless steel enclosure. Provide Kunkle safety relief valve set at boiler design pressure.

3.3 - Provide a slow opening bottom drain valve in accordance with ASME code.

4.0 – Burner

4.1 - The factory assembled boiler package shall include 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.

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

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

4.0 – Burner (Continued)

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 - 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 efficiency of not less than [ ]% with the conditions provided.

5.2 - Provide for 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.