LAARS Heating Systems Company
POWERED BY KELTECH

E Series
Eyewash Heaters
Tankless Electric Water Heating Solutions

- 18-25 kW (85,000-170,000 BTU/hr.)
- Flow range between 0.75–10 gpm (3–37.8 L/Min)
- Certified Lead-Free Design
- Pressure Drop Advantage
- Standard NEMA 4 enclosure
- 3/4" connections
- Independent Safeties
- ETL and cETL certified to UL and CSA Standards
- Liquid-Cooled Solid State Relays
- Internal fusing (included) adds safety and permits single power connection
- Meets ANSI Z358.1 Standards
- Variable temp heat exchanger
- Controller-locked temperature setting, output fixed at 80°F (27°C)

Standard Equipment

Tankless Water Heating Specifications

Laars E-Series Tankless Water Heaters Powered by Keltech™ provide warm water intended to supply safety fixtures. The heaters uniquely perform in applications with low line pressure, while still accommodating ANSI standard flow rates. The durable plumbing components withstand higher pressures which result in a longer service life, while ensuring the delivery of precise output temperature within ±1°F. Durable electrical components withstand power abnormalities found in industrial environments and ensure tepid water standards are never exceeded (100°F), with its three-tier anti-scald protection. Our tankless systems do not require the installation of an emergency thermostatic mixing valve. The NEMA 4 Enclosure (General Area) is durable and waterproof. NEMA 4X Enclosure offers the same features as a NEMA 4 Enclosure, with the added benefit of corrosion resistance. E-Series units are also suited to applications where 3 Phase
Delta 480V or 600V, 50/60 Hz is required.

Construction

Temperature Controller

The Laars 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.

Heating Element

Each heater features a heavy duty, low watt density, incoloy 800 sheathed resistive element. The Laars design ensures greater protection, durability and resistance to scaling from hard water because water is only heated when flowing; this means sediment is less likely to collect in the heat exchanger.

Solid State Relays

The liquid cooled solid state relays provide silent switching, which has a fast response and works in conjunction with the PID controller to infinitely modulate and add to the life of the heater.

Electrical

The E Series requires only one service feed per unit. Includes internal fusing as standard, which provides superior protection. Laars protects each heating element with fusing.

Cabinet Enclosure

The standard wall cabinet enclosure is NEMA 4 rated and made from 16 gauge mild steel and powder coated with ANSI 61 gray, corrosive resistant paint. The optional NEMA 4X enclosures are for harsher environments and made from 16 gauge 304 stainless steel. Optional floor standing leg kit available (LK).

Independent Safeties

The internal thermostat with auto reset high limit switch ensures that when the temperature limit is reached, the unit will power down a bank of elements; when the temperature drops back down to the set point, power is restored. The surface mounted bi-metal thermostat with manual reset acts as a fail-safe and must be manually reset before power can be restored to the elements if the temperature limit is exceeded.



Temperature Safety Values:

Internal thermostat with auto reset high limit switch: 95°F (35°C)

Surface mounted bi-metal thermostat with manual reset: 100°F (38°C)

Code Compliance and Certifications

Lead-Free

Products marked with the Lead-Free logo comply with the Safe Drinking Water Act (SDWA) requirements of a weighted average of less than 0.25% lead content on wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

ETL listed to UL499

ETL listed to UL 50E (Requires NEMA 4X Option)*

ETL listed to NFPA 496 (Requires EXP2 Option)*

cETL listed to CSA-C22.2 No. 88

Standard product selections contained within this document are third party CERTIFIED to NSF/ANSI 372 meeting the Lead-Free content requirement. Any product configured with custom options will be COMPLIANT with NSF/ANSI 372 meeting the Lead-Free content requirement.

* Must be specified when ordering

Product Options

Internal Fused Disconnect and Ground Fault Package

The FDS part of this option interlocks with enclosure door when energized, prohibiting access to a live cabinet. It adds an additional level of safety and convenience at the heater location. GF senses leakage current to ground > 1 Amp. If a fault is detected, this will terminate the high voltage power supply to heating elements and disable operation of the unit.

Explosion Proof Purge System

The EXP2 option makes heaters compliant for classified areas; Class 1, Division 2, Groups A-D, T5. The Purge System requires a supply of clean instrument air or inert gas (provided by installer). This supply maintains a positive internal pressure and prevents the enclosure from filling with flammable gasses, dusts or vapors from the ambient environment. In addition to manufacturer certifications on the purge system, Laars independently tests and 3rd party certifies all finished product with EXP2 to comply with NFPA 496.

Alarm Selections

For critical process applications, the high/low temperature alarm (AL option) alerts you to an over or under temperature situation. The visual indicator alarm is located on the heater control panel. If the process temperature strays from the defined temperature range, an alert is sent to the controller.

Freeze Protection

The standard ambient temperature is 33°F (0.6°C). For environments lower than 33°F, a freeze protection package is available. ENHT offers protection to -20°F (-28°C). This level of protection utilizes the normal heater supply voltage. No additional dedicated circuit to the unit is required during field installation. Freeze protection (ENHT option) includes an internally insulated NEMA 4/4X enclosure and thermostatically controlled forced air heater to maintain internal temperatures above freezing.
The ENHT option also includes a connection point for DCS monitoring. In the event of a power interruption or ENHT system failure when internal enclosure temperatures reach 40°F (4.4°C) or lower, the unit will notify a facilities control/monitoring system that the unit is unable to maintain freeze protection. Regardless of state of power to the unit, this warning notifies maintenance personnel and provides an opportunity to correct the condition before any damage occurs to the unit.

Other Product Options

For additional heater options and installation accessories, reference the appropriate section at the end of this document.

Electrical Specifications for the Heater (3-Phase)

☑ All internal fuses necessary for installation are included with the unit.

Capacity (kW)	Voltage	Maximum Amperage	Minimum AWG Wire Size*
18	480	22	10
18	600	18	10
25	480	30	8
25	600	24	10

* Based on the NEC Table 310.16 (Formerly 310.15) for 75°C insulated copper wire @ 30°C Ambient. Aluminum wire requires larger gauges.

Low Pressure Drop Advantage

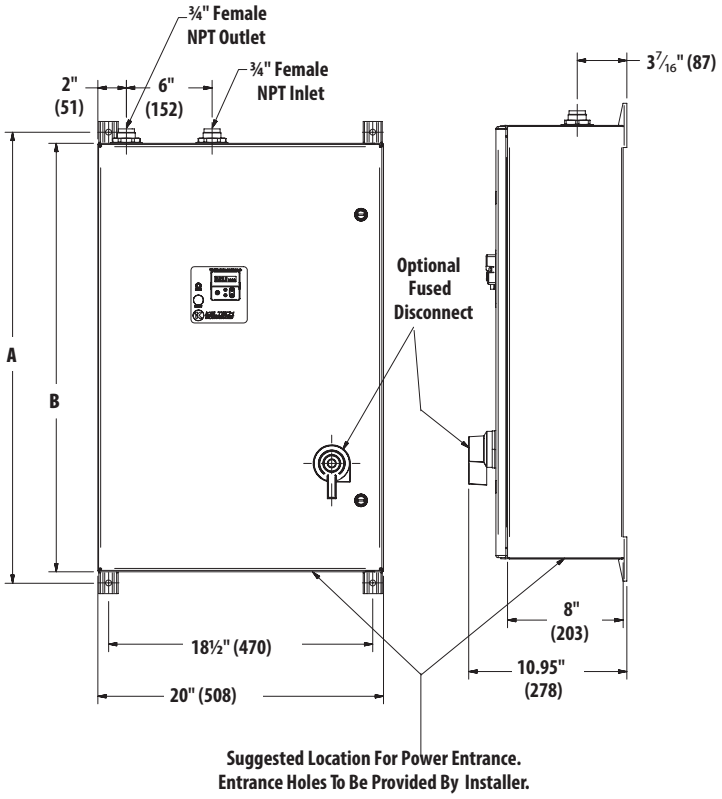
Pressure Drop**								
GPM	1	2	3	4	5	6	8	10
PSI	0	1	2	3	4	5	7	10
LPM	3.8	7.6	11.3	15.1	18.9	22.7	30.2	37.8
BAR	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.7

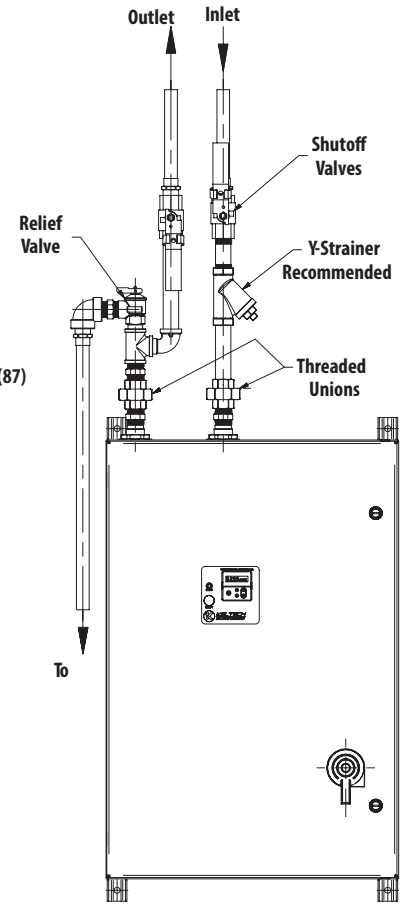
** Standard build configuration

E Series - Dimensions

☑ Select product options shown.

(mm)





Suggested Installation Configuration
Components provided by installer unless otherwise specified. Reference the product options sections or contact your local Manufacturer Representative for product options.

	A	B
18kW	31-1/2" (800)	30" (762)
25kW	37-1/2" (953)	36" (914)

kW Calculator

E Series: 18, 25 kW

Temperature Δ °F (°C)

Flow GPM	LPM	10° (6°)	15° (8°)	20° (11°)	25° (14°)	30° (17°)	35° (19°)	40° (22°)	45° (25°)	50° (28°)	55° (31°)	60° (33°)	65° (36°)	70° (39°)	75° (42°)	80° (44°)	85° (47°)	90° (50°)	95° (53°)	100° (56°)	105° (58°)	110° (61°)	115° (64°)	120° (67°)	125° (69°)	130° (72°)	135° (75°)	140° (78°)
0.75	2.8	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
1.0	3.8	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	
1.5	5.7	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25	25	-	-	-	-	-	-
2	7.6	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-
3	11.3	18	18	18	18	18	18	18	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	15.1	18	18	18	18	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	18.9	18	18	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	22.7	18	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	26.5	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	30.2	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	34.0	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	37.8	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	56.8	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sizing for the proper flow rate is important. If the temperature rise requirements exceed a single G Series, consider using multiple G Series units. Please contact your Laars Representative for additional product information.

How to Size a Heater.

1. Calculate temperature rise (also known as delta tee or ΔT).
   Setpoint temp _____ minus coldest incoming water temp _____ = ΔT ΔT = _____

2. Select kW required by using chart or formula below.
   Peak demand in GPM x ΔT x 0.1465 = kW kW = _____

3. Confirm voltage and phase available on site. Voltage & Phase _____

4. Confirm minimum flow. Minimum Flow _____

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E Series
Eyewash Heaters
Tankless Electric Water Heating Solutions

Brand (1)
L = Laars

Category (2 3 4 5)
C T E E = Commercial Tankless Electric E Series

Power (6 7 8)
0 1 8 = 18kW
0 2 5 = 25kW

Voltage Three Phase (9)
S = 480
T = 600

Enclosure Construction (10)
D = NEMA 4 - Standard
E = NEMA 4X 304 SSTL
K = NEMA 4 & Explosion proof EXP2
M = NEMA 4 & Leg Kit
N = NEMA 4X 304 & EXP2
R = NEMA 4X 304 & LK

LK not available with EXP2

Heat Exchanger Construction (11)
X = Standard
C = ENHT
Freeze Protection -20°F

Control (12)
X = Standard
C = AL3 Dist Control Sys Link
D = AL3-SL Stack Light with Distributed Control Sys Link

Electrical (13)
X = Standard
J = FDS Internal Fuse Disconnect and GF Ground Fault Package

Temperature Setpoints (14)
X = Standard (0.75 GPM Activation & 160F)

Firmware (15)
X = Standard

Language (16)
__ = English (blank)
F = French

Installation Accessories

☐ BSPP = Stainless steel thread adapter converts NPT to BSPP (NEMA 4 or 4X only)	☐ PR = Pressure and temperature relief valve	☐ YS = Y-Strainer
☐ NONE= None	☐ PRS = ASME pressure relief valve, stainless steel	☐ YSS = Y-Strainer, stainless steel
	☐ NONE= None	☐ NONE = None

Application Attributes (MANDATORY)

Coldest incoming water temperature (140F Max):_____ Maximum Flow:_____ Set point temperature:_____

Delta T Calculation: Set Point Temperature - Coldest Incoming Water Temperature = _____ (Maximum Delta T for Application)

☑ Laars Tankless Water Heaters are built to customer specification and are therefore non-cancelable, non-refundable and non-returnable.

Teflon is a registered trademark of E. I. du Pont de Nemours and Company

Model Number Configuration

L	C	T	E	E											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Customer Signoff_____

Laars Heating Systems Company reserves the right to change specifications, components, features, or to discontinue products without notice.

LAARS Heating Systems Company

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