

Technical Information – Top Load Washer

MAT12PDAA*, MAT12PRAA*, MAT12PSAA*

- Due to possibility of personal injury or property damage, always contact an authorized technician for servicing or repair of this unit.
- Refer to Service Manual 16022842 for detailed installation, operating, testing, troubleshooting, and disassembly instructions.



CAUTION

All safety information must be followed as provided in Service Manual 16022842



WARNING

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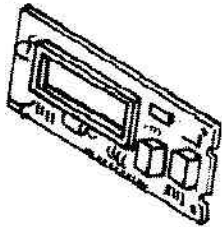
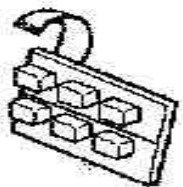
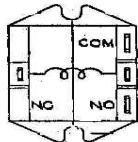
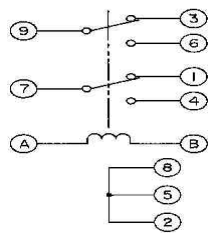
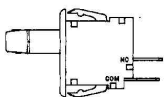
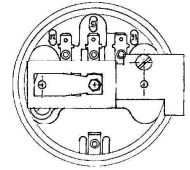
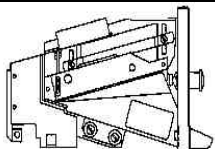
Models	MAT12PDAA*, MAT12PRAA*, MAT12PSAA*
Power Source	
Voltage AC	120 VAC
Fuse Requirement	15 Amp
Frequency	60 Hz
Motor HP (single-phase, reversible)	1/2 HP
Cabinet Dimensions	
Height Overall (including lid open)	52" (132.1 cm)
Height of Machine	44-7/8" (114 cm)
Width	25-1/2" (64.8 cm)
Depth	26-3/4" (67.9 cm)
Weight	
Crated (lbs/kg)	224-lbs (102-kg)
Uncrated (lbs/kg)	198-lbs (90-kg)
Water Temperatures	3
Water Levels	2
Overall Gallons (liters)	31.5 (119.2)
Adjustable Gallons (liters)	29 (109.0)
Inlet Hose Length	4 feet (1.22 m.)
Drain Hose Length	4 feet (1.22 m.)
Tub Capacity cubic feet (cubic meters)	2.5 cu.ft (0.07 cu.m.)
Inner Tub (spin speed)	618 r.p.m.
Agitation Speed (oscillations per minute)	150 o.p.m.

Component Testing Procedures



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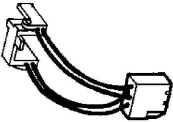
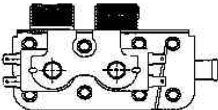
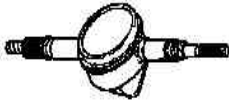
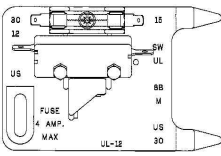
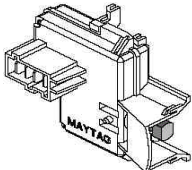
Illustration	Component	Test Procedure	Results																								
	Control Board	Voltage and Edge Board Pin Connection Points Proper grounding is necessary when handling microprocessor board to prevent damage from static electricity.	See Control Board Section																								
	Touch Pad	Depress the proper button, checking for continuity. Whites Colors Bright colors Permanent Press Wool Delicate & Knits	Continuity, if not replace. 1 to 3 1 to 2 1 to 4 5 to 3 5 to 2 5 to 4																								
	Motor Relay	Relay Coil: Grey to Orange/Black ----- Switch Terminals: Common to N.O.---- Relay Coil Energized-----	Approx 350 – 450 Ω Internal switch circuit is open. If switch is welded closed, replace switch. 24VDC. Check for signal from control board if not present.																								
<table border="1" data-bbox="102 1068 336 1310"><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>WH</td><td>L2</td><td>RD</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>RD</td><td>RD</td><td>WH</td></tr><tr><td>7</td><td>8</td><td>9</td></tr><tr><td>YL</td><td>BR</td><td>BU</td></tr><tr><td>A</td><td></td><td>B</td></tr><tr><td>PU</td><td></td><td>GY</td></tr></table> 	1	2	3	WH	L2	RD	4	5	6	RD	RD	WH	7	8	9	YL	BR	BU	A		B	PU		GY	Reversing Relay	Relay coil: Purple and Gray (A to B)---- Terminals and Wires: Agitate (1) White to (7) Yellow----- (3) Red to (9) Blue----- (7) Yellow to (4) Red----- (9) Blue to (6) White-----	Approximately 350 – 450 Ω Closed circuit Closed circuit Open circuit Open circuit
1	2	3																									
WH	L2	RD																									
4	5	6																									
RD	RD	WH																									
7	8	9																									
YL	BR	BU																									
A		B																									
PU		GY																									
	Vault and Service Switch	Disconnect wire terminals from switch. Check for continuity between terminals: Common to N.O.	Circuit is open until switch plunger is depressed. If not, replace switch.																								
	Pressure Switch	Disconnect wire terminals from switch. Measure resistance across the following terminals: Empty (Filling) 20 to 15----- Full (Run) 20 to 15 -----	Resistance above 2 Ω indicates dirty switch contacts. Closed circuit Open circuit																								
	Coin Drop	Check for coin Movement. Diameter of Coin----- Thickness of Coin----- Rear of Chute (Penny Window)-----	Restricted: Clean and adjust if necessary. Adjust guide rail if necessary. Examine Pinch adjustment. Bend two deflector scoops if necessary.																								

Component Testing Procedures



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Illustration	Component	Test Procedure	Results
	Step-Down Transformer	Check voltage. Primary Side:----- Secondary Side: White/Orange to White/Orange----- White/Orange to Blue----- Yellow to Yellow----- Pink to Pink-----	120 VAC 3.8 VAC 1.6 VAC 20.7 VAC 22.6 VAC
	Coin sensor	Check for coin registering. Coin Sensor Voltage Checks: 1) Blocked- White to Red----- 2) Unblocked- White to Red----- 3) Continuously- Blue to White /Blue---	Display flashes an “**” in “Service Mode”. 23 VDC 0.6 VDC 1.5VDC Replace sensor if voltage is 23VDC (Open Diode), or 0 VDC (Shorted Diode),
	Water Valve	Measure resistance across the terminals of each coil on the valve.	Approximately 850-950 Ω
	Motor	Type of Motor: Single speed (Split phase)	See “Motor Testing” section for correct wiring contact
	Pump	Verify drain pump is not clogged or damaged.	1) Remove clog and verify proper operation. 2) Replace drain pump if damaged
	Transmission	Type of transmission (orbital): 618 r.p.m. Spin 150 o.p.m. Agitate Check wattage with full tub of water only (Use Wattage Meter)	Refer to section on “Transmission” Disassembly Procedures in base manual. 380 to 420 watts
	Belts	Check belt for excessive wear or being burnt and cracking.	Replace if belt if damaged.
	Lid Switch prior to series 15	Fuse 4 Amp Switch	No continuity replace fuse. 1) Open circuit until switch is depressed. 2) If circuit is closed, check for welded contacts and replace switch.
	Lid Switch series 15 and later	Check for Continuity between the following terminals: Line to Machine (Lid Open) ----- Line to Motor (Lid Closed)----- Line to Machine (Lid open or Closed)-- -	Closed Circuit Closed Circuit Closed Circuit, If not replace lid switch.

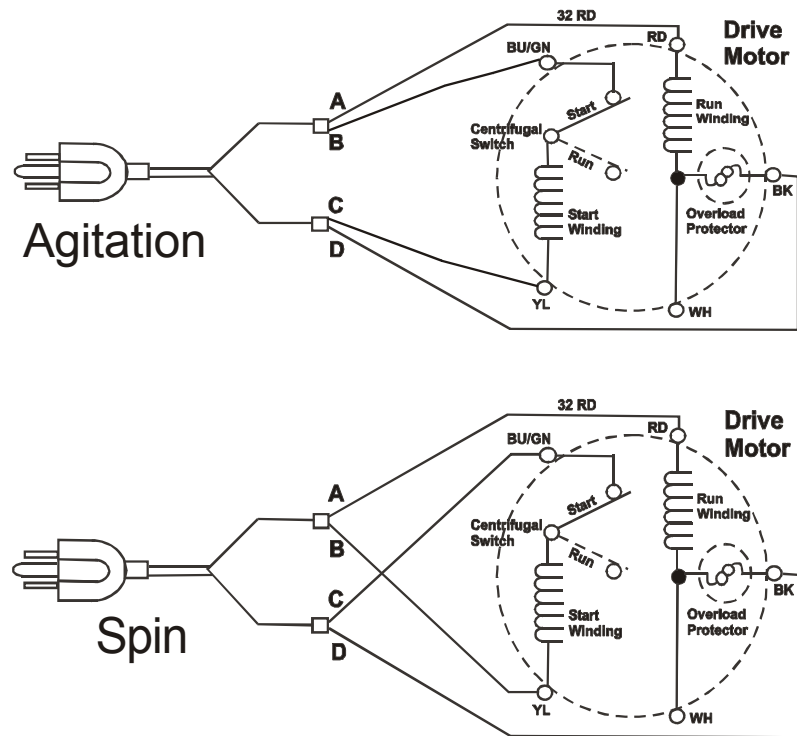
Component Testing Procedures

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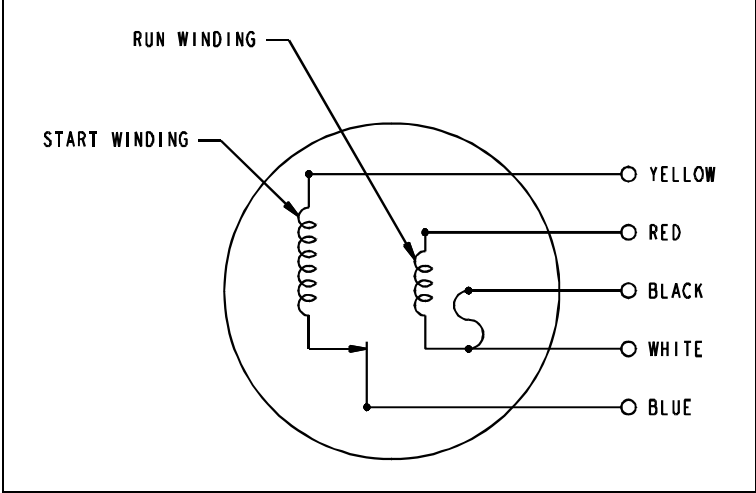
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MOTOR TESTING

All four leads of the test cord are required to test the washer drive motor. The following drawings show installation of the test cord on the drive motor. Reversing the motor to agitate or spin is accomplished by reversing wires B and C.



Windings	Wiring Harness Connections	Readings
Run Winding	Red to White or Black	1.5Ω
Start Winding	Yellow to Blue	3Ω
Over-load	White to Black	0 Ω



The diagram shows the internal wiring of the motor. The Run Winding is connected to the RED and WHITE terminals. The Start Winding is connected to the YELLOW and BLUE terminals. The BLACK terminal is connected to the Overload Protector.

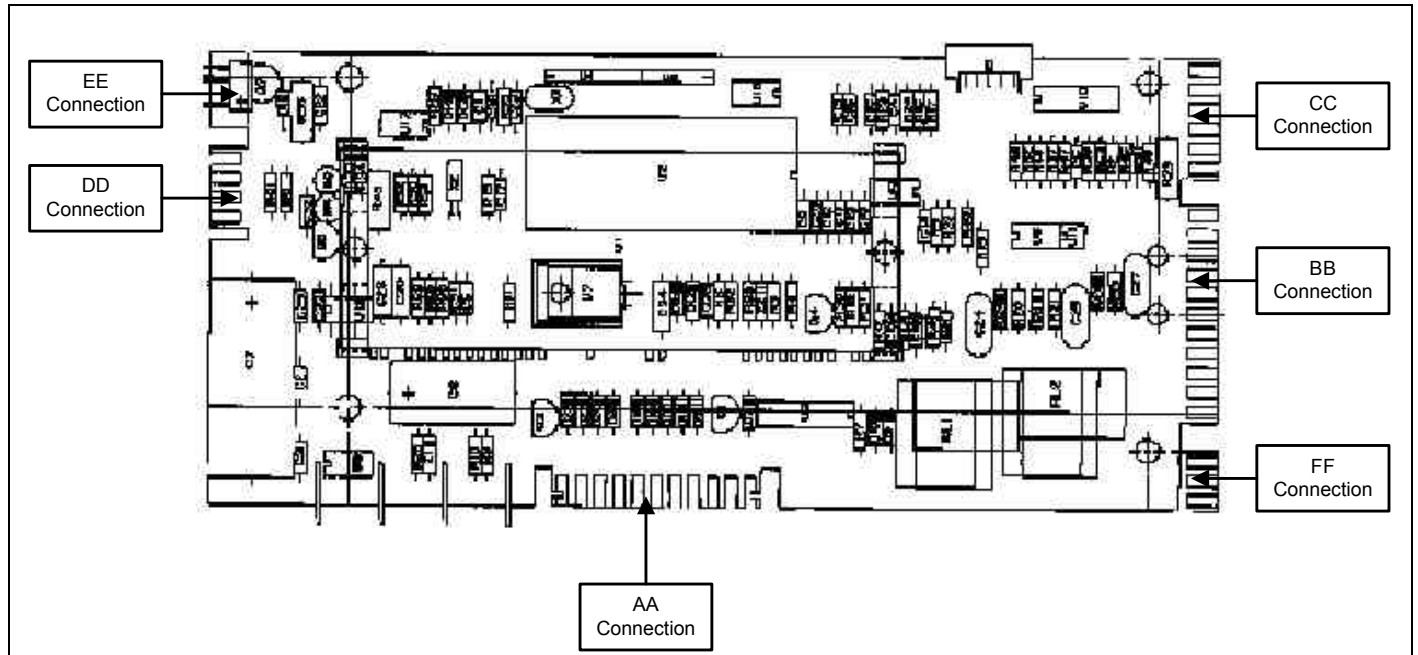
Component Testing Procedures



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Control Board



Connection Pin and Description

AA	Board Power Source & Relays	CC	Switches and Coin Sensor #1
AA1	3.8 VAC (AA1 to AA2) (7.6 VAC AA1 to AA5)	CC1	--
AA2	Center Tap	CC2	--
AA3	22.6 VAC (AA3 to AA4)	CC3	Service Door Switch Sense
AA4	22.6 VAC (AA4 to AA3)	CC4	Coin 1
AA5	3.8 VAC (AA5 to AA2) 7.6 VAC (AA1 to AA5)	CC5	Coin1 Photodiode
AA6	20.7 VAC (AA6 to AA7)	CC6	Vault Switch Sense
AA7	20.7 VAC (AA& to AA6)		
AA8	Motor relay 24VDC (AA8 to AA9)	DD	Coin Sensor #2
AA9	25VDC	DD1	Coin 2 Photodiode
AA10	Reversing Relay 24 VDC	DD2	--
		DD3	Coin 2
		DD4	--
BB	Component Sensors & Line Voltage		
BB1	25VDC (BB1 to EE4)		
BB2	Cold Water Valve	EE	Battery
BB3	Hot Water Valve	EE1	+ 4.5VDC (EE1 to EE4)
BB4	--	EE2	--
BB5	120 Line / Pressure Switch	EE3	--
BB6	Washer Motor Sense	EE4	- Ground 4.5VDC (EE4 to EE1)
BB7	Lid Switch		
BB8	120 Neutral	FF	Coin and Vault Switch Sensor
BB9	--	FF1	--
BB10	--	FF2	25VDC
BB11	--	FF3	--

Note: Component side of the microprocessor board, the connector pins are read left to right (except the battery connector EE).

Component Testing Procedures



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PROGRAMMING PROCEDURES

CODE	DISPLAY	EXPLANATION
607	6 07	REGULAR CYCLE PRICE Represents the number of coins. See value of Coin 1 and Coin 2. Adjustable from 0-39 coins by pressing the <u>Permanent Press</u> keypad. NOTE: PS MODELS ONLY- Represent the number of push-in actuations of the coin slide. Press <u>Woolens</u> keypad once to advance to next code.
710	7 10	WASH & AGITATION CYCLE This is the number of minutes for <u>Wash</u> . Adjustable from 8-15 minutes by pressing the <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.
811	8	RINSE CYCLES Represents the length and number of rinses (except "woolens" and "delicates"). The middle digit is length of rinse agitation (1 to 4 minutes) and the last digit is number of rinses (1or 2). Advance rinse option by pressing <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.
900	9 00 OC	CYCLE COUNTER OPTION "OFF." ON." Press <u>Delicates & Knits</u> keypad three consecutive times to select "OC". Press <u>Woolens</u> keypad once to advance to next code.
1.00	1. 00 OC C0	MONEY COUNTER OPTION "OFF" "ON". Press <u>Delicates & Knits</u> keypad three consecutive times to select "OC". Counter resets by going from "OFF" to "ON". To select "On" and not turn off. First select "ON", then within two seconds press <u>Delicates & Knits</u> twice, <u>Permanent Press</u> Once, and exit the setup mode.
2.00	2. 00 SP	SPECIAL PRICING OPTION. "OFF." "ON." Press <u>Delicates & Knits</u> keypad once to select "SP." Steps "3." thru "9." codes are skipped if mode "2.00" is selected. Press <u>Woolens</u> keypad once to advance to next code.
3.07	3. 07	SPECIAL CYCLE PRICE Represents the number of coins. Adjustable from 0 - 99 by pressing the <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.
5.00	5. 00	MINUTES This is the selection "MINUTES" of the time of day clock. Adjustable from 0 to 59 by pressing the <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.
6.00	6. 00	HOURL This is the selection "HOURL" of the time of day clock using military time (24 hour clock). Adjustable from 0 to 23 by pressing the <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.
7.00	7. 00	SPECIAL PRICING STARTING HOUR This is the selection of the hour using military time (24 hour clock) that the Special Pricing will "begin ". Adjustable from 0 to 23 by pressing the <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.

Component Testing Procedures



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CODE	DISPLAY	EXPLANATION
8.00	8. 00	SPECIAL PRICING STOPPING HOUR This is the selection of the hour using military time (24 hour clock) that the <i>Special Pricing</i> will "stop." Adjustable from 0 to 23 by pressing the <u>Permanent Press</u> keypad. Press <u>Woolens</u> keypad once to advance to next code.
9.10	9. 10	SPECIAL PRICE DAYS Represents the day of the week and if special pricing is to occur on that day of the week. The last digit is "0" for <i>OFF</i> or "S" for <i>ON</i> . Press the <u>Delicates & Knits</u> keypad once to select "0" and once for "S." Press <u>Permanent Press</u> keypad to advance to next day of the week. Press <u>Woolens</u> keypad once to advance to next code.
A.00	A. 00 SC	VAULT VIEWING "OFF." "ON." Press <u>Delicates & Knits</u> keypad once to select "SC." The money and/or cycle counter will be viewable when the vault is opened. If "00" is selected, the service door will need to be opened to activate, to view the money and/or cycle counter. Press <u>Woolens</u> keypad once to advance to next code.
b.05	b. 05	VALUE OF COIN 1 (QUARTER DROP) Represents the number of nickels given to the <i>value of each coin</i> in code 607 "regular cycle price" or "special cycle price." For example: b.05 equals five nickels or one quarter. Press <u>Permanent Press</u> keypad to advance from 1 to 99 in nickels. Press <u>Woolens</u> keypad once to advance to next code.
C.20	C. 20	VALUE OF COIN 2 (DOLLAR DROP) Represents the number of nickels given to the <i>value of each</i> Dollar dropped in the dollar coin slot. For example: C.20 equals twenty nickels or one dollar. Press <u>Permanent Press</u> keypad to advance from 1 to 99 in nickels. Press <u>Woolens</u> keypad once to advance to next code.
d.00	d. 00 CS	COIN SLIDE OPTION "OFF." "ON." Press <u>Delicates & Knits</u> keypad once to select "00" when coin drop is used, and "CS" for models <i>not</i> using coin drops. Press <u>Woolens</u> keypad once to advance to the beginning of the program mode.

WASHER DIAGNOSTIC MODE

The mode is entered by depressing Delicates & Knits keypad for one second while in any of the set-up modes one through six or with a diagnostic code present. Diagnostic codes are cleared on entry and all display segments should flash. If a diagnostic code persists, it must be corrected before the diagnostic cycle will start. With all segments flashing, depressing the Woolens keypad starts the diagnostic cycle.

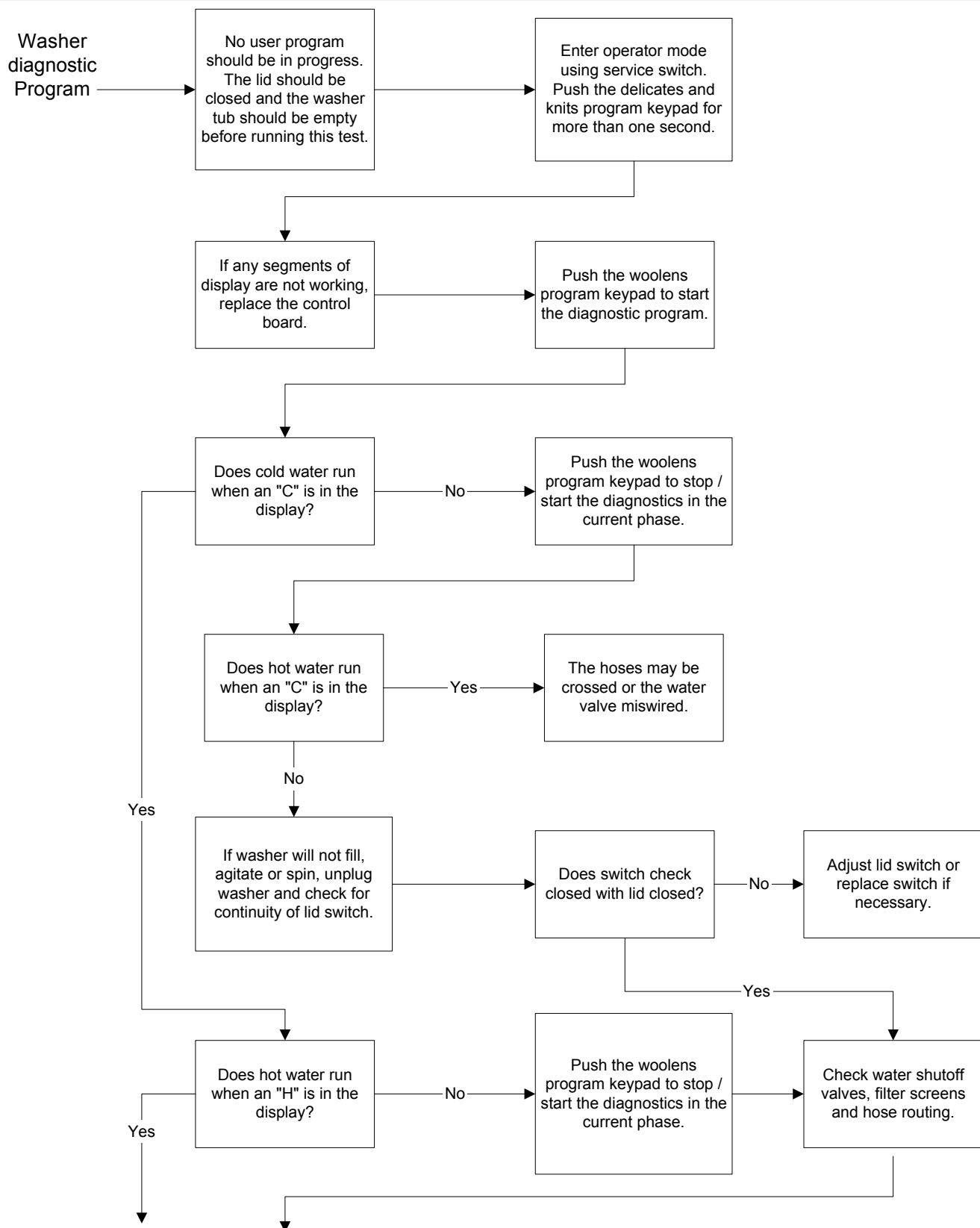
Display	Function	Time Length
C	Cold Fill	3 seconds
H	Hot Fill	3 seconds
A	Agitation	3 seconds
S	Spin	10 seconds
Note: 1) <u>Woolens</u> keypad can be used to pause/resume the diagnostic cycle. 2) <u>Delicate & Knits</u> keypad will cancel the cycle and exit the diagnostic mode. 3) <u>Permanent Press</u> keypad, "CC"(Free cycle) will be displayed. When you exit the service mode "Select Cycle" will be displayed		

Component Testing Procedures



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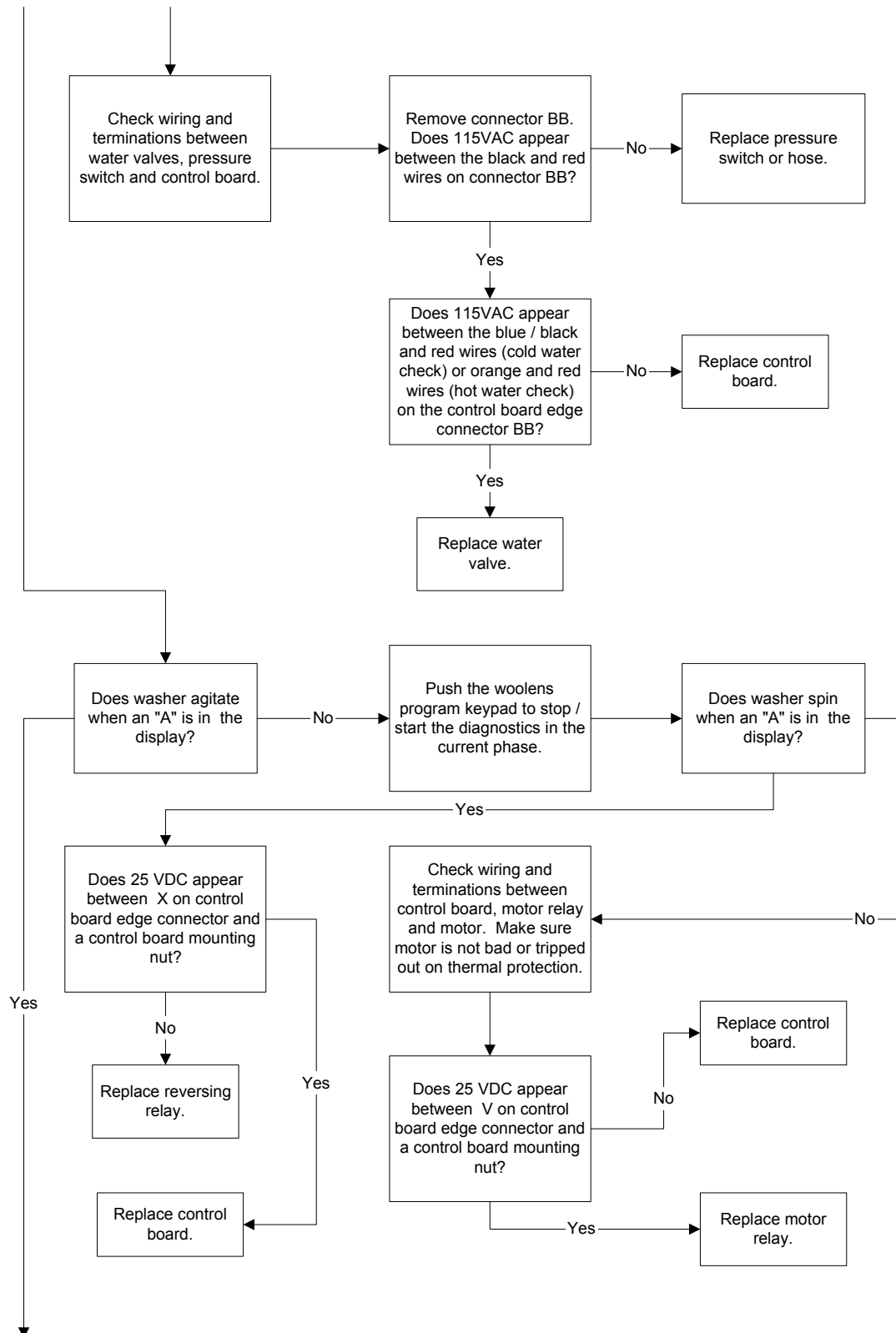


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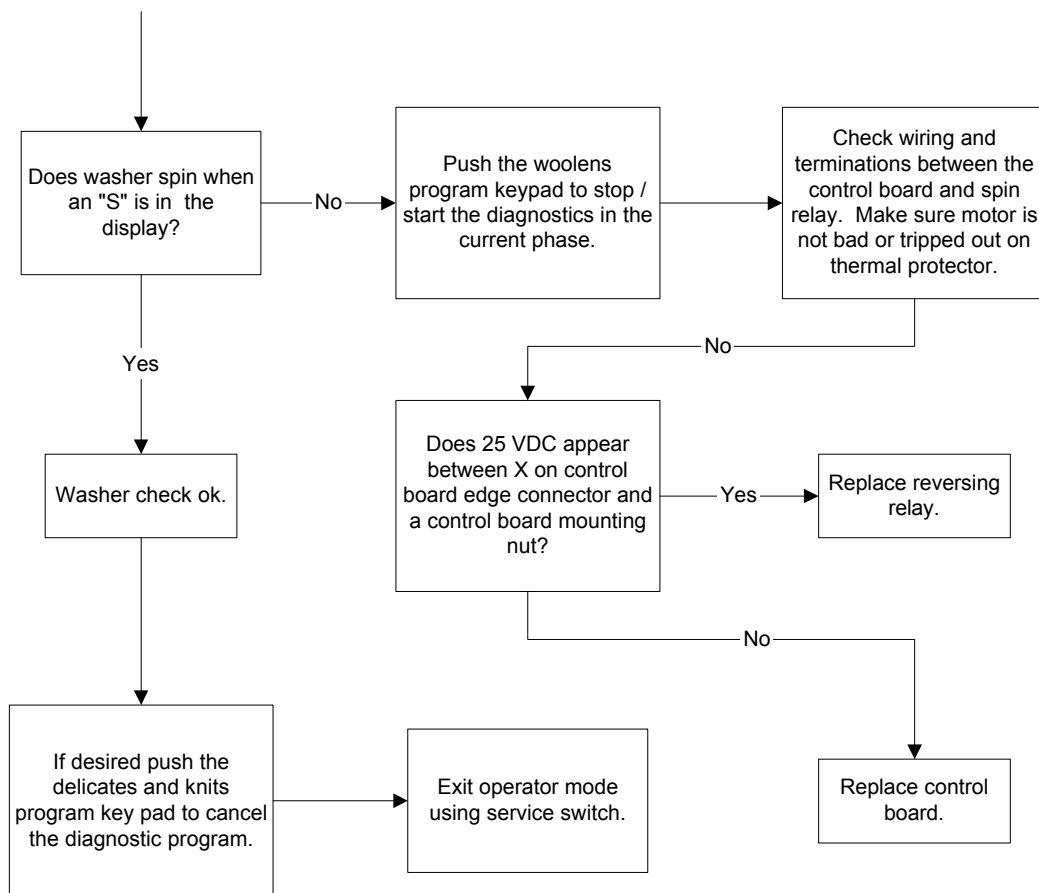


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WASHER HELP CODES

Code	Problem	Description
20	Filling too quickly during cycle	Pressure switch opens sooner then expected
21	Losing water during cycle (siphoning)	Added more water during agitations cycle
22	Losing water during cycle (siphoning)	Added more water during soaking cycle

WASHER FAULT CODES

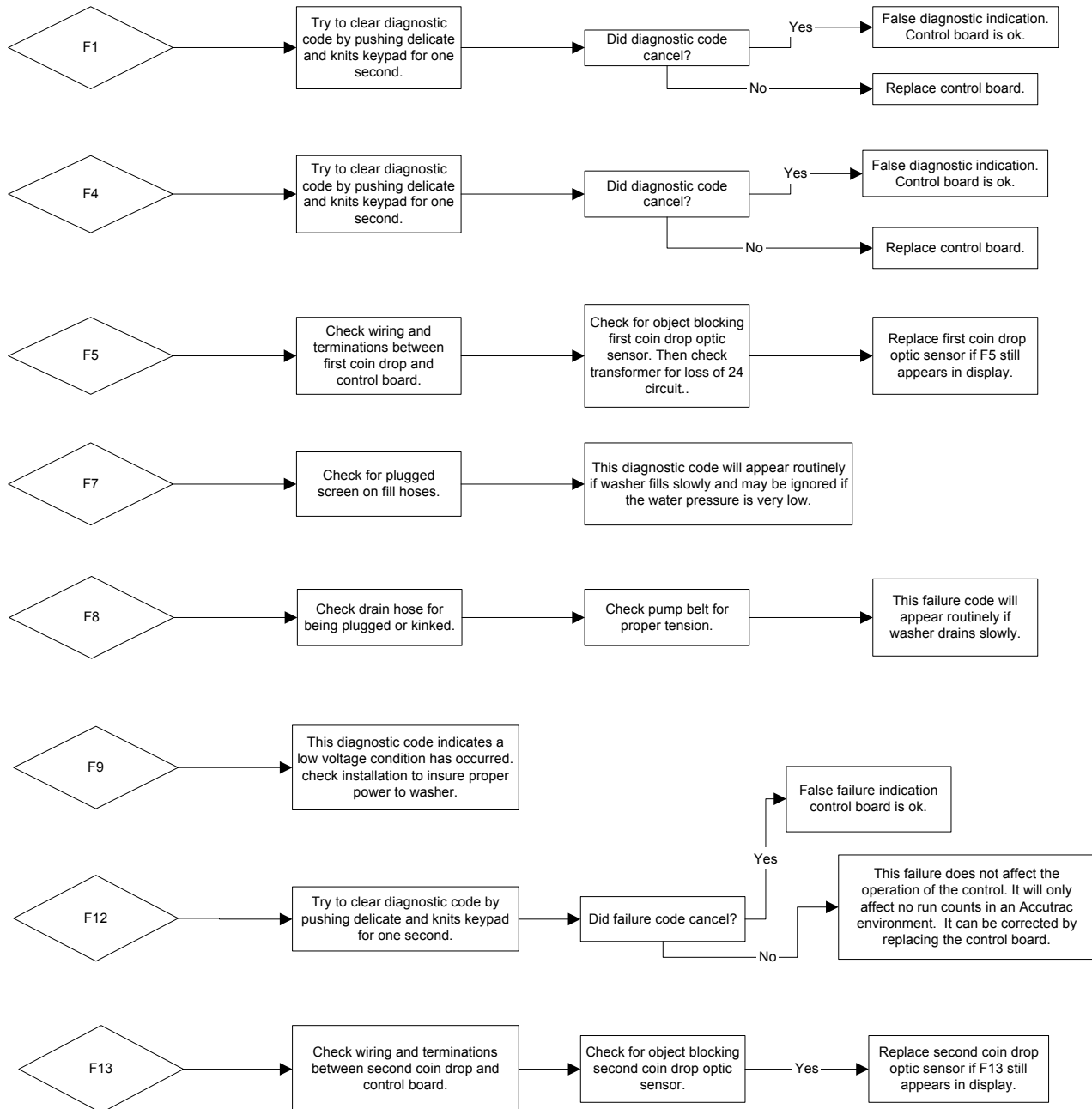
Fault Codes	Description
F1	Water level circuit failure on control board (machine non functional)
F4	Lid switch circuit failure on control board (machine non functional)
F5	Blocked coin 1 or coin drop control circuit failure (machine non functional)
F7	Slow fill detected; fill time greater than 5 minutes (machine functional)
F8	Slow drain detected; drain time greater than 2 minutes (machine functional))
F9	Low voltage detected; less than 90 volts AC (machine functional)
F12	Motor sensor circuit failure on control board (machine functional)
F13	Blocked coin 2 or coin drop control circuit failure (machine non-functional)

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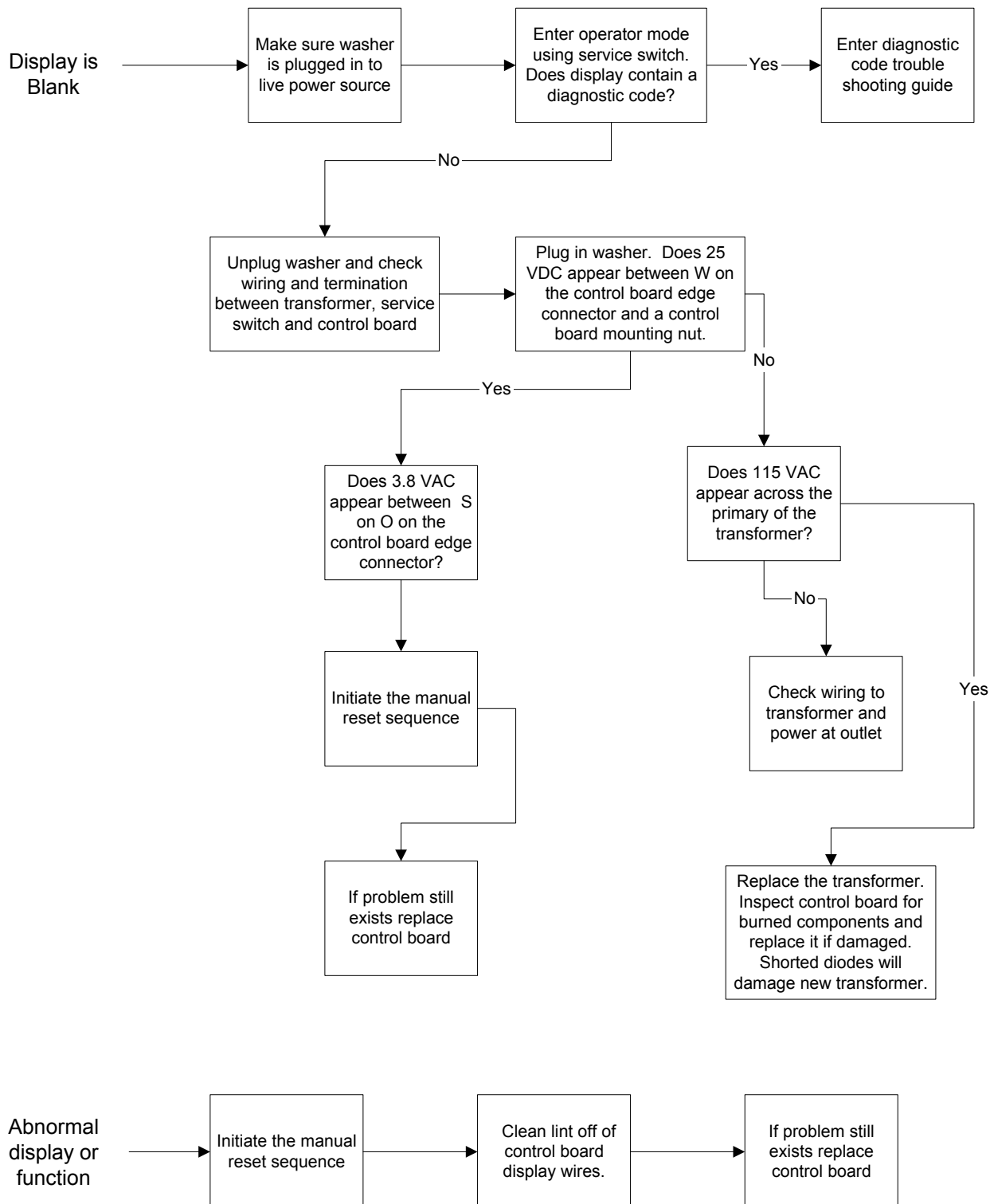
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TROUBLESHOOTING CONTROL BOARD FLOW CHART

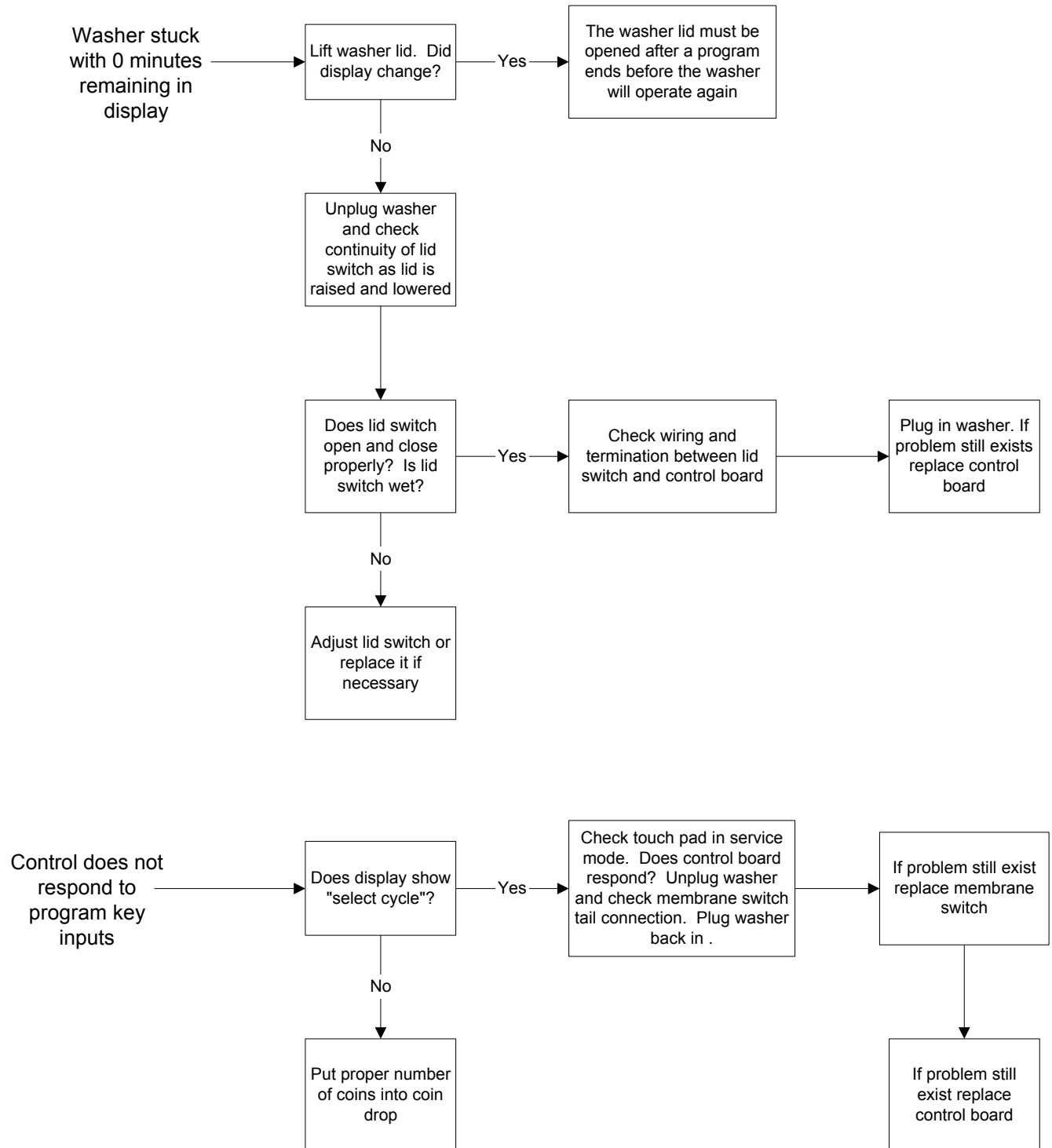


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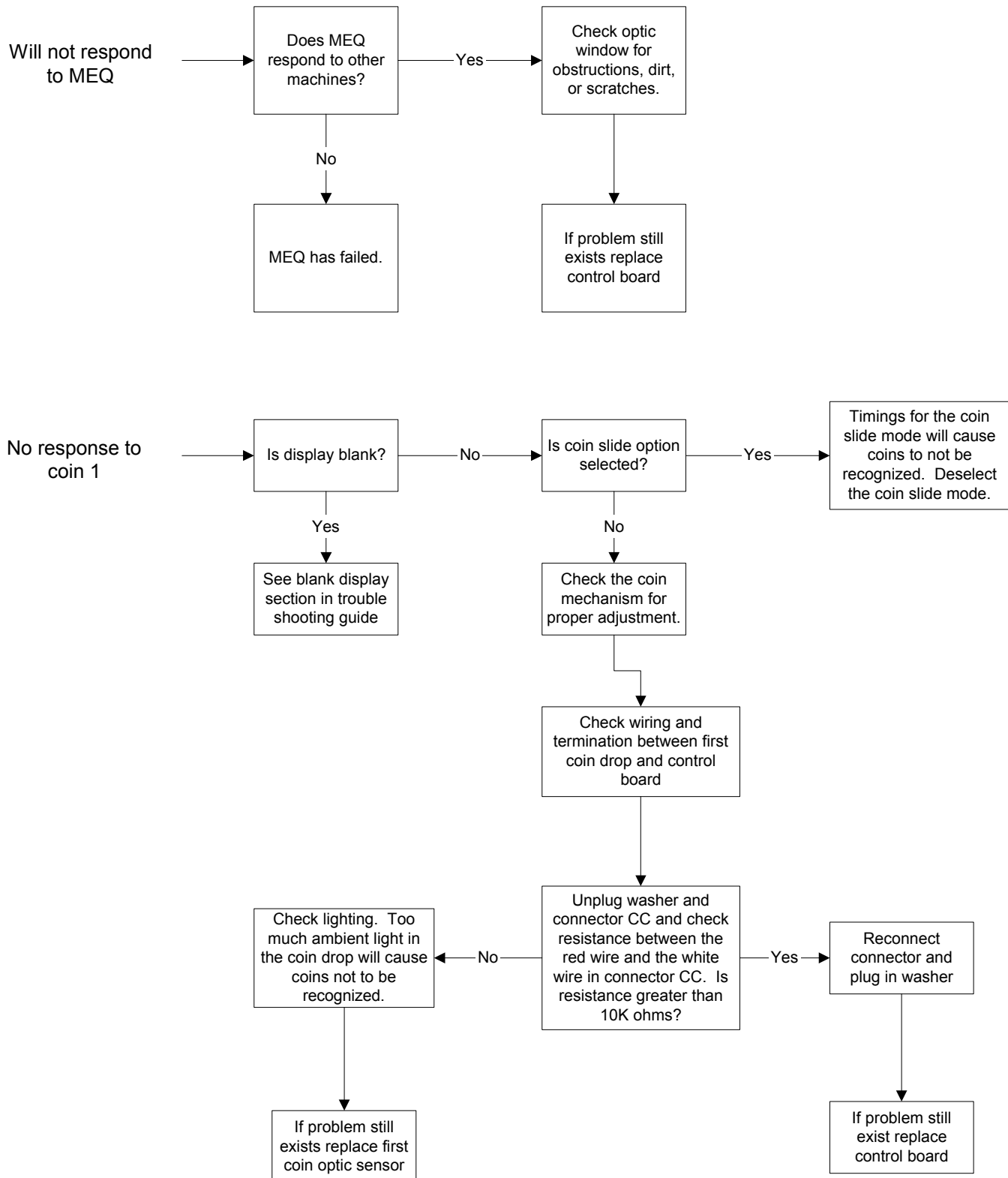


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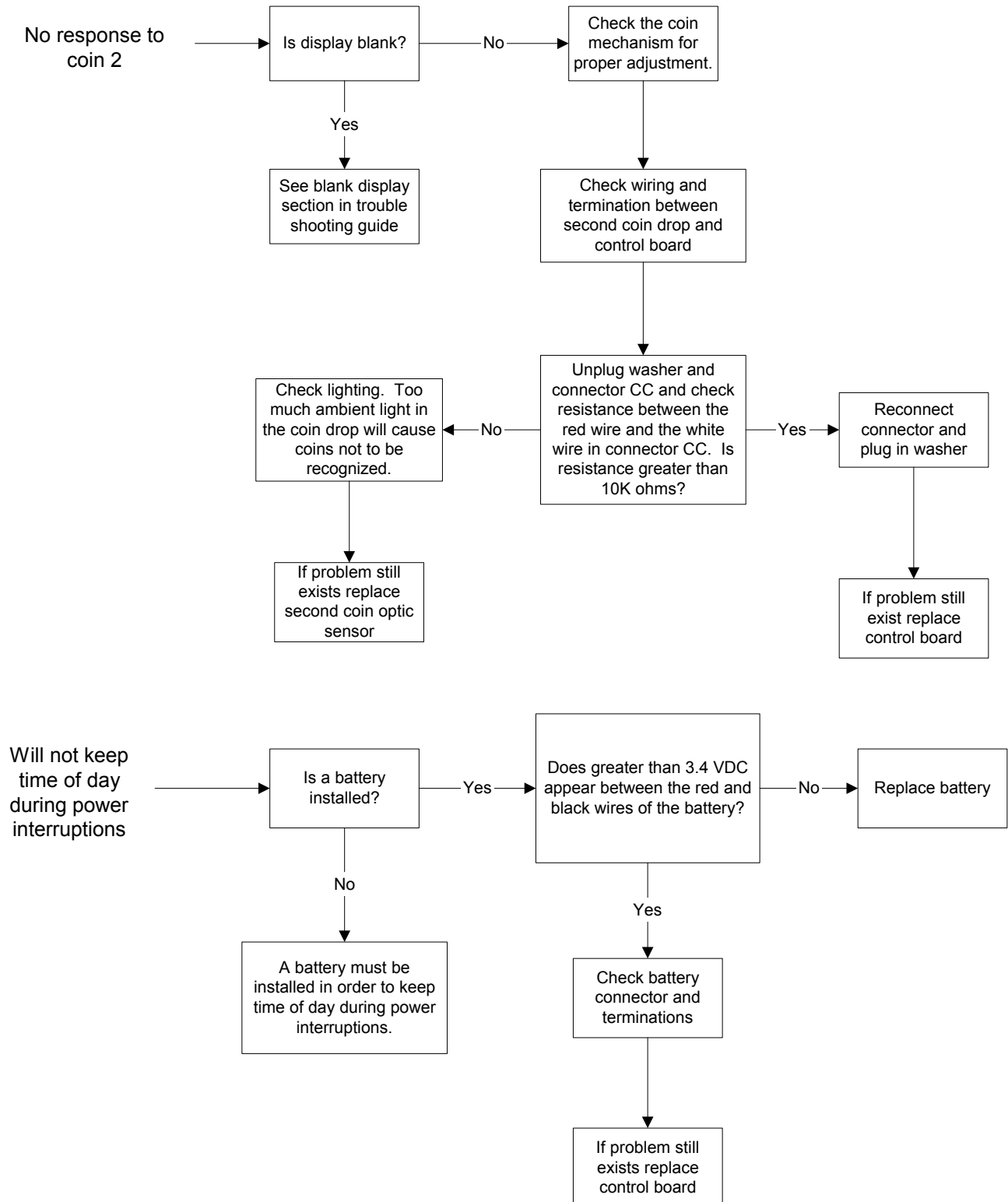


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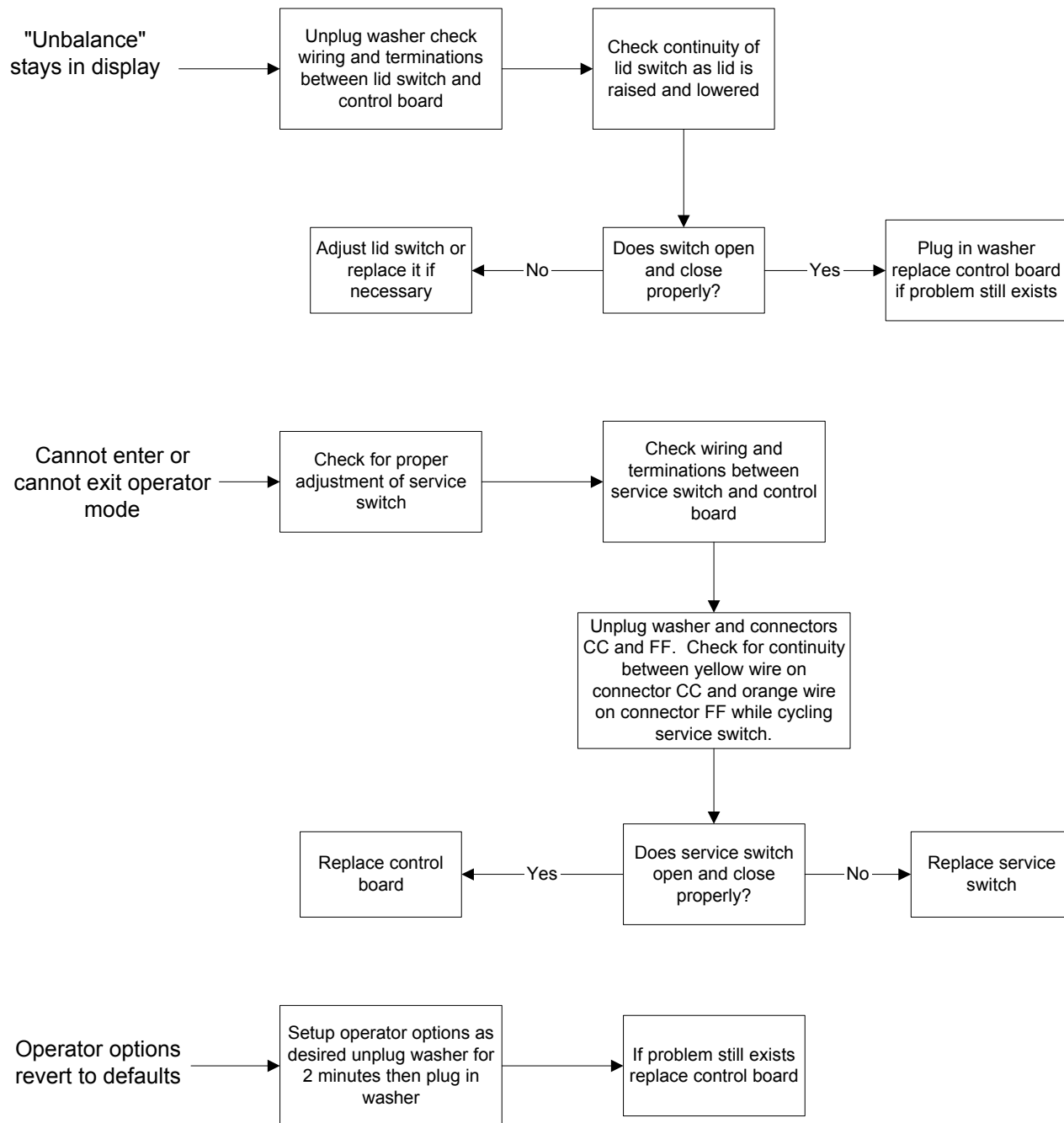


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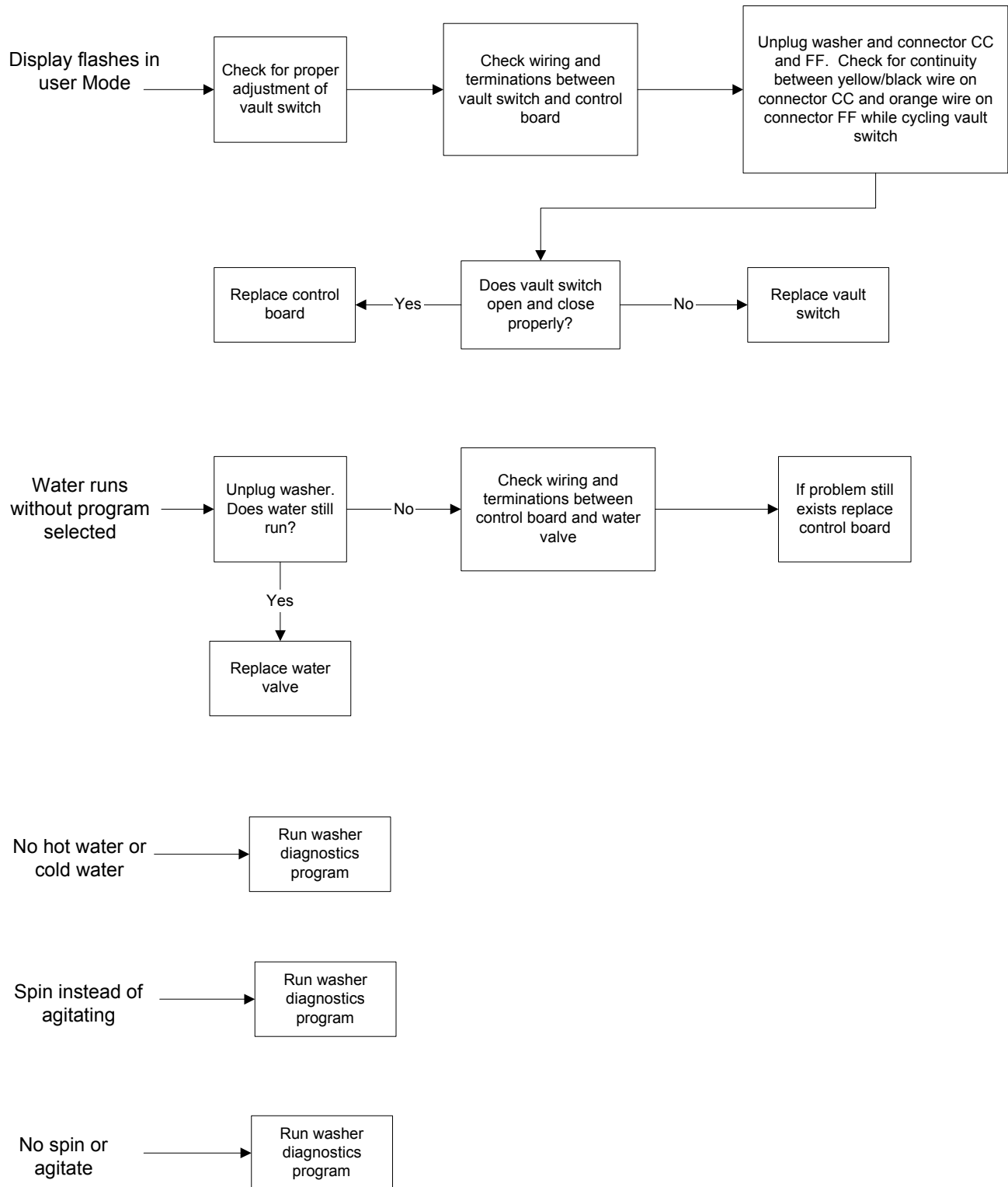


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Wiring Diagram



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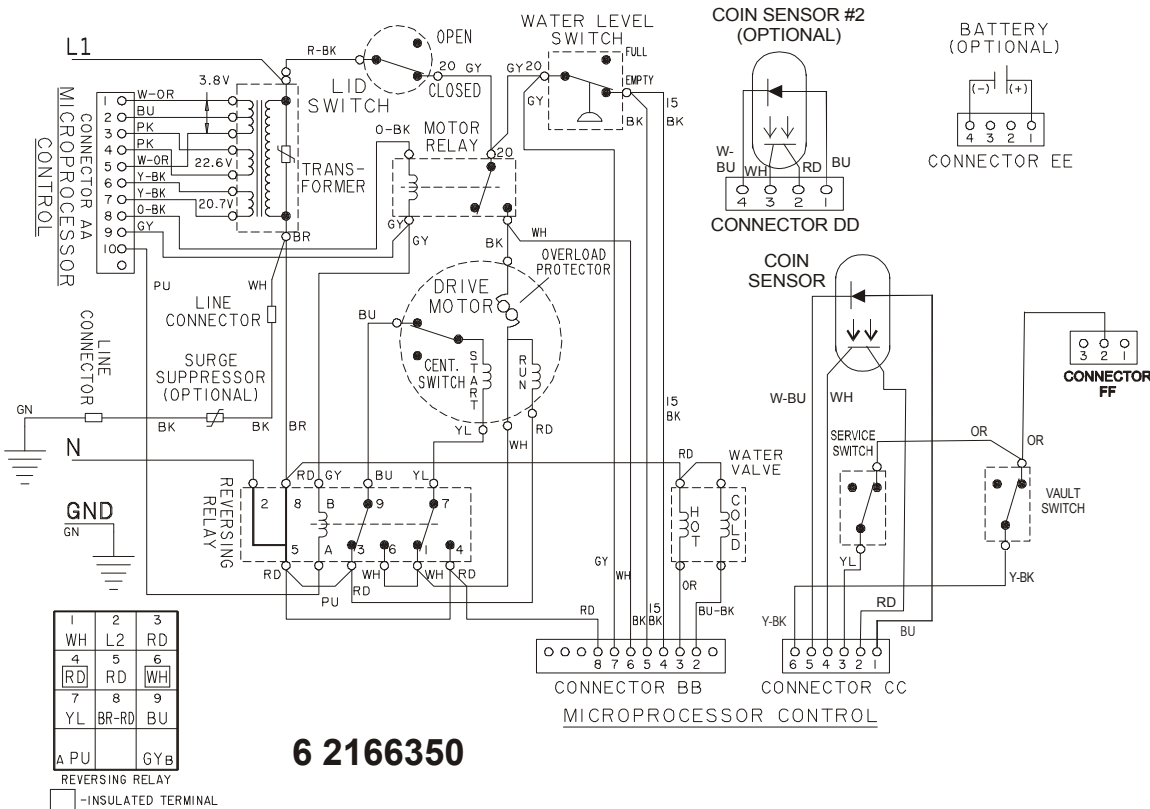
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MAT12PDA**, MAT12PSA** SCHEMATIC

NON-SOAK CYCLES	PERMANENT PRESS					8-15 MIN WASH	8-15 MIN WASH	PAUSE	SPIN 1 MIN	SPIN 0.5 MIN	FILL	PAUSE	SPIN 1-4 MIN	SPIN 2 MIN	FILL	SPIN 1-4 MIN	SPIN 3 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 SEC	SPIN 27 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1. OPTIONAL SECOND RINSE IS NOT AVAILABLE ON "WOOLENS" OR "DELICATES & KNITS" CYCLES.

2. THE TIME REMAINING SHOWN IN THE DISPLAY IS READJUSTED BY THE CONTROL AFTER EACH FILL.



Wiring Diagram



WARNING

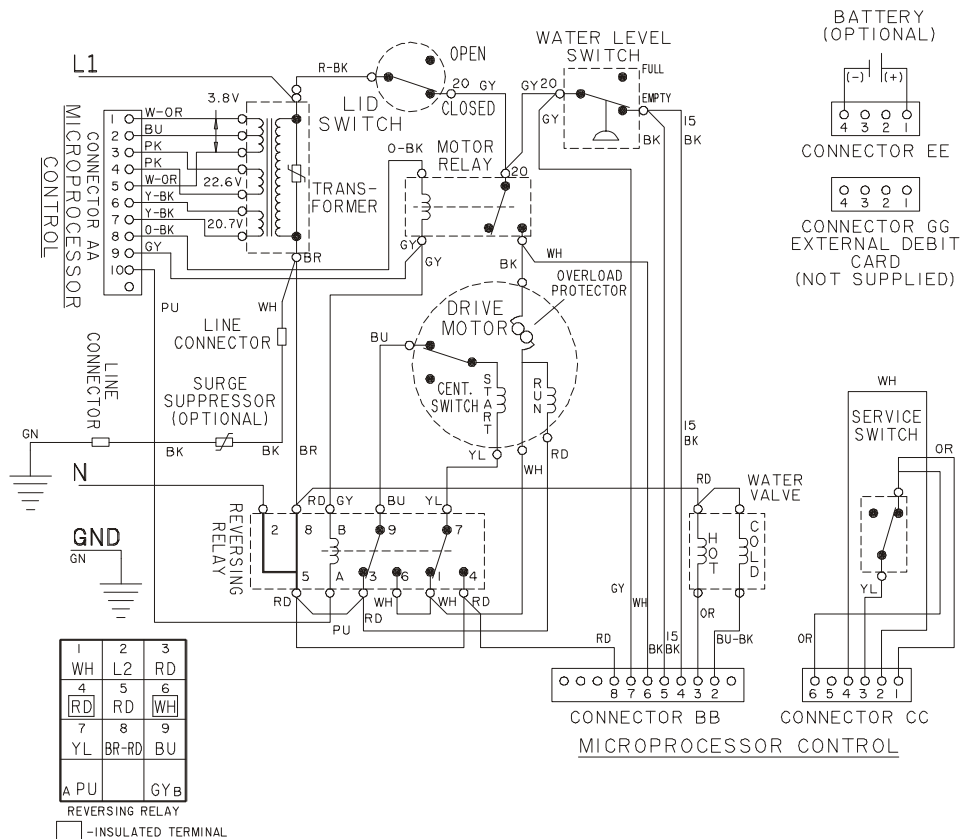
To avoid risk of electrical shock, personal injury or death; disconnect power to washer before servicing, unless testing requires power.

MAT12PRA** SCHEMATIC

[illegible]

I. OPTIONAL SECOND RINSE IS NOT AVAILABLE ON "WOOLENS" OR "DELICATES & KNITS" CYCLES.

2. THE TIME REMAINING SHOWN IN THE DISPLAY IS READJUSTED BY THE CONTROL AFTER EACH FILL.



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