

FLORIDA SOLAR



ENERGY CENTER®

Solar Water Heater Troubleshooting Checklist

Author

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Fact Sheet

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Public Information Office

Solar Water Heater Troubleshooting Checklist

FSEC-FS-32-86

Symptom	Component	Possible Cause	Remedy/Check
Not enough hot water	Collectors	1. Partially shaded	1. Reduce shading or move collectors.
		2. Improper orientation	2. Check direction; face south $\pm 45^\circ$.
		3. Improper tilt	3. Check tilt; set equal to latitude $\pm 15^\circ$.
		4. Insufficient area	4. Check sizing; See Sizing Guide, GP-10.
		5. Improperly plumbed	5. Compare with system schematic.
		6. Dirty glazing	6. Clean periodically — only when cool .
	Differential Controller	1. Improper operation (cycling, late turn-on)	1. Check sensor placement. Adjust for good thermal contact. Insulate from surrounding air.
		2. Faulty sensors or faulty controller	2. Check by placing sensors against hot and cold water glasses and watching pump function. Replace defective units.
		3. Improper wiring or loose connections	3. Compare with system schematic. Check for proper connections. Seal all splices.
		4. Shorted sensor wiring.	4. Check wiring for breaks, metal contact, water exposure and/or corrosion.
	Piping	1. High heat losses	1. Check insulation for splits, deterioration, absence.
		2. Nighttime thermosiphoning	2. Check for pump running at night. Contact installer.
		3. Improperly plumbed	3. Compare with system schematic. Check flow direction.
		4. Isolation valves closed	4. Open valves.
		5. Flow blockage	5. Flush system. Check effluent for dirt/scale.
		6. Low system pressure	6. Check pressure gauge. Refer to owner's manual for correct pressure.
	Pump	1. No power	1. Check breaker, pump cord, controller fuse if any. Replace if necessary.
		2. Faulty pump	2. Listen for irregular noises in pump operation. Feel pipes for temperature difference.
		3. Runs continuously	3. Check control system for breaks and shorts.
		4. Improperly installed	4. Compare with system schematic.
	Tank	1. Insufficient size	1. Consult sizing formula (GP-10) for hot water demand.
		2. High storage losses	2. Check insulation and location of tank.
		3. Breaker or timer off on cloudy day	3. Turn on backup power.

Symptom	Component	Possible Cause	Remedy/Check
No hot water in morning	Check Valve	1. Stuck open (nighttime thermosiphoning)	1. Check for pump running at night. Contact installer.
	Controller	1. Sensor wires reversed	1. Check wiring and connect properly.
Noisy system	Pump	1. Bearings need lubrication 2. Air locked	1. Oil per manufacturer's recommendation. 2. Loosen vent screw, if any. Bleed air.
	Piping	1. Entrapped air (direct systems only) 2. Pipe vibration	1. Purge system by running water up supply pipe and out drain on return line (isolation valves closed). 2. Isolate piping from walls.
Does not drain	Vacuum breaker/ Air vent	1. Dirty or stuck seat	1. Disassemble and clean. Replace if necessary.
	Piping	1. Insufficient slope 2. Air pockets	1. Check for vertical drop in all horizontal runs. 2. Check for high points in collector piping.
Fluid leak	Collectors	1. Burst due to freezing or excessive pressures	1. Isolate system, turn off collector and contact repairman.
	Piping	1. Thermal expansion loosened connections	1. Tighten adjustable connections.
	Valves	1. Valve gland nuts loose 2. Seats deteriorated	1. Tighten nuts. Replace seal/packing if necessary. 2. Replace seat washers. Redress seat. Replace valve if necessary.
High electric use	Tank	1. Lower element connected. 2. Thermostat set too high	1. Check wiring. Contact installer if necessary. 2. Check setting and adjust to desired temperature.
	Piping	1. Collector return above tank thermostat	1. Check tank plumbing. Contact installer if necessary.