SHPA SERIES
AIR SOURCE HEAT PUMP HEAT PUMP WATER HEATER

The State SHPA-185 is an air-to-water heat pump water heater designed to be an energy-efficient, zero-emissions solution for your commercial water heating needs.

FEATURES:

- Up to 160°F maximum water temperature
- Ambient operating range of 40-120°F
- Air-to-Water units cool and dehumidify the surrounding ambient air, reducing the need for air conditioning and further increasing savings
- Environmentally-friendly R134a refrigerant
- Double wall condenser for potable water heating
- Integrated potable water-approved pump
- Suitable for indoor and outdoor applications
- BACnet compatible logic controller optional

APPLICATIONS

- Restaurants
- Hotels
- Apartment buildings
- Laundry facilities
- Healthcare facilities
- Schools
- Sports arenas
- Gyms
- Prisons
- Military barracks
- Manufacturing facilities, etc

ONE-YEAR LIMITED WARRANTY

- Backed by 1-year limited warranty, with an option for additional 5-year Extended Compressor Warranty
- For complete warranty information, consult written warranty or go to StateWaterHeaters.com

MODEL SHPA-185

SOLID. STATE.

SPECIFICATIONS

Operating Conditions	**Model Number**				**SHPA-185**			
	Recovery Rate †				174 Gal/hr			
	Compressor Type				Scroll			
	Refrigerant				R134a			
	Max Water Temperature				160° F			
	Ambient Operating Range				40° F - 120° F			
	Max Working Water Pressure				150 psig			
Multi-Pass Unit Sizing	Water Connections				2" FPT Copper			
	Water Flow Rate				40 GPM			
	Condenser Pressure Drop				15.73 ft Head			
	External Head Pressure Allowed by Unit				2.04 ft Head / 50 ft run of 2" pipe			
Single-Pass Unit Sizing	Water Connections				1 1/2"" FPT Copper			
	Average Water Flow Rate				18.5 GPM			
	Condenser Pressure Drop				3.60 ft Head			
	External Head Pressure Allowed by Unit				14.24 ft Head / 50 ft run of 1" pipe			
Unit Specifications	Air Flow Rate				4,500 CFM			
	Dry Weight				1,350 lbs			
	Operating Weight				1,410 lbs			
	Model		**Dimensions (L x W x H)**		**Ext. Static Pressure (in H20)**		**Standard Sound Rating**	
	Axial		72 3/4" x 45 1/4" x 43"		N/A		93 dB	
	Blower		72 3/4" x 42 3/4" x 43"		1.63		93 dB	
Power Requirements	**Voltage**	**Compressor LRA**	**Total RLA †† (Compressor + Fan)**		**Wire and Disconnect Sizing †††**			
					MCA		**MOCP / MFS**	
			Axial	**Blower**	**Axial**	**Blower**	**Axial**	**Blower**
	208-230/3/60	505	81.3	86.4	100	105	110	110
	440-480/3/60	225	36.5	39.2	45	47	50	50
	575/3/60	180	30.5	32.6	37	39	40	40

† Water heated from 50° F to 150° F with 75° F entering air temperature and 60% relative humidity
†† Axial fan is standard, high-static blower is optional.
††† Single point electric service

Legend
LRA: Locked Rotor Amps
RLA: Rated Load Amps
MCA: Maximum Current Ampacity (used for wire sizing)
MOCP: Minimum Overcurrent Protection (minimum disconnect size to be used)

PERFORMANCE DATA

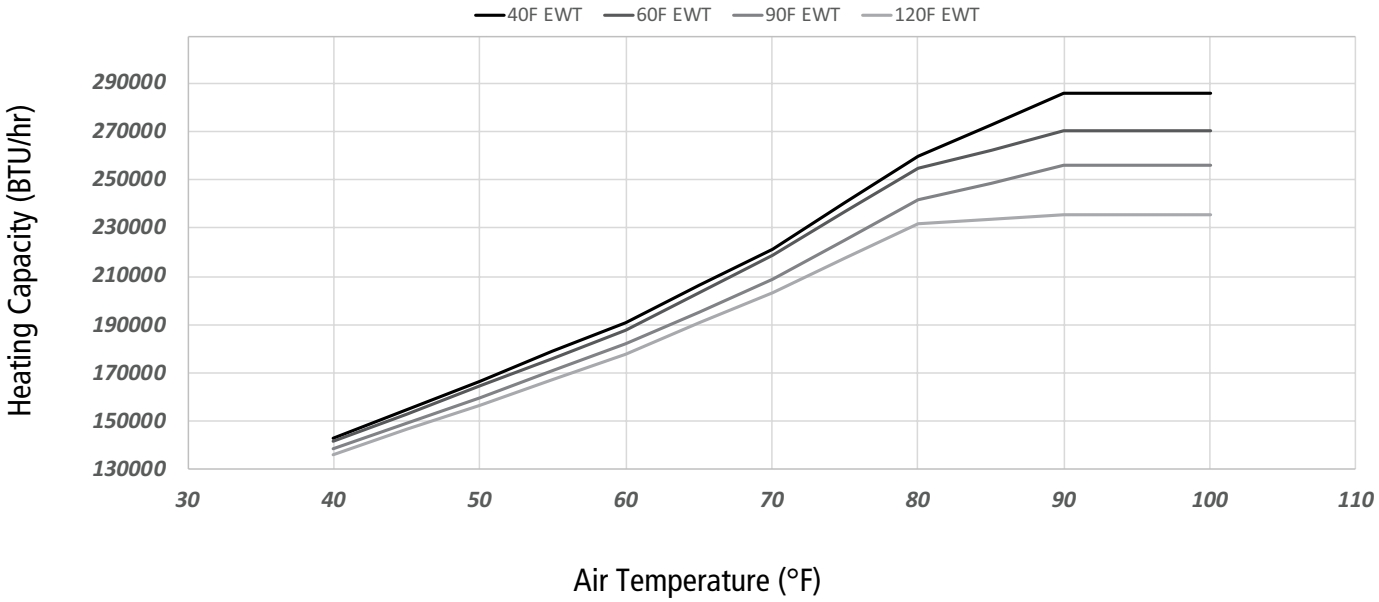
Model	Entering Air Condition	Air Cooling Capacity (Btu/hr)	Entering Water Temp (°F)	Leaving Water Temp (°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPA-185 - Axial	40°F 60% RH	113200	50	57	142500	8.15
		112000	60	67	141500	8.35
		109000	70	77	140500	8.9
		104000	80	87	139900	9.95
		99500	90	97	138800	11.1
		95500	100	107	138300	12.5
		90000	110	117	137500	13.9
		86500	120	127	136900	14.5
		83200	130	137	136400	15.80
		80100	140	147	135800	16.80
	50°F 60% RH	136600	50	58	165200	8.35
		132000	60	68	164500	8.5
		130000	70	78	163200	9.15
		125000	80	88	161800	10.2
		119000	90	98	159900	11.4
		113000	100	108	158300	12.7
		107000	110	118	158100	14.4
		100000	120	128	156900	15.5
		96500	130	138	157000	16.3
		93000	140	148	156200	17.5
	60°F 60% RH	160000	50	59	190200	8.6
		156000	60	69	188200	9
		152000	70	79	186400	9.5
		145000	80	89	184100	10.6
		140000	90	99	182200	11.8
		133000	100	109	181000	13.2
		126000	110	119	178800	14.8
		119000	120	129	177500	16.7
		114000	130	139	176800	17.8
		108000	140	149	176100	18.5
	70°F 60% RH	191000	50	61	220500	8.9
		186000	60	71	218500	9.2
		179000	70	81	214700	9.9
		171000	80	91	211500	11
		164000	90	101	208600	12.2
		157000	100	110	206400	13.6
		149000	110	120	203800	15.2
		142000	120	130	202400	17
		136000	130	140	201500	18.1
		131000	140	150	200100	19.4
	80°F 60% RH	221500	50	63	258200	9.1
		216000	60	73	254700	9.5
		207000	70	82	248500	10.4
		199000	80	92	245600	11.6
		194000	90	102	241656	12.8
		185000	100	112	237800	14.3
		176000	110	122	234600	16
		167000	120	132	231700	17.8
		159000	130	141	228500	18.8
		155000	140	151	224900	19.9
	90°F 60% RH	241000	50	64	275600	9.4
		234000	60	74	270000	9.7
		226000	70	83	266500	10.7
		217000	80	93	261000	11.8
		208000	90	103	255700	13.1
		195000	100	113	248400	14.5
		183000	110	122	241291	16.2
		170000	120	132	235700	18.1
		164000	130	142	232500	19.2
		159000	140	151	228600	20.3

PERFORMANCE DATA

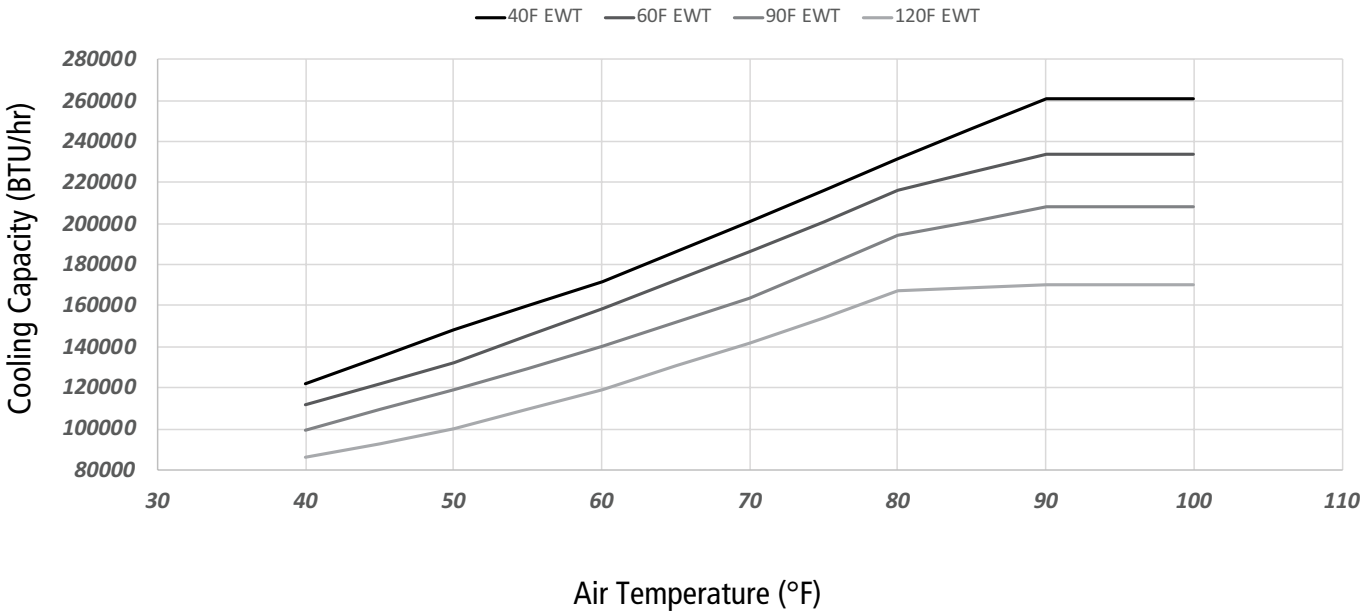
Model	Entering Air Condition	Air Cooling Capacity (Btu/hr)	Entering Water Temp (°F)	Leaving Water Temp (°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPA-185 - Blower	40°F 60% RH	113200	50	57	142500	9.79
		112000	60	67	141500	9.99
		109000	70	77	140500	10.54
		104000	80	87	139900	11.59
		99500	90	97	138800	12.74
		95500	100	107	138300	14.14
		90000	110	117	137500	15.54
		86500	120	127	136900	16.14
		83200	130	137	136400	17.44
		80100	140	147	135800	18.44
	50°F 60% RH	136600	50	58	165200	9.99
		132000	60	68	164500	10.14
		130000	70	78	163200	10.79
		125000	80	88	161800	11.84
		119000	90	98	159900	13.04
		113000	100	108	158300	14.34
		107000	110	118	158100	16.04
		100000	120	128	156900	17.14
		96500	130	138	157000	17.94
		93000	140	148	156200	19.14
	60°F 60% RH	160000	50	59	190200	10.24
		156000	60	69	188200	10.64
		152000	70	79	186400	11.14
		145000	80	89	184100	12.24
		140000	90	99	182200	13.44
		133000	100	109	181000	14.84
		126000	110	119	178800	16.44
		119000	120	129	177500	18.34
		114000	130	139	176800	19.44
		108000	140	149	176100	20.14
	70°F 60% RH	191000	50	61	220500	10.54
		186000	60	71	218500	10.84
		179000	70	81	214700	11.54
		171000	80	91	211500	12.64
		164000	90	101	208600	13.84
		157000	100	110	206400	15.24
		149000	110	120	203800	16.84
		142000	120	130	202400	18.64
		136000	130	140	201500	19.74
		131000	140	150	200100	21.04
	80°F 60% RH	221500	50	63	258200	10.74
		216000	60	73	254700	11.14
		207000	70	82	248500	12.04
		199000	80	92	245600	13.24
		194000	90	102	241656	14.44
		185000	100	112	237800	15.94
		176000	110	122	234600	17.64
		167000	120	132	231700	19.44
		159000	130	141	228500	20.44
		155000	140	151	224900	21.54
	90°F 60% RH	241000	50	64	275600	11.04
		234000	60	74	270000	11.34
		226000	70	83	266500	12.34
		217000	80	93	261000	13.44
		208000	90	103	255700	14.74
		195000	100	113	248400	16.14
		183000	110	122	241291	17.84
		170000	120	132	235700	19.74
		164000	130	142	232500	20.84
		159000	140	151	228600	21.94

PERFORMANCE CHARTS

Heating Capacity vs. Air Temperature

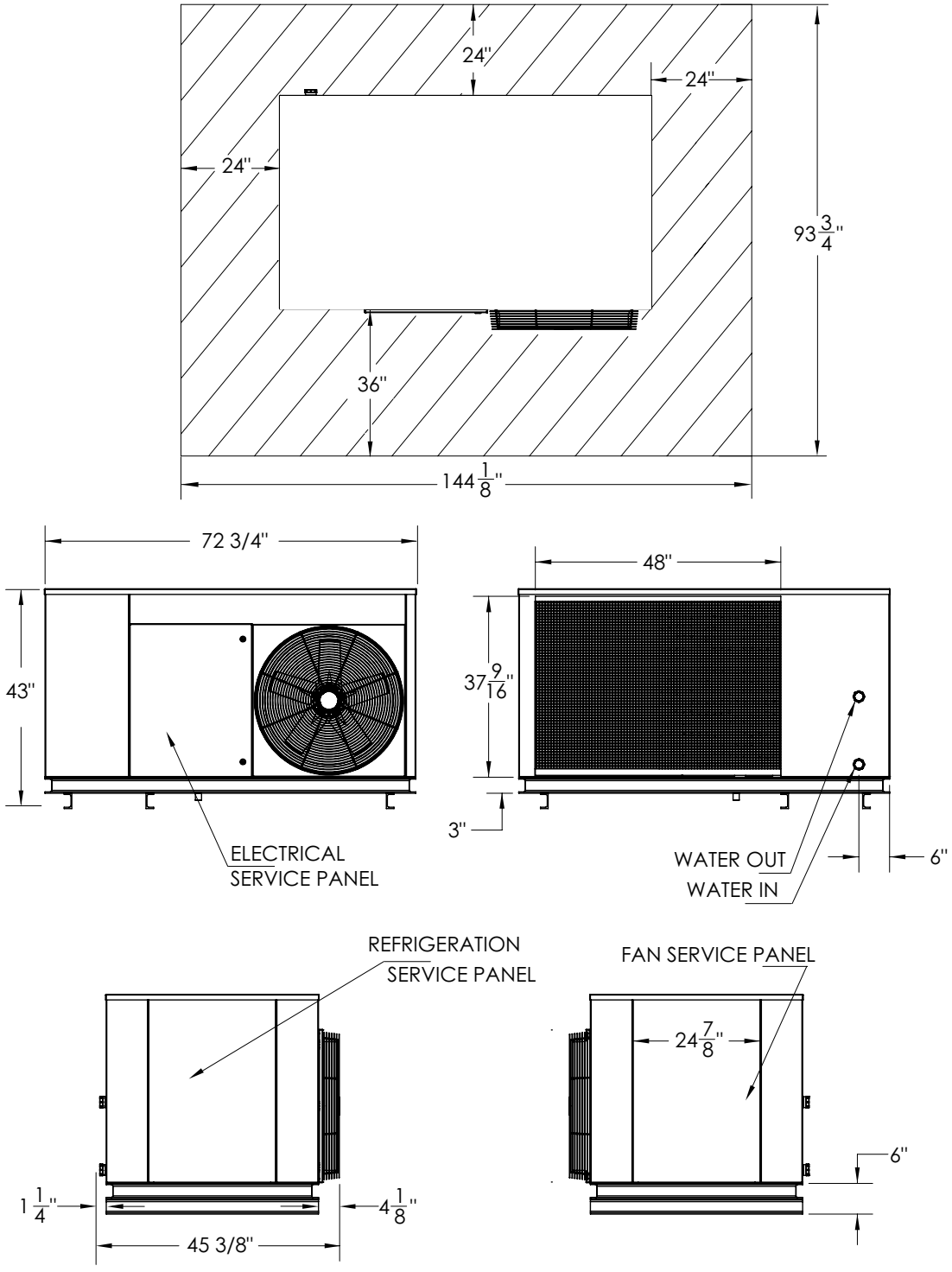


Cooling Capacity vs. Air Temperature



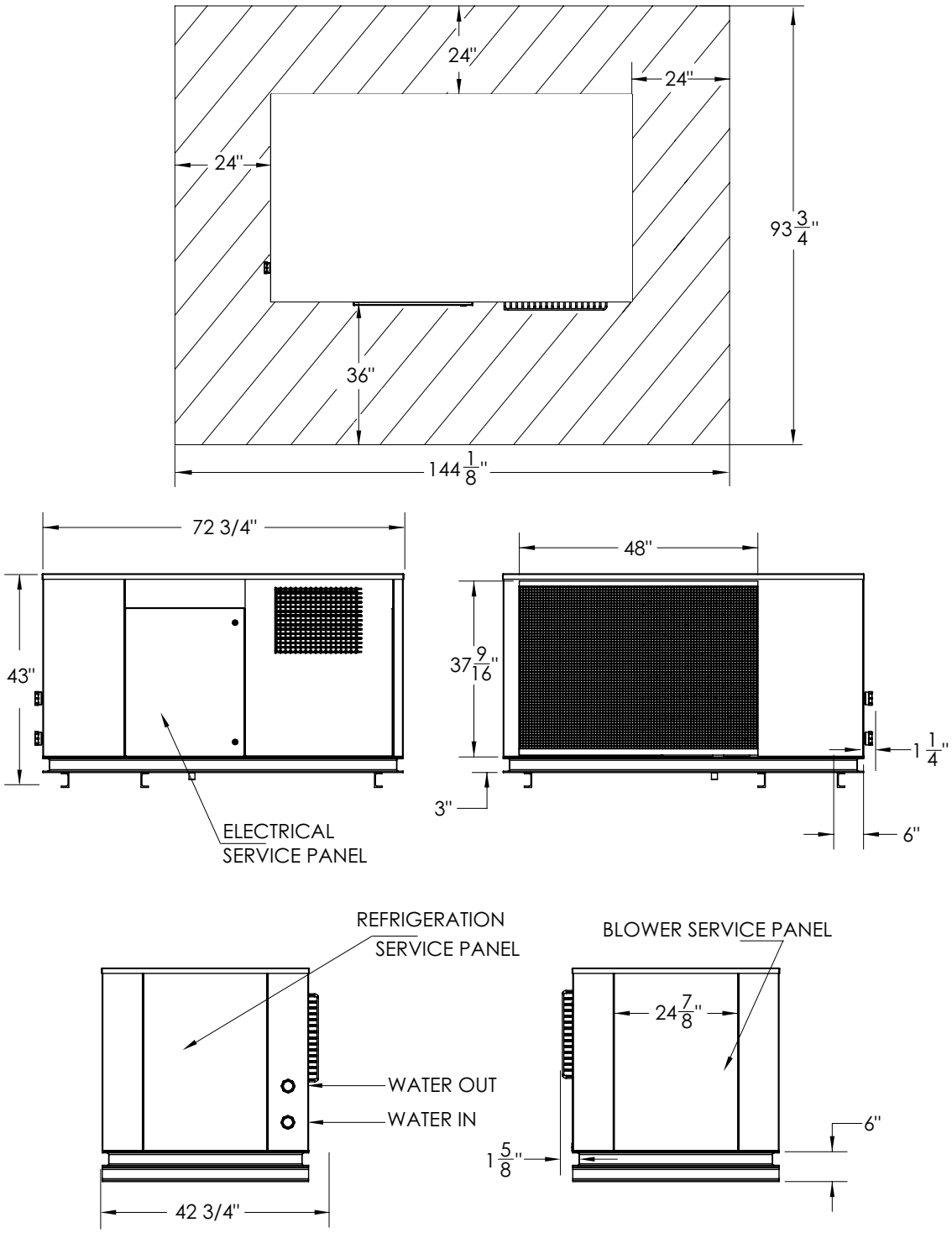
Water heated from 50°F to 150°F with 75°F dry bulb, 60% RH ambient air

AXIAL MODEL DIMENSIONS



NOTE: 36" electrical service clearance per NEC 110.26(A)(1) Working Spaces for "Condition 1."
Check with local codes for additional requirements.

BLOWER MODEL DIMENSIONS



NOTE: 36" electrical service clearance per NEC 110.26(A)(1) Working Spaces for "Condition 1."
Checkwith local codes for additional requirements.

SUGGESTED SPECIFICATION

The HEAT PUMP shall be State Model SHPA-185 having a heating capacity capable of 224,675 BTU/h and cooling capacity of 172,375 BTU/h.

The HEAT PUMP shall have a scroll compressor, factory charged with R134a refrigerant, NSF61-approved stainless steel circulator pump, and double-wall stainless steel condenser for potable water applications. The HEAT PUMP shall have a factory coated evaporator coil. The complete heat pump assembly shall carry a one (1) year limited warranty.

The HEAT PUMP refrigerant circuit shall contain an adjustable thermal expansion valve, receiver, accumulator, serviceable filter drier and service ports for refrigerant gauges.

The HEAT PUMP shall be certified and listed by TUV to CSA C22.2 No. 236:2015, UL 1995:2015-07 standards. The HEAT PUMP shall be certified for indoor and/or outdoor installation.

The HEAT PUMP shall be constructed with a heavy gauge aluminum jacket assembly and painted on both sides.

The HEAT PUMP shall utilize a 24 VDC control circuit and components. The control system shall have a display (PLC Option) for HEAT PUMP set-up, HEAT PUMP status and HEAT PUMP diagnostics. All components shall be easily accessed and serviceable. The HEAT PUMP shall be equipped with low and high refrigerant pressure switches short-cycle control outlet water temperature sensor and return water temperature sensor.

The HEAT PUMP shall have an optional control for “Cascade” to sequence and rotate while maintaining operation of up to eight HEAT PUMPs of same BTU inputs. The HEAT PUMP shall be capable of controlling a valve (single pass option) that maintains constant delivery temperature to the storage tank. The HEAT PUMP shall have an optional gateway device which will allow integration with BACnet.

The HEAT PUMP shall be equipped with terminal strips for electrical connections. A low voltage connection board shall have connection points for safety and operating controls, i.e., alarm contacts, runtime contacts and tank thermostat. A high voltage terminal strip shall be provided for supply voltage connection. Supply voltage shall be 208-230V/3PH/60Hz, 440-480V/3PH/60Hz, or 575V/3PH/60Hz.

The HEAT PUMP shall be suitable for use with polypropylene glycol, up to 50% concentration. The de-rate associated with the glycol will vary per glycol manufacturer.

STANDARD CONSTRUCTION

The HEAT PUMP shall be constructed in accordance with the code requirements as standard equipment.

FOR MORE INFORMATION ON CALL 1-800-365-0024. STATE WATER HEATERS RESERVES THE RIGHT TO MAKE PRODUCT CHANGES OR IMPROVEMENTS WITHOUT PRIOR NOTICE.