

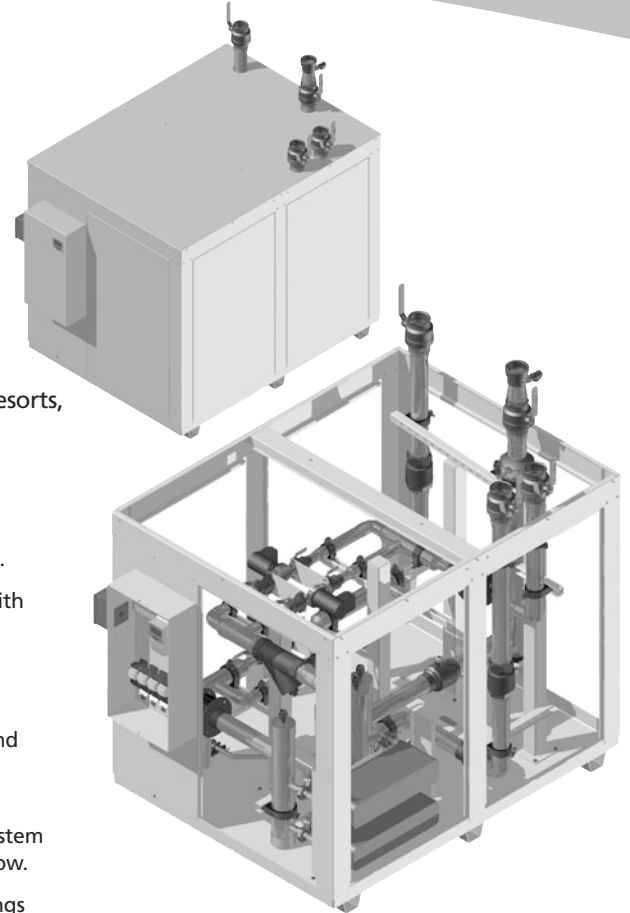
SOLAR PUMP STATIONS FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS

A. O. Smith integrated commercial solar pump stations maximize performance, savings, and serviceability. All-in-one factory assembled heat transfer station simplifies system design and sizing; saves space and reduces installation costs. Five pump stations available with single wall or double wall heat exchangers capable of transferring 160,000 to 800,000 Btu/hr of heat energy captured from the sun. Pump stations can be combined to supply an unlimited number of collectors.

Designed for commercial and industrial applications including hospitals and healthcare facilities, government and military buildings, hotels and resorts, universities, schools and industrial process water.

FEATURES

- Factory assembled fully integrated pump stations – consistent intuitive design.
- Redundant solar and water loop circulation pumps - self-lubricating pumps with isolation flanges - allows continued pump station operation while servicing individual pumps.
- Stainless steel (316L) flat plate heat exchangers - single wall or double wall.
- Fully programmable electronic solar control with LCD display that monitors and records system data with graphical view for temperature, energy and other operational data.
- Solar control continually monitors system operation and provides alerts for system errors such as shorted or open temperature sensors, pump failure or loss of flow.
- SD memory card slot on solar control - saves and transfers configuration settings from one pump station to another - provides permanent storage for energy data.
- Web module for online monitoring via Internet or local intranets.
- Standard energy metering via onboard solar control with factory installed surface mount temperature sensors - energy data logging, tracks performance and savings.
- Optional MID certified energy meter (part number 9910086000) with well mounted temperature sensors - certified validation of solar contribution required for Renewable Energy Credits (RECs), Power Purchase Agreements (PPAs) and other incentives.
- Pulse type electronic flow meter.
- Surface mount temperature sensors in solar and water loop – monitored by solar control to start/stop circulation pumps and for standard energy metering.
- Temperature sensor wells (4) are provided at solar and water loop connections to heat exchangers - for optional energy meter or field supplied temperature sensors.
- Fluid balancing valves for precise flow control.
- Full port isolation ball valves at solar and water loop connections.
- Air stripper with automatic air vent - purges air from solar loop.
- Brass body wye strainer in water loop protects pump station components from debris.
- Solar and water loop pressure relief valves.
- Removable access panels on all four sides – allows ease of servicing.



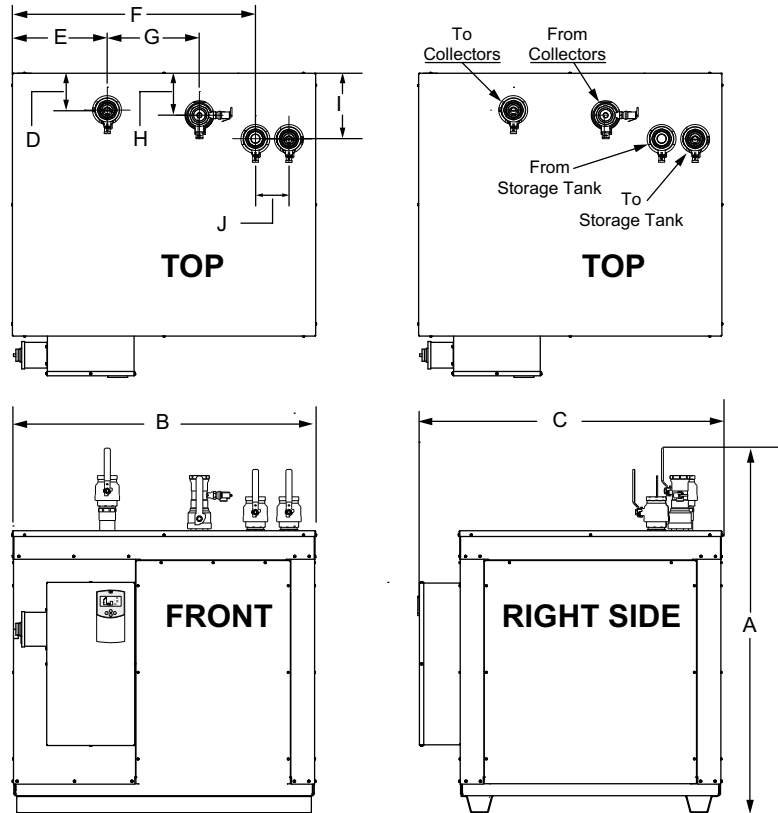
OPTIONAL MID CERTIFIED
ENERGY METER
PN 9910086000



Intertek

These pump stations are eligible for a 30% federal tax credit when installed as part of a complete commercial solar thermal hot water system.

160, 320, 480 KBTU/HR PUMP STATIONS

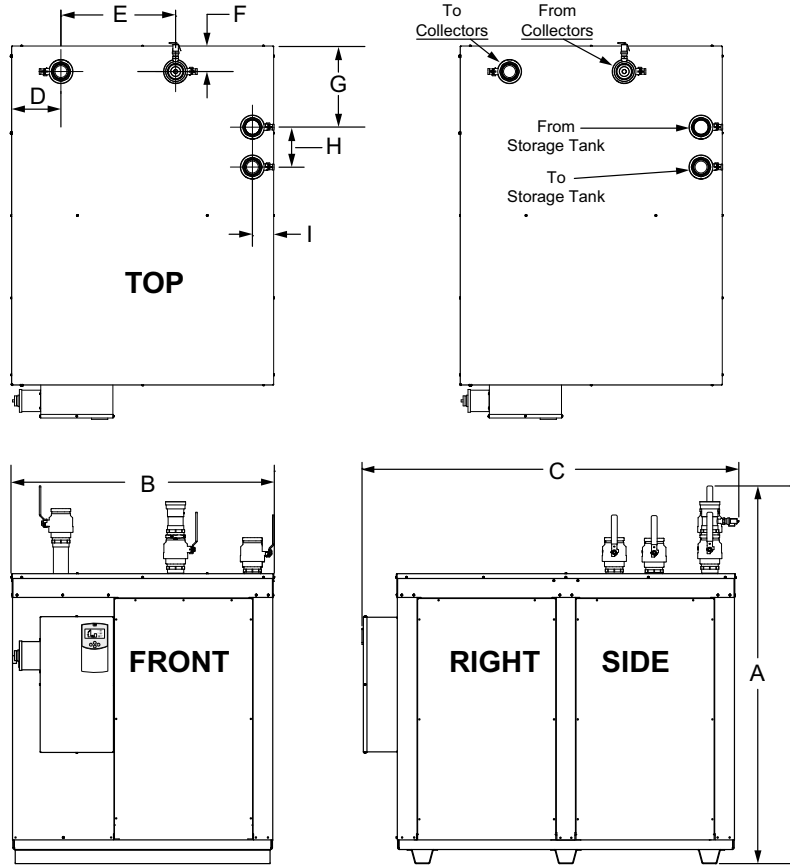


PART NUMBER	HEAT EXCHANGER SW / DW	A	B	C	D	E	F	G	H	I	J	SOLAR/WATER LOOP IN/OUT CONNECTIONS	DRY WEIGHT (lbs.)	CAPACITY (GALLONS)
9910076000	Single Wall	57	52 3/4	52 3/4	6 3/4	16 1/2	42	15 3/4	7 3/4	12	6	1 1/2	650	4
9910077000	Double Wall													
9910078000	Single Wall	62	52 3/4	52 3/4	6	16 3/4	42	15 1/2	6 3/4	11 1/2	5 3/4	2	675	6.5
9910079000	Double Wall													
9910080000	Single Wall	63 1/4	52 3/4	52 3/4	6 1/2	16 1/2	42	16	7 1/4	11 1/4	5 3/4	2 1/2	800	9.5
9910081000	Double Wall													

All dimensions are in inches
 Maximum system working pressures; solar loop 75 psi, water loop 150 psi.
 Maximum heat exchanger pressure ratings; single wall 450 psi, double wall 232 psi.
 Solar loop and water loop connections are female NPT.
 Power requirements: 120 VAC, single phase, 15 amp breaker.

PART NUMBER	HEAT EXCHANGER SW / DW	MAX COLLECTOR APERTURE AREA (FT ²)	MAX NUMBER CR-110-AP COLLECTORS (3.5' X 7')	MAX NUMBER CR-130-AP COLLECTORS (4' X 8')	MAX NUMBER CR-140-AP COLLECTORS (4' X 10')	ENERGY RATING BTU/HR
9910076000	Single Wall	741	32	26	20	160,000
9910077000	Double Wall					
9910078000	Single Wall	1,481	64	50	40	320,000
9910079000	Double Wall					
9910080000	Single Wall	2,222	96	76	60	480,000
9910081000	Double Wall					

640, 800 KBTU/HR PUMP STATIONS



PART NUMBER	HEAT EXCHANGER SW / DW	A	B	C	D	E	F	G	H	I	SOLAR/WATER LOOP IN/OUT CONNECTIONS	DRY WEIGHT (lbs.)	CAPACITY (GALLONS)
9910082000	Single Wall	78 1/2	54 3/4	78 1/2	10 1/4	23 3/4	5 1/4	17	8 1/4	4 1/2	3	1455	21
9910083000	Double Wall												
9910084000	Single Wall	78 1/2	54 3/4	78 1/2	10 1/4	23 3/4	5 1/4	17	8 1/4	4 1/2	3	1465	22
9910085000	Double Wall												

All dimensions are in inches

Maximum system working pressures; solar loop 75 psi, water loop 150 psi.

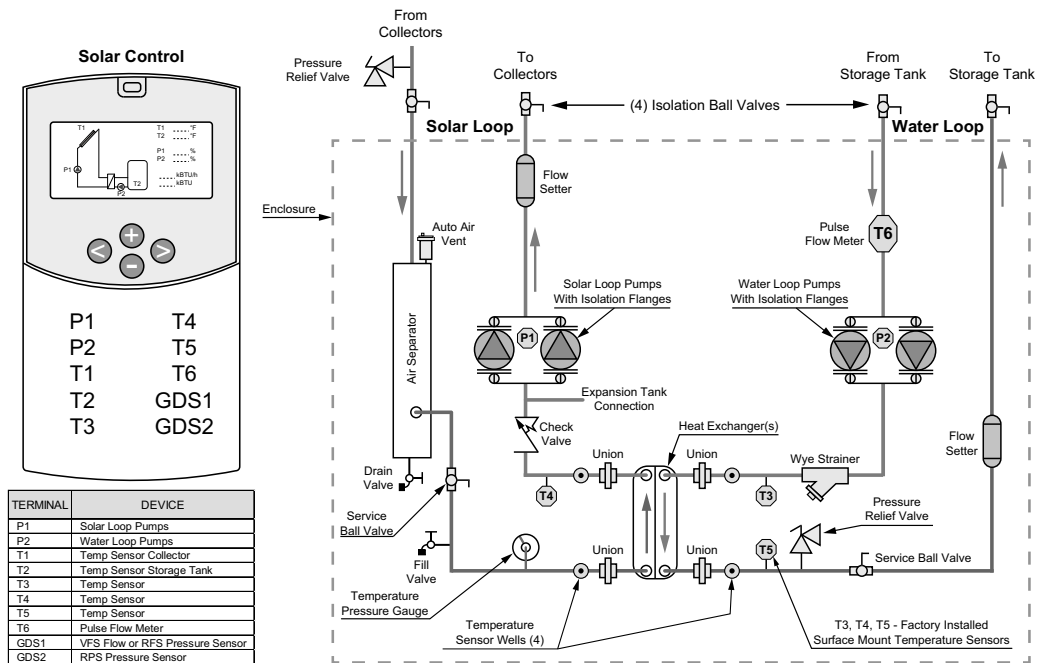
Maximum heat exchanger pressure ratings; single wall 450 psi, double wall 232 psi.

Solar loop and water loop connections are female NPT.

Power requirements: 120 VAC, single phase, 15 amp breaker 640,000 Btu/hr model, 25 amp breaker 800,000 Btu/hr model.

PART NUMBER	HEAT EXCHANGER SW / DW	MAX COLLECTOR APERTURE AREA (FT ²)	MAX NUMBER CR-110-AP COLLECTORS (3.5' X 7')	MAX NUMBER CR-130-AP COLLECTORS (4' X 8')	MAX NUMBER CR-140-AP COLLECTORS (4' X 10')	ENERGY RATING BTU/HR
9910082000	Single Wall	2,962	128	100	80	640,000
9910083000	Double Wall					
9910084000	Single Wall	3,703	160	126	100	800,000
9910085000	Double Wall					

PIPING AND INSTRUMENTATION DIAGRAM



LIMITED WARRANTY OUTLINE

Factory installed plumbing and piping components such as pumps, heat exchangers, strainers and valves are warranted for a period of 5 years from the date of installation. Electronic components such as the solar control, web module, pulse flow meter and optional Btu meter are warranted for a period of 3 years from the date of installation. Warranty does not include labor or shipping.

NOTE: THIS OUTLINE IS NOT A WARRANTY. For complete information, consult the written warranty or A. O. Smith. Warranty does not apply to product installed outside of the United States of America or its territorial possessions and Canada.

SUGGESTED SPECIFICATION

Commercial solar pump station(s) to be A. O. Smith part number _____. Pump station is a fully integrated factory assembled heat transfer appliance with a maximum heating capacity of _____ Btu/hr. Pump station water loop pressure rating of 150 psi, rated for 120 VAC single phase power.

The pump station has redundant (2) solar and (2) water loop circulation pumps. Circulation pumps are self-lubricating and fitted with integral isolation flanges to allow continued pump station operation during servicing of individual pumps. The pump station is equipped with factory installed (single, double) _____ wall 316L stainless steel flat plate heat exchanger(s) with a maximum working pressure rating of (450, 232) _____ psi. Heat exchangers are installed with pipe unions on all fluid connections to provide ease of removal for inspection and service.

The pump station has a fully programmable electronic solar system control with LCD display that continually monitors and records system performance and provides alerts for loss of flow, pump failure or temperature sensor failure. The pump station has factory installed temperature sensors and an electronic (pulse type) flow meter in the water loop to allow the solar control to display and calculate actual energy (Btu) production. The pump station includes a web module for online monitoring via the Internet and on local intranets.

The pump station has adjustable fluid balancing valves installed on both the solar loop and water loop for precise flow adjustment. The pump station has four factory installed full port isolation ball valves at the external connections for the solar and water loops. The pump station incorporates a factory installed air stripper in the solar loop with an automatic air vent to purge air. The pump station includes brass body wye strainer installed in the water loop to protect pump station components from debris. The pump station utilizes factory installed quarter turn brass body fill and drain valves. The pump station includes factory installed 75 psi solar loop and 150 psi water loop pressure relief valves. The pump station includes a connection for a field supplied solar loop expansion tank. Pump station to include factory installed Loadbreak Switch to secure power supply and removable panels on all sides for safety, ease of maintenance and servicing.