



Keltech Incorporated
Electric Tankless Safety Water Heaters SNA Series
Guide Specification

Keltech Tankless Safety Water Heaters provide a practical solution to the requirement for providing a reliable supply of temperature-controlled tepid water to safety showers, eye/face wash, and combination safety shower fixtures in a variety of workplace settings. These units are specially designed to deliver properly tempered water within the range recommended by ANSI Z358.1 for the required 15-minute rinse.

Available as free-standing heaters or as a component of Keltech's turnkey field-constructed or skid-mounted Safety Shower units, Keltech Tankless Safety Water Heaters range from 36 to 144 kW units for showers and combination units. They feature flow activation and scald protection. Shower units are equipped with Incoloy 800 sheathed heating elements and a three-mode (PID) controller with dual digital display of set-point and output water temperature.

Keltech's safety water heaters allow safety showers to quickly reach the required ANSI Z358.1 standard for tepid water temperatures 80 deg F (26.7 deg C) in as little as 20 to 30 seconds and provide injured employees with a consistent flow of tepid water – up to 50 GPM – for 15 minutes.

Redundant Control and Safety Features: Every Keltech safety water heater includes multiple safety features including internal fusing, digital microprocessor-based temperature control, an externally mounted emergency stop button, TepidGuard™ temperature overshoot purge, and splash proof NEMA 4 water tight enclosures. Safety only circuits monitor for over temperature conditions and ensure output temperature does not exceed ANSI standards for safety shower tepid water temperature.

View Keltech's complete line of innovative tankless water heaters for ASME standard, continuous flow in industrial, healthcare and laboratory facilities, and specialty applications, at www.keltech-inc.com. Contact Keltech, Inc., Delton MI; Phone: (800) 999-4320 Email sales@keltech-inc.com.

Keltech eases the specifying process with a seasoned customer service staff and a range of helpful information tools on an advanced website. Keltech is a subsidiary of Bradley, the industry leader in the manufacture of safety eyewash, eye/face wash, and eyewash heaters, as well as premium quality commercial plumbing fixtures, valves, TMVs, electric tankless water heaters and washroom accessories that appear in the following CSI MasterFormat 2012™ Sections:

Section 22 11 19 - DOMESTIC WATER PIPING SPECIALTIES (Thermostatic mixing valves)

Section 22 33 13 - INSTANTANEOUS ELECTRIC DOMESTIC WATER HEATERS
(Keltech tankless water heaters)

Section 22 42 16.11 - COMMERCIAL SINKS AND FAUCETS

Section 22 42 23 - COMMERCIAL SHOWERS AND SHOWER VALVES

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SECTION 22 33 13 – INSTANTANEOUS ELECTRIC DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Electric, tankless safety shower 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): www.ansi.org:
 - 1. ANSI Z358.1 - American National Standard for Emergency Eyewash and Shower Equipment
 - 2. ANSI Z21.22 - Relief Valves for Hot Water Supply Systems
- C. American Society of Mechanical Engineers (ASME): www.asme.org

Specifier: Select subparagraph below based upon reference(s) retained under Quality Assurance Article.

- 1. ASME Boiler and Pressure Vessel Code, Section IV for "HLW" stamp and registered with National Board of Boilers and Pressure Vessel Inspectors for "NB" stamp
- D. 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
 - 2. ASSE 1010 - Performance Requirements for Water Hammer Arresters
- E. CSA Group
 - 1. CSA C22.2 No. 88 - Construction and Test of Industrial Heating Equipment Heaters

- F. National Electrical Manufacturers Association (NEMA): www.nema.org:
 - 1. NEMA Standards Publication 2501 - "Enclosures for Electrical Equipment (1000 Volts Maximum)"
- G. National Fire Protection Association (NFPA) www.nfpa.org:
 - 1. NFPA 70 - National Electrical Code
 - 2. NFPA 496 - Standard For Purged and Pressurized Enclosures for Electrical Equipment
- H. NSF International (NSF): www.nsf.org:
 - 1. NSF 61 - Drinking Water System Components – Health Effects
 - 2. NSF 372 - Drinking Water System Components - Lead Content
- I. Underwriters Laboratories (UL) www.ul.com:
 - 1. UL 50E – Enclosures for Electrical Equipment, Environmental Considerations
 - 2. 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 electric tankless 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. Safety Shower and Emergency Eyewash Standard: Comply with ANSI Z358.1.

Specifier: Retain "Boiler and Pressure Vessel requirements" option in the paragraph below based upon the following requirements:

HLW: When the heater has a heat input of 58.6 kW or more, or an output temperature of 210 deg. F (98.9 deg. C), or when authority having jurisdiction requires that water heater manufacturer complies with manufacture, inspection, and testing requirements in accordance with ASME Boiler and Pressure Vessel Code, Section IV.

- D. Boiler and Pressure Vessel Safety Requirements: Comply with ASME "Boiler and Pressure Vessel Code," Section IV for "HLW" stamp.
- E. Sanitation Standard: Comply with NSF 61 for fixture components in contact with potable water.
- F. Lead-Free Construction: Comply with NSF 372 for fixture components in contact with potable water.

1.8 WARRANTY

- A. 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. Standard 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
 2. ASME Warranty Period: From Date of Substantial Completion
 - a. Electrical Components, two years
 - b. Heating Elements, five years
 - c. Heat Exchanger Free From Leaks, ten years

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide electric tankless safety shower water heaters by Keltech, Inc., Delton MI; Phone: (800) 999-4320; Email sales@keltech-inc.com; Web site www.keltech-inc.com.
1. Submit requests for substitution in accordance with Instructions to Bidders and Division 01 General Requirements.

2.2 ELECTRIC, TANKLESS SAFETY SHOWER WATER HEATERS

Keltech SNA Series water heaters includes TepidGuard™ overshoot purge controls that automatically dump heated water to drain if the water temperature increases to 95 deg. F (35 deg. C).

The TepadGuard™ overshoot protection purge process ensures temperatures will never exceed "tepid" ANSI standards. This eliminates the necessity of tempering valves and scald guards required when using boiler heated water.

- A. Electric tankless safety shower water heater, UL 499, sized for stable, lower temperature duty to meet flow requirements and temperature requirements of ANSI Z358.1- compliant safety shower fixtures, with liquid-cooled solid-state relays, flow activation, external emergency stop button, anti-scald protection, and TepadGuard™, an overshoot protection purge function.
1. Basis of Design Manufacturer/Model: **Keltech, Inc., Model SNA Safety Shower Heater.**

Specifier: Select one of two "Enclosure" subparagraphs.

2. Enclosure: UL 50E [0.078-inch/14-ga.- (1.99-mm-) thick, NEMA 4] [0.063-inch/16-ga.- (1.59-mm-) thick stainless steel NEMA 4X].
3. Enclosure: UL 50E and NFPA 496 Explosion Proof, Class 1/Division 2: [0.078-inch/14-ga.- (1.99-mm-) thick, NEMA 4] [0.063-inch/16-ga.- (1.59-mm-) thick stainless steel NEMA 4X].
 - a. Water Heater Freeze Protection: [Not required] [to -20 deg. F (-29 deg. C)] [to -30 deg. F (-35 deg. C)].
 - b. Mounting: Floor mounted, free standing.

Specifier: Retain option for certification in "Heat Exchanger" Paragraph below when required. Keltech SNA Series units are the only electric tankless water heaters available with ASME and National Board certifications with the HLW stamp. Available for 63 kW and higher units.

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 [ASME- and National Board- certified].
5. Connections: 1-1/4 inch NPT (DN 25) inlet, outlet, and purge.
6. Pressure Rating: 150 psig (1035 kPa).
7. Heating Element: Incoloy 800 low-watt density sheathed resistive heating element.
8. Temperature Control: Microprocessor with PID logic and dual display of set-point and actual outlet water temperature.
9. Distributed Control System Link: [Required] [Required, with stack light] [Not required].
10. Safety Controls:
 - a. 90 deg. F (32 deg. C) controller alarm sends a signal to disconnect power to elements
 - b. 95 deg. F (35 deg. C) internal thermostat with auto reset high- limit switch
 - c. 95 deg. F (35 deg. C) passive monitoring, TepadGuard™ anti-scald protection activates and purges excessively hot water to drain.
 - d. 100 deg. F (38 deg. C) surface mounted bi-metal thermostat with manual reset.
 - e. Door cutoff switch and emergency stop button.
 - f. Internal Fused Disconnect: [Required] [Not required].
 - g. Ground Fault Equipment Protection. For leakage to ground, greater than 1 amp, Door-mounted ground fault status light and reset: [Required] [Not required].
11. 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. Flow range available: 1.5 – 50 gpm (5.7 - 189 L/m).

- a. Temperature Rise at Flow Rate: [___ deg. F (___ deg. C) at ___ gpm (___ L/m)] [As scheduled].
 - b. Factory Temperature Setpoint: 80 deg. F (27 deg. C).
12. Electrical Characteristics: [36] [54] [63] [72] [108] [126] [144] kW at [480VAC/3-phase/3-wire] [600VAC/3-phase/3-wire] [As scheduled].

2.3 WATER HEATER ACCESSORIES

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

Specifier: Retain accessories required for project from those in subparagraphs 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].

2.4 SOURCE QUALITY CONTROL

- A. Factory Tests: Test and inspect domestic-water heaters according to ASME "Boiler and Pressure Vessel Code," Section [III] [IV]. Submit test reports.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Electric, Tankless, 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. Anchor to structure as recommended by manufacturer.
 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. Manifold relief valve discharge and over-temperature purge lines as shown in manufacturer's instructions.
- D. Extend relief-valve/over-temperature purge outlet line, and discharge by positive air gap above closest floor drain.
- E. Install relief valve/over-temperature purge 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/over-temperature purge drain piping without creating tripping hazard.

Specifier: Retain accessories in following paragraph that are required for project; coordinate with contents of other Division 22 sections.

- G. Install [pressure-reducing valve with integral bypass relief valve in water heater cold water inlet piping] [and] [water hammer arrester in water-heater outlet piping], maximum outlet pressure [____ psig (____ kPa)] [as scheduled].

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. Replace defective or malfunctioning controls and equipment.
- C. Clean unit surfaces, test fixtures, and leave in ready-to-use condition.

END OF SECTION