

Notes for Troubleshooting Chart for DLP-20 Control

1. To Check Sensors and Circuits

SENSORS: Disconnect each suspicious sensor from the terminals at the control. Leave the connection at the sensor intact for the time being. Using an ohmmeter and the temperature vs. resistance chart which follows, determine if the resistance of the sensor is appropriate for the temperature it should be measuring, and confirm that the resistance changes as the temperature of the sensor changes. This may mean running water out of a tank or covering collectors, to cool off the sensor. The resistance of the sensor goes **up** as the temperature goes **down**, and the resistance goes **down** when the temperature goes **up**. If there is a direct short, or a complete break in the sensors or their lines, the control will not operate properly. The control displays a temperature of over 200° when shorted and less than 30° when the circuit is open.

CIRCUITS: With **all** sensors disconnected, short the two terminals marked "Collector". This should turn on the green solar pump and the spa pump, (if in spa priority) or the bronze potable pump (if in DHW priority). Check this with both priorities. Also make sure the appropriate indicator light (spa or DHW is lit on the face of the control.

With the collector terminals shorted, and the appropriate pumps running, short the sensor terminals for the load

which is running. For example, if the control is in spa priority, and the green solar pump and the spa pump are running, short the sensor terminals marked "Spa". The control should switch to the other priority. In this example, the green solar pump will stay on, but the spa pump will go off, and the bronze potable pump will come on. Do this for both priorities.

With the collector terminals shorted, and the spa terminals shorted, the control should be running in DHW mode. Short the terminals marked DHW-HL. The control should go off. This indicates whether or not the high limit circuit on the DHW is working properly.

2. To Check Sensors and Leads

Follow the above procedure for sensors. Typically, this problem is caused by incorrect sensor installation - the sensor may be too far away, or thermally isolated from the temperature being sensed.

3. To Check Pump Cartridge

Before disassembling the pump, use an ammeter on the pump while power is applied to it. The Taco 008 pump draws .75 amps (¾ amps) when running properly. Any less, (usually zero), indicates power supply problems in the pump. Any more indicates a bad cartridge, (replace it), or a jammed impellor, (clear it).

SYSTEM OPERATION - SPA PRIORITY

DHW	SPA	DT DHW	DT SPA	HL	SOLAR PUMP	DIV VALVE	SPA OUT	POT PUMP
TD<THD	TS<THS	NO	NO	<180	OFF	OFF	OFF	OFF
TD<THD	TS<THS	NO	YES	<180	ON	ON	ON	OFF
TD<THD	TS<THS	YES	NO	<180	ON	OFF	OFF	ON
TD<THD	TS<THS	YES	YES	<180	ON	ON	ON	OFF
TD>THD	TS<THS	YES	YES	<180	ON	ON	ON	OFF
TD<THD	TS>THS	YES	YES	<180	ON	OFF	OFF	ON
TD>THD	TS>THS	YES	YES	<180	ON	OFF	OFF	ON
TD>THD	TS>THS	YES	YES	>180	OFF	OFF	OFF	OFF
TD>THD	TS<THS	YES	YES	>180	ON	ON	ON	OFF
TD>THD	TS>THS	NO	YES	<180	OFF	OFF	OFF	OFF
TD<THD	TS>THS	NO	YES	<180	OFF	OFF	OFF	OFF
TD>THD	TS<THS	NO	YES	<180	ON	ON	ON	OFF
TD<THD	TS>THS	YES	NO	<180	ON	OFF	OFF	ON
TD>THD	TS<THS	YES	NO	<180	ON	OFF	OFF	ON
TD>THD	TS>THS	YES	NO	<180	ON	OFF	OFF	ON

TD - DHW TANK TEMPERATURE

TS - SPA TEMPERATURE

) - DHW TEMPERATURE THRESHOLD

THS - SPA TEMPERATURE THRESHOLD

dt DHW - SUFFICIENT TEMPERATURE DIFF. DHW

dt SPA - SUFFICIENT TEMPERATURE DIFF. SPA

HL - DHW HIGH LIMIT

SYSTEM OPERATION

DHW PRIORITY

_DHW	SPA	dT DHW	dT SPA	HL	SOLAR PUMP	DIV VALVE	SPA OUT	POT PUMP
TD<THD	TS<THS	NO	NO	<180	OFF	OFF	OFF	OFF
TD<THD	TS<THS	NO	YES	<180	ON	ON	ON	OFF
TD<THD	TS<THS	YES	NO	<180	ON	OFF	OFF	ON
TD<THD	TS<THS	YES	YES	<180	ON	OFF	OFF	ON
TD>THD	TS<THS	YES	YES	<180	ON	ON	ON	OFF
TD<THD	TS>THS	YES	YES	<180	ON	OFF	OFF	ON
TD>THD	TS>THS	YES	YES	<180	ON	OFF	OFF	ON
TD>THD	TS>THS	YES	YES	≥180	OFF	OFF	OFF	OFF
TD>THD	TS<THS	YES	YES	≥180	ON	ON	ON	OFF
TD>THD	TS>THS	NO	YES	<180	OFF	OFF	OFF	OFF
TD<THD	TS>THS	NO	YES	<180	OFF	OFF	OFF	OFF
TD>THD	TS<THS	NO	YES	<180	ON	ON	ON	OFF
TD<THD	TS>THS	YES	NO	<180	ON	OFF	OFF	ON
TD>THD	TS<THS	YES	NO	<180	ON	OFF	OFF	ON
TD>THD	TS>THS	YES	NO	<180	ON	OFF	OFF	ON

TD - DHW TANK TEMPERATURE

TS - SPA TEMPERATURE

THD - DHW TEMPERATURE THRESHOLD

THS - SPA TEMPERATURE THRESHOLD

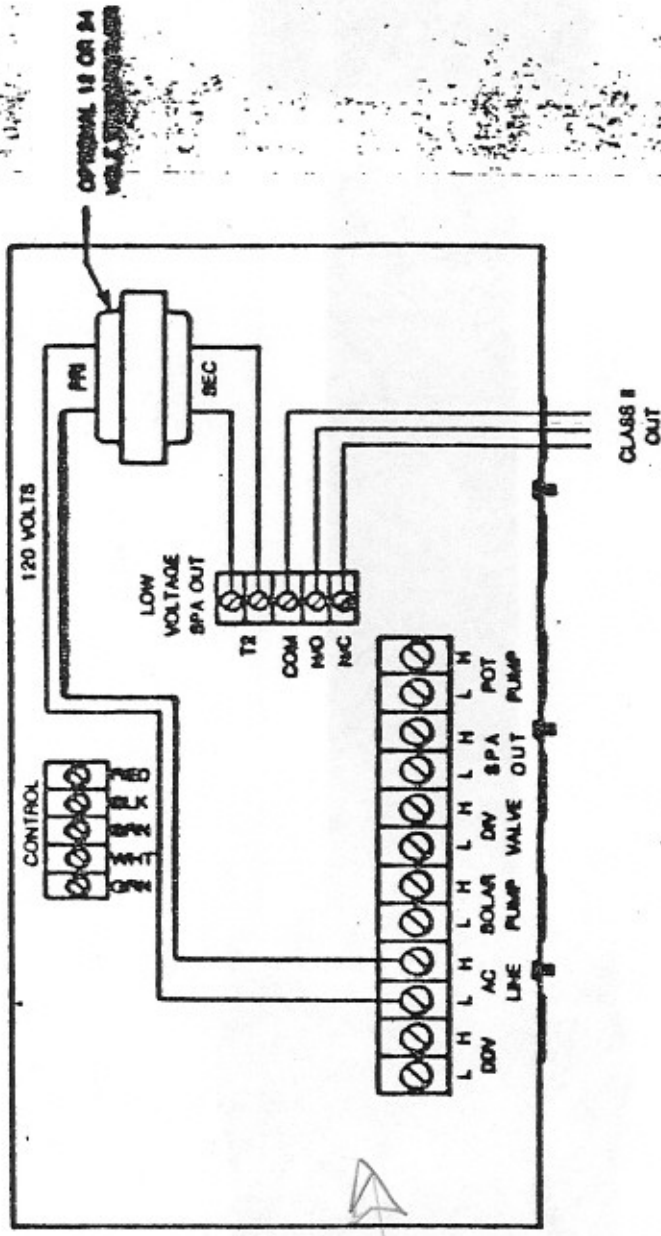
dT DHW - SUFFICIENT TEMPERATURE DIFF. DHW

dT SPA - SUFFICIENT TEMPERATURE DIFF. SPA

HL - DHW HIGH LIMIT

LOW VOLTAGE DIVERTING VALVE OPTION

- 1 0 5
 - 2 0 5
 - 3 0 5
 - 4 0 5
 - 5 0 5
 - 6 0 5
 - 7 0 5
 - 8 0 5
 - 9 0 5
 - 10 0 5
 - 11 0 5
 - 12 0 5
 - 13 0 5
 - 14 0 5
 - 15 0 5
- 120VAC IN
- DHW Pump OUT
- DIV VLV OUT
- SPA Pump OUT
- SOLAR PUMP OUT



- SPA ON — N/O 24 VAC OUT
- DHW ON — N/C 24 VAC OUT
- SPA DHW OFF — N/C 24 VAC OUT
- N/O — OUTPUT TO MOVE LOW VOLTAGE VALVE TO SOLAR POSITION
- N/C — OUTPUT TO MOVE LOW VOLTAGE VALVE TO NORMAL POSITION

2011
PHRTB
Single Box Unit

DLP-20
Two Box Unit