



# WARNING

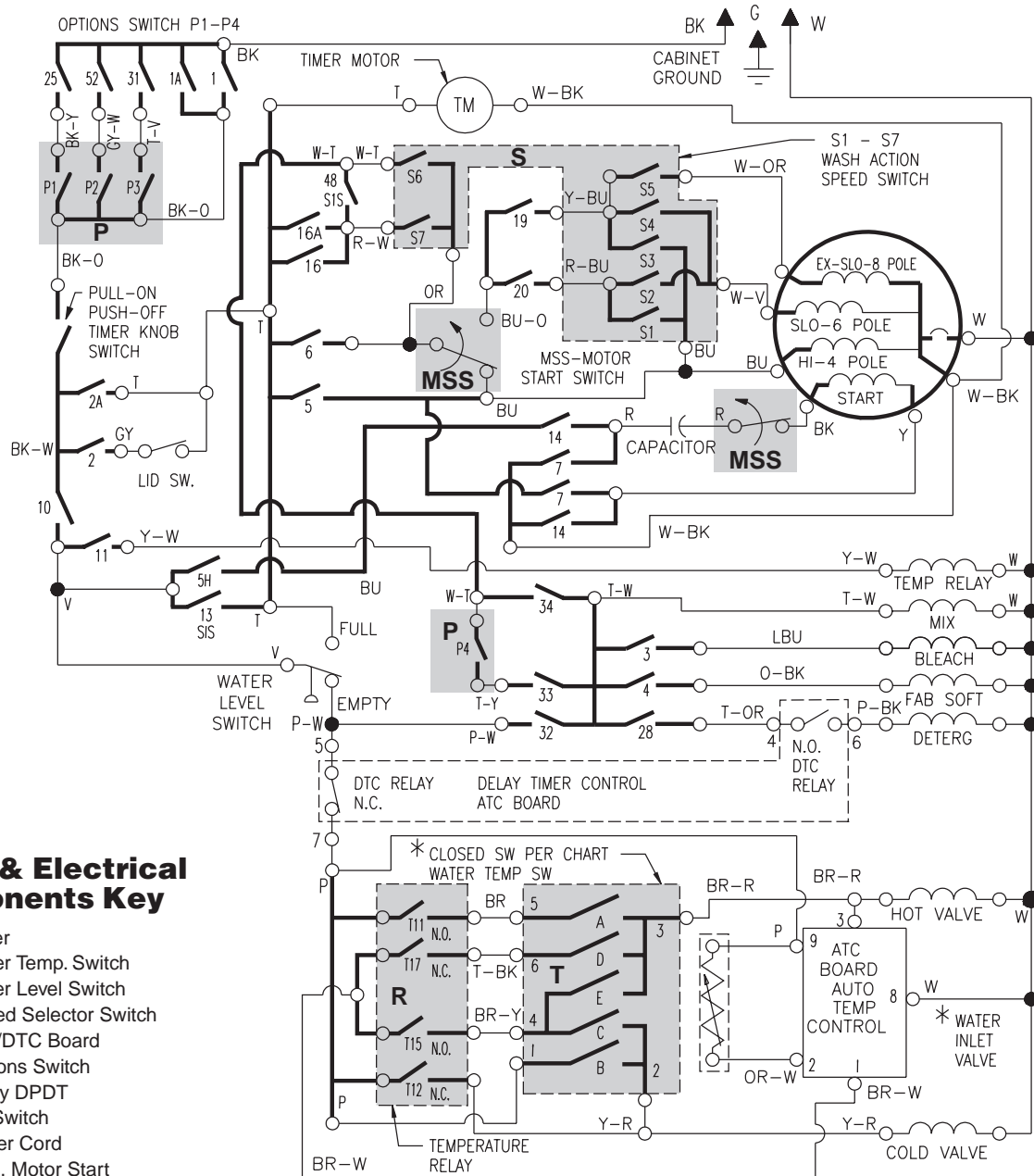


## Electrical Shock Hazard

Disconnect electric supply from appliance before servicing.  
Replace all panels before operating.  
Failure to do so can result in death or electrical shock.

## Switch Codes

**MSS** - Motor Start Switch  
**S** - Speed Selector Switch  
**P** - Options Switch  
**T** - Water Temp Switch  
**R** - Temp. Relay



## Part No. & Electrical Components Key

3950468	Timer
* 661615	Water Temp. Switch
3366845	Water Level Switch
3946851	Speed Selector Switch
3349478	ATC/DTC Board
3950346	Options Switch
697811	Relay DPDT
3949247	Lid Switch
3949248	Power Cord
661605	Cap., Motor Start
* 64163	Valve - Mix
64164	Valve - Dispense
3352282	Sensor - ATC/DTC
3352287	Motor, Drive - 3 Speed

\* Denotes energy efficient components.  
Do not substitute.

## Legend

	0 - TIMER SWITCH		HARNESS CONNECTION
	13 & 48 - SUB-INTERVAL SWITCH		TERMINAL CONNECTION
	INT. COMP CONNECTION		X TIMER SWITCH MAY BE OPEN OR CLOSED
	HARNESS WIRING		

**TEST 4: Bleach Dispenser**

1. Set the Timer to the last two minutes of Wash Fill, the Dry Agitate mark, and start the washer. NOTE: the Lid switch must be closed.
2. Agitation will begin immediately and flush water should enter the bleach dispenser. The flush water will be on for 10 seconds and off for 20 seconds in a repeating cycle for approximately 2 minutes.

**If flush water does not enter the bleach dispenser:**

- Make sure Timer is in the last 2 minutes of wash fill, just before drain.
- Check Timer contacts 3 and 34 for closure. SIS Timer sw. #48 must also be operating.
- Check the bleach solenoid for proper operation.

After repair, repeat steps 1 and 2 of Test 4.

**TEST 5: Fabric Softener Dispenser**

1. Set the Water Level switch at its minimum setting.
2. Set the Options switch to the One Rinse position.
3. Set the Timer to the 1st rinse mark and start the washer. The washer will begin filling with water.
4. Once agitation has begun, flush water will enter the fabric softener dispenser. The flush water will be on for 10 seconds and off for 20 seconds in a repeating cycle for approximately 2 minutes.

**If flush water does not enter the fabric softener dispenser:**

- Check Timer contacts 4 and 33 for closure. They should be closed.
- Check Options switch P4 for closure.
- Check the fabric softener solenoid for proper operation.

After repair, repeat steps 1, 2, 3, and 4 of Test 5.

**TEST 6: Speed Selector Switch - Agitation**

1. Set the Water Level switch at its minimum setting.
2. Set Timer in pre-wash cycle and start the washer.
3. Select different agitation speeds with the Speed Selector switch. All three motor speeds can be observed: fast, slow, & extra slow. Hand Wash is intermittent extra slow, on for 10 seconds and off for 20 seconds.

**If the Speed Selector switch is not functioning correctly:**

- Check Timer switch 19 - It should be closed for agitation.
- Check Speed Selector switch wiring.
- Check Timer switch 16 & 16A. One switch should be closed.

**TEST 7: Speed Selector Switch - Spin**

1. Set the Timer in Ultra Clean Spin.
2. Pull Timer knob out and machine should begin to spin. If machine starts to drain, push Timer in for 5 seconds and pull out.
3. Using Speed Selector switch select different spin speeds. Two different spin speeds should be observed: slow & fast.

**If the Speed Selector switch is not functioning correctly:**

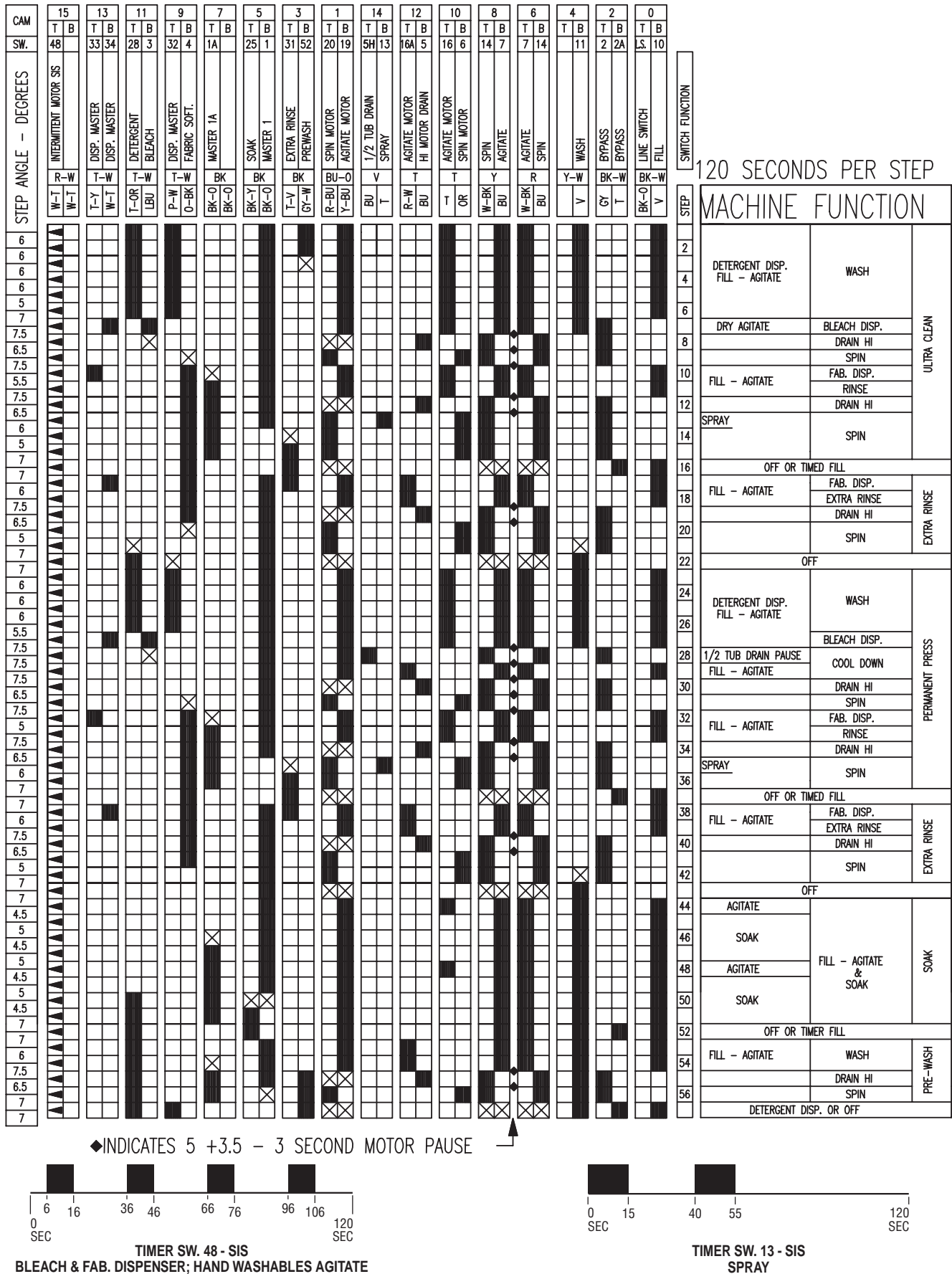
- Check Timer switch 20 - It should be closed for spin.
- Check Timer switch 6 - It should be closed for spin.
- Check Speed Selector switch wiring.

**PART NO. 3951186 REV. A**

NOTE: This sheet contains important Technical Service Data

**FOR SERVICE TECHNICIAN ONLY  
DO NOT REMOVE OR DESTROY**

## TIMING CYCLE CHART



## Speed Selector Switch

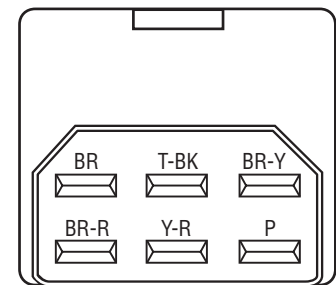
CYCLE	MOTOR SPEED		CLOSED SWITCHES						
	AGITATE	SPIN	S1	S2	S3	S4	S5	S6	S7
HANG DRY	FAST - 4 POLE	SLOW - 6 POLE		X	X				X
HEAVY DUTY	FAST - 4 POLE	FAST - 4 POLE	X		X				X
REGULAR	SLOW - 6 POLE	FAST - 4 POLE	X			X			X
DELICATE	SLOW - 6 POLE	SLOW - 6 POLE		X		X			X
EX DELICATE	EX SLOW - 8 POLE	SLOW - 6 POLE		X			X		X
HAND WASH	SIS - 8 POLE	SLOW - 6 POLE		X			X	X	
CONTACTS			R-BU/ BU	R-BU/ W-V	Y-BU/ BU	Y-BU/ W-V	Y-BU/ W-OR	W-T/ OR	R-W/ OR
			HI	SLOW	HI	SLOW	EX SLOW	HAND WASH	NO HAND WASH
			SPIN		AGITATE			HAND WASH	

## Water Temperature Switch

SW	ATC			NON-ATC			
	WW	CC	WC	HC	WC	CC	WW
A	X		X	X	X		X
B		X			X	X	X
C	X		X				
D	X						X
E		X					

**NOTE:** All warm rinses ATC controlled 75° ± 5°F.

## Water Temperature Switch

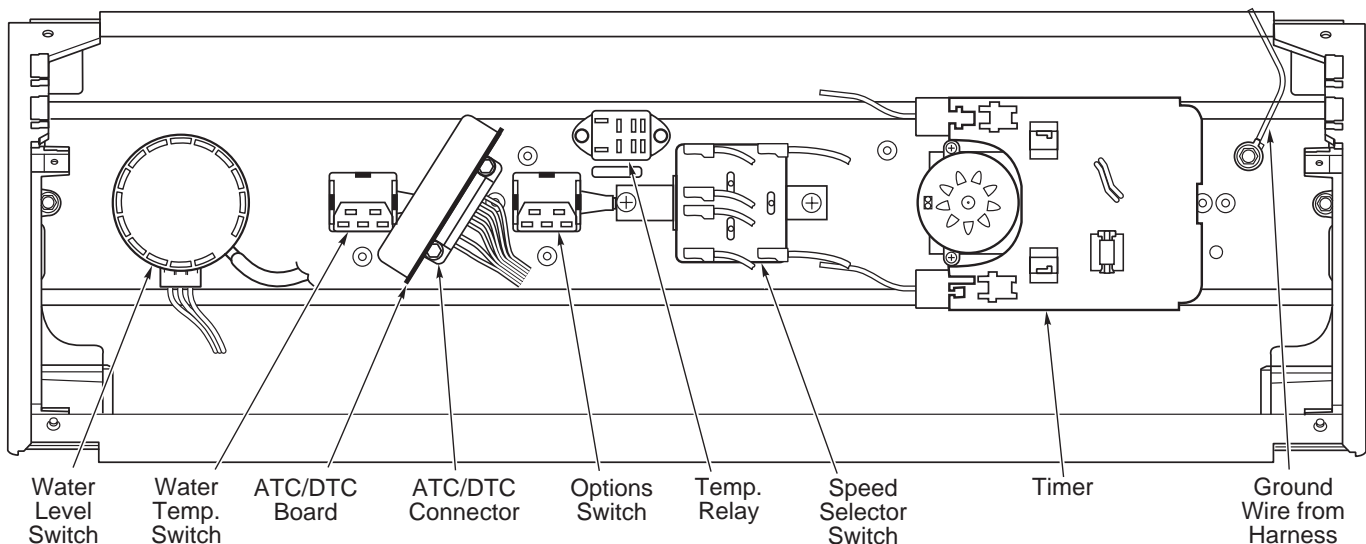
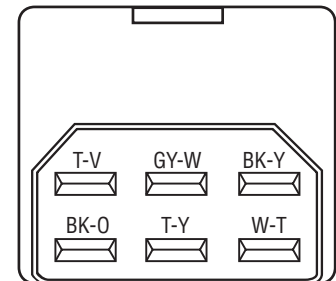


## Options Switch

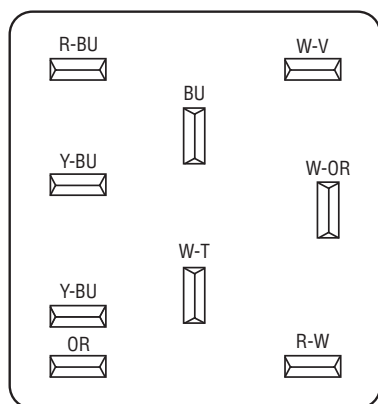
OPTION	NOTES	P1	P2	P3	P4
SOAK ONLY	STOPS AFTER SOAK. STOPS BETWEEN EACH CYCLE.				X
PREWASH ONLY	ADDS PREWASH TO SOAK, THEN STOPS	X			X
ONE RINSE	ADDS ULTRA CLEAN TO SOAK AND PREWASH, THEN STOPS	X	X		X
2ND RINSE	ADDS SECOND RINSE TO ABOVE 3 CYCLES, THEN STOPS	X	X	X	
CONTACTS		BK-Y/ BK-O	GY-W/ BK-O	T-V/ BK-O	W-T/ T-Y

**NOTE:** The options switch only determines where the timer will stop; turning the washer off. All cycles will operate by turning the timer to the desired setting and pulling the timer knob out.

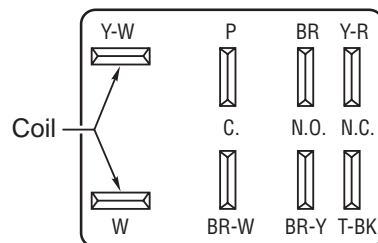
## Options Switch



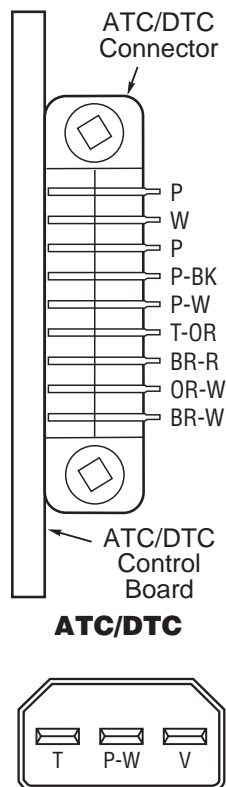
## DIAGNOSTICS



**Speed Selector Switch**



**Temperature Relay**



**Water Level Switch**

### Temperature Relay

The Temperature Relay is used to select Wash & Rinse temperatures in the appropriate part of the cycle.

PROBLEM	POSSIBLE CAUSE
Wash/Rinse temperatures incorrect	Temperature Relay coil open.
	No connection to coil thru Timer Switch 11 (Y-R).

COMPONENTS	COIL RESISTANCE VALUES	CONTACTS
MIX SOLENOID	= 800 - 1200 Ohms	W to T-W
BLEACH SOLENOID	= 800 - 1200 Ohms	W to LBU
FABRIC SOLENOID	= 800 - 1200 Ohms	W to O-BK
DETERGENT SOLENOID	= 800 - 1200 Ohms	W to P-BK
HOT VALVE SOLENOID	= 800 - 1200 Ohms	W to BR-R
COLD VALVE SOLENOID	= 800 - 1200 Ohms	W to Y-R
TEMPERATURE RELAY	= 3800 - 5400 Ohms	W to Y-W

**NOTE:** If values are outside of range listed, replace defective solenoid.

MOTOR SPEED	RESISTANCE AT MOTOR	CONTACTS
EX SLOW - 8 POLE	2.9 Ohms	W-BK to W-OR
SLOW - 6 POLE	2.1 Ohms	W-BK to W-Y
HIGH - 4 POLE	1.3 Ohms	W-BK to BU
START	4.8 Ohms	Y to BK



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## ATC/DTC TESTING

Perform the following tests in sequence.

### TEST 1: Non-ATC Wash Fills

**NOTE:** The non-ATC system must function properly before testing the ATC system.

1. Set the Timer in the Soak cycle and start the washer. Washer will begin filling with water.
2. Turn the Water Temp. switch to each of the non-ATC positions and note the temperature of the water entering the washer at each position.
3. Turn the Timer to Rinse Fill. Turn the Water Temperature switch to all 7 positions and note the water temps. There will be some warm and some cold rinse fills. All warm rinses are controlled  $75^{\circ} \pm 5^{\circ}\text{F}$ .

**If the temperatures are not correct, or the washer is not filling, check the following for proper operation and function:**

- Timer switch 11 (Y-W) should be closed during wash.
- Water Level switch
- Water Temp. switch
- Water valves
- Wiring harness and connectors. Make sure there is a closed circuit between pins 5 and 7 of the ATC/DTC control board.

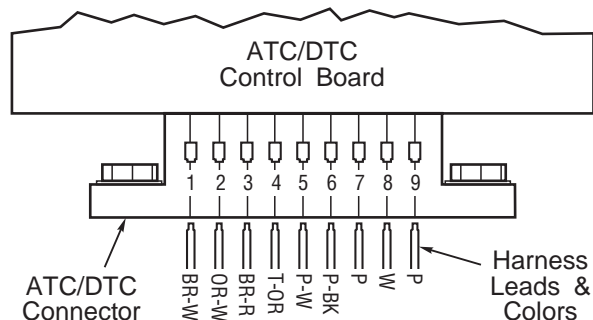
### TEST 2: ATC Wash Fills

This tests the ATC portion of the ATC/DTC control, bypassing the dispense system.

**NOTE:** A properly operating ATC system will provide the following water temperatures in the washer after wash fill is complete:

COLD =  $75^{\circ} \pm 5^{\circ}\text{F}$

WARM =  $100^{\circ} \pm 10^{\circ}\text{F}$



Hot wash and cold rinse fills are not ATC-controlled. All warm rinses are controlled  $75^{\circ} \pm 5^{\circ}\text{F}$ .

1. Set the Water Temp. switch to ATC-controlled Warm/Cold or Warm/Warm.
2. Set the Timer in the Soak cycle and start the washer. Washer will begin filling with water.

Both the hot and cold valves operate continuously for approximately 55 seconds. After 55 seconds, the cold valve should cycle on and off while the hot valve stays on continuously.

#### If the cold valve is not working properly:

- Disconnect the washer from the electrical supply.
- Check the ATC/DTC board for proper installation in the connector.
- Make sure the harness wires are in the proper location to the connector.

If these checks are okay, disconnect the washer from the electrical supply. Install a new ATC/DTC board and repeat steps 1 and 2 of Test 2.

**NOTE 1:** If the hot water temperature is below  $120^{\circ}\text{F}$ , the cold valve may turn off and stay off.

**NOTE 2:** If the cold water temperature is above  $70^{\circ}\text{F}$ , the cold valve may stay on continuously.

**NOTE 3:** If the thermistor is open, the cold valve will stay off. If the thermistor is shorted, the cold valve will stay on continuously.

#### If it cannot be determined that the ATC system is operating properly:

- Disconnect the washer from the electrical supply.
- Remove the ATC/DTC board from the connector.
- Make an ohmmeter reading of the thermistor between harness leads 2 (OR-W) and 9 (P) at the connector. The resistance reading should be between 20K (20,000) and 120K (120,000) ohms.

#### If ohmmeter reading is not correct:

- Remove the cabinet.
  - Replace the thermistor and repeat steps 1 and 2 of Test 2.
3. Set the Water Temp. switch to ATC-controlled Cold/Cold.
  4. Set the Timer in the Soak cycle and start the washer. Washer will begin filling with water.

The hot valve should cycle on and off while the cold valve operates continuously.

**NOTE:** If cold water temperature is above  $65^{\circ}\text{F}$ , the hot valve may not turn on.

#### If the hot valve is not working properly:

- Disconnect the washer from the electrical supply.
  - Replace the ATC/DTC board and repeat steps 3 and 4 of Test 2.
5. Repeat TEST 2 for all three ATC-controlled Water Temp. switch positions.

### TEST 3: Detergent Dispenser

1. Set the timer in the Ultra Clean cycle. Flush water should enter the dispenser. After 2 minutes, washer will begin filling with water.

**NOTE:** In a properly operating detergent dispenser, flush water will enter the dispenser for 2 minutes before regular wash fill begins. The flush water is not controlled by the Water Temp. switch and is usually warm.

#### If wash fill begins immediately:

- Disconnect the washer from the electrical supply.
- Replace the ATC/DTC board and repeat step 1.

#### If no flush water enters the detergent dispenser but wash fill begins 2 minutes later:

- Disconnect the washer from the electrical supply.
- Check the detergent solenoid and mix solenoid for proper operation.
- Check Timer contacts 28 and 32 for closure. They should be closed.

If these checks are okay, replace the ATC/DTC board and repeat step 1 of Test 3.