

Laars Model SH Heat Pump Water Heater Stratified Storage Tank Specification

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 WORK INCLUDED

- A. Section includes stratified storage tank for use with heat pump water heater systems. The tank shall be fabricated, assembled, charged, and tested by one manufacturer.

1.3 SUBMITTALS

- A. Submit shop drawings, mechanical layout, flow schematics, and product data, as specified. Include capacity data, installation manual, startup and service instructions, and spare/replacement parts lists.

1.4 QUALITY ASSURANCE AND COMPLIANCE

- A. Reference Standards
 - a. ASME Boiler and Pressure Vessel Code Section IV HLW Stamp.
 - b. ASHRAE 90.1b Energy Efficiency Standard for Buildings.
- B. Each submittal shall be provided with documentation certifying that all materials, products, components, and test reports comply with the design requirements for this project.
- C. Furnish all equipment, materials, and accessories new and free from defects.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of tank that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: 10-Year limited warranty.

PART 2 – PRODUCTS

2.1 RATINGS

- A. Nominal Capacity:
 - a. Model 30075: 229 gallons (867 liters)
 - b. Model 30111: 340 gallons (1287 liters)
 - c. Model 48073: 572 gallons (2165 liters)
 - d. Model 54113: 1119 gallons (4236 liters)
- B. Capacity:
 - a. Model 30075: 210 gallons (795 liters)
 - b. Model 30111: 320 gallons (1211 liters)
 - c. Model 48073: 500 gallons (1893 liters)
 - d. Model 54113: 1000 gallons (3785 liters)
- C. Operating Conditions:
 - a. Maximum water pressure = 125 psi (861 kPa)
 - b. Maximum water temperature = 180°F (82°C)

2.2 CONSTRUCTION

- A. Description: Laars Heat Pump Stratified Storage Tank, model SH.
- B. Tank shall be vertically oriented.
- C. Tank diameter shall be:
 - a. Model 30075: 30 inches (76 cm)
 - b. Model 30111: 30 inches (76 cm)
 - c. Model 48073: 48 inches (122 cm)
 - d. Model 54113: 54 inches (137 cm)
- D. Tank height to top of fitting shall be:
 - a. Model 30075: 82 inches (208 cm)
 - b. Model 30111: 118 inches (300 cm)
 - c. Model 48073: 80 inches (203 cm)
 - d. Model 54113: 122 inches (310 cm)
- E. Tank shall be steel construction.
- F. Outside of tank shall be painted with red oxide primer.
- G. Tank shall be double-glass lined with a coating that produces a superior, resistant, long-lasting material that bonds to the steel substrate. Lining shall be 20 mils thick (+/- 4 mils). Lining shall be able to withstand temperatures up to 180°F (82°C), and shall feature antimicrobial product protection to help prevent the growth of bacteria, mold and mildew on the surface of the tank lining. The glass lining shall be tested under the following ASTM testing guidelines:
 - a. Degradation: W-H-196 Test = 7.0 – 8.0 mg/in².
 - b. Resistance: PEI T-21 Spot Acid Test = Class A.
 - c. Adhesion: Impact Resistance = Class 4 to 5.
 - d. Hi-Pot Test: Less than 20.
- H. Tank shall have 3" NPT stainless steel outlet with built-in diffuser tube.
- I. Tank shall have 3" NPT stainless steel inlet with built-in diffuser tube.
- J. Tank shall have two plugged 3" NPT stainless steel fittings, for recirculation systems and for placement of an optional third diffuser for the heat pump system's cold water makeup tank.
- K. Tank shall be fitted with five ½" NPT thermowells for placement of heat pump control sensors that are used in demand response systems.
- L. Tank shall include magnesium anode rods, quantities and placement chosen to best protect the tank.
- M. Tank shall have a drain sized:
 - a. Model 30075: 1" NPT
 - b. Model 30111: 1" NPT
 - c. Model 48073: 1" NPT
 - d. Model 54113: 1½" NPT
- N. Tank shall have a 1¼" relief valve opening.
- O. Tank shall have a skirt support welded to the base.

2.3 OPTIONS

- A. Tank shall be available with insulated topcoat with the following properties:
 - a. Exceeds ASHRAE 90.1b requirements.
 - b. 2.5 inches of high density two-component polyurethane foam with an R value of R-16 that is applied directly to the vessel, and rises to the desired thickness. Foam shall have the following properties:
 - i. Specific gravity: 1.22
 - ii. Density: 2.5
 - iii. Closed cell content: >90%
 - iv. K-factor, initial: 0.152 2' SPF
 - v. Permeance: .55
 - vi. Dimensional stability: +1% dry age 28 days (158°F (70°C), dry)
 - vii. Flame spread: 25 – ASTM E-84
 - viii. Smoke development: 450
 - ix. R-value: 6.6 inch

- c. 100% acrylic topcoat that is formulated for outdoor applications, is designed to withstand a full range of environmental conditions, and protects the foam from deterioration from the sun. Topcoat shall have the following properties:
 - i. Topcoat: White, 25 mils
 - ii. Texture: Smooth
 - iii. Grade: Spray or roll
 - iv. Base: 100% acrylic