

Date:

Bid Date:

Project #:

Location:

Project Name:

Engineer:

Contractor:

Prepared By:

Mascot ST

Residential

Tankless Water Heater

Models MSTWW 199, Indoor

Specification

Contractor shall supply and install Qty.: Laars Model No. MSTWW (size) modulating condensing tankless water heater(s).

The tankless water heater shall be a Laars Mascot ST Model MSTWW (size) 199 rated at the input and output shown on the schedule. The tankless water heater shall modulate 10-100% of full fire. The unit(s) shall be design-certified to comply with the current edition of the Harmonized ANSI Z21.10.3/ CSA 4.3 Standard for Gas Water Heaters, Storage Water Heaters, Circulating and Instantaneous.

The tankless water heater shall be listed with the U.S. Department of Energy as an Energy Star appliance. The tankless water heater shall be listed with AHRI (Air Conditioning, Heating and Refrigeration Institute). The tankless water heater shall have a minimum energy factor of 0.96.

The water tube heat exchanger shall be stainless steel, rated for 150 psi (1034 kPa) working pressure. Heat exchanger shall be accessible for visual inspection and cleaning of internal surfaces. The tankless water heater shall be fully condensing design with built-in condensate drain and trap. The heat exchanger shall have a limited 12-year warranty.

Tankless water heater(s) shall provide domestic hot water flow rates, at 77°F (25°C) temperature rise of:

- 199 MBH = 4.7 gpm (18 l/m)

A Hall Effect flow sensor shall initiate the call for domestic water.

Each tankless water heater shall be test fired and all safety components tested, at the factory.

The tankless water heater shall be sealed combustion. Chamber shall include a sight glass for viewing flame.

The tankless water heater jacket shall be a unitized shell finished with acrylic thermoset paint.

The tankless water heater shall have a condensate trap that does not need to be primed and will not allow flue gases to pass back through unit.

The tankless water heater shall operate on 3.5-13" w.c. gas pressure.

The tankless water heater shall use a premix metal fiber burner and a zero governor gas valve to burn cleanly, with NOx emissions not exceeding 20ppm. The tankless water heater shall meet the emissions requirements of SCAQMD.

The tankless water heater shall be designed for vertical or horizontal Category IV venting:

- Up to 50 equivalent feet with 2" diameter in PVC, CPVC, Polypropylene or stainless steel vent material
- Up to 100 equivalent feet with 3" diameter in PVC, CPVC, Polypropylene or stainless steel vent material

Air may be taken from the room, or ducted directly to the tankless water heater:

- Up to 50 equivalent feet with 2" diameter in ABS, PVC, CPVC, Polypropylene or galvanized pipe
- Up 100 equivalent feet with 3" diameter in ABS, PVC, CPVC, Polypropylene or galvanized pipe

Unit shall be 120VAC, single phase, less than 4 Amps (including mounted pump) for connection to a 15A breaker. The control circuit shall be 24VAC. A 3 ft. length 14 AWG plug-in line cord is included for connection to 120VAC/15A receptacle.

The tankless water heater shall have built-in gas leakage detection capabilities such that when gas is detected for greater than 5 seconds, or three times within 10 minutes, the tankless water heater will lock out for safety purposes.

The tankless water heater control shall be an integrated electronic PID temperature and ignition control with LCD, push buttons and dial and shall control the tankless water heater operation and firing rate. The tankless water heater display shall be visible without the removal of any jacket panels.

The control shall monitor flue gas temperature and shall stop the tankless water heater from firing if temperature is excessive.

The control shall easily allow the user to force the tankless water heater into minimum or maximum firing rate, for tankless water heater setup and diagnostic purposes. Control shall have menu structures for user mode and installer mode.

Allowable control adjustments shall include: tankless water heater temperature setpoint and °F or °C display

Control diagnostics shall include, at a minimum, the following: ignition failure, grounded flame rod, sensor errors (open or shorted), and fan speed proving rate failure.

The control shall be able to cascade (to units with identical controllers), without additional system controllers.

In multiple water heating systems (cascaded) the water heaters shall be controlled to keep each one in the lowest firing rate possible, based on system demand, to maximize efficiency. For example, the master control shall choose to bring on all water heaters at low firing rates, instead of one water heater at a high rate, to meet the system needs.

continued >>

Standard features shall include:

- High condensing efficiency
- 0.96 Energy Factor
- Modulation down to 10% of full fire (10:1 turndown)
- Cascadable up to 18 units
- Sealed combustion chamber
- Pre-mix metal fiber burner
- Low NOx system— 20ppm NOx
- Horizontal or vertical direct vent
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Stainless steel heat exchanger
- Natural or Propane
- Vent with PVC, CPVC or Polypropylene
- ASME 150 psi (207kPa) working pressure heat exchanger
- Low lead compliant
- Gas leak detection
- Built-in condensate trap and drain, priming not required
- Pressure gauge
- Burner site glass
- Electronic PID modulating control
- Direct spark ignition
- Large user-interface and display
- Wall mount bracket
- Field convertible between natural gas and propane
- Inlet water filter
- Condensate trap hose
- 12-Year limited warranty