COMMERCIAL
HEAT PUMP WATER HEATERS

AHPW SERIES
WATER SOURCE HEAT PUMP
HEAT PUMP WATER HEATER

The A. O. Smith AHPW-250 is a 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 process and groundwater
- 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 hotwater.com

MODEL AHPW-250

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SPECIFICATIONS

Operating Conditions	**Model Number**			**AHPW-250**	
	Recovery Rate †			340 Gal/hr	
	Compressor Type			Reciprocating	
	Refrigerant			R134a	
	Max Water Temperature			160° F	
	Source Water Range			40° F - 100° F	
	Max Working Water Pressure			100 psig	
Multi-Pass Unit Sizing	Water Connections			2″ FPT Copper	
	Condenser Water Flow Rate			50 GPM	
	Condenser Pressure Drop			18.48 ft Head	
	Evaporator Water Flow Rate			36 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	Water Connections			1 1/2″ FPT Copper	
	Average Condenser Water Flow Rate			25 GPM	
	Condenser Pressure Drop			4.93 ft Head	
	Evaporator Water Flow Rate			36 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			1,300 lbs	
	Operating Weight			1,450 lbs	
	Standard Sound Rating			62 dB	
	Dimensions (L x W x H)			61″ x 38 1/4″ x 51″	
Power Requirements	**Voltage**	**Compressor LRA**	**RLA**	**Wire and Disconnect Sizing ††**	
				MCA	**MCOP / MFS**
	208-230/3/60	446	92.7	116	125
	440-480/3/60	223	46.7	59	60
	575/3/60	164	38.9	49	50

Note: Pump for heated side provided by A. O. Smith. 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

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)

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PERFORMANCE DATA

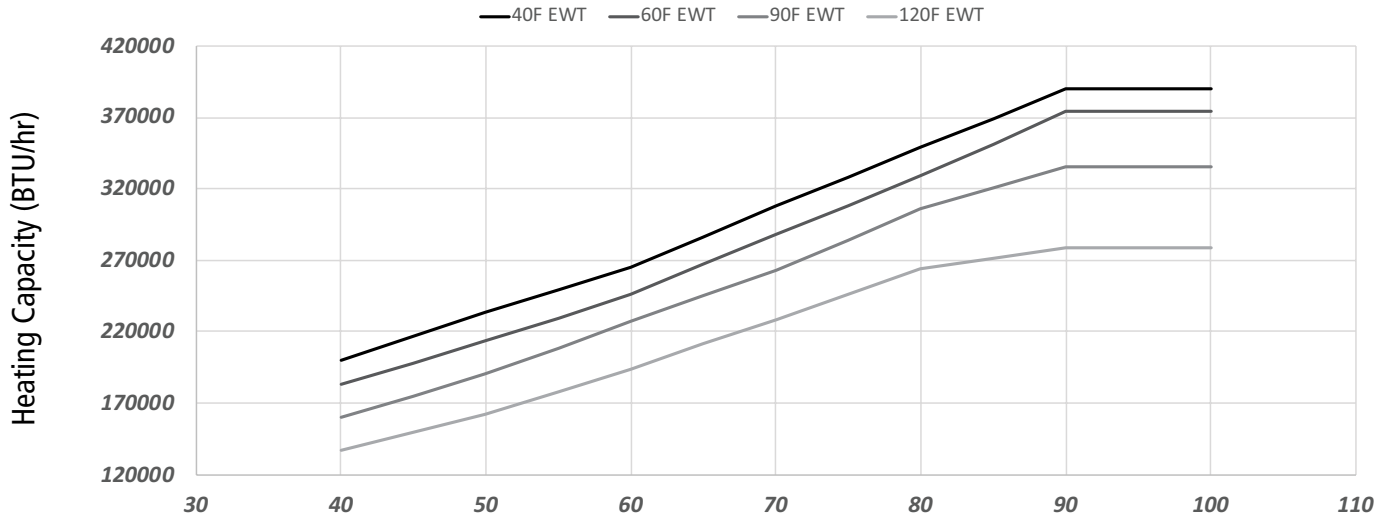
Model	Entering Source Water Temp(F°)	Leaving Source Water Temp(°F)	Source Cooling Capacity (Btu/hr)	Entering Heated Water Temp(°F)	Leaving Heated Water Temp(°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
AHPW-250	45°F	35	179650	50	59	213000	9.8
		36	160250	60	68	195900	10.4
		36	153750	70	78	192550	11.4
		37	143200	80	87	184750	12.2
		38	133500	90	97	177400	12.8
		38	123300	100	107	168300	13.2
		39	110000	110	116	156450	13.6
		39	101400	120	126	149000	14.0
		40	86600	130	135	134500	14.0
		41	76500	140	145	124450	14.1
	50°F	39	194200	50	59	228500	10.05
		40	177800	60	69	214800	10.85
		41	169700	70	78	209900	11.8
		41	158700	80	88	202000	12.67
		42	148300	90	98	194300	13.46
		42	138600	100	108	186600	14.08
		43	124900	110	117	174700	14.57
		44	113600	120	127	165100	15.1
		44	102200	130	136	154300	15.3
		44	91500.00	140	146	144000	15.4
	60°F	48	223300	50	60	259500	10.6
		48	212900	60	70	252600	11.79
		49	201600	70	80	244600	12.62
		49	189700	80	90	236500	13.7
		50	177900	90	99	228100	14.73
		51	169200	100	109	223200	15.83
		51	154700	110	119	211200	16.55
		52	138000	120	128	197300	17.39
		53	133400	130	138	193900	17.73
		53	121500	140	148	183100	18.06
	70°F	55	265600	50	62	302900	10.93
		56	249500	60	72	291000	12.16
		57	235700	70	81	281700	13.47
		57	228500	80	91	279300	14.89
		58	214500	90	101	269800	16.21
		59	200400	100	110	259500	17.32
		60	185800	110	120	249300	18.61
		61	168500	120	130	235900	19.73
		61	159500	130	140	228500	20.22
		62	127800	140	150	214600	20.85

PERFORMANCE DATA

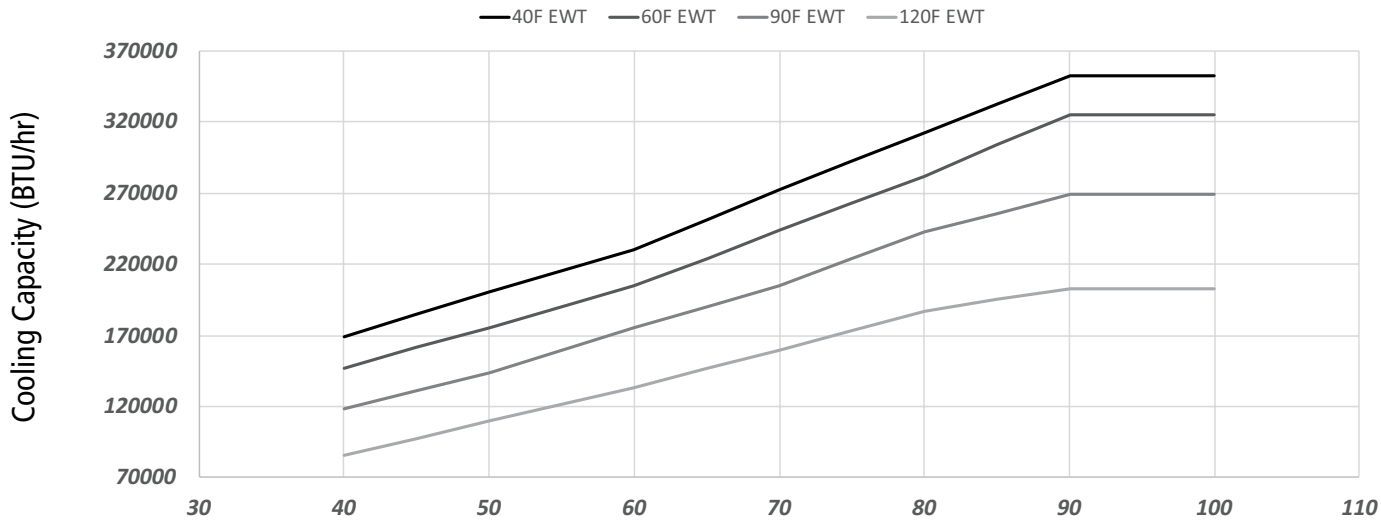
Model	Entering Source Water Temp(F°)	Leaving Source Water Temp(°F)	Source Cooling Capacity (Btu/hr)	Entering Heated Water Temp(°F)	Leaving Heated Water Temp(°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
AHPW-250	80°F	63	307200	50	64	345000	11.08
		64	290700	60	73	333500	12.55
		65	275800	70	83	324000	14.12
		65	267700	80	93	321600	15.8
		66	251500	90	103	310900	17.41
		67	232500	100	112	297100	18.92
		68	217800	110	122	287400	20.4
		69	197700	120	131	272200	21.81
		70	187300	130	140	263900	22.44
		70	175300	140	150	252400	24.03
	85°F	50	329200	67	65	367250	11.2
		60	312400	67	74	355950	12.8
		70	296950	68	83	346350	14.5
		80	288150	69	94	343800	16.3
		90	268550	70	104	329750	17.9
		100	246500	71	113	312800	19.4
		110	224950	72	122	295900	20.8
		120	200500	73	131	275400	21.9
		130	189650	74	140	266700	22.8
		140	178150	75	150	255500	24.1
	90°F	70	351200	50	66	389500	11.22
		71	334100	60	75	378400	12.98
		72	318100	70	85	368700	14.84
		73	308600	80	95	366000	16.8
		72	285600	90	104	348600	18.44
		70	260500	100	113	328500	19.91
		68	232100	110	122	304400	21.18
		65	203300	120	131	278600	22.08
		65	192000	130	140	269500	23.06
		65	181000	140	150	258600	24.2

PERFORMANCE CHARTS

Heating Capacity vs. Source Water Temperature

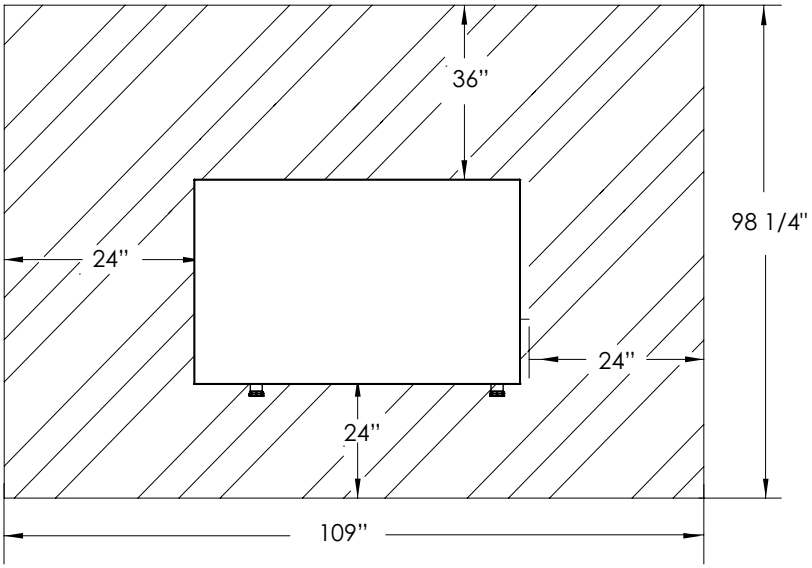


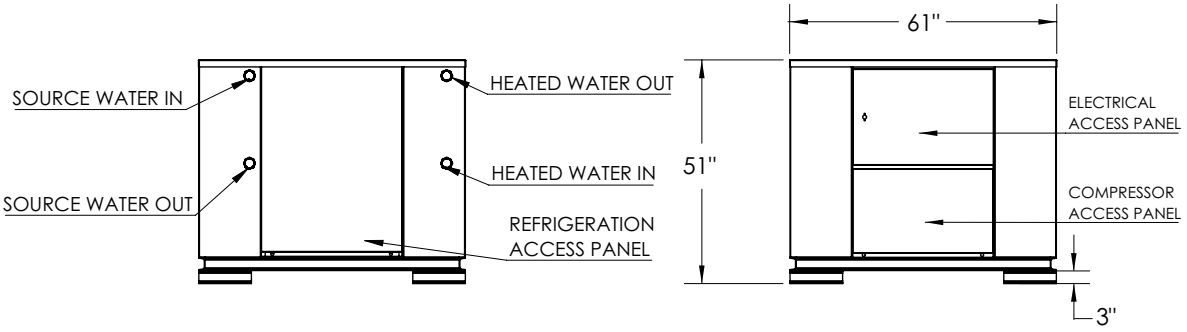
Cooling Capacity vs. Source Water Temperature

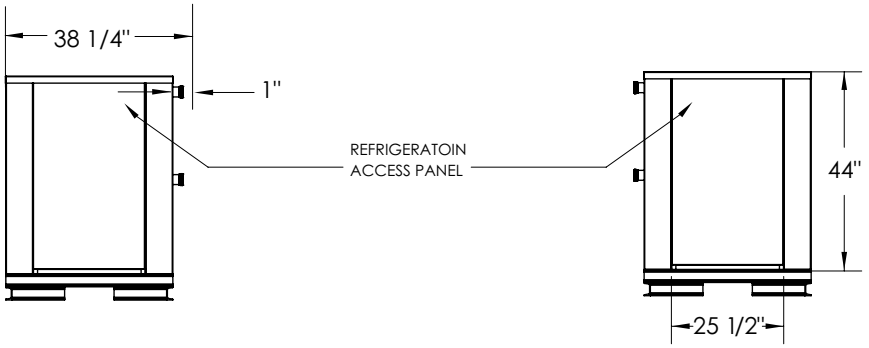


Water heated from 50°F to 150°F with 75°F entering source water temperature

DIMENSIONS







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 A. O. Smith Model AHPW-250 having a heating capacity capable of 272,375 BTU/h and cooling capacity of 208,050 BTU/h.

The HEAT PUMP shall have a reciprocating 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.

For technical information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

hotwater.com | 800-527-1953 Toll-Free USA | A. O. Smith Corporation | 500 Tennessee Waltz Parkway | Ashland City, TN 37015