Laars Tankless Electric Water Heaters, Powered by Keltech™

H Series (Formerly HL Series)

Guide Specification

Laars Tankless Electric Water Heaters, Powered by Keltech™ Light Industrial Water Heaters are designed to accommodate most commercial fluid heating applications including: environments where demand is ≤ 25 kW and total flow is ≤ 7 GPM (26.5 L/m), and environments where lower activation flows are required: standard units are 0.5 GPM (1.9 L/m) with options as low as 0.15 GPM (0.6 L/m). H Series (Formerly HL Series) units are also suited to applications where only single-phase service is available or 3-Phase 208V, 240V, 277V, 380V, 400V, 415V or 480V. H Series (Formerly HL Series) products include a standard cabinet, with NEMA 4 (standard on 25 kW) and 4X options available.

Laars Tankless Electric Water Heaters, Powered by Keltech™ commercial water heaters allow water supply to quickly reach the required set point temperatures 40 - 160 deg. F (4.4 – 71.1 deg. C) and provide continuous flow of heated water – up to 7 GPM (26.5 L/m).

Laars's PID Temperature Controller is more energy efficient and reliable than traditional microprocessors using staged elements. Power is infinitely variable, with no fixed inputs. The PID controller makes it possible to modulate the amount of power applied to the elements while also dispersing the required power evenly across all elements. This unique feature increases the product's life cycle.

Section 22 11 19 - DOMESTIC WATER PIPING SPECIALTIES (Thermostatic mixing valves)
Section 22 33 13 - INSTANTANEOUS ELECTRIC DOMESTIC WATER HEATERS (Laars Tankless Electric Water Heaters, Powered by Keltech™)
Section 22 42 16.11 - COMMERCIAL SINKS AND FAUCETS
Section 22 42 23 - COMMERCIAL SHOWERS AND SHOWER VALVES

SECTION 22 33 13 – INSTANTANEOUS ELECTRIC DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Tankless, Electric commercial water heaters and water heater accessories.

Specifier: If retaining optional "Related Sections" article, edit to include sections applicable to Project.

1.2 RELATED SECTIONS

A. Division 22 Section "General-Duty Valves for Plumbing Piping" for valves.

B. Division 22 Section "Domestic Water Piping" for water piping.

C. Division 22 Section "Domestic Water Piping Specialties" for vacuum breakers, water pressure-reducing valves, water-hammer arresters, and specialty valves.

D. Division 26 Sections for electrical power and control wiring.

Specifier: If retaining optional "References" article, edit to include standards cited in edited Section.

1.3 REFERENCES

A. General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.

B. American National Standards Institute (ANSI) http://webstore.ansi.org:

1. ANSI 372 – Drinking Water System Components – Lead Content

C. American Society of Sanitary Engineering (ASSE): www.asse-plumbing.org

1. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems

D. ASSE 1010 - Performance Requirements for Water Hammer Arresters National Electrical Manufacturers Association (NEMA) www.global.ihs.com:

1. NEMA Standards Publication 250 - Enclosures for Electrical Equipment (1000 Volts Maximum)

E. National Fire Protection Association (NFPA) www.nfpa.org:

1. NFPA 70 - National Electrical Code

F. NSF International

1. NSF 61 - Drinking Water System Components – Health Effects
2. NSF 372 - Drinking Water System Components - Lead Content

G. Underwriters Laboratories (UL) www.ul.com:

1. UL 499 - Standard for Electric Heating Appliances

1.4 ACTION SUBMITTALS

A. Product Data: For each product:

1. Manufacturer's data sheets indicating unit performance and compliance with requirements.
2. Include details of electrical and mechanical operating parts.
3. Show mounting and securing requirements and utility connection requirements.

1.5 INFORMATION SUBMITTALS

Specifier: Retain paragraphs below when Project requirements include compliance with Federal Buy American provisions.

A. Buy American Act Certification: Submit documentation certifying that products comply with provisions of the Buy American Act 41 U.S.C 10a – 10d.

B. Source quality-control test reports.

C. Field quality-control test reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.7 QUALITY ASSURANCE

A. Source Limitations: Obtain tankless electric water heaters through a single source from a single manufacturer.

B. Electrical Components: Listed and labeled per NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

C. Lead-Free Construction: Comply with NSF 372 for fixture components in contact with potable water.

D. Standard Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of electric, domestic-water heaters that fail in materials or workmanship within specified warranty period.

1. Warranty Period: From Date of Substantial Completion

a. Electrical Components, two years
b. Heating Elements, four years
c. Heat Exchanger Free From Leaks, eight years

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Laars tankless electric commercial water heaters, Powered by Keltech™, Rochester, NH. Phone: (603) 335-6300, Web site: laars.com

1. Submit requests for substitution in accordance with Instructions to Bidders and Division 01, General Requirements.

2.2 TANKLESS, ELECTRIC COMMERCIAL WATER HEATERS

A. Tankless electric commercial water heater, UL 499, sized for low flow constant temperature requirements, with PID Controller, liquid-cooled triac switches, low flow activation, and overheat protection.

1. Basis of Design Manufacturer/Model: **Laars, Powered by Keltech™, H Series (Formerly HL Series) Commercial Water Heater**.

Specifier: Select one of three "Enclosure" subparagraphs.

2. Enclosure: [0.052-inch/18-ga.- (1.32-mm-) thick galvanized steel, NEMA 1].
3. Enclosure: [0.052-inch/18-ga.- (1.32-mm-) thick, NEMA 4] [0.063-inch/16-ga.- (1.59-mm-) thick stainless steel NEMA 4X].
4. Heat Exchanger: Copper tubing with brazed brass fittings and large internal passageways for minimal pressure drop. NSF 61 barrier materials for potable water, without storage capacity.

Specifier: Select following subparagraph for applications requiring contact with food or deionized water.

a. Xylan Fluoropolymeric Coating: FDA approved for food contact or deionized water

5. High Temperature Package: [Insert temperature required between 160 and 190 deg. F] [Not required].
6. Connections: [3/4 inch copper sweat inlet, outlet NEMA 1] [3/4 inch female NPT inlet, outlet NEMA 4] [3/4 inch female NPT inlet, outlet NEMA 4X].
7. Rating: 150 psig (1035 kPa).
8. Heating Element: Heavy duty, low-watt density Incoloy 800 sheathed resistive element
9. Temperature Control: Microprocessor with PID logic and dual display of set-point and actual outlet water temperature.
10. Safety Controls:

a. Surface mounted bi-metal thermostat with manual reset.

11. Mounting: Wall mounted.
12. Capacity:

Specifier: If temperature rise/flow rate data appear on Drawings, then select "As scheduled" option. Otherwise, insert temperature rise and flow rate below from product data sheet. Temperature rise range available: 10 – 140 deg. F (6 – 78 deg. C). High Temperature Option Setpoints Available: 160 - 190 deg. F (71.1 – 87.8 deg. C). Flow range available: 0.75 - 15 gpm (1.9 - 57 L/m).

a. Temperature Rise at Flow Rate: [___ deg F (__ deg C) at ___ gpm (__ L/m)] [As scheduled].

b. Adjustable Temperature Setpoint: [___ deg F (___ deg C)] [As scheduled].

13. Electrical Characteristics:

a. 5 kW at [208VAC/1-phase] [240VAC/1-phase] [As scheduled].
b. 6 kW at [208VAC/1-phase] [240VAC/1-phase] [277VAC/1-phase] [480VAC/1-phase] [As scheduled].
c. 10 kW at [208VAC/1-phase] [240VAC/1-phase] [480VAC/1-phase] [208VAC/3-phase] [380VAC/3-phase] [480VAC/3-phase] [As scheduled].
d. 15 kW at [208VAC/1-phase] [240VAC/1-phase] [208VAC/3-phase] [240VAC/3-phase] [380VAC/3-phase] [400VAC/3-phase] [415VAC/3-phase] As scheduled].
e. 18 kW at [208VAC/1-phase] [240VAC/1-phase] [277VAC/1-phase] [480VAC/1-phase] [208VAC/3-phase] [240VAC/3-phase] [380VAC/3-phase] [400VAC/3-phase] [415VAC/3-phase] [480VAC/3-phase] [As scheduled].
f. 25 kW at [480VAC/3-phase] [As scheduled].

Specifier: Retain one or more of the following three subparagraphs that describe available options for the H Series (Formerly HL Series) models if required for Project.

14. Facility Controls Integration:

a. 4-20 mA input
b. RS-485
c. Process Temp Alarm

Specifier: Optional temperature lockout range available: 40 - 160 deg. F (5 - 71 deg. C).

15. Temperature Lockout: ____ deg. F (____ deg. C).
16. Low Flow Activation: [0.15 GPM (0.6 L/m)] [0.25 GPM (0.9 L/m)].

2.3 WATER HEATER ACCESSORIES

A. Provide tankless electric water heater system including the following system accessories:

Specifier: Retain accessories required for project from those in four paragraphs below; coordinate with contents of other Division 22 sections.

1. Pressure and Temperature Relief Valves: Pressure and Temperature Relief Valves: [Brass] [Stainless steel, ASME rated and stamped pressure relief valve]. Adjust to pressure setting less than water heater working-pressure rating.

a. Pressure and Temperature Safety Relief Valve set to 80 psig (552 kPa).

2. Pressure-Reducing Valves: ASSE 1003.
3. Vacuum Relief Valves: ANSI Z21.22/CSA 4.4.
4. Shock Absorbers: ASSE 1010 or PDI-WH 201, Size A water hammer arrester.
5. Thread Adapters: NPT to BSPP, stainless steel.
6. Y-Strainer: [Lead Free Brass] [Stainless steel].

PART 3 - EXECUTION

3.1 INSTALLATION

A. Tankless, Electric, Domestic-Water Heater Mounting:

1. Install water heaters in accordance with manufacturer's written instructions.
2. Install water heaters level and plumb, according to layout drawings and referenced standards.
3. Maintain manufacturer's recommended clearance and access dimensions.

B. Install water supply piping to each water heater, and from heater to fixture requiring hot water supply connection.

1. Install stop valves on water supply and outlet piping. Provide stop valve on each supply in readily serviced location. Lock stop valve in OPEN position.
2. Comply with Division 22 Section, General-Duty Valves for Plumbing Piping, for stop valve requirements.

C. If shipped loose, install pressure and temperature safety relief valves on water heater. Run relief valve discharge lines as shown in manufacturer's instructions.

D. Extend relief-valve outlet line, and discharge by positive air gap above closest floor drain.

E. Install relief valve drain piping as indirect waste to spill by positive air gap into open drains or over floor drains. Install hose-end drain valves at low points in water piping.

F. Run relief valve drain piping without creating tripping hazard.

3.2 FIELD QUALITY CONTROL

A. Do not energize water heater until hydrostatic testing of domestic water lines is complete. See Division 22 Section "Domestic Water Piping."

B. Test and adjust installation.

1. Set field-adjustable temperature set point of temperature-actuated controls. Adjust set point within allowable temperature range.
2. Replace defective or malfunctioning controls and equipment.

C. Clean unit surfaces, test fixtures, and leave in ready-to-use condition.

END OF SECTION