

⚠ WARNING

Electric Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Membrane Readings (All Models)		
	Connector	Measure Between
Heavy Wash *	J1	Pin 9 - Pin 5
Normal Wash *	J1	Pin 9 - Pin 6
Light Wash / China Crystal / Gentle Wash / Quick Wash(Models with Hi Temp Wash) *	J1	Pin 9 - Pin 7
Rinse Only *	J1	Pin 9 - Pin 8
Auto Clean / Sensor Clean *	J1	Pin 10 - Pin 5
Heated Dry	J1	Pin 11 - Pin 5
Sanitize *	J1	Pin 11 - Pin 6
Hi Temp Wash/Extra Rinse	J1	Pin 11 - Pin 8

(Front Only Controls)		
	Connector	Measure Between
Cycle Select *	J1	Pin 9 - Pin 5
Start / Cancel	J1	Pin 10 - Pin 6
Delay	J1	Pin 10 - Pin 7
Tough Scrub Plus / Super Scrub / Power Scrub *	J1	Pin 10 - Pin 8
Tough Scrub / Extra Wash / Hi Temp *	J1	Pin 11 - Pin 7
Insta Wash/Quick(Models with Extra Rinse) *	J1	Pin 12 - Pin 5
Model ID Jumper *	J1	Pin 12 - Pin 7

An unpressed switch will read as an open circuit.
A pressed switch will read as 10k .
* On select models

Manual Function Test

A Manual Function Test may be started by pressing the **Heated Dry** key 5 times followed by the **Start** key within 8 seconds.

The **Normal Wash** LED will **Flash** 3 times indicating manual test mode is active. Specific keypads will turn on or off a component as follows:

KEY	Function	LED
Hi Temp Wash/Extra Rinse	Wash Motor	Hi Temp Wash/Extra Rinse
Delay	Water Inlet Valve	Delay
Heated Dry	Heating Element	Heated Dry
Cycles Select / Normal		
First Press	Vent	Heavy Wash
Second Press	Dispenser	Normal Wash
Third Press	Drain Pump	Light Wash / China Crystal

The test will cancel 120 seconds after the last keypad is pressed. The display (if available) will show '99' until the remaining timeout period is less than 99 seconds. At this point it will countdown until the modes times out, is cancelled, or another key is pressed. To cancel test, press the **Start / Cancel** keypad.

Diagnostic Tips

To check control, LED's and components, enter **Field Service Test**. If control fails to perform sequence as described, and a fault is detected, determine failure as described in the **Field Service Test**. If a load component failure has been diagnosed, proceed to the **Manual Function Test**. To check individual load components for proper operation, enter **Manual Function Test**. Follow test procedure as described. Repair or replace component as needed.

Note: The **High Current** or **Low Current Motor Error** may be detected during a wash cycle selected by a consumer. If this happens, the control will go into a 30 second auto restart mode and shut down if the unit is not able to restart the motor.

Optimized Wash Cycle

The Optimized Wash Mode is a special service mode that is designed to alter the Normal Wash cycle to improve wash performance. Once the Optimized Wash Mode is enabled, it cannot be disabled. To enable the Optimized Wash Mode on front and top display models, press Normal Wash and Heated Dry for 3 seconds. For all other display models, press Heated Dry and Hi Temp Wash / Extra Rinse for 3 seconds. All the display lights will illuminate momentarily to confirm the mode is enabled.

Membrane Readings (Front & Top Controls)		
	Connector	Measure Between
Insta Wash/Quick(Models with Extra Rinse) *	J1	Pin 10 - Pin 6
Tough Scrub Plus / Super Scrub / Power Scrub *	J1	Pin 10 - Pin 7
160° Wash *	J1	Pin 10 - Pin 8
Tough Scrub / Extra Wash / Hi Temp *	J1	Pin 11 - Pin 7
Model ID Jumper *	J1	Pin 12 - Pin 8
Start / Cancel	J3	Pin 9 - Pin 5
Delay	J3	Pin 9 - Pin 6

(Top Only Controls)		
	Connector	Measure Between
Insta Wash/Quick(Models with Extra Rinse) *	J1	Pin 10 - Pin 6
Tough Scrub Plus / Super Scrub *	J1	Pin 10 - Pin 7
160° Option	J1	Pin 10 - Pin 8
Tough Scrub / Extra Wash / Hi Temp *	J1	Pin 11 - Pin 7
Model ID Jumper *	J1	Pin 12 - Pin 6
Start Cancel	J1	Pin 13 - Pin 12
Delay	J1	Pin 13 - Pin 14

* On select models

Load Readings		
	Measure Between	Result
Heater ¹	ST1 (Heater) - ST11 (Dlb Neutral)	16
Wash Motor	ST5 (Motor Common) - ST8 (Motor Main)	3 to 4
Drain Motor	ST6 (Drain) - ST4 (Dlb Line)	25
Vent Wax Motor	J6 Pin 1 (Vent) - ST4 (Dlb Line)	1.2k
Dispenser Wax Motor	J6 Pin 3 (Disp) - ST4 (Dlb Line)	2k
Water Valve ²	J6 Pin 4 (Inlt) - ST4 (Dlb Line)	1.1k
Thermistor	J5 Pin 1 (Temp) - J5 Pin 4 (Neutral)	See Component Info

- Notes:**
- This value assumes the high limit thermostat is closed.
 - This value assumes the float switch is closed.

Field Service Test

A Field Service Test may be started by pressing the **Heated Dry** key 6 times followed by the **Start** key within 8 seconds. This test must be performed with clean water to insure proper sensor performance.

"88" will appear in the display (if available*) and the following sequence of events will occur:

SECONDS	FUNCTIONS / ACTIVE LOADS
106	Vent Wax Motor / Water Valve
5	Thermistor check / Turbidity Sensor check & calibration - no loads active.
120	Wash Motor / Vent Wax Motor / Dispenser Wax Motor
180	Wash Motor / Heater / Vent Wax Motor
120	Drain Pump
4	Water Valve

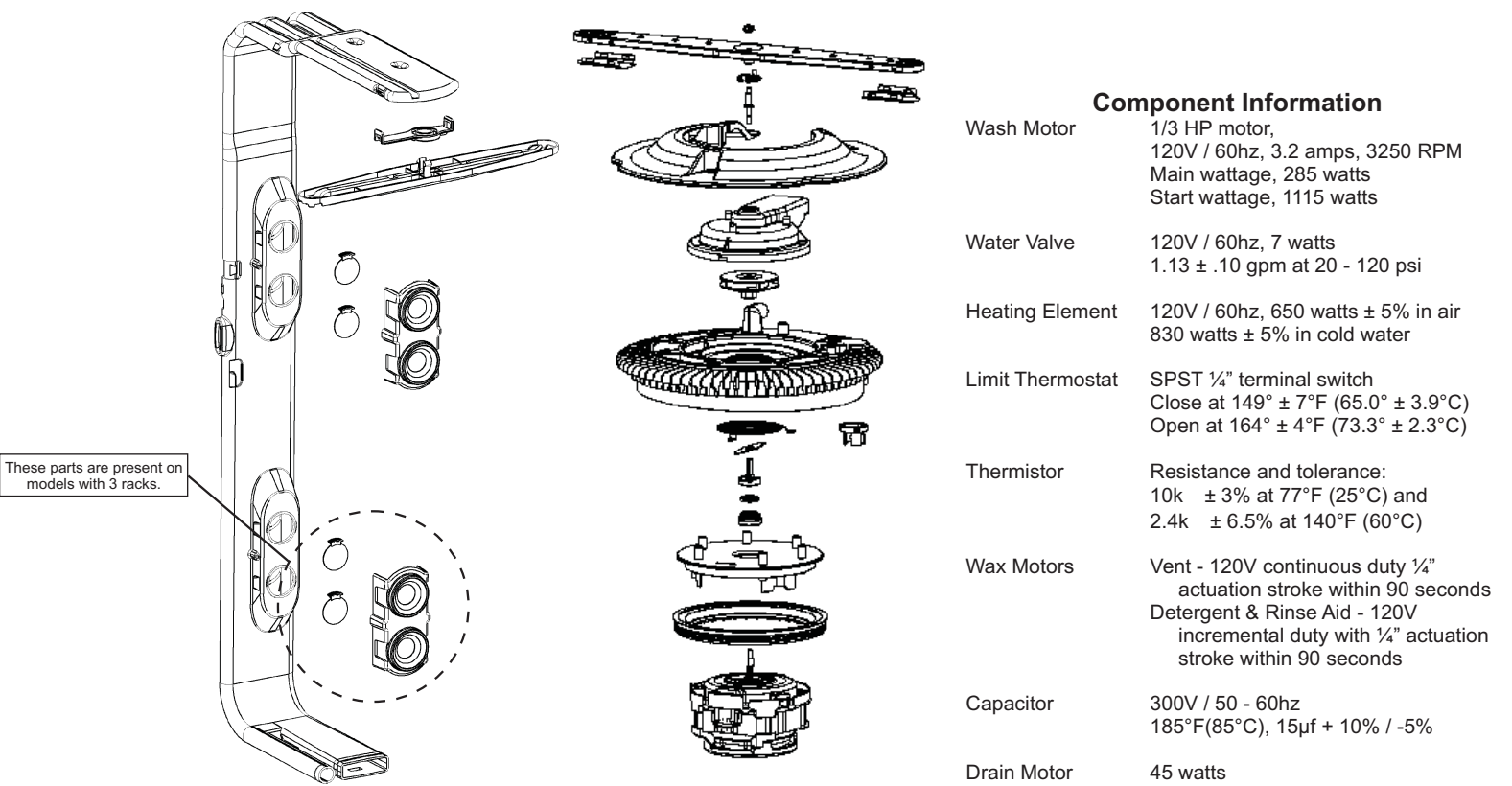
The time for the Thermistor check / Turbidity Sensor check & calibration may vary slightly.

The Field Service Test will not repeat. The **Heavy Wash** LED will **Flash** during the test mode. All Indicator lights (except **Heavy Wash**) will illuminate. If the dishwasher door is opened during the test, the test sequence will pause, and resume when the door is closed. To the cancel test, press the **Start / Cancel** keypad.

The control has been designed to test the Sensor, Memory, and Motor. During the Field Service Test, if a fault has been detected, the test will abort any time after the motor current has been checked and 2 or more LED's will begin to **Flash**. A **Memory / Software Check** will occur immediately after the test is started. The **(Delay / Delay 2 hr)** LED and one of the following:

- Turbidity Sensor** - failure - **Hi Temp Wash** LED/Extra Rinse LED
- Thermistor** - failure - **Heavy Wash** LED
- Motor** - high current - **Normal Wash** LED
- Motor** - low current - **Light Wash** LED
- Memory Failure** - **Heated Dry** LED

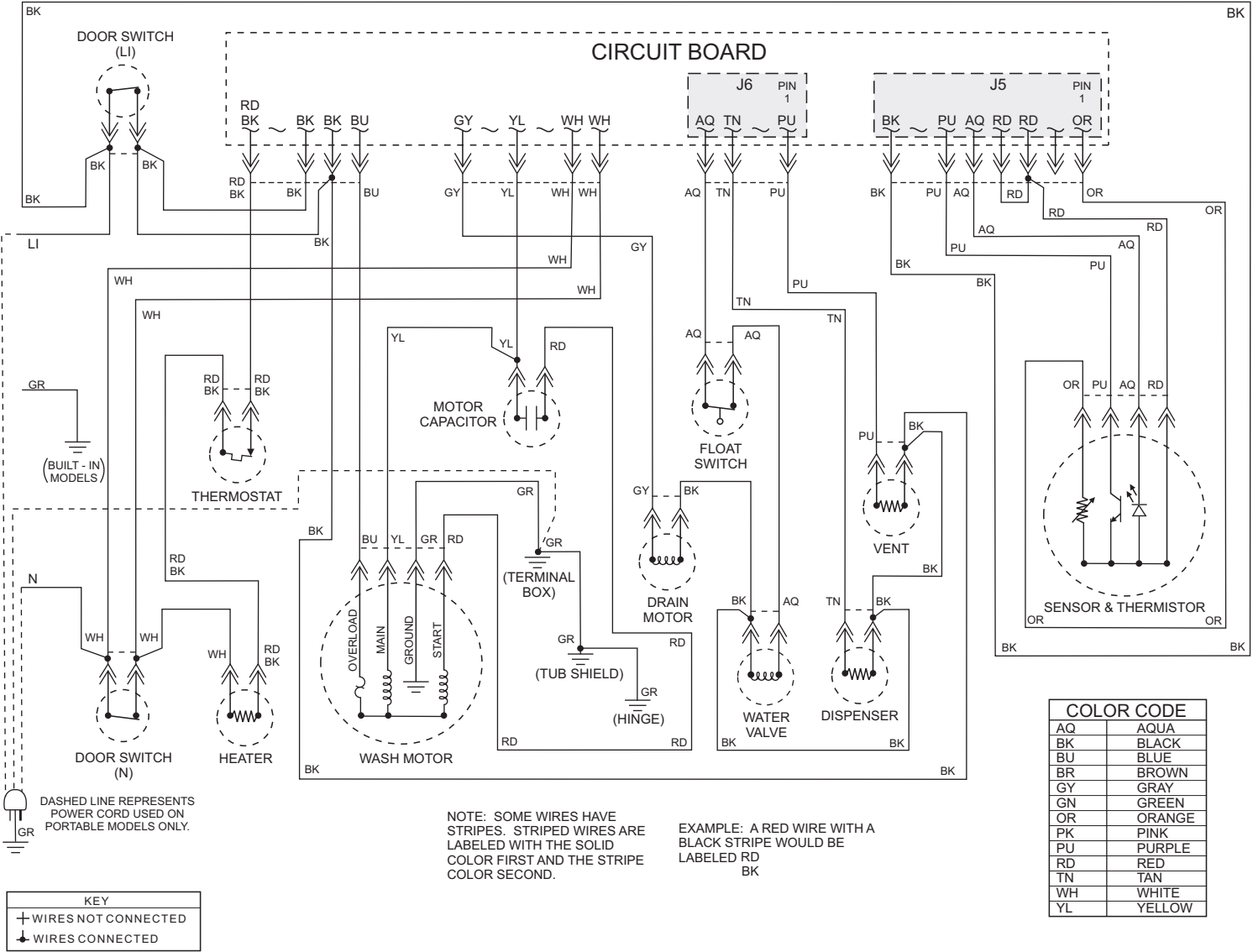
* On select models



Component Information

Wash Motor	1/3 HP motor, 120V / 60hz, 3.2 amps, 3250 RPM Main wattage, 285 watts Start wattage, 1115 watts
Water Valve	120V / 60hz, 7 watts 1.13 ± .10 gpm at 20 - 120 psi
Heating Element	120V / 60hz, 650 watts ± 5% in air 830 watts ± 5% in cold water
Limit Thermostat	SPST ¼" terminal switch Close at 149° ± 7°F (65.0° ± 3.9°C) Open at 164° ± 4°F (73.3° ± 2.3°C)
Thermistor	Resistance and tolerance: 10k ± 3% at 77°F (25°C) and 2.4k ± 6.5% at 140°F (60°C)
Wax Motors	Vent - 120V continuous duty ¼" actuation stroke within 90 seconds Detergent & Rinse Aid - 120V incremental duty with ¼" actuation stroke within 90 seconds
Capacitor	300V / 50 - 60hz 185°F(85°C), 15µf + 10% / -5%
Drain Motor	45 watts

ELECTRICAL SCHEMATIC



RINSE ONLY CYCLE 9 Minutes	FILL	RINSE	DRAIN	FILL
	1:36 min 1:46 max	5:00	2:00	0:02

Available Options:
No options are available with the **Rinse Only** cycle.

INSTA WASH CYCLE/ QUICK WASH(Models with Extra Rinse) 20 Minutes - Min 51 Minutes - Max	FILL	DET DISP	HEATED WASH	DRAIN	FILL	HEATED RINSE	DRAIN	FILL	HEATED RINSE	DRAIN	FILL
	1:36 min 1:46 max		4:00	2:00	1:36 min 1:46 max	2:00	2:00	1:36 min 1:46 max	3:00	2:00	0:02

Available Options:
Only the **Heated Dry** option is available with the **Insta Wash** cycle.

LIGHT WASH CYCLE/ CHINA/CRYSTAL CYCLE/ GENTLE WASH/ QUICK WASH(Models with Hi Temp Wash) 81 Minutes - Min 82 Minutes - Max	FILL	DET DISP	HEATED WASH	DRAIN	FILL	HEATED RINSE	DRAIN	FILL	HEATED RINSE	TEMP CHECK	RINSE AID DISP	RINSE	DRAIN	FILL	DRY CYCLE 30:00
	1:36 min 1:46 max		10:00	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	15:00	140°F		5:00	2:00	0:02	

Available Options:
Hi Temp Wash/Extra Rinse - This option boosts the final rinse temp check to 145°F.
Tough Scrub/Extra Wash/Hi Temp - This option adds an 8 minute pre-wash and 5 minutes of heated wash to the main wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

NORMAL WASH CYCLE 93 Minutes - min 121 Minutes - max	FILL	UN- HEATED PRE WASH	DRAIN	FILL	DET	HEATED	UN- HEATED WASH	HEATED	HEATED	TEMP	DRAIN	FILL	HEATED	DRAIN	FILL	HEATED	TEMP	RINSE	RINSE	DRAIN	FILL	DRY CYCLE 30:00
	1:36 min 1:46 max	8:00	2:20	1:36 min 1:46 max	DISP	WASH 2:00	3:00	17:00	10:00	SEE NOTE TC 1	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	20:00	SEE NOTE TC 2	AID DISP	5:00	2:00	0:02	

Available Options:
Hi Temp Wash/Extra Rinse - Overrides the sensor’s decision to modify the temp checks and skip a rinse. Changes pre wash to 8 minutes heated. Reduces heated wash by 4 minutes and adds 10 minutes unheated wash.
Tough Scrub/Extra Wash/Hi Temp - This option overrides the sensor’s decision to skip cycle functions / modify temp checks and adds an additional **5** minutes of heated wash to the main wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

TC 1: If sensor detects lighter soil, the temp check will be 110 ° F
If sensor detects heavier soil, the temp check will be 140 ° F
TC 2: If sensor detects lighter soil, the temp check will be 130 ° F
If sensor detects heavier soil, the temp check will be 145 ° F

HEAVY WASH CYCLE 132 Minutes - min 133 minutes - max	FILL	HEATED PRE WASH	DRAIN	FILL	HEATED	DET	HEATED	TEMP	DRAIN	FILL	HEATED	DRAIN	FILL	HEATED	DRAIN	FILL	HEATED	TEMP	RINSE	RINSE	DRAIN	FILL	DRY CYCLE 30:00
	1:36 min 1:46 max	8:00	2:20	1:36 min 1:46 max	WASH 8:00	DISP	22:00	140°F	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	20:00	145°F	AID DISP	5:00	2:00	0:02	

Available Options:
Hi Temp Wash/Extra Rinse - This option has no effect on this cycle.
Tough Scrub/Extra Wash/Hi Temp - This option adds 5 minutes heated wash and 10 minutes unheated wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

AUTO CLEAN CYCLE/ SENSOR CLEAN CYCLE 94 Minutes - min 128 Minutes - max	FILL	HEATED PRE WASH	DRAIN	FILL	DET	HEATED	TEMP	DRAIN	FILL	HEATED	DRAIN	FILL	HEATED	DRAIN	FILL	HEATED	TEMP	RINSE	RINSE	DRAIN	FILL	DRY CYCLE 30:00
	1:36 min 1:46 max	8:00	2:20	1:36 min 1:46 max	DISP	WASH 25:00	140°F	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	20:00	145°F	AID DISP	5:00	2:00	0:02	

Available Options:
Hi Temp Wash/Extra Rinse - 10 minutes of unheated circulation are added after the main wash temp check and first pre rinse is skipped.
Tough Scrub/Extra Wash/Hi Temp - This option overrides the sensor’s decision to skip cycle functions and adds 5 minutes of heated wash to main wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

Temperature Options (Available on select models)
Sanitize: If the **Sanitize** option is available for a given cycle, it forces a 140°F temp check at the end of the main wash for the **Light Wash**, a 154°F temp check prior to the rinse aid dispense in the final rinse, and adds 5 minutes unheated circulation prior to rinse aid dispense.
160° Option: If the **160° Option** is available for a given cycle, it forces a 160°F temp check prior to the rinse aid dispense in the final rinse.

- Notes
1. All times are approximate.
 2. Temperature checks force a maximum 20 minute heating delay to reach the desired temperature.
 3. The **Auto Clean/Sensor Clean** cycle definition gives the minimum and maximum possible cycle lengths. Actual cycle length and executed cycle functions will vary based on the sensor input.
 4. Fill length varies between different models.

DRY CYCLE (Front Only Display Models)															
HEATER ON 3:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 1:30	HEATER ON 1:00	HEATER OFF 9:30

Note: If **Heated Dry** is not selected, the heater will not be activated during the dry cycle.

DRY CYCLE (Front Top / Top Only Display Models)											
HEATER ON 3:00 or 1:00	HEATER OFF 3:00	HEATER ON 1:00	HEATER OFF 3:00	HEATER ON 1:00	HEATER OFF 3:00	HEATER ON 1:00	HEATER OFF 3:00	HEATER ON 1:00	HEATER OFF 3:00	HEATER ON 1:00	HEATER OFF 7:00 or 9:00

Notes: If **Heated Dry** is not selected, the heater will not be activated during the dry cycle.
If **160° Option** is selected, the first two minutes of heating is changed to 2 minutes of unheated at the end of the dry cycle.

SKIP?

This represents the portion of a cycle that **MAY** be omitted. The determination of whether a segment is skipped or not is made by input from the sensor.