

⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

IMPORTANT

Electrostatic Discharge (ESD) Sensitive Electronics

Do not open package until it is time to install the electronic board.

ESD problems are present everywhere. ESD may damage or weaken the electronic board. The new board may appear to work well after repair is finished, but failure may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.

- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic board by edges only.
- When repackaging failed electronic board in anti-static bag, observe above instructions.

DIAGNOSTIC GUIDE

Before servicing, check the following:

- Is the power cord firmly plugged into a live circuit with proper voltage?
- Has a household fuse blown or circuit breaker tripped? Time delay fuse?
- Is dryer vent properly installed and clear of lint or obstructions?
- All tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms per volt DC or greater.
- Check all connections before replacing components. Look for broken or loose wires, failed terminals, or wires not pressed into connectors far enough.
- The most common cause for control failure is corrosion on connectors. Therefore, disconnecting and reconnecting wires will be necessary throughout test procedures.
- Connectors: Look at top of connector. Check for broken or loose wires. Check for wires not pressed into connector far enough to engage metal barbs.
- Resistance checks of components **must** be made with power cord unplugged from outlet.

LESS DRY TEST

Begin with a fully assembled, empty dryer with clean lint screen. Be sure dryer is connected to a known good power source.

1. Set the following configuration:
 - Door - must be closed
 - Timer - **Less Dry**
 - Temperature switch - **Senseon High**
 - End of Cycle Signal switch - **Louder**
2. Press the Push to Start (PTS) switch. After approximately 16 seconds, the Timer will start to advance to **Off**. If this function does not occur, proceed to the Diagnostic Test.

DIAGNOSTIC TEST

This diagnostic test allows factory/service personnel to test and verify all inputs to the electronic control. The basic operation of this test is to notify the operator with an audible beep every time the status of an input to the control changes state.

This test is performed with a fully assembled dryer, connected to a known good power source.

Activating the Test Mode

1. Set the following configuration:
 - Door - must be open
 - Temperature switch - **Air Only**
 - End of Cycle Signal switch - **Louder**
 - Timer - **Timed Drying** or **AccuDry Sensor Drying** selection
2. Turn the Wrinkle Shield switch from **Off** to **120 Minute** three times within a five second period. A single beep, a pause, then a single beep will sound to indicate that the test mode is activated.

NOTE: If any of these initial conditions are not satisfied, the control will not enter the test mode.

Test Mode Functionality

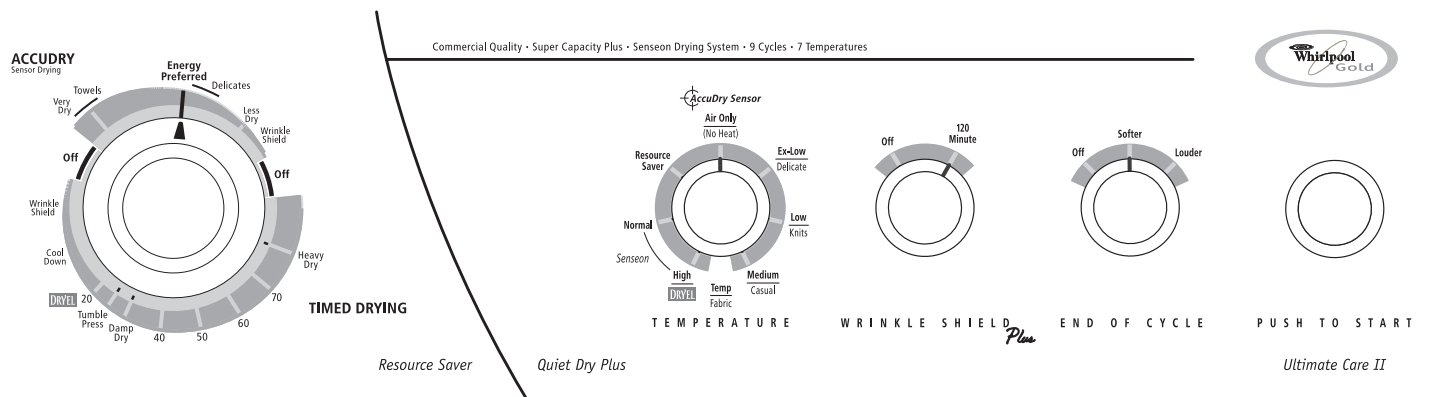
When the control is in test mode, every input change of state will result in an audible beep (with the exception of the End of Cycle Signal switch). This includes:

- Door switch
- Moisture Sensor (short/open Sensor will result in a beep)

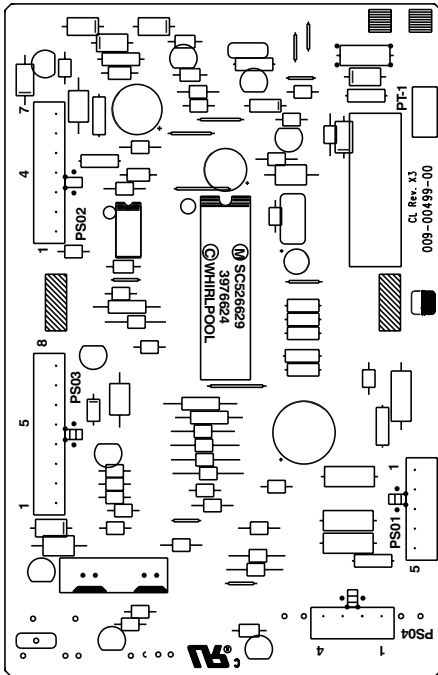
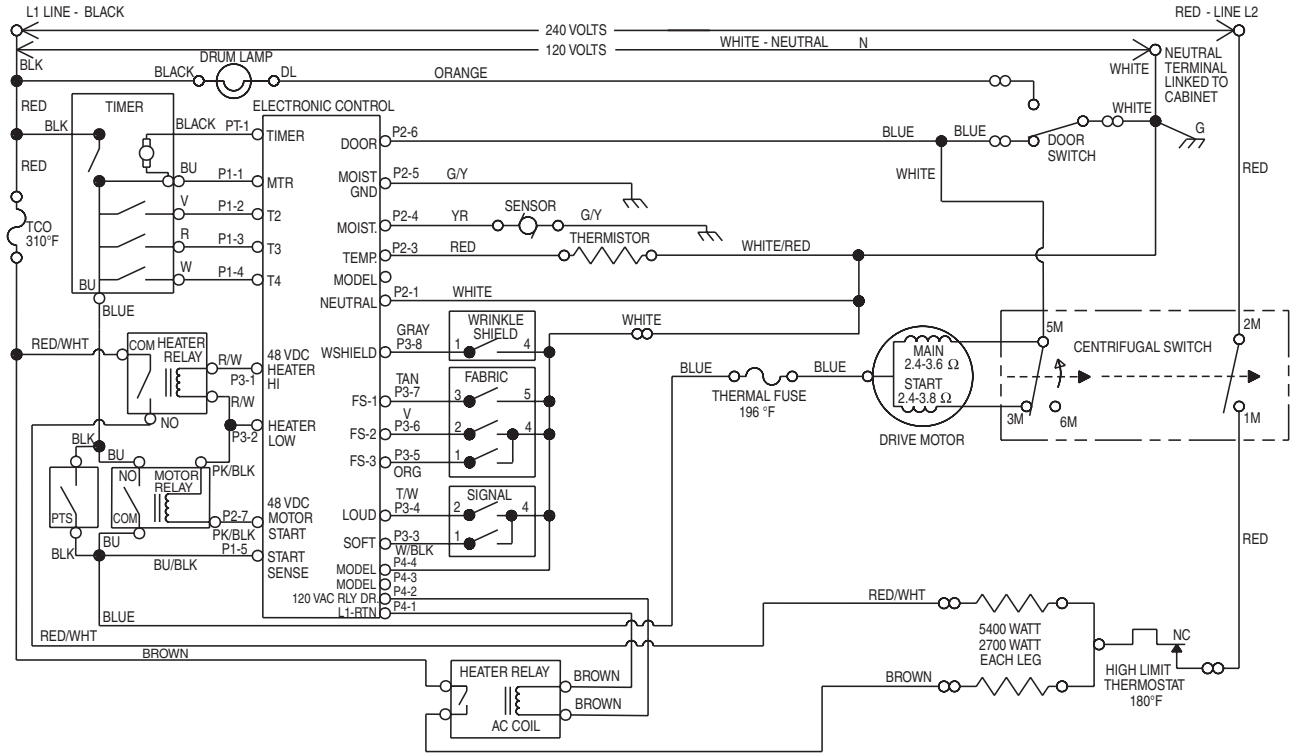
NOTE: A moistened finger or damp cloth may also be used.
- Temperature switch
- Wrinkle Shield switch
- Push to Start (PTS) switch (with the door switch closed)
- Timer (any cam input change will result in a beep)

NOTE: Timer will advance during test.

If any of the inputs do not result in a beep, proceed to the corresponding component tests, beginning on page 4.



Electric Dryer Wiring Diagram

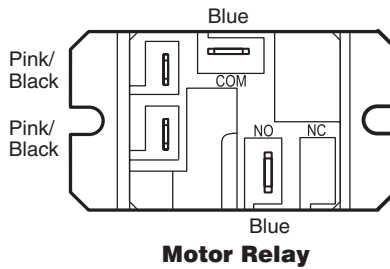


Electronic Control Assembly

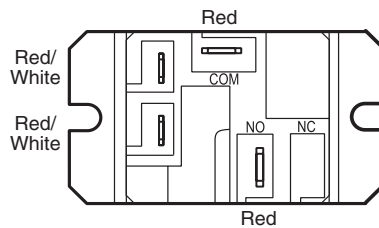
Function	Contacts				
	1M	2M	3M	5M	6M
Start			●		
Run	●			●	

● = Contacts closed

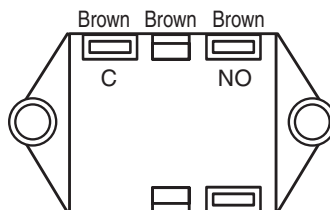
Centrifugal Switch (Motor)



Motor Relay

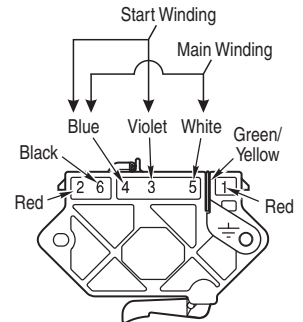


D.C. Heater Relay



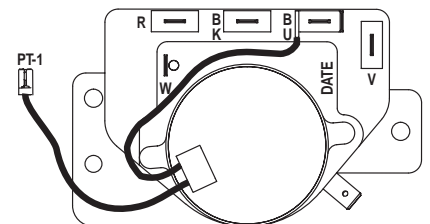
A.C. Heater Relay

Drum Size: 7 cubic feet
Drum Speed: 48 ± 3 RPM CW



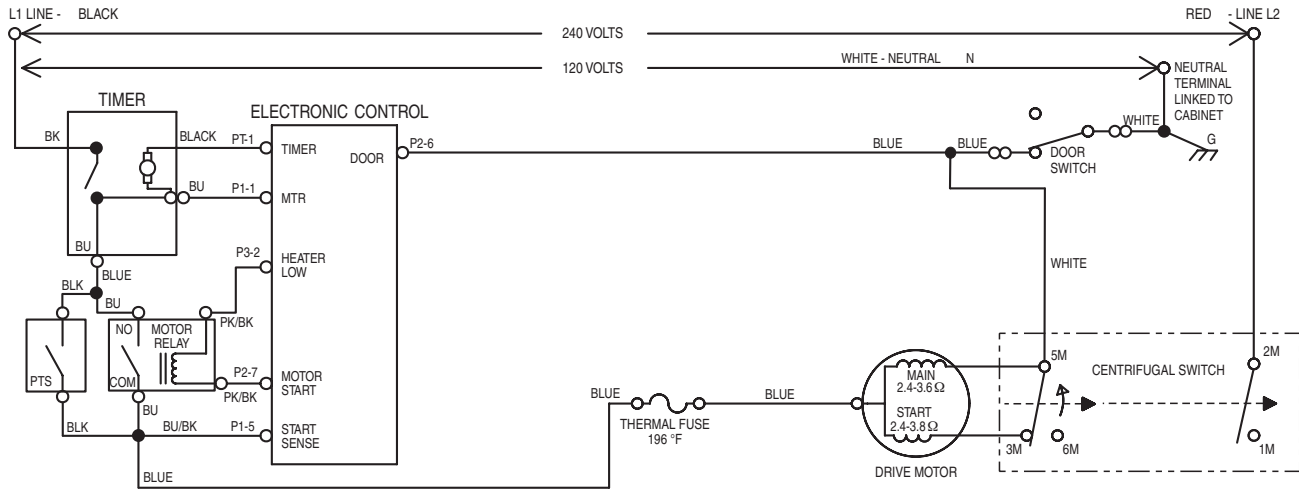
Pluggable Drive Motor Switch

Timer	BU	BK	R	V	W
Wire Colors	Blue	Black	Red	Violet	White

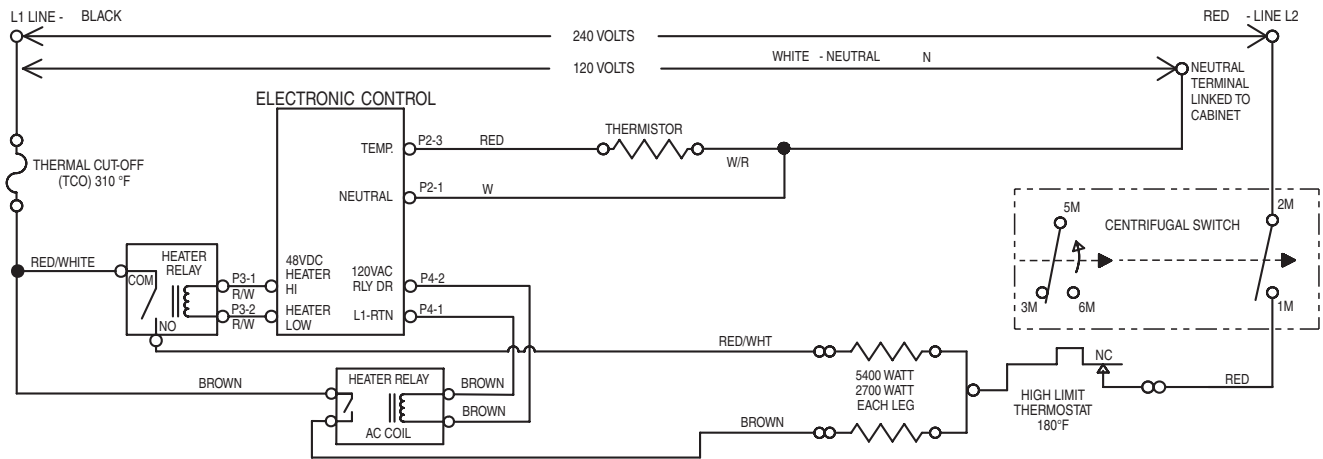


Timer

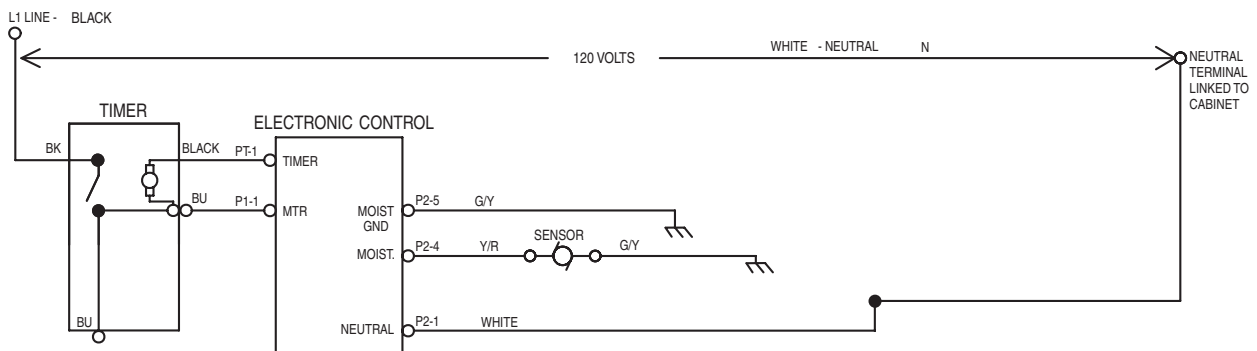
MOTOR STRIP CIRCUIT



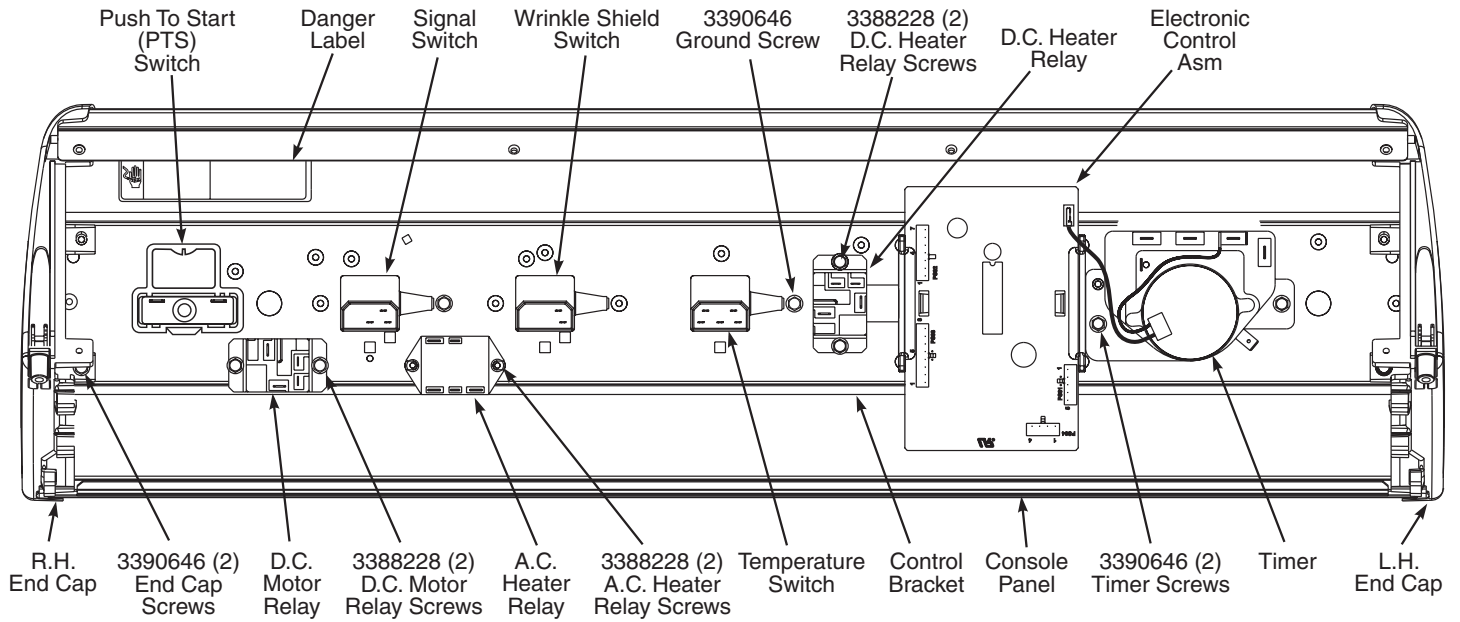
HEATER STRIP CIRCUIT



MOISTURE SENSOR STRIP CIRCUIT



Component Location



COMPONENT	PART NUMBER	
	MODEL NO. GEW9878LW (White)	MODEL NO. GEW9878LG (Biscuit)
Console Panel	8532633	8532634
End Cap - R. H.	8271359	8271362
End Cap - L. H.	8271365	8271368
PTS Switch	3977456	3977456
PTS Knob *	8316541	8316546
Control Knob *	8316540 (3)	8316545 (3)
Control Bracket	8271418	8271418
Signal Switch	3405151	3405151
Wrinkle Shield Switch	3405152	3405152
Temperature Switch	8299970	8299970
D.C. Motor Relay	3405281	3405281
D.C. Heater Relay	3405281	3405281
A.C. Heater Relay	697812	697812
Electronic Control Assembly	3976623	3976623
Timer Knob *	8316538	8316549
Console Harness *	8283135	8283135
Main Harness *	8299897	8299897
Door Switch *	3406107	3406107
Thermal Cut-Off *	3977393	3977393
Thermal Fuse *	3390719	3390719
Heat Element Assembly *	3404466	3404466
High Limit Thermostat *	3404153	3404153
Drive Motor *	661654	661654
Thermistor - NTC 10K Ohms *	3976615	3976615
Timer	8299771	8299771

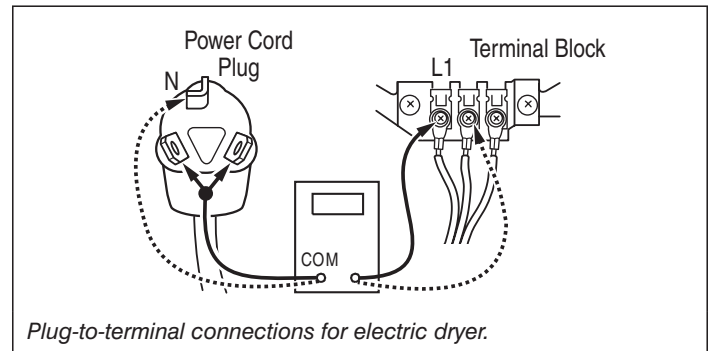
* not shown in illustration above

COMPONENT TESTS

Supply Connections Test

This test assumes that proper voltage is present at the outlet, and visual inspection indicates that the power cord is securely fastened to the terminal block.

1. Disconnect dryer from power.
2. Remove the cover plate from the back of the dryer.
3. With an ohmmeter, check for continuity between the neutral (N) terminal of the plug and the center contact on the terminal block. See illustration below.



- If there is no continuity, replace the power cord and test the dryer.
 - If there is continuity, go to step 4.
4. In a similar way, check which terminal of the plug is connected to the left-most contact on the terminal block and make a note of it. This will be L1 (black wire) in the wiring diagram. See illustration above.
 - When this is found, go to step 5.
 - If neither of the plug terminals have continuity with the left-most contact of the terminal block, replace the power cord and test the dryer.

- Access the electronic control without disconnecting any wiring to it.
- With an ohmmeter, check for continuity between the L1 terminal of the plug (found in step 4) and BK (black wire) terminal on the timer.
 - ➔ If there is continuity, go to step 7.
 - ➔ If there is no continuity, check that wires to the terminal block are mechanically secure. If so, replace or repair the main wire harness and test the dryer.
- Check for continuity between the neutral (N) terminal of the plug and P2-1 (white wire) on the electronic control.
 - ➔ If there is continuity, go to the Timer Test.
 - ➔ If there is no continuity and the mechanical connections of the wire are secure, replace or repair the main wire harness.

Timer Test

Perform the diagnostic test on page 1 to determine that the timer motor advances (should run continuously). If the timer does not advance or fails the diagnostic test:

- Disconnect dryer from power.
- Remove the wires from timer terminals.
- Check the timer motor resistance and timer switching. The resistance (BU to PT-1) should be 3 K ohms (±2). Use the timer encoding table below for switching conductivity, and refer to timer illustration on page 2.

Reference contact continuity to timer - BK.

Timer Encoding Table

TIMED DRYING MODE					
TIMER CONTACTS	TIMED DRYING	COOL DOWN	WRINKLE SHIELD	OFF	
W to BK	O	O	O	O	
R to BK	X	X	O	O	
V to BK	O	X	X	O	
BU to BK	X	X	X	O	
ACCUDRY SENSOR DRYING MODE					
TIMER CONTACTS	VERY DRY	ASTERISK	LESS DRY	WRINKLE SHIELD	OFF
W to BK	X	X	O	O	O
R to BK	O	O	O	O	O
V to BK	X	O	O	X	O
BU to BK	X	X	X	X	O

O = OPEN X = CLOSED

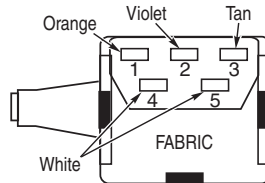
Motor Test

- Disconnect dryer from power, and open the dryer door.
- Measure resistance between the motor relay common (COM) terminal and the P2-6 terminal on the electronic control. 1 to 6 ohms should be measured.
 - ➔ If resistance measurements are outside 1 to 6 ohms, perform the Thermal Fuse Test and Door Switch Test, and check harness continuity. If they test good, replace the motor.
- Measure resistance between the motor relay common (COM) terminal and ground. A high resistance (open) should be measured.
 - ➔ If it does not, perform the Thermal Fuse Test and Door Switch Test and check harness continuity. If they test good, replace the motor.

Door Switch Test

- Disconnect dryer from power.
- Check door switch continuity. Neutral to P2-6 on the electronic control should read closed with the door closed, and open with the door open.
- Otherwise, verify harness continuity.
 - ➔ If no continuity, repair or replace the harness.
 - ➔ If harness is good, replace the door switch.

Temperature Switch Test



- Disconnect dryer from power.
- Remove the wires from the switch to complete this test.
- Reference contact continuity with Pins 1 and 2 to Pin 4 (White).
- Reference contact continuity with Pin 3 to Pin 5.

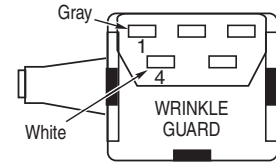
Temperature Switch Table

SWITCH POSITION	CONTACTS			FUNCTION
	3-5	2-4	1-4	
12 o'clock	O	O	O	Air Only (No Heat)
2 o'clock	O	O	X	Ex-Low, Delicate
4 o'clock	O	X	O	Low, Knits
5 o'clock	O	X	X	Medium, Casual
7 o'clock	X	O	O	High, Senseon
8 o'clock	X	O	X	Normal, Senseon
10 o'clock	X	X	O	Resource Saver

O = OPEN X = CLOSED

Wrinkle Shield Switch (On/Off) Test

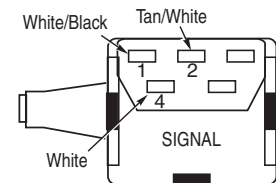
- Disconnect dryer from power.
- Remove the wires from the switch to complete this test.
- Reference contact continuity with Pin 1 to Pin 4 (White).



Wrinkle Shield Switch Table

SWITCH POSITION	CONTACTS	FUNCTION
11 o'clock	Open	Wrinkle Shield Off
1 o'clock	Closed	Wrinkle Shield 120 Minute

End of Cycle Signal Switch Test



- Disconnect dryer from power.
- Remove the wires from the switch to complete this test.
- Reference contact continuity with Pins 1 and 2 to Pin 4 (White).

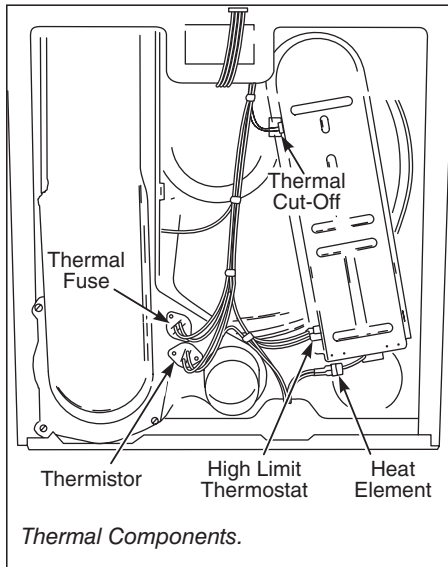
End of Cycle Signal Switch Table

SWITCH POSITION	CONTACTS		FUNCTION
	1-4	2-4	
10 o'clock	O	O	Off
12 o'clock	X	O	Softer End of Cycle Signal
2 o'clock	O	X	Louder End of Cycle Signal

O = OPEN X = CLOSED

High Limit Thermostat Test

1. Disconnect dryer from power.
2. Remove the high limit thermostat and check continuity. Refer to the Thermal Components illustration below.
 - ➔ If open, replace the high limit thermostat.
 - ➔ If closed, apply heat. It should open at about 250°F. Otherwise, replace the high limit thermostat.



Thermal Cut-Off Test

This unit is equipped with a “one-shot” thermal cut-off. See Thermal Components illustration above. If the dryer does not heat with power supplied, disconnect dryer from power and check the thermal cut-off for continuity. If open, thermal cut-off has failed and must be replaced.

NOTE: If the thermal cut-off has failed, replace the thermal cut-off and high limit thermostat. In addition, check for failed heater element, or blocked or improper exhaust system.

Thermal Fuse Test

A thermal fuse is used on this model. The thermal fuse is wired in series with the dryer drive motor. If the thermal fuse opens, power is shut off to the motor.

1. Disconnect dryer from power. Check continuity of thermal fuse.
2. Once the thermal fuse has opened, it must be replaced. Check for failed thermistor, shorted heat element, or other causes of failure. Replace failed parts. See Thermal Components illustration at left.

Thermistor Test or Dryer Beeps 3 Times when Push to Start (PTS) Pressed

An electronic temperature sensor called a thermistor is used in this model in place of an operating thermostat. The electronic control monitors the exhaust temperature using the thermistor, and cycles the heater relay on and off to maintain the desired temperature.

Procedure

Begin with a fully assembled, empty dryer and a clean lint screen.

1. Set the following configuration:
 - Door - must be closed
 - Timer dial - **Timed Drying**
 - Temperature switch - **Senseon High**
 - Wrinkle Shield switch - **Off**
 - End of Cycle Signal switch - **Louder**
 2. Press the Push to Start switch.
 - ➔ If you hear three short beeps and the dryer shuts off after several seconds, the thermistor or wire harness is either shorted or open.
- Disconnect dryer from power. Check wire connections at the electronic control and thermistor. If wiring is functional, replace the thermistor. Refer to Thermal Components illustration on this page.

- ➔ If the dryer appears to operate correctly, proceed to step 3.
3. Remove exhaust vent and start the dryer.
 - ➔ Turn Temperature switch to desired temperature to be tested, and select 20 minutes of **Timed Drying**. Hold a glass bulb thermometer capable of reading from 90°F to 180°F in the center of the exhaust outlet. Measure exhaust temperatures with heater off and on.
- The correct exhaust temperatures are as follows:

TEMP. SWITCH SETTING	HEAT TURNS OFF	HEAT TURNS ON
Senseon High	155° ± 10°F	10°-15°F below heat off
Senseon Normal/Medium	145° ± 10°F	
Resource Saver	135° ± 10°F	
Low	125° ± 10°F	
Extra Low	115° ± 10°F	

- ➔ If the exhaust temperature is not within specified limits, disconnect dryer from power and check the resistance of the thermistor.

THERMISTOR RESISTANCE			
TEMP. °F	RES. K Ω	TEMP. °F	RES. K Ω
50°	19.9	100°	5.7
60°	15.3	110°	4.7
70°	11.9	120°	3.7
80°	9.2	130°	3.1
90°	7.4	140°	2.5

- ➔ If the thermistor resistance checks within normal limits, replace the electronic control assembly.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE / TEST
DRYER WILL NOT RUN.	Refer to Motor Strip Circuit, page 3. - LINE VOLTAGE - HARNESS/CONNECTION - MOTOR RELAY - PUSH TO START (PTS) SWITCH - THERMAL FUSE - MOTOR - DOOR SWITCH - ELECTRONIC CONTROL For more details, see Troubleshooting section at right.
DRYER WILL NOT HEAT.	Refer to Heater Strip Circuit, page 3. - LINE VOLTAGE (240V) - HARNESS/CONNECTION - HEATER RELAY - THERMAL CUT-OFF - THERMAL FUSE - HIGH LIMIT THERMOSTAT - HEATER - CENTRIFUGAL SWITCH - THERMISTOR - ELECTRONIC CONTROL For more details, see Troubleshooting section at right.
DRYER HEATS DURING AIR ONLY (NO HEAT) CYCLE.	Refer to Heater Strip Circuit, page 3. - HARNESS/CONNECTION - HEATER RELAY - TEMPERATURE SWITCH - ELECTRONIC CONTROL For more details, see Troubleshooting section at right.
DRYER WON'T SHUT OFF.	Refer to Motor and Moisture Sensor Strip Circuits, page 3. - PUSH TO START (PTS) SWITCH - HARNESS/CONNECTION - MOTOR RELAY - MOISTURE SENSOR - ELECTRONIC CONTROL For more details, see Troubleshooting section, page 8.
DRYER SHUTS OFF BEFORE CLOTHES ARE DRY.	Refer to Thermistor Test, page 6; and Moisture Sensor Strip Circuit, page 3. - HARNESS/CONNECTION - MOISTURE SENSOR - THERMISTOR - ELECTRONIC CONTROL - MAY NEED TO CHANGE TIMER SETTING TO A MORE DRY SETTING For more details, see Troubleshooting section, page 8.
TIMER CONTINUOUSLY ADVANCES.	Refer to Timer Drawing, page 2; and Motor Strip Circuit, page 3. - HARNESS/CONNECTION - TIMER For more details, see Troubleshooting section, page 8.
WRINKLE SHIELD DOES NOT RUN.	Refer to Wrinkle Shield Switch (On/Off) Test, page 5.

IMPORTANT: Electrostatic (static electricity) discharge may cause damage to electronic control assemblies. See page 1 for details.

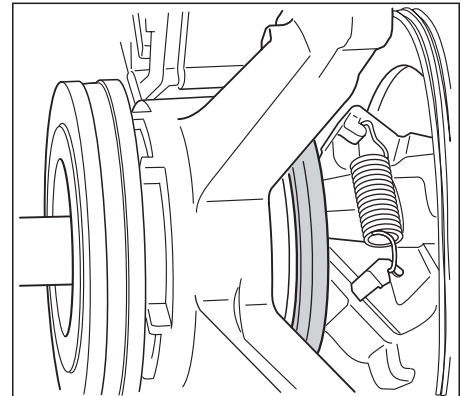
TROUBLESHOOTING

PROBLEM: Dryer Will Not Run
 (Refer to Motor Strip Circuit, page 3; and Troubleshooting Guide at left.)

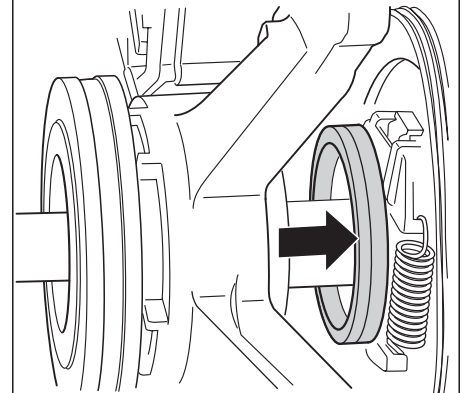
1. Disconnect dryer from power.
2. Check connector pins in P2 connector of the electronic control to verify they are making good connections.
3. Check the Push to Start (PTS) switch continuity when pressed. It should show continuity while pushed in. If not, replace the PTS switch.
4. Perform Thermal Fuse Test, page 6.
5. Check the door switch (D to D1). There should be continuity when the door is closed. If not, replace the door switch.
6. If the motor started but did not continue to run, and components checked in steps 2 through 5 were ok, replace the electronic control assembly.
7. If motor did not start and components checked in steps 2 through 5 were ok, replace the motor.

PROBLEM: Dryer Will Not Heat
 (Refer to Heater Strip Circuit, page 3; and Troubleshooting Guide at left.)

1. Perform Supply Connections Test, page 4.
2. Perform Thermal Cut-Off Test, page 6.
3. Perform High Limit Thermostat Test, page 6.
4. With dryer disconnected from power, check continuity of heater. It should be about 10 ohms and should be open to ground, chassis, and neutral. If it does not meet these parameters, replace the heat element assembly.
5. With dryer disconnected from power, check continuity of motor centrifugal switch:
 - ➔ 1M to 2M terminals should be open in the off condition. Manually operating the switch should close 1M to 2M. This can be done by pushing the actuator from the off condition to the run position. See the illustration above right.



Actuator in off condition.



Actuator in run position.

➔ If these conditions are not true, replace the motor.

PROBLEM: Dryer Heats During Air Only (No Heat) Cycle
 (Refer to Heater Strip Circuit, page 3; and Troubleshooting Guide at left.)

1. Perform Temperature Switch Test, page 5.
2. With dryer disconnected from power, check continuity of heater relay contacts. COM to NO should be open. If not, replace the heater relay.
3. With dryer fully assembled, reconnect power to dryer, set to **Air Only**. If the dryer still heats, disconnect dryer from power and replace the electronic control assembly.

TROUBLESHOOTING (cont.)**PROBLEM: Dryer Won't Shut Off**

(Refer to Motor and Moisture Sensor Strip Circuits, page 3; and Troubleshooting Guide, page 7.)

1. With the dryer fully assembled, set the timer to **Off**. If the dryer starts running as soon as it is plugged in, disconnect dryer from power and replace the timer.
2. Set the following configuration:
 - Dryer - power cord plugged in
 - Door - must be closed
 - Temperature switch - **Senseon High**
 - Timer - **Timed Drying** for less than 10 minutes
3. If the dryer starts running before the Push to Start (PTS) switch is pressed, disconnect dryer from power and replace the PTS switch.
 - If, after replacing the PTS switch, the dryer still starts before the PTS switch is pressed, disconnect dryer from power and replace the motor relay.
4. If the dryer does not stop after the set time elapses, disconnect dryer from power and check the motor relay. Continuity of relay should be open from COM to NO.
5. If the dryer will not terminate its cycle when set to **AccuDry Sensor Drying**, disconnect dryer from power and check the moisture sensor.
 - If there is continuity to Ground for Yellow/Red (Y/R) wire with no load, look for a short in the sensor or Y/R wire. Verify harness connections both at the sensor and the electronic control.
 - If the sensor and Y/R wire are good, replace the electronic control assembly.

PROBLEM: Dryer Shuts Off Before Clothes Are Dry

(Refer to Moisture Sensor Strip Circuit, page 3; Thermistor Test, page 6; and Troubleshooting Guide, page 7.)

1. Test the moisture sensor by following the procedure outlined in the Diagnostic Test, page 1. If the moisture sensor fails the Diagnostic Test (does not produce a beep sound), disconnect the dryer from power and check the moisture sensor.
 - If there is continuity to Ground for Yellow/Red (Y/R) wire with no load, look for a short in the Sensor or Y/R wire. Verify harness connections both at the sensor and the electronic control.
 - If the Sensor and Y/R wire are good, replace the electronic control assembly.
2. If Diagnostic Test is passed, verify thermistor by performing test procedures outlined in Thermistor Test, page 6.
3. If problem persists after replacing moisture sensor and thermistor, disconnect dryer from power and replace the electronic control assembly.

PROBLEM: Timer Continuously Advances

(Refer to Timer Drawing, page 2; Motor Strip Circuit, page 3; and Troubleshooting Guide, page 7.)

1. Disconnect dryer from power and verify the Blue wire and the Black L1 wires are in the correct positions. See timer illustration on page 2.
2. Test the timer by following the procedure outlined in the Diagnostic Test, page 1.
3. If the timer continues to advance past **Off**, then replace the timer.

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:

4,385,452	4,720,925	4,899,264	5,560,120
4,430,809	4,754,556	4,899,464	5,636,453
4,663,861	4,821,535	4,908,959	5,651,188
4,669,200	4,840,285	5,066,050	5,664,339
4,700,495	4,865,366	5,243,771	D314,261

D314,262