SHPA SERIES
AIR SOURCE HEAT PUMP HEAT PUMP WATER HEATER

The State SHPA-90 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-90

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SPECIFICATIONS

Operating Conditions	**Model Number**				**SHPA-90**			
	Recovery Rate †				133 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				1 1/2" FPT Copper			
	Water Flow Rate				20 GPM			
	Condenser Pressure Drop				10.44 ft Head			
	External Head Pressure Allowed by Unit				2.29 ft Head / 50 ft run of 1 1/2" pipe			
Single-Pass Unit Sizing	Water Connections				1" FPT Copper			
	Average Water Flow Rate				9 GPM			
	Condenser Pressure Drop				2.12 ft Head			
	External Head Pressure Allowed by Unit				3.75 ft Head / 50 ft run of 1" pipe			
Unit Specifications	Air Flow Rate				2,800 CFM			
	Dry Weight				750 lbs			
	Operating Weight				775 lbs			
	Model		**Dimensions (L x W x H)**		**Ext. Static Pressure (in H2O)**		**Standard Sound Rating**	
	Axial		70 1/4" x 32 3/4" x 40 1/4"		N/A		87 dB	
	Blower		70 1/4" x 29 3/4" x 40 1/4"		1.75		77 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	239	39.3	41.6	49	51	50	60
	440-480/3/60	125	20.8	22	26	27	30	30
	575/3/60	80	14.4	15.2	18	19	20	20

† 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)

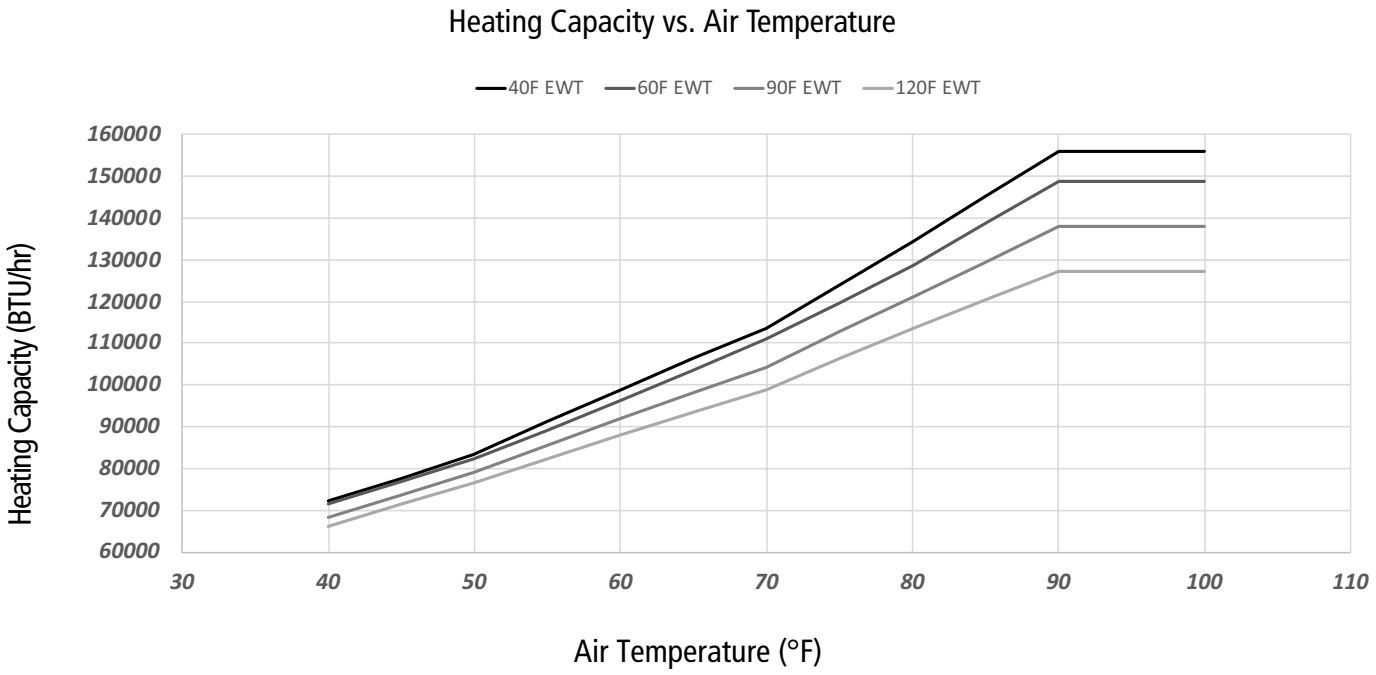
PERFORMANCE DATA

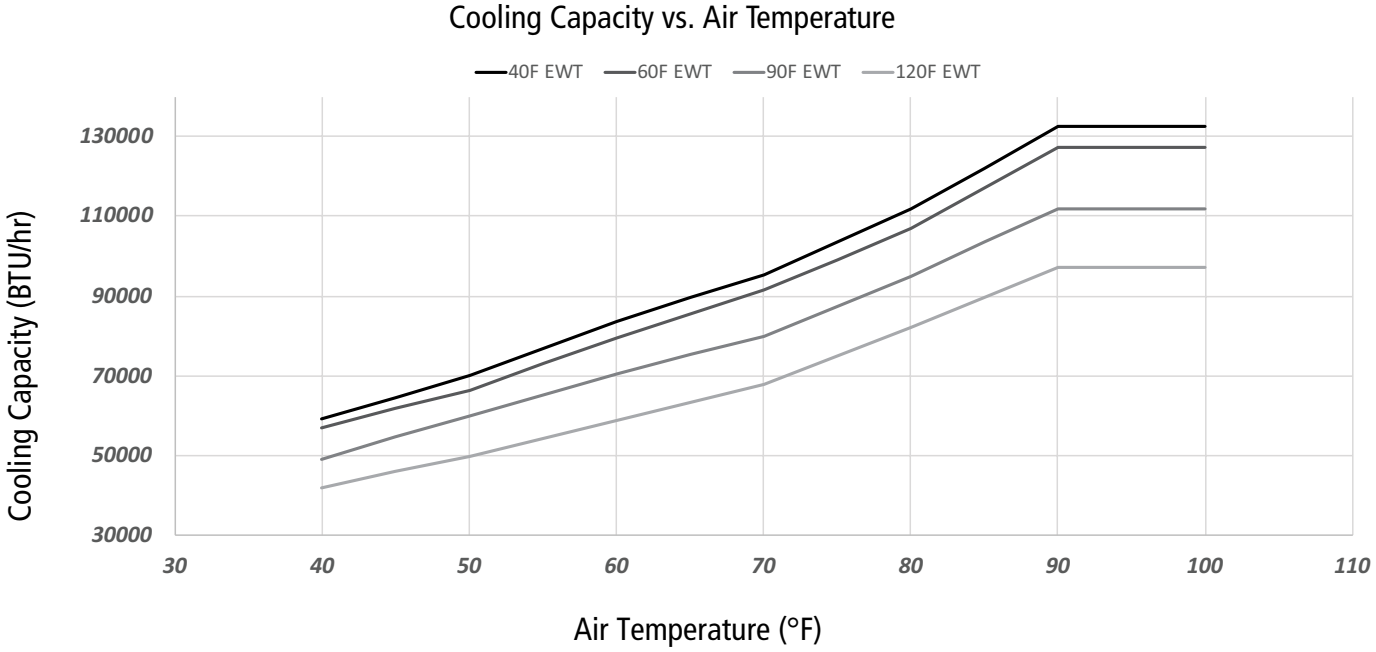
Model	Entering Air Condition	Air Cooling Capacity (Btu/hr)	Entering Water Temp (°F)	Leaving Water Temp (°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPA-90 - Axial	40°F 60% RH	60200	50	57	73700	3.5
		57000	60	67	71600	4
		54500	70	77	70000	4.4
		51500	80	87	69200	4.8
		49100	90	97	68300	5.4
		47600	100	107	67900	5.95
		44300	110	117	67500	6.55
		42100	120	127	67100	7
		40800	130	137	66500	7.40
		38500	140	147	65400	7.90
	50°F 60% RH	67900	50	58	83500	3.8
		66500	60	68	82200	4.3
		64000	70	78	80900	4.67
		61500	80	88	79900	5.1
		59000	90	98	79100	5.6
		56000	100	108	78000	6.15
		53000	110	118	77200	7.94
		49800	120	128	76700	7.55
		48500	130	138	71900	7.95
		47200	140	148	70400	8.4
	60°F 60% RH	81900	50	59	97800	4.2
		79500	60	69	96200	4.6
		76500	70	79	95000	5
		74000	80	89	93400	5.4
		70500	90	99	92100	5.9
		66000	100	109	90700	6.5
		62500	110	119	89400	7.15
		59000	120	129	88000	7.9
		57100	130	139	87100	8.2
		55400	140	149	85900	8.6
	70°F 60% RH	95000	50	60	112500	4.5
		91500	60	70	110900	4.96
		87500	70	80	108100	5.3
		83500	80	90	105600	5.7
		80000	90	100	104200	6.2
		76000	100	110	102200	6.8
		71500	110	120	99900	7.45
		68000	120	130	98500	8.2
		65400	130	140	96700	8.9
		61800	140	150	95000	9.4
	80°F 60% RH	111000	50	62	129500	4.8
		107000	60	72	128600	5.1
		104000	70	82	126600	5.75
		99500	80	92	124000	6.15
		95000	90	102	121200	6.65
		90500	100	111	118600	7.2
		87000	110	121	115800	7.8
		82000	120	131	113500	8.65
		79500	130	141	111400	9.1
		74900	140	151	109500	9.7
	90°F 60% RH	130000	50	63	152100	5.1
		126700	60	73	148400	5.7
		122000	70	83	145100	6.2
		118000	80	93	142300	6.55
		112000	90	103	137900	7
		109500	100	113	135200	7.4
		105400	110	122	132900	7.9
		101900	120	132	129500	8.6
		99400	130	142	126000	9.5
		95800	140	152	123900	10.2

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-90 - Blower	40°F 60% RH	60200	50	57	73700	4.581
		57000	60	67	71600	5.081
		54500	70	77	70000	5.481
		51500	80	87	69200	5.881
		49100	90	97	68300	6.481
		47600	100	107	67900	7.031
		44300	110	117	67500	7.631
		42100	120	127	67100	8.081
		40800	130	137	66500	8.48
		38500	140	147	65400	8.98
	50°F 60% RH	67900	50	58	83500	4.881
		66500	60	68	82200	5.381
		64000	70	78	80900	5.751
		61500	80	88	79900	6.181
		59000	90	98	79100	6.681
		56000	100	108	78000	7.231
		53000	110	118	77200	9.021
		49800	120	128	76700	8.631
		48500	130	138	71900	9.031
		47200	140	148	70400	9.481
	60°F 60% RH	81900	50	59	97800	5.281
		79500	60	69	96200	5.681
		76500	70	79	95000	6.081
		74000	80	89	93400	6.481
		70500	90	99	92100	6.981
		66000	100	109	90700	7.581
		62500	110	119	89400	8.231
		59000	120	129	88000	8.981
		57100	130	139	87100	9.281
		55400	140	149	85900	9.681
	70°F 60% RH	95000	50	60	112500	5.581
		91500	60	70	110900	6.041
		87500	70	80	108100	6.381
		83500	80	90	105600	6.781
		80000	90	100	104200	7.281
		76000	100	110	102200	7.881
		71500	110	120	99900	8.531
		68000	120	130	98500	9.281
		65400	130	140	96700	9.981
		61800	140	150	95000	10.481
	80°F 60% RH	111000	50	62	129500	5.881
		107000	60	72	128600	6.181
		104000	70	82	126600	6.831
		99500	80	92	124000	7.231
		95000	90	102	121200	7.731
		90500	100	111	118600	8.281
		87000	110	121	115800	8.881
		82000	120	131	113500	9.731
		79500	130	141	111400	10.181
		74900	140	151	109500	10.781
	90°F 60% RH	130000	50	63	152100	6.181
		126700	60	73	148400	6.781
		122000	70	83	145100	7.281
		118000	80	93	142300	7.631
		112000	90	103	137900	8.081
		109500	100	113	135200	8.481
		105400	110	122	132900	8.981
		101900	120	132	129500	9.681
		99400	130	142	126000	10.581
		95800	140	152	123900	11.281

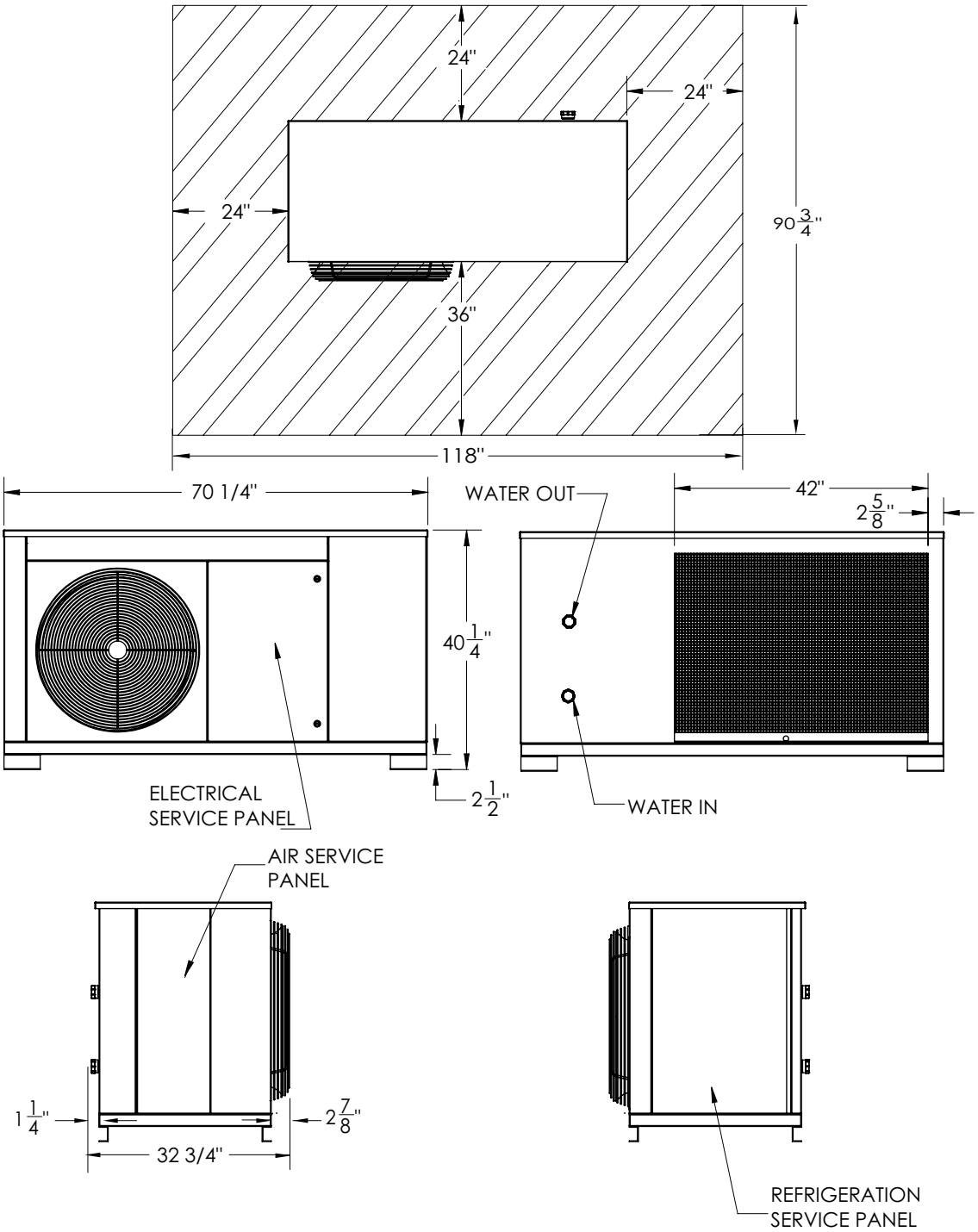
PERFORMANCE CHARTS





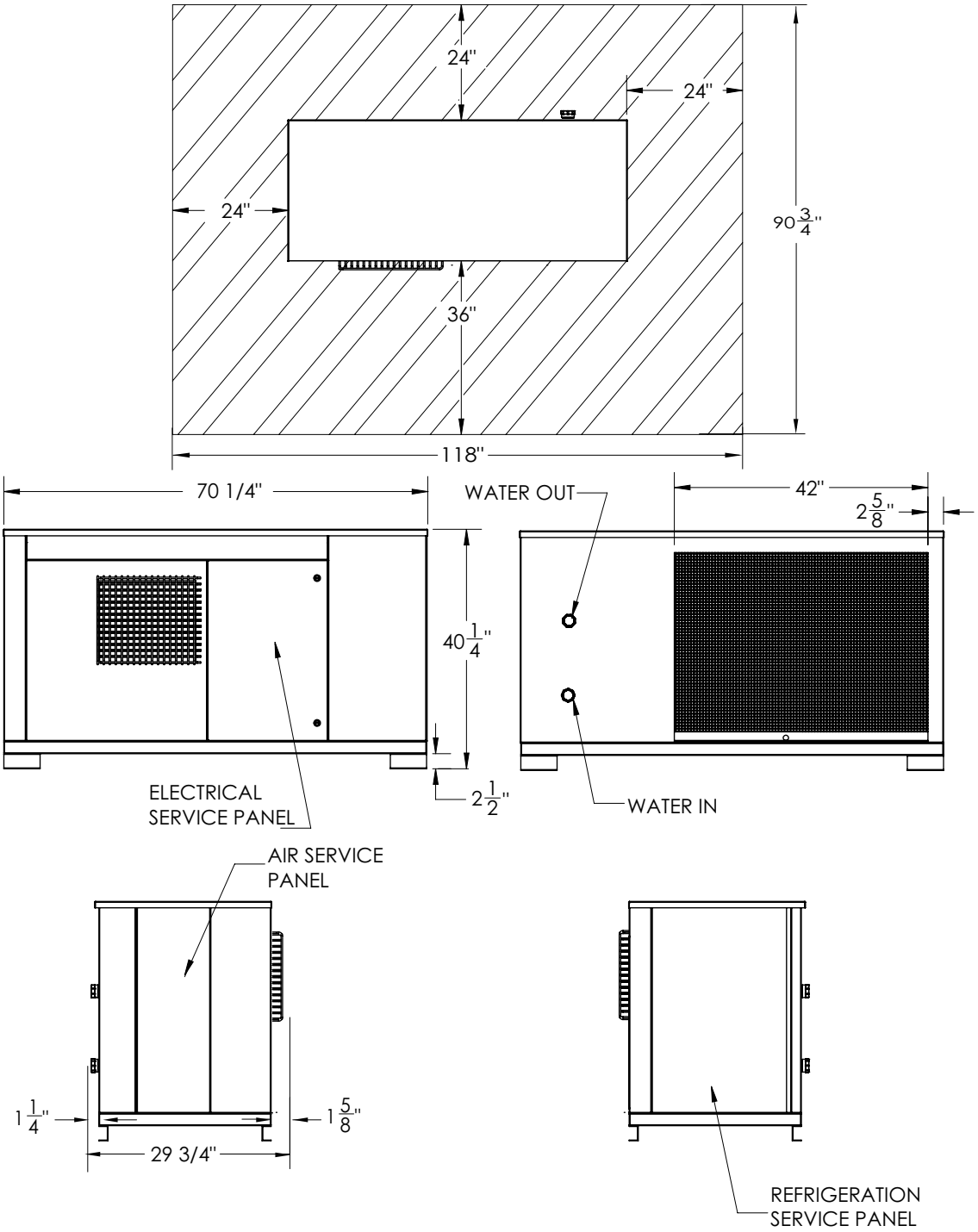
Water heated from 50°F to 150°F with 75°F dry bulb, 60% RH ambient air

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".
Check with local codes for additional requirements.

SUGGESTED SPECIFICATION

The HEAT PUMP shall be State Model SHPA-90 having a heating capacity capable of 110,725 BTU/h and cooling capacity of 83,625 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.

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