

SHPM SERIES
MODULAR WATER SOURCE HEAT PUMP
HEAT PUMP WATER HEATER

The State SHPM-270 is a modular water-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
- Absorbs heat from water sources, including return chiller water, process and groundwater
- Environmentally-friendly R134a refrigerant
- Double wall condenser for potable water heating
- 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 SHPM-270



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SPECIFICATIONS

Operating Conditions	Model Number		SHPM-270		
	Recovery Rate †		323 Gal/hr		
	Compressor Type		Scroll		
	Refrigerant		R134a		
	Max Water Temperature		160° F		
	Source Water Range		40° F - 100° F		
	Max Working Water Pressure		150 psig		
Multi-Pass Unit Sizing	Water Connections		2" FPT Copper		
	Condenser Water Flow Rate		50 GPM		
	Condenser Pressure Drop		10.76 ft Head*		
	Evaporator Water Flow Rate		50 GPM		
	Evaporator Pressure Drop		11.19 ft Head*		
	External Head Pressure Allowed by Unit		3.08 ft Head / 50 ft run of 2" pipe		
Single-Pass Unit Sizing	Heated Water Connections		1 1/2" FPT Copper		
	Source Water Connections		2" FPT Copper		
	Average Condenser Water Flow Rate		25 GPM		
	Condenser Pressure Drop		1.92 ft Head*		
	Evaporator Water Flow Rate		50 GPM		
	Evaporator Pressure Drop		11.19 ft Head*		
	External Head Pressure Allowed by Unit		3.46 ft Head / 50 ft run of 1 1/2" pipe		
Unit Specifications	Dry Weight		1,150 lbs		
	Operating Weight		1,300 lbs		
	Standard Sound Rating		78 dB		
	Dimensions (L x W x H)		34 7/8" x 36 1/4" x 67 1/4"		
Power Requirements	Voltage	Compressor LRA	RLA Per Compressor	Wire and Disconnect Sizing ††	
				MCA	MOCP / MFS
	208-230/3/60	560	92.9	96	100
	440-480/3/60	270	49.3	47	50
	575/3/60	198	28.2	37	40

Note: Pump for heated side provided by State. Customer responsible for providing source side pump.

† Water heated from 50° F to 150° F with 75° F entering source water temperature

†† Single point electric service

*XXXX ft Head per module

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 Source Water Temp(°F)	Leaving Source Water Temp(°F)	Source Cooling Capacity (Btu/hr)	Entering Heated Water Temp(°F)	Leaving Heated Water Temp(°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPM-270	42°F	36	151300	50	57.7	193200	12.28
		36.2	146700	60	67.7	192300	13.33
		36.4	141900	70	77.7	191400	14.46
		36.6	136900	80	87.6	190400	15.67
		36.8	131800	90	97.6	189700	16.95
		37	126400	100	107.6	188900	18.32
		37.2	120800	110	117.6	188400	19.8
		37.4	114700	120	127.6	187700	21.37
		37.7	108800	130	137.6	187500	23.07
		37.7	107700	140	147.6	187200	23.69
	50°F	42.7	178000	50	58.8	220600	12.45
		43.1	172700	60	68.8	218800	13.67
		43.4	167500	70	78.7	217600	14.67
		43.6	161800	80	88.6	216000	15.91
		43.9	153600	90	98.6	214500	17.22
		44.1	147600	100	108.6	213000	18.62
		44.3	142800	110	118.6	211600	20.08
		44.6	135200	120	128.5	210200	21.72
		44.9	127600	130	138.5	209300	23.47
		45.1	121800	140	148.5	208300	25.2
	60°F	52	199400	50	59.7	242300	12.55
		52.3	193500	60	69.6	240100	13.64
		52.5	187800	70	79.6	238300	14.8
		52.8	181200	80	89.5	236000	16.06
		53	174800	90	99.4	234100	17.38
		53.3	168000	100	109.4	232200	18.82
		53.6	160900	110	119.3	230100	20.29
		53.9	152400	120	129.3	227700	22.07
		54.2	145300	130	139.2	226300	23.72
		54.5	137200	140	149.1	224700	25.31
	70°F	61.1	222800	50	60.6	266000	12.65
		61.2	219600	60	70.5	263300	13.75
		61.6	210000	70	80.5	260900	14.93
		61.9	202600	80	90.4	258000	16.2
		62.2	195600	90	100.4	255500	17.55
		62.5	188100	100	110.3	252900	18.99
62.7		180100	110	120.1	250500	20.54	
63.1		171000	120	130	247200	22.35	
63.5		163300	130	139.9	245000	23.96	
63.8		154400	140	149.9	242700	25.87	

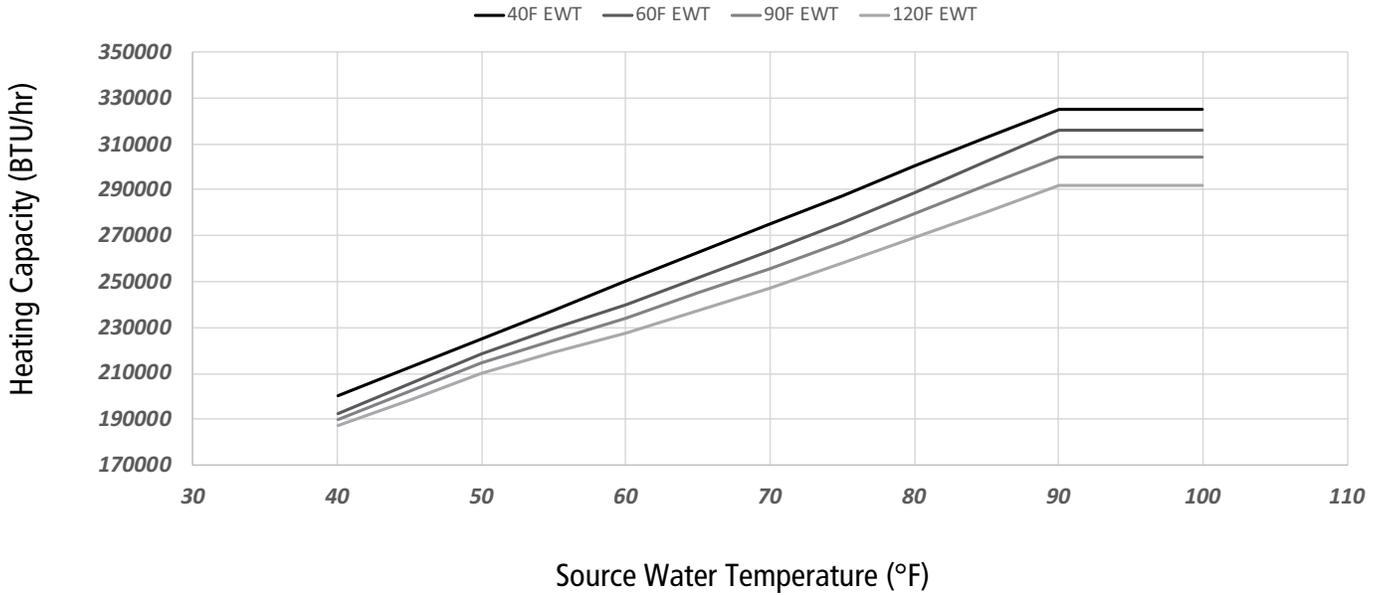


PERFORMANCE DATA

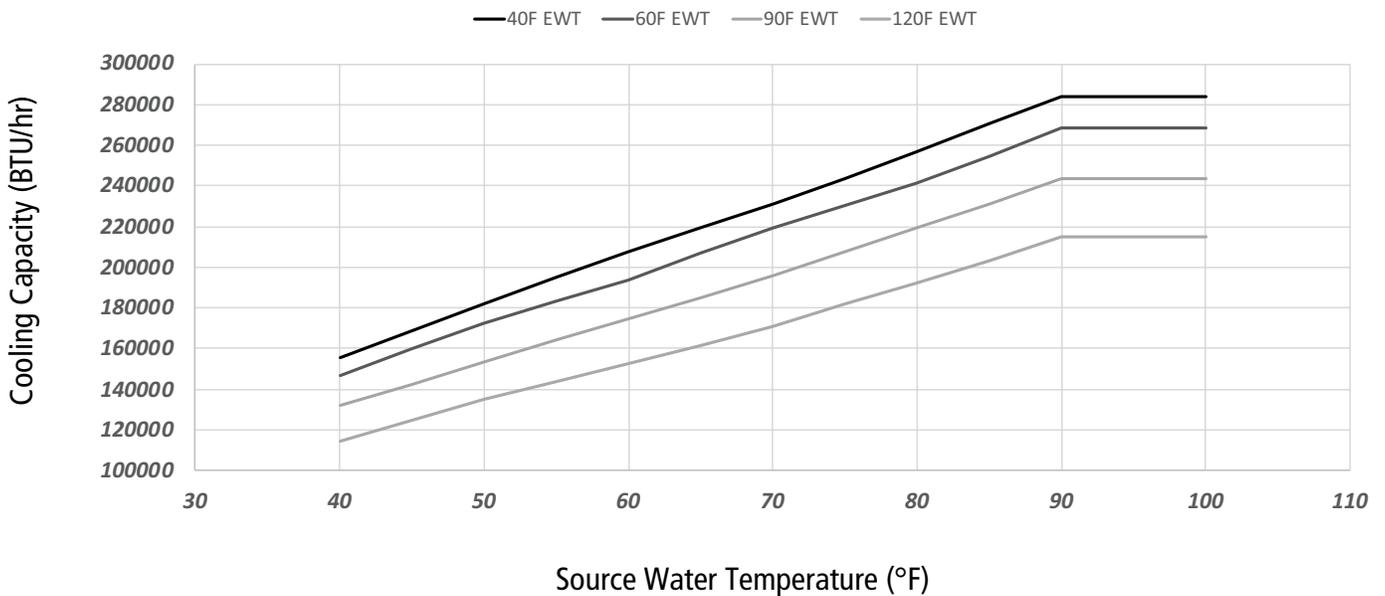
Model	Entering Source Water Temp(°F)	Leaving Source Water Temp(°F)	Source Cooling Capacity (Btu/hr)	Entering Heated Water Temp(°F)	Leaving Heated Water Temp(°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPM-270	80°F	70	248400	50	61.7	291800	12.74
		70.3	241200	60	71.5	288500	13.86
		70.6	234200	70	81.4	285600	15.06
		70.9	226500	80	91.3	282300	16.33
		71.2	219200	90	101.2	279400	17.6
		71.7	209800	100	111.1	275300	19.15
		72	201400	110	121	272100	20.71
		72.4	192400	120	131	268900	22.39
		72.8	183000	130	140.9	265500	24.17
	73.1	173200	140	150.7	262400	26.11	
	90°F	78.9	276100	50	62.8	319900	12.83
		79.35	268300	60	72.7	315900	13.96
		79.8	260600	70	82.5	312400	15.61
		80.25	251800	80	92.3	308000	16.46
		80.7	243400	90	102.1	304300	17.8
		81.15	234000	100	111.9	299900	19.3
		81.6	224900	110	121.5	296200	20.83
		82.05	214600	120	131.1	291700	22.55
		82.5	204600	130	140.9	287700	24.3
83		193900	140	150.7	283300	26.33	

PERFORMANCE CHARTS

Heating Capacity vs. Source Water Temperature

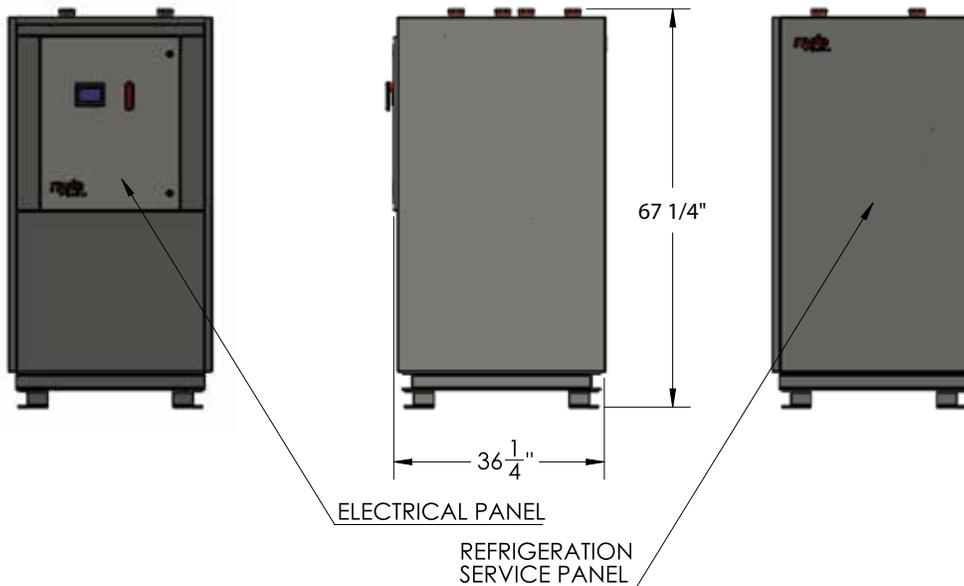
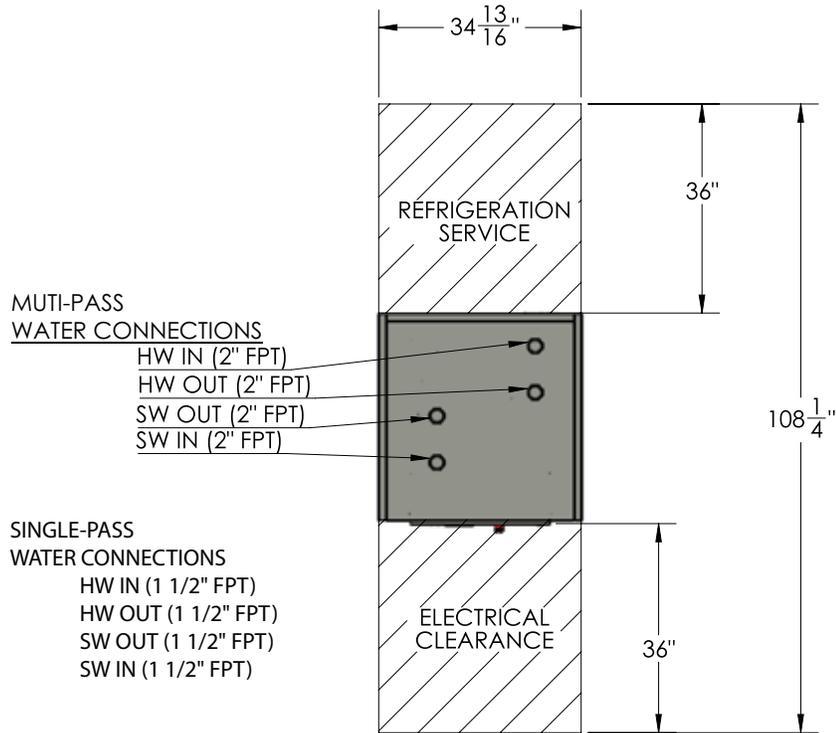


Cooling Capacity vs. Source Water Temperature



Water heated from 50°F to 150°F with 75°F entering source water temperature

DIMENSIONS



HW - HEATED WATER

SW - SOURCE WATER

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 SHPM-270 having a heating capacity capable of 277,100 BTU/h and cooling capacity of 210,000 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 be equipped with a stainless steel single-wall heat exchanger evaporator. 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.