MOHAWK SPECIFICATION SHEET

The following sample specifications are provided by Superior Boiler Works to assist you in providing your customer with the specific needs for that application. The sample specification is normally used as the base template for the boiler specification.

MODEL: Mohawk (Water) 30 - 1000 HP

1.0 Specification Overview
2.0 Structural Specifications
3.0 Connections
4.0 Boiler Trim
5.0 Factory Firetest

MOHAWK 3-Pass Water Boiler, 30-1000HP, 30-60-100-125-PSI Section IV

The size and location of all connections, water capacity, furnace volume can be found on Superior Boiler Works Form CAT4WF.
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Contact your local insurance carrier and State Boiler Inspector for the current insurance and code requirements.

Please contact Superior Boiler Works Factory if you need assistance in completing the specification.

1.0 Specification Overview

1.1 The boiler shall be a 3-pass Mohawk dryback boiler manufactured by Superior Boiler Works. Model No.______________ . The boiler shall not have less than five square feet of A.S.M.E. heating surface, measured on the fireside, per rated boiler horsepower. Maximum system temperature shall not exceed 30 F without the use of blending pumps.

1.2 The boiler is to be mounted on a structural steel base with a forced draft burner and burner controls. The boiler is to be designed, constructed and tested in accordance with the latest edition and addenda of the A.S.M.E. Boiler and Pressure Vessel Code and shall be registered with the National Board of Boiler
The boiler shall be designed for ________________ PSI water with an operating pressure of ____________ in accordance with the latest edition and addenda of Section (IV)

The steam boiler shall be completely pre-assembled and fire tested at the factory to check construction, controls and combustion characteristics of the unit.

Boilers smaller than 300 HP are to be constructed to meet the requirements of CSD-1; boilers 300 HP and larger are to comply with the requirements of NFPA8501. The complete packaged boiler shall be listed as a unit by Underwriters Laboratories and shall bear the Underwriters label.

Structural Specification

The furnace is to be located in the bottom third of the boiler to provide for maximum heat transfer while being in contact with the coolest boiler water.

All boilers shall have a furnace volume of not less than ____________ cubic feet.

All tubes are to have a minimum wall thickness of .105"and have an OD of 2 1/2". The hot end tubes (the entrance to first pass of tubes) on all boilers are to be seal welded after flare rolling and beading. The remaining tube ends on Section I are to be attached by flare rolling and then beading. The remaining tube ends are to be attached by flare rolling.

The boiler shall be mounted on a heavy structural steel base with the runners on the front to provide burner support and protection,

The rear legs are to be slotted to provide for expansion when the boiler goes from a cold to a hot condition.

All boilers with more than 350 square feet of heating surface are to have a 15"
minimum diameter rear access plug in the rear door. Boilers with over 3750 square feet of heating surface are to have a 19" diameter rear access plug. The plug is to be equipped with a Pyrex observation port and shutter assembly for the observation of the burner flame, and the shutter assembly is to have a 1/8" tapping for the field connection of a manometer.

2.7 The rear turnaround area, timesheets and refractory are to be fully accessible when the rear door is opened. The rear turnaround area shall house the refractory blocks and bridge. The blocks and bridge are to be manufactured from a high quality insulating castable refractory equal to Plibrico LWI24. The rear door refractory is to be poured from the same material as the refractory blocks and is to be "one piece construction: with no baffles. The refractory is to be held in place with anchors welded to the rear door.

2.8 The rear door is to be supported by an extra heavy-duty davit hinge that is capable of supporting the door when it is being opened or closed. The hinge is to be positioned so that the rear door will open to the (right) (left) when viewed from the burner end.

2.9 All front doors are to be insulated with a 1" thick ceramic fiber blanket. The insulating blanket is to have a K factor of .44 and is coated with a hardener to prevent erosion from the flue gases. Front doors on boilers over 350 square feet of heating surface shall be davited.

2.10 All doors are to be held in place by lugs that are secured by replaceable brass nuts. The doors are to be sealed with a gas tight, non-proprietary ceramic fiber rope with a minimum density of 20 lbs. per cubic feet and a continuous use limit of 1800 F.

2.11 All necessary handholes and man holes shall be provided in accordance with the A.S.M.E. Code. Provide two additional handholes to improve the ease of waterside inspection and cleaning located in the front tubesheet near the bottom of the boiler on either side of the furnace.

2.12 The front and rear tubesheets must be fully accessible for inspections or cleaning when the doors are opened (two in the front and one in the rear). Opening of the doors is not to be impeded by any fuel lines, linkages or electrical connections.
2.13  The boiler shell is to be insulated with 2" thick, 8 pounds per cubic foot density mineral wool with a K factor of .27. The insulation is to be held in place by bands and is to be covered with a 22 gauge phosphate coated galvanized steel jacket. All openings in the jacket are to have trim rings.

2.14  The front and rear tubesheets must be fully accessible for inspections or cleaning when the front doors or rear door is open. Fuel lines, linkages, and electrical connections shall not impede opening of the doors.

2.15  Boilers with 625 square feet or more of heating surface are to have a 12" x 16" manway located along the top centerline of the boiler to facilitate waterside cleaning and inspection. The top of the boiler furnace is to be visible when the manway is removed from the boiler shell.

2.16  The boiler shall be designed to heat ___(GPH)___ of water with a maximum temperature differential of ___(degrees F)___, and a minimum temperature differential of ___(degrees F)___. (Note to specification writer), Contact your local Superior Boiler Works Distributor to determine if the specified system design parameters require the use of blending pumps to prevent thermal shocking of the boiler.

2.17  Two factory piped blending pumps, (this section is to be used if two blending pumps are being specified, please, contact your local Superior Boiler Works Distributor for guidance) one shall be supplied for each side of the boiler. Each pump shall be designed to circulate ___(GPM)___ of water from the rear of the boiler, to the front. The piping will be Schedule 40 and shall include flow switches wired into the burner control circuit that will prevent the burner from operating unless circulation in the blending pump piping is to be factory insulated with fiberglass pipe insulation that has a temperature limit of 850 F, and shall be covered with an embossed aluminum jacket.

2.18  One factory piped blending pump (this section is to be used if one blending pump is being specified, please contact your local Superior Boiler Works Distributor for guidance) piped between the boiler water supply and water return nozzle. The piping shall not interfere with performing routine and maintenance. The piping will be Schedule 40 and will include a flow switch wired into the burner control circuit that will prevent the burner from operating unless circulation in the pump piping is provided. Two gate valves, one on each side of the pump, are to be integral with the piping.
3.0 Connections  

3.1 The boiler drain connection is to be ___(size)____.

3.2 The hot water return ___(size)____ and supply ___(size)____ connections are to be located along the top centerline of the boiler. The return connection is to be designed to increase the velocity of the return water to insure rapid mixing of the return water. The boiler water supply nozzle shall include a dip tube.

3.3 The boiler is to be equipped with two lifting eyes.

3.4 A ___(size)____ flue gas connection shall be located at the rear of the boiler on the top centerline. The stack shall be designed for an easy attachment of the exhaust flue by a slip connection. The flue gas connection will be designed to support a minimum of 2,000 lbs. of dead weight. The stack will have a 1/2" connection for a stack thermometer.

3.5 The boiler is to have an air vent connection.

3.6 The boiler is supplied with a low fire hold connection located in the bottom third of the shell.

4.0 Boiler Trim  

4.1 A float type primary low water cut-off and pump control shall be provided with gage glass, ball check gage glass valves, try-cocks and a ball type water column blowdown valve.

4.2 The boiler is to be supplied both operating and high limit temperature controls.

4.3 A firing rate controller shall be supplied for boilers with low-hi-low or modulating burners.

4.4 Relief valves set at a minimum of 10% higher than the operating pressure of the boiler, but no higher than the boiler design pressure shall be provided.

4.5 A pressure gauge with an inspector's test cock and temperature gauge with a brass thermowell shall be provided. The pressure gauge and temperature
gauges are to ship loose for field installation.

4.6 All boilers with more than 500 square feet of heating surface shall have a low
fire hold control.

5.0 **Factory Firetest**  

5.1 The factory firetest shall be a complete functional test conducted at 10 PSIG  
(Section IV) or 100 PSIG (Section I) and at a minimum, is to consist of filling  
the boiler with water and operating the burner throughout its complete range  
of operation. Additionally, all of the components wired into the boiler safety  
control circuit are to be tested by simulating a failure condition. A copy of the  
firetest report is to be included in the manual.

5.2 Upon completion of the factory firetest, the boiler shall be cooled and hydro-
statically tested. The unit shall be ready for installation and final connection  
of water, steam, fuel, blowdown, electrical and flue.