

SELLERS XID IMMERSION FIRED
HOT WATER BOILER
SUGGESTED SPECIFICATION

PART 1. – GENERAL

1.1 Boiler Characteristics

- A. Furnish and install Sellers Engineering Co Model 8001 Immersion Fired hot water boilers.
- B. Boiler shall have an output of ___ Btu/hour at the nozzle when fired with natural (LP) gas with a minimum pressure of _____ inwc (PSI).

PART 2 – PRODUCTS

2.1 Packaged Boilers

- A. Boiler shall be built to the requirements of the ASME Boiler and Pressure Vessel Code for a maximum allowable working pressure of ___ PSI.
- B. Electrical power available will be _____ Volts, _____ Hertz, _____ Phase
- C. Boiler overall dimensions shall not exceed ___" wide X ___" long X ___" high.
- D. Boilers shall be factory assembled and wired to require only supply, return, drain, fuel, vent and electrical connections.
- E. The boiler shall be of the single pass immersion fired design. Ligaments between the tubes shall not be less than 1". Stainless steel ENERGY X-TRACTORS shall be installed in each tube for high efficiency operation
- F. Front and rear tube sheets and all flues shall be fully accessible for inspection or cleaning when doors are swung open.
- G. Provide on the boiler an unobstructed hinged relief door with an area of 14 square inches for each cubic foot of internal flue gas volume.
- H. Front and rear doors shall be designed to be opened or closed without the use of special tools.
- I. Observation ports shall be installed through the front door to inspect the flame.
- J. Exhaust Gas Vent shall be on top centerline, near the rear of the boiler, complete with flue gas thermometer.
- K. Handholes shall be furnished for cleaning and inspection. Number of handholes shall be in accordance with ASME requirements and shall include at least one handhole in the lower quadrant of the rear tube sheet. A manhole shall be provided on boilers 500 HP and larger.
- L. The boiler shall be insulated with 2" of fiberglass and covered with a steel jacket. A precast hardtop walkway shall be furnished to allow personnel to walk on top of boiler without denting steel jacket.
- M. Lifting eyes shall be provided to facilitate rigging.

2.2 Hot Water Boiler Trim

A. Boiler trim shall include the following components:

1. Low water cutoff with manual reset
2. Pressure gauge
3. Temperature gauge
4. Operating temperature controls
5. High limit temperature control with manual reset
6. Pressure relief valve sized in accordance with the ASME Code.

2.3 Burner

A. Burner and burner components shall be mounted on an easily opened hinged door. The one burner door shall also provide clear access to all fireside burner parts including tube sheets and tubes. The burner assembly shall include the following:

1. Forced draft combustion air blower.
2. Air gas mixer.
3. One burner nozzle for each fire tube.
4. Pilot burner assembly.
5. Control panel including:
 - a. Solid state flame safeguard with digital readout
 - b. Motor starter
 - c. On-Off switch and Manual-Automatic Switch
 - d. Control transformer
 - e. Six (6) indicating lights.
 - f. Air louver initiation and proving circuit in pre-ignition interlocks
 - g. Remote alarm contacts for all alarm conditions
 - h. Remote enabling circuit
6. Main arid pilot gas valves and regulators.
7. Ignition transformer with electrode.
8. Flame proving electrode.
9. Air proving switch.
10. High and low gas pressure switches
11. Flame observation ports.
12. The burner and controls shall conform to the requirements of UL (FM) (IRI) and CSD-1.

2.4 Emissions

- A. The boiler manufacturer shall certify that at the time of start-up, the boiler shall not emit more than 50-PPM NOx at 100% firing rate when referenced at 3% oxygen. The boiler shall be capable of being field converted to 30-PPM NOx without requiring the addition of a flue gas recirculation (FGR) system.
- B. (Optional) The boiler manufacturer shall certify that at the time of start-up, the boiler shall not emit more than 30 PPM NOx at 100% firing rate when referenced at 3% oxygen.

2.5 Efficiency Guarantee

- A. The boiler manufacturer shall guarantee that at the time of start-up, the boiler shall achieve efficiencies as indicated in the chart below.

50-PPM NOx Efficiencies

BOILER HORSEPOWER	OPERATING TEMPERATURE			
	180°F	200°F	220°F	240°F
10 – 200	84.9%	84.4%	84.0%	83.5%
250 – 800	85.4%	84.9%	84.5%	84.0%

30-PPM NOx Efficiencies

BOILER HORSEPOWER	OPERATING TEMPERATURE			
	180°F	200°F	220°F	240°F
10 – 200	83.4%	83.9%	82.5%	82.0%
250 – 800	83.9%	83.4%	83.0%	82.5%

- B. If the boiler(s) fail to achieve specified efficiency, the boiler manufacturer shall rebate to the owner five thousand dollars (\$5,000.00) for every full efficiency point (1.0%) that the actual efficiency is below the guaranteed level.

2.6 Warranty

- A. The pressure vessel shall carry a 20-year warranty against thermal shock damage. Warranty shall cover 100 % of labor and material required to repair damage such as loosened tubes, cracked ligaments or welds.
- B. All boiler and burner components shall carry a 5-year warranty against defects. Warranty shall cover 100 % of labor and material required to repair or replace any parts that fail due to defects or wear and tear during the 5-year warranty period.
- C. Any refractory used in the construction of the boiler shall be warranted for twenty (20) years from the date of startup. Warranty shall cover 100% of the cost of repair or replacement.

PART 3 – EXECUTION

3.1 Shop Tests

- A. The boiler shall be completely assembled, wired and tested at the factory. A factory fire and efficiency test report shall be provided to the owner. Owner, engineer or purchaser shall be allowed to witness test, if desired.

3.2 Startup Service

- A. Furnish the services of a factory-authorized technician to perform initial startup and adjustment of the boiler, burner and controls.

- B. Provide a minimum of four (4) hours of operator training. Operators shall receive instruction in the operation and maintenance of the boiler, burner and all controls.
- C. Complete the manufacturer's approved startup report and submit one copy each to the owner's representative and the boiler manufacturer.