

LAARS E-THERM™



Commercial Air-to-Water Natural Refrigerant Heat Pump Water Heater

CHV325 Indoor / Outdoor



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

Submittal Data

Project Name:

Location:

Contractor:

The Laars E-Therm commercial air-to-water heat pump utilizes CO₂ (a natural refrigerant) and electricity to efficiently produce up to 180°F domestic hot water.

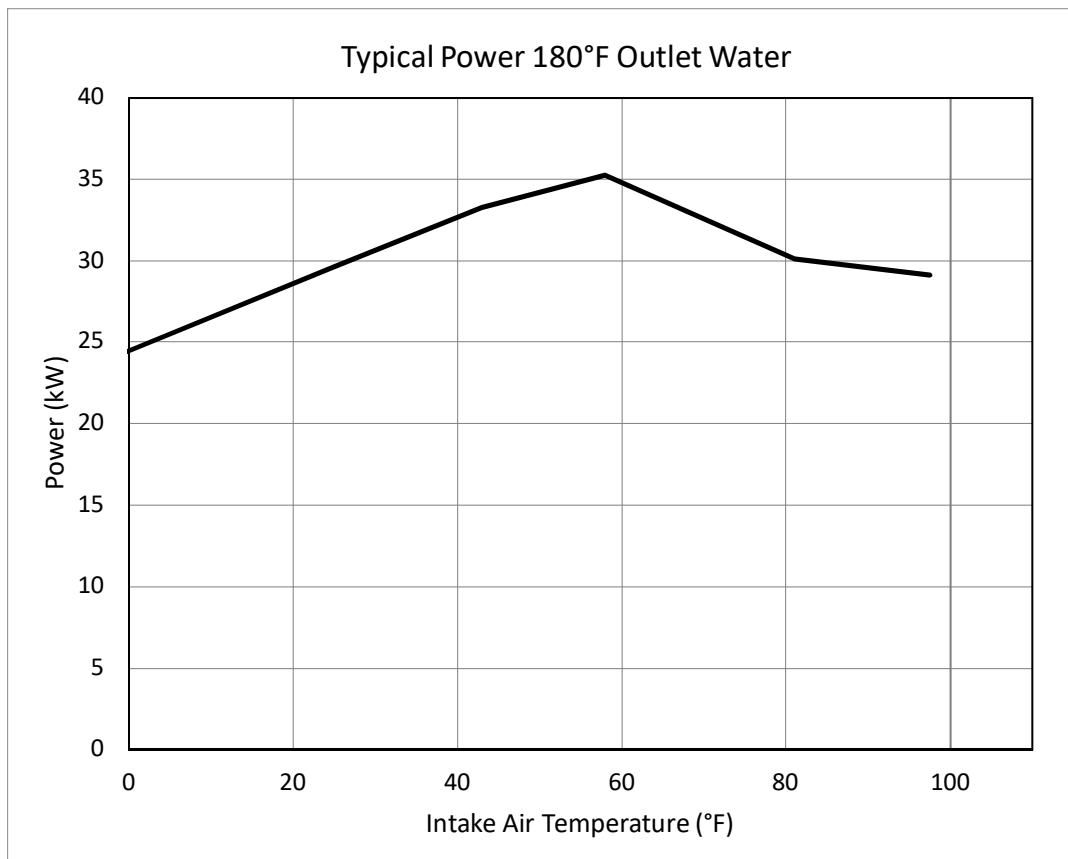
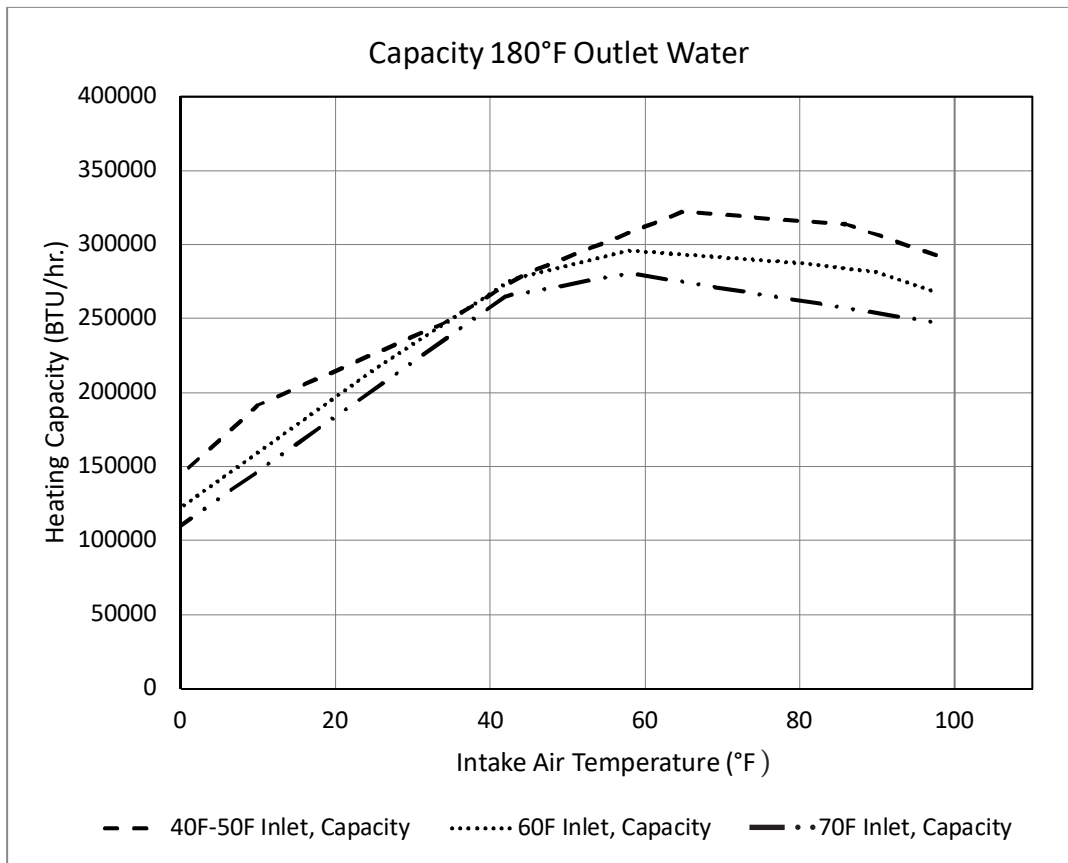
- Ideal for high volume, domestic water applications such as multi-family, hotels and hospitality, dormitories, healthcare, industrial, food and beverage, and many more.
- CO₂ as a refrigerant is non-toxic, non-flammable, has a low Global Warming Potential of 1, and results in an ultra high COP.
- Reduce operational costs by extracting as high as 4 times the energy in heat that is inputted as electricity.
- Can be used in high ambient or below freezing temperature environments.
- Includes double wall heat exchanger to separate potable water from refrigeration loop.
- 1-Year Limited Warranty.

Performance Data

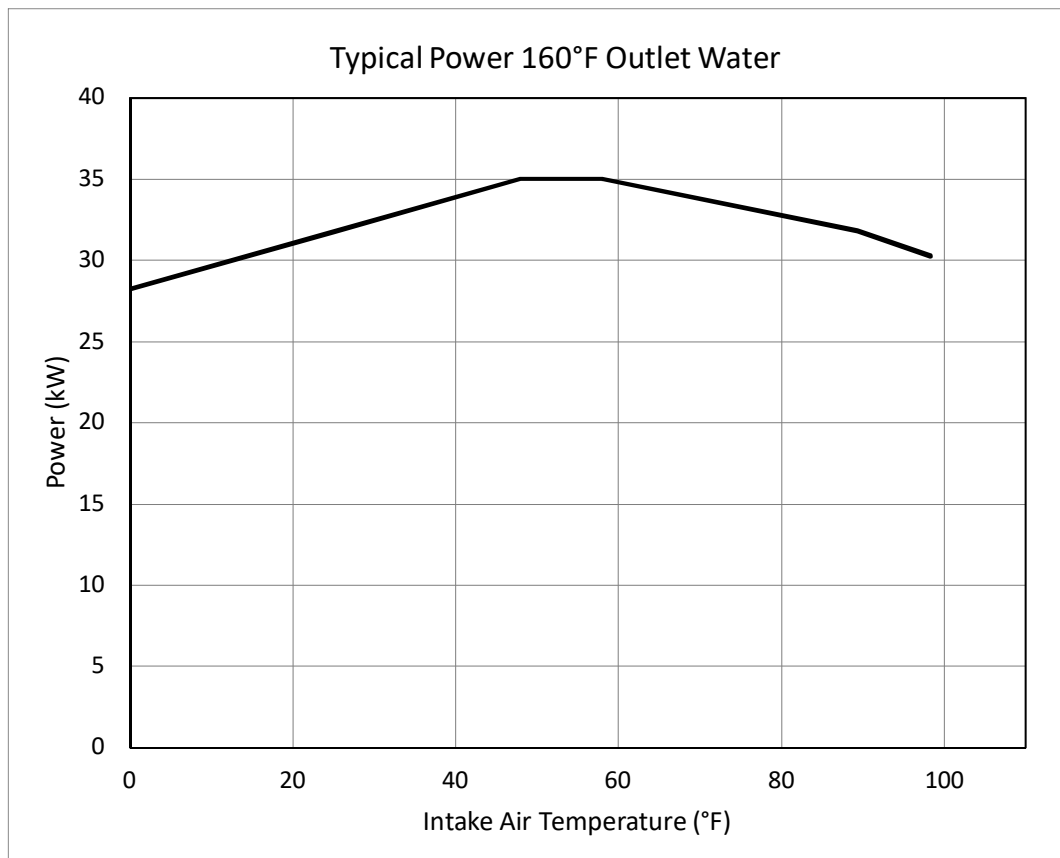
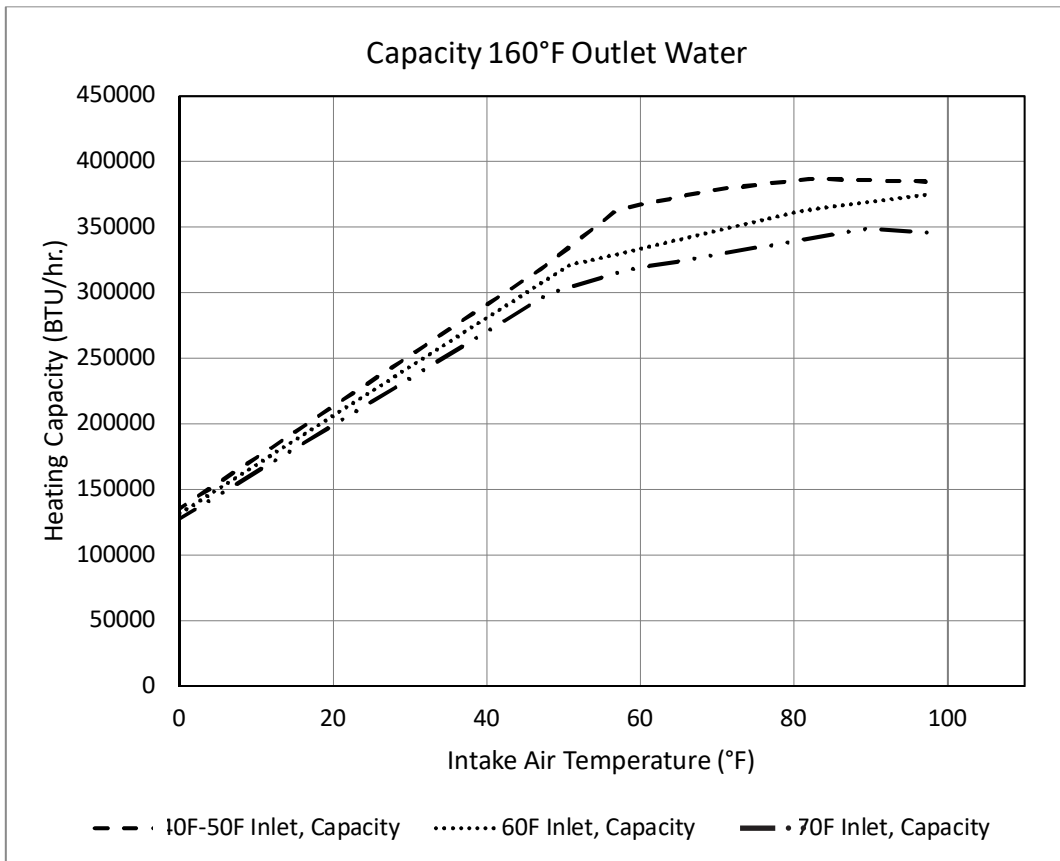
Nominal Heating Capacity		322 MBH	94.5 kW
Nominal COP (Performance Coefficient)	Per AHRI Standard 1300*	4.0	
Domestic Hot Water Data	Maximum Outlet Temp Range	120 to 180°F	49 to 82°C
	Flow Rate	2.8 to 15 gpm	10.5 to 57.8 lpm
Operating Conditions	Inlet Water Pressure, Maximum	150 psi	21.8 kPa
	Inlet Water Temperature Range	38 to 90°F	3 to 32°C
	Entering Air Temperature Range	0 to 115°F	-18 to 46°C
	Ambient Temperature Range	0 to 115°F	-18 to 46°C
Electrical Data	Voltage	480V	
	Phase	3	
	MCA	70 A	
	MOP	110 A	
	FLA	58 A	
	SCCR, RMS Symmetrical Maximum	10,000 A	
Refrigerant	Type	R744 (CO ₂)	
	Refrigerant Charge	50 lbs	22.7 kg
	Discharge Pressure, Maximum	1740 psi	120 bar
	Suction Pressure, Maximum	1088 psi	75 bar
Defrost Type		Hot Gas Bypass	
Sound Level, A-Weighted Average @ 1 Meter		76 dB(A)	
Sound Level, A-Weighted Average @ 4 Meters		67 dB(A)	
Fan	Type x Quantity	Axial (2)	
	Maximum Total Air Flow Rate	26000 cfm	12271 lps
Gas Cooler/ DHW Heat Exchanger	Type	Double Wall	
	HX Material, Potable Side	Stainless Steel	

*AHRI Standard 1300 test condition of 70°F inlet and 120°F outlet water temperature at 80.6°F incoming air temperature.

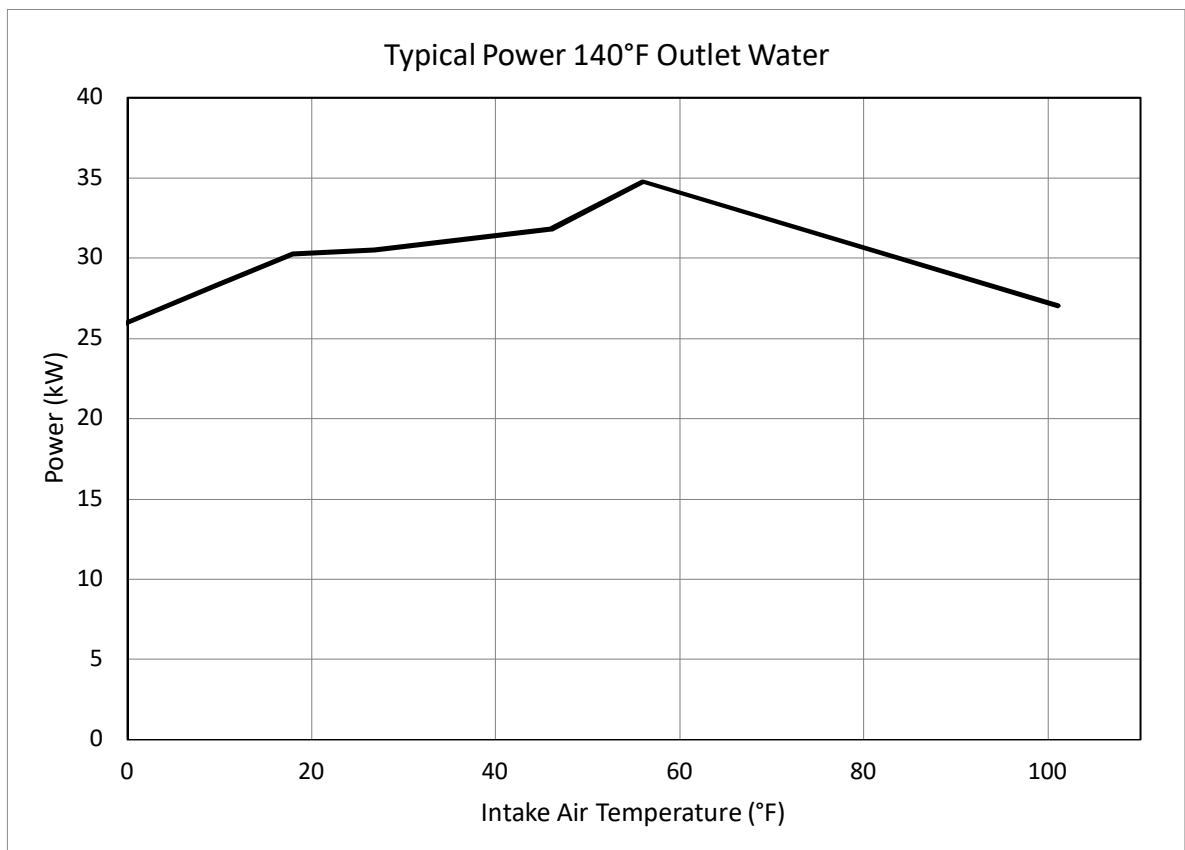
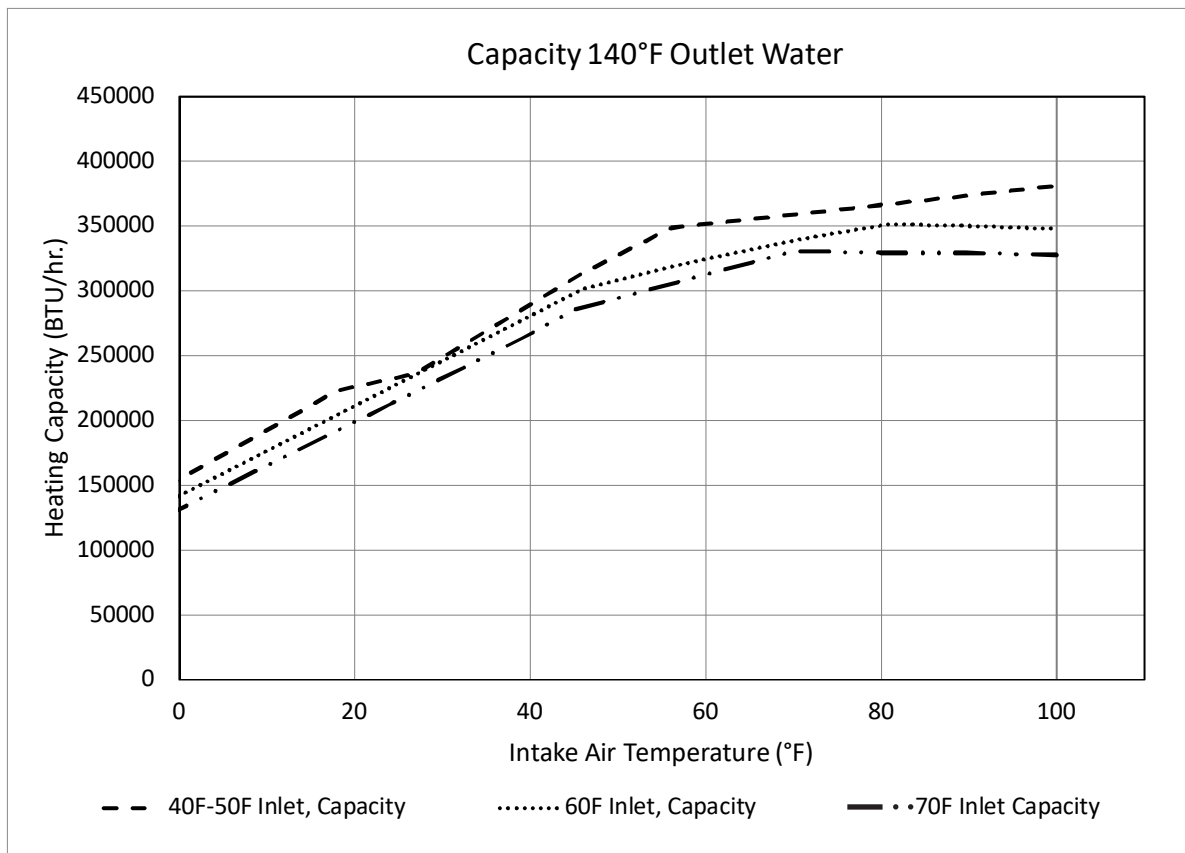
Performance Map Sizing Data
180°F Outlet Water Temperature



Performance Map Sizing Data
160°F Outlet Water Temperature

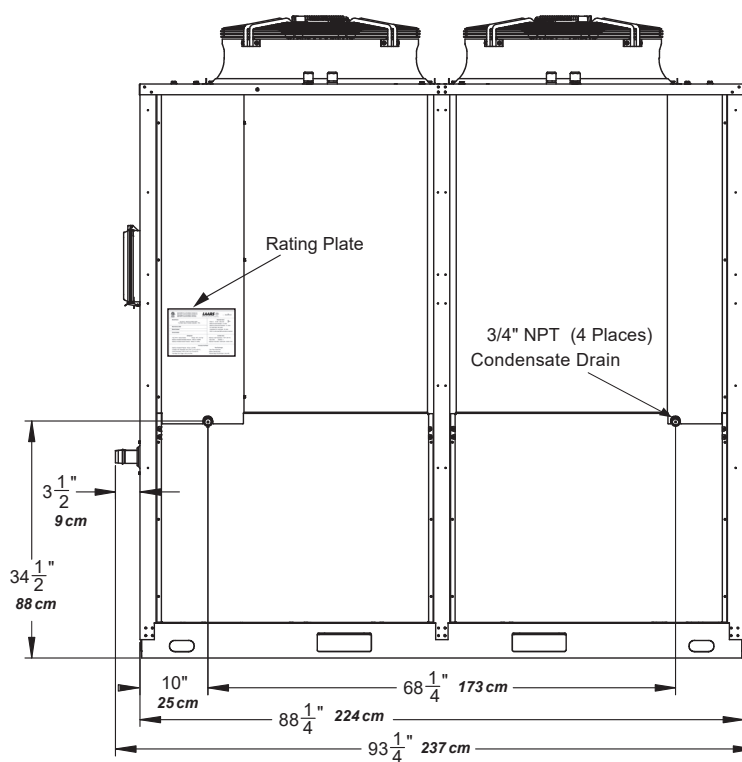
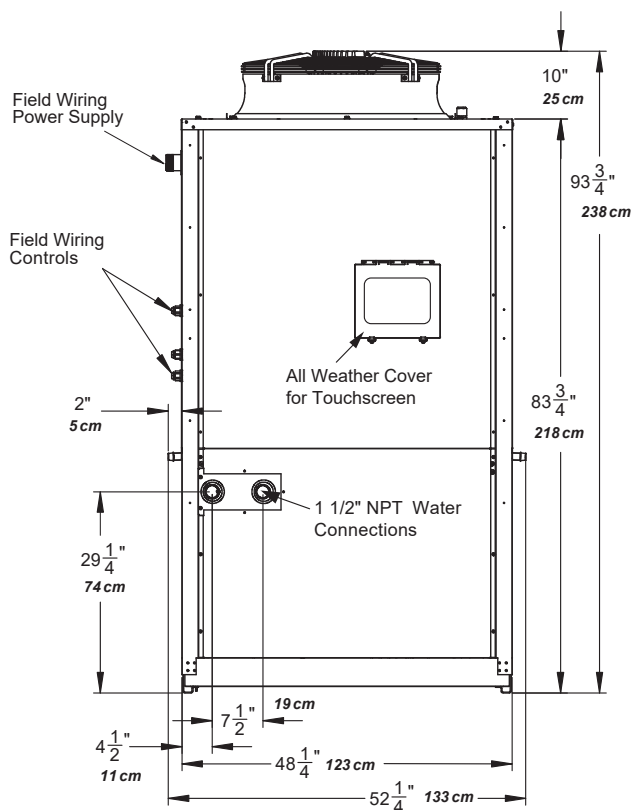
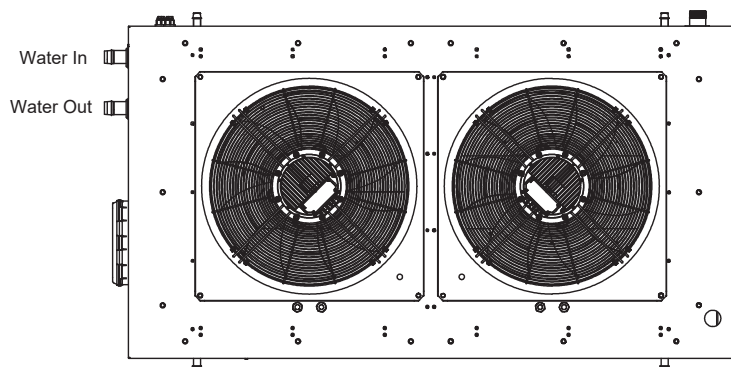


Performance Map Sizing Data
140°F Outlet Water Temperature



Weights and Dimensions

Product Weight	Operating	2500 lbs	1134 kg
	Shipping (crated & charged)	3000 lbs	1361 kg
	Product - Dry	2300 lbs	1043 kg
Operating Weight Corner Point Loading	Front Left Side	625 lbs	283 kg
	Front Right Side	625 lbs	283 kg
	Rear Right Side	625 lbs	283 kg
	Rear Left Side	625 lbs	283 kg
Installation Clearances (Minimum)	Both Sides	3 ft	91 cm
	Front and Rear	4 ft	122 cm
	Above the Heat Pump	10 ft	305 cm
Outside Dimensions	Height	93-3/4" in	238 cm
	Width	52-1/4" in	133 cm
	Length	93-1/4" in	237 cm
Water Connections	Water Inlet	1-1/2" in M NPT	
	Hot Water Outlet	1-1/2" in M NPT	
	Condensate Drains (4)	3/4" in M NPT	



Laars Thermal Storage, Major Components



Laars Stratified Storage Tanks for Heat Pump Systems are designed specifically to optimize installed heat pump system performance. Tanks are offered with red oxide primer and a 2-1/4" high-density polyurethane foam and acrylic top coat for increased energy savings. Typical tank configurations include multiple 340-gallon, 500-gallon or multiple 1000-gallon tanks that are piped to maximize temperature stratification.

Tanks are offered in carbon steel with an exclusive, corrosion-resistant double glass lined coating that is bonded to the interior surfaces at 1600°F, or in stainless steel materials such as 316L or Duplex for long service life.

Pipe tapings are located at the ideal locations to promote proper temperature stratification to maximize energy efficiency.



The Laars-Jet[®] Stainless-Steel Diffuser greatly reduces the velocity and turbulence of incoming water at the top and bottom of the storage tank. By minimizing turbulence, desirable thermal stratification inside the storage tank is preserved. The result is an efficient and automatic migration of usable hot water whenever there is a draw from the storage tank.



Laars Electric Temperature Maintenance Tanks are available in a wide range of kW inputs to meet the needs of most any temperature maintenance loop or process. These temperature maintenance tanks are sized to match system load with typical storage sizes of 200 gallons and 300 gallons. Units are 150 psi ASME rated, are approved for 180°F operation and have the required connections to properly pipe with a high efficiency heat pump system.

Low Watt Incoloy elements are used to efficiently heat the water. This tough alloy successfully resists the effects of prolonged high operating temperatures, hard water, acids, corrosion and thermal shock.

Tanks are offered in carbon steel with an exclusive, corrosion-resistant enamel coating that is bonded to the interior surfaces at 1600°F, or in stainless steel materials such as 316L or Duplex for long service life. High-density open cell foam insulation is used to minimize heat loss, allowing a maximum of 4 watts per square foot of tank surface energy loss.



Laars Expansion Bladder Tanks are used to help eliminate the expansion forces caused by heating and cooling of pressurized water systems. A heavy-duty replaceable NSF 61 butyl rubber bladder keeps the system water separate from the tank, eliminating tank corrosion. The expansion tanks designed for commercial potable water applications are available in glass lined carbon steel or stainless steel, and can be manufactured with insulating foam and topcoat for increased energy savings.