



SECTION 22 34 00 - FUEL-FIRED DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Commercial gas-fired water heaters.
 - 2. Packaged water heating systems.
 - 3. Domestic hot water storage tanks.

1.2 REFERENCES

- A. Comply with appropriate standards.
 - 1. American Society of Mechanical Engineers: ASME.
 - 2. Southern California Air Quality Control Management District: SCAQMD Rule 1121 Low NOx Emission Standards.

1.3 SUBMITTALS

- A. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Water Heater Performance Requirements: Equipment efficiency not less than prescribed by ASHRAE 90.1 when tested in accordance with all required standards.

1.5 WARRANTY

- A. One year standard warranty.

PART 2 - PRODUCTS

2.1 COMMERCIAL GAS FIRED WATER HEATERS

- A. Manufacturers:
 - 1. **Lochinvar, LLC / A.O. Smith Corporation.**
 - 2. **Rheem Manufacturing Company.**
 - 3. **A.O. Smith Water Products Company / A.O. Smith Corporation.**
- B. Type: Automatic, natural gas-fired, vertical storage.



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1. Maximum working pressure: 150 psig.
 2. Certification: ANSI Z21.10.1.
- C. Tank: Glass lined welded steel with single flue passage, flue baffle and draft hood; thermally insulated with Non-CFC foam and encased in corrosion-resistant steel jacket; baked-on enamel finish; floor shield and legs, no dielectric fittings, brass ball valve and 6 inch nipple to connect dissimilar pipes, brass drain valve, T&P relief valve.
- D. Controls: Automatic water thermostat and built-in gas pressure regulator; temperature range adjustable from 120 to 170 degrees F, cast iron or stainless steel burner, safety pilot and thermocouple, electronic ignition and power vent if required.
- E. Accessories: Brass dip tube, drain valve, magnesium anode, anchoring straps, State of California listed and approved.

2.2 PACKAGED WATER HEATING SYSTEMS

- A. Manufacturers:
1. **Rheem Manufacturing Company.**
 2. **A.O. Smith Water Products Company / A.O. Smith Corporation.**
 3. **Lochinvar, LLC / A.O. Smith Corporation.**
- B. System: Gas-fired circulating pump, factory controls, piping and valves, storage tank, all mounted on skid or equipment pad as required.
- C. Boiler:
1. Type: natural gas-fired water tube boiler, with copper finned tube heat exchanger, one inch minimum diameter, 13 gage steel boiler tubes and copper tube heat exchanger with bronze heads, steel jacket with glass fiber insulation.
 2. Boiler Trim: Gas burner, thermometer and pressure gauge. Immersion thermostats for operating and high limit protection, 100 percent safety shut-off. Electric gas valve with transformer, electronic safety pilot and pilot burner, gas pressure regulator. Manual gas shut-off, low water cut off, ASME rated temperature and pressure relief valve, coil relief valve, automatic boiler fill and expansion tank, draft inverter.
- D. Vertical or Horizontal storage tank:
1. Working pressure: 150 psi ASME labeled.
 2. Lining: 15 mils thick epoxy lining extended through flanges and couplings.
 3. Support: Two factory welded tank saddles not less than 4 inches wide by 1/4 inch thick, mounted on 2 inch pipe stand with minimum four cross braced legs; sheet Teflon isolation strip between tank and saddle.
 4. Connection: No dielectric unions shall be used. Use brass ball valve and 6 inch long Brass nipple to connect dissimilar pipes between tank and piping system.
 5. Insulation: 3 inch glass fiber insulation with aluminum jacket.



- E. Pump:
 - 1. Type: All bronze, in-line circulation pump mounted on boiler, between heater and storage tank, controlled by tank mounted immersion thermostat set at max. Outlet temperature as required.
 - 2. Pump Capacity: As required.
 - 3. Electrical Characteristics: As required.
- F. Thermostatic Valve: Three-way, self-contained, full line size, bronze body 1/2 to 2 inches size, iron body 2-1/2 inches and over, set at 140 degrees F maximum inlet temperature. Outlet temperature as required.

2.3 DOMESTIC HOT WATER STORAGE TANKS

- A. Manufacturers:
 - 1. **Rheem Manufacturing Company.**
 - 2. **A.O. Smith Water Products Company / A.O. Smith Corporation.**
 - 3. **Lochinvar, LLC / A.O. Smith Corporation.**
- B. Tank: Welded steel, ASME labeled for working pressure of 125 psig, steel support saddles, taps for accessories, threaded connections of stainless steel, access maintenance hole.
- C. Lining: Corrosion-resistant concrete approximately 3/4 inch thick. Glass-lined or as provided as manufacturer.
- D. Openings: Up to 3 inches, copper-silicone threaded; over 4 inches, flanged; flanged collar for heat exchanger; man-way fitting.
- E. Accessories: Tank drain, water inlet and outlet, thermometer range of 40 to 200 degrees F, ASME pressure relief valve suitable for maximum working pressure.
- F. Insulation: Factory furnished 2 inch minimum glass fiber insulation with steel aluminum jacket.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install water heater on concrete housekeeping pad, minimum 4 inches high and 6 inches larger than water heater base on each side.
- B. Seismic Bracing: Provide approved anchoring straps – two (2) minimum.
- C. Install the following piping accessories.
 - 1. On supply:
 - a. Thermometer well and thermometer.



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- b. Strainer.
- c. Pressure gage.
- d. Shutoff valve.
- 2. On return:
 - a. Thermometer well and thermometer.
 - b. Pressure gage.
 - c. Shutoff valve.
- D. Install the following piping accessories on natural gas piping connections.
 - 1. Shutoff valve.
 - 2. Pressure reducing valve as required.
- E. Install discharge piping from relief valves and drain valves to nearest approved receptor.
- F. Install circulator and diaphragm expansion tank on water heater.
- G. Install electrical devices furnished loose for field mounting.
- H. Connect flue to water heater outlet, full size of outlet.
- I. Domestic Hot Water Storage Tanks:
 - 1. Provide piping support, independent of building structural framing members.
 - 2. Clean and flush after installation. Seal until pipe connections are made.
 - 3. Provide seismic bracing.

END OF SECTION 22 34 00