

WASHING MACHINE SERVICE MANUAL

A CAUTION

READ THIS MANUAL CAREFULLY TO DIAGNOSE PROBLEMS CORRECTLY BEFORE SERVICING THE UNIT.

MODEL: WM3987H*



P/No.: MFL30138960

NOV. 2009 PRINTED IN KOREA

CONTENTS

1. SPECIFIC	CATIONS	3
2. FEATURI	ES & TECHNICAL EXPLANATION	4
3. PARTS II	DENTIFICATION	7
4. INSTALL	ATION & TEST	8
5. WIRING	DIAGRAM1	1
6. OPERAT	ION1	2
7. TROUBL	ESHOOTING1	4
7-1. BEF	FORE PERFORMING SERVICE1	4
7-2. QC	TEST MODE1	4
7-3. HO	W TO CHECK THE WATER LEVEL FREQUENCY1	4
7-4. ERF	ROR DISPLAY1	5
8. ERROR I	DIAGNOSIS AND CHECK LIST1	7
8-1. DIA	GNOSIS AND SOLUTION FOR ABNORMAL OPERATION1	7
8-2. FAU	JLT DIAGNOSIS AND TROUBLESHOOTING2	0
9. DISASSE	MBLY INSTRUCTIONS3	1
10. EXPLOI	DED VIEW4	0
10-1. CA	ABINET & CONTROL PANEL ASSEMBLY4	0
10-2. DF	RUM & TUB ASSEMBLY4	1
10-3. DI	SPENSER ASSEMBLY4	2
10-4 DE	RYFR 4	૧

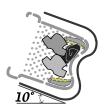
1. SPECIFICATIONS

ITEM		WM3987H*
COLOR		BLUE WHITE
POWER SUPPLY		AC 120 V, 60 Hz
PRODUCT V	VEIGHT	201 lbs (91kg)
EL ECTRIC	WASHING	280 W
ELECTRIC POWER	DRAIN MOTOR	80 W
CONSUMTION	WASH HEATER	1000 W
REVOLUTION	WASH	46 rpm
SPEED	SPIN	0 - 1200 rpm
CYCLE	S	9
WASH/RINSE TEM	PERATURES	5
SPIN SPE	EDS	5
OPTION	JC .	Prewash, Extra Rinse, Stain Cycle, Water Plus, Drum Light Tub Clean,
OF HOIS	NO	SPINSENSE™, Delay Wash
WATER CIRCU	JLATION	Incorporated
OPERATIONAL WAT	ER PRESSURE	14.5-116 psi (100-800 kPa)
CONTROL TYPE		Electronic
WASH CAPAC	ITY [cu.ft]	3.63 (4.2 IEC)
DIMENSIO	ONS	27" (W) X 29 ³ / ₄ " (D) X 38 ¹¹ / ₁₆ " (H), 50 ¹³ / ₁₆ " (D, door open)
DELAY W	ASH	up to 19 hours
DOOR SWITC	H TYPE	PTC + Solenoid
WATER LE	EVEL	10 steps (by sensor)
LAUNDRY LOAD	SENSING	Incorporated
ERROR DIAG	SNOSIS	Incorporated
AUTO POWER OFF		Incorporated
CHILD LC	OCK	Incorporated
RLM ENABLE		-

2. FEATURES & TECHNICAL EXPLANATION

2-1. FEATURES















■ Direct Drive System

The advanced Brushless DC motor directly drives the drum without belt and pulley.

■ Tilted Drum and Extra Large Door Opening

The tilted drum and extra large door opening make it possible to load and unload easily.

■ Water Circulation

Spray detergent solution and water onto the load repeatedly. Clothes are soaked more quickly and thoroughly during the wash cycle. Detergent suds are eliminated more easily by the water shower during rinse cycle. The water circulation system uses both water and detergent more efficiently.

RollerJets

The washing ball enhances wash performance and reduces damage to clothing. The jets spray and help tumble clothes to enhance washing performance while maintaining fabric care.

Automatic Wash Load Detection

Automatically detects the load and optimizes the washing time.

■ Built-in Heater

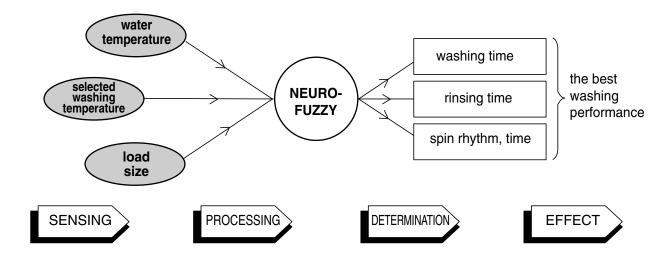
The internal heater automatically heats the water to the optimum temperature on selected cycles.

Child Lock

The Child lock feature prevents children from pressing any buttons to change the settings during operation.

2-2. NEURO FUZZY WASHING TIME OPTIMIZATION

To get the best washing performance, optimal time is determined by the water temperature, the selected washing temperature, and the size of the load.



2-3. WATER LEVEL CONTROL

- This model incorporates a pressure sensor which can sense the water level in the tub.
- The water supply is stopped when the water level reaches the preset level, the washing program then proceeds.
- Spinning does not proceed until the water in the tub drains to a certain level.

2-4. DOOR CONTROL

- The door can be opened by pulling the door handle whenever washer is not in operation.
- When the cycle is completed, the DOOR LOCKED light will turn off.
- If a power failure has occurred while in operation, the door will unlock after 5 minutes.
- Clicking sounds can be heard when the door is locked/unlocked.

2-5. THE DOOR CAN NOT BE OPENED

- While program is operating
- When a power failed and power plug is taken out in operation
- While Door Lock lights turn on.
- White the motor is in the process of intertial rotating, through the operation is paused.

2-6. DOOR LOCKED LAMP LIGHTS

- When the frequency of water level is lower than 22.9 kHz
 (It can be canceled when the frequency is more than 23.8 kHz)
- When the temperature inside the tub is higher than 45 °C and water level is not 25.5 kHz
 (It can be canceled when the water level is 25.5 kHz or the temperature inside the tub is lower than 40 °C)

2-7. CHILD LOCK

- Use this option to prevent unwanted use of the washer. Press and hold PRE WASH button for 3 seconds to lock/unlock control.
- When Child lock is set, CHILD LOCK lights and all buttons are disabled except the Power button. You can lock the washer while it is operating.

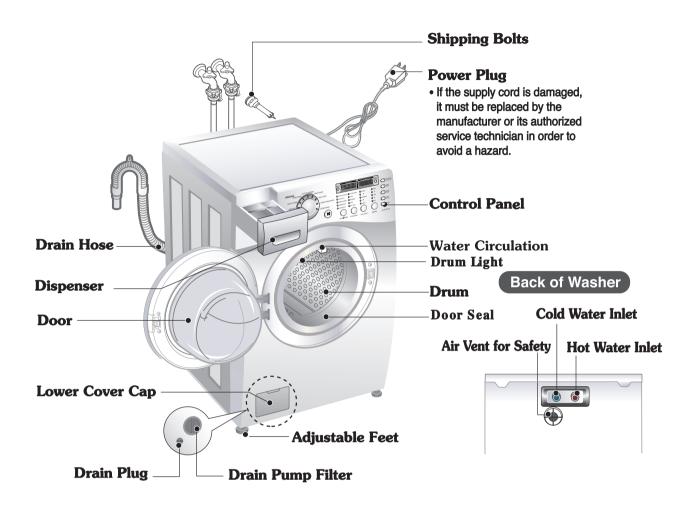
2-8. WATER CIRCULATION

- When Washing and Rinsing function of shower at the upper part of Gasket.
- When Washing, it continuously operates for 3 minutes and intermittently.
- When Rinsing, it continuously operates after completion of water supply.

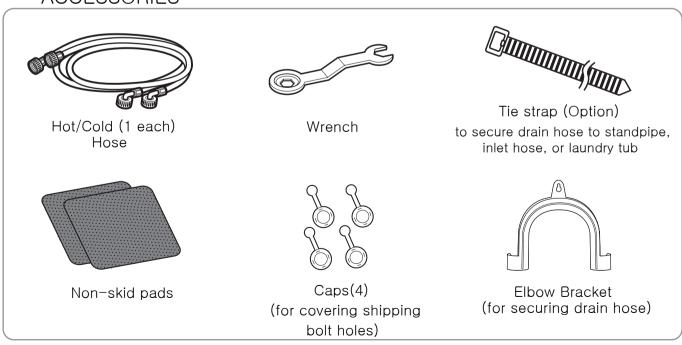
2-9. DRUM LIGHT

- The Drum Light comes on when the Power button is pressed. It goes off when the door is closed and the washer starts operation.
- The Drum Light remains off when the door is locked.
- The Drum Light can be turned on while the washer is in operation by pressing the Rinse+Spin button for 3 seconds. The light will turn off automatically 4 minutes later.
- The Drum Light comes on when the washing cycle is finished and goes off 4 minutes later.

3. PARTS IDENTIFICATION



ACCESSORIES



4. INSTALLATION & TEST

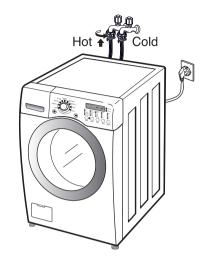
- 1 Before servicing, ask the customer what the trouble is.
- 2 Check the setup (power supply is 120V AC, remove the transit bolts....).
- 3 Check with the troubleshooting guide.
- 4 Plan your service method by referring to the disassembly instructions.
- 5 Service the unit.
- 6 After servicing, operate the appliance to see whether it functions correctly.
- **STANDARD INSTALLATION**

The appliance should be installed as follows:

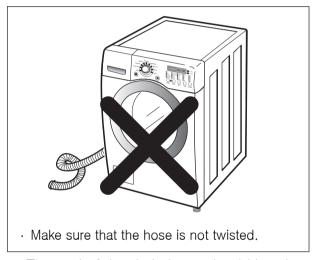
REMOVE THE SHIPPING BOLTS	INSTALL THE APPLIANCE ON A FLAT AND FIRM SURFACE	ADJUST THE LEVELING
Remove the 4 shipping bolts with the supplied wrench. Do first lower side to remove easily.		Turn the leveling feet to adjust the appliance.
 Keep the shipping bolts and spanner for future use. Insert the 4 caps (provided) into the hole. 		
Keeping		Lower
		Turn clockwise to raise; counterclockwise to lower.

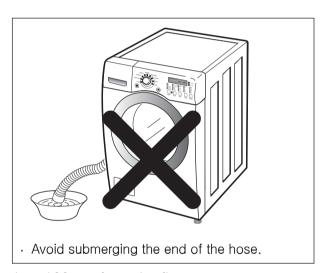
■ HOW TO CONNECT THE INLET HOSE

- Verify that the rubber washer is inside of the valve connector.
- Tighten the inlet hose securely to prevent leaks.



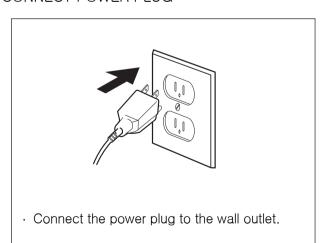
■ CONNECT THE DRAIN HOSE

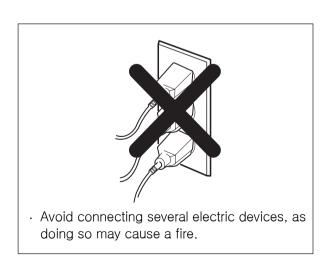




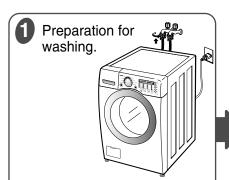
* The end of the drain hose should be placed less than 100 cm from the floor.

■ CONNECT POWER PLUG

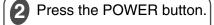


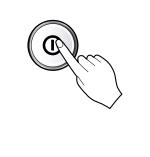


7 TEST OPERATION

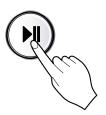


- Connect the power plug to the outlet.
- Connect the inlet hose.





Press the Start/Pause button.



• Listen for a click to determine if the door has locked.

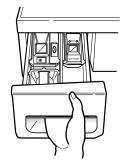
6 Check the water heating function.



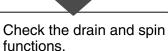
 Press the WASH/RINSE button and the present temperature will be displayed. Check the automatic reverse rotation.



 Check if the drum rotates clockwise and counterclockwise. 4 Check the water supply.



 Check if water is supplied through the detergent dispenser.



- Power off and the power on.
- Press the SPIN SPEED button.
- Press the START/PAUSE button.
- Check the spin and drain functions.

Press the START/PAUSE button.

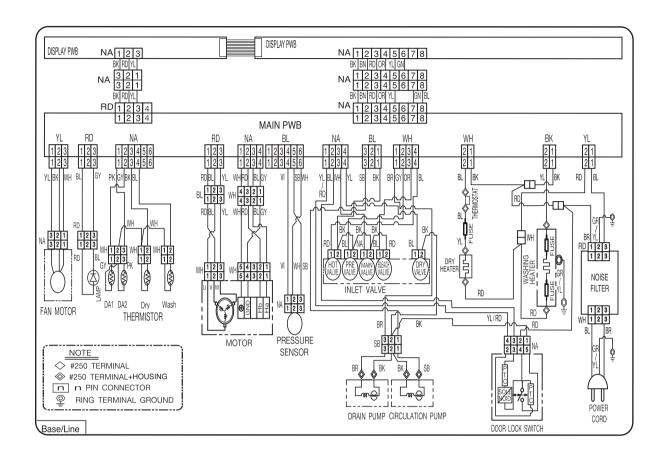


 Listen for a click to determine if the door is unlocking. Water removal.



 If SERVICE is needed during check, remove the remaining water by pulling out the hose cap.

5. WIRING DIAGRAM



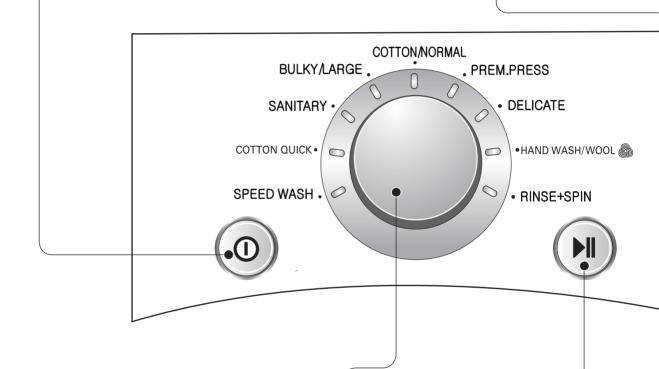
6. OPERATION

Power Button

• Use this button to turn the power On/Off.

Status Indicator

• It shows elapsed time of the cycle the washer is operating.



Cycle Selector Knob

 Rotate the Cycle selector knob to select the cycle designed for different types of fabric and soil levels.

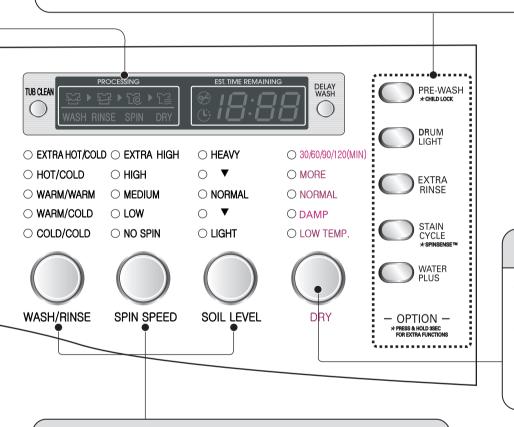
Start/Pause

 Use this button to Start/ Stop the washer.

Option Button

- PREWASH: Use this option for loads that need pretreatment. It adds 16 minutes prewash and a spin cycle.
- EXTRA RINSE: This option provides an additional rinse.
- STAIN CYCLE: Adds time to the wash and rinse cycles for better stain removal.

 Automatically provides a rinse.
- WATER PLUS: Add extra water to the wash and rinse cycles for superior results.



DRY SELECTOR

- Dry program can be selected by pressing the DRY button.
- By pressing the DRY button, [NORMAL → MORE →
 30/60/90/120 → LOW TEMP.
 → DAMP] can be selected.

WASH/RINSE, SPIN SPEED, SOIL LEVEL button

- Select a water temperature based on the type of load you are washing.
- To change the spin speed, press the Spin Speed button repeatedly to cycle through available options.
- To change the soil level, press the Soil Level button repeatedly until the desired setting is on.

7. TROUBLESHOOTING

7-1. BEFORE PERFORMING SERVICE

- Be careful of electric shock when disconnecting parts while troubleshooting.
- The voltage of each terminal is 120 V AC and DC when the unit is plugged in.

7-2. QC TEST MODE.

The washer must be empty and the controls must be in the off state.

- 1. Press the SPIN SPEED and SOIL LEVEL buttons simultaneously.
- 2. Press the Power (10) button, while the above condition. Then buzzer will sound twice.
- 3. Press the Start/Pause (*) button repeatedly to cycle through the test modes.

Number of times the Start/Pause button is pressed	Check Point	Display Status
None	Turns on all lamps and locks the door.	
1 time	Tumble clockwise.	rpm
2 times	Low speed Spin.	rpm + Water Level
3 times	High speed Spin.	rpm + Water Temperature
4 times	Inlet valve for prewash turns on.	Water level frequency (25~65)
5 times	Inlet valve for main wash turns on.	Water level frequency (25~65)
6 times	Inlet valve for hot water turns on.	Water level frequency (25~65)
7 times	Inlet valve for steam turns on.	Water level frequency (25~65)
8 times	Inlet valve for bleach turns on.	Water level frequency (25~65)
9 times	Tumble counterclockwise.	rpm (42~50)
10 times	Heater turns on for 3 sec.	Water temperature
11 times	Circulation pump turns on.	Water level frequency (25~65)
12 times	Drain pump turns on.	Water level frequency (25~65)
13 times	Off	-

7-3. HOW TO CHECK THE WATER LEVEL FREQUENCY

* Press the Spin and Rinse button simultaneously.



The digits indicate the water level frequency (x.1 kHz).

So, for example a display indicating 241: a Water level frequency of 241 x.1 kHz = 24.1 kHz

7-4. ERROR DISPLAY

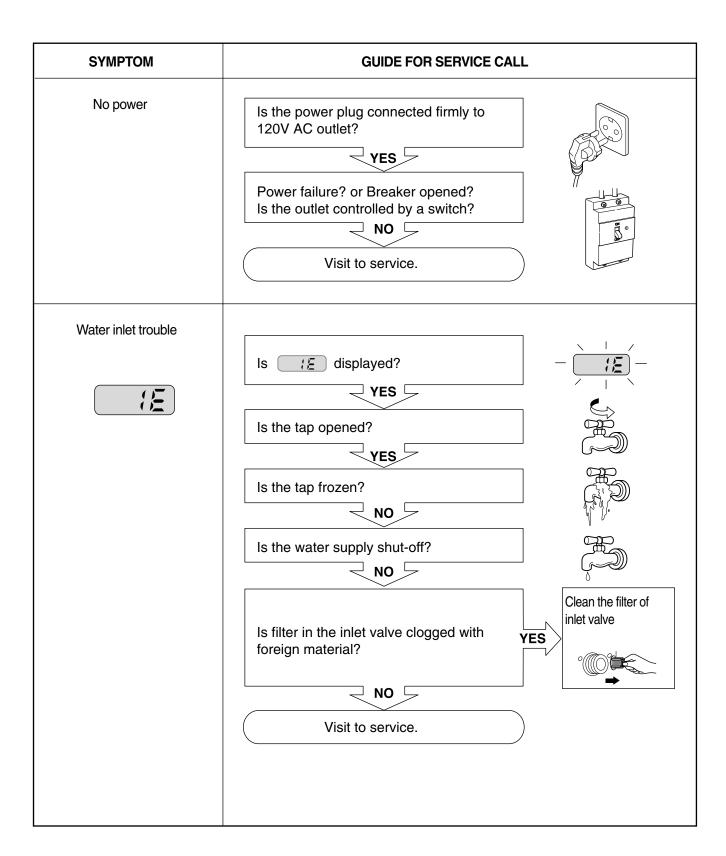
- If you press the START/PAUSE button when an error is displayed, any error except "PE" will disappear and the machine will go into the pause status.
- In case of <code>FE</code> <code>_, FE</code> <code>_, FAE</code> if the error is not resolved within 20 sec., or the in case of other errors, if the error is not resolved within 4 min., power will be turned off automatically and the error code will blink. But in the case of <code>FE</code> <code>_, power will not be turned off.</code>

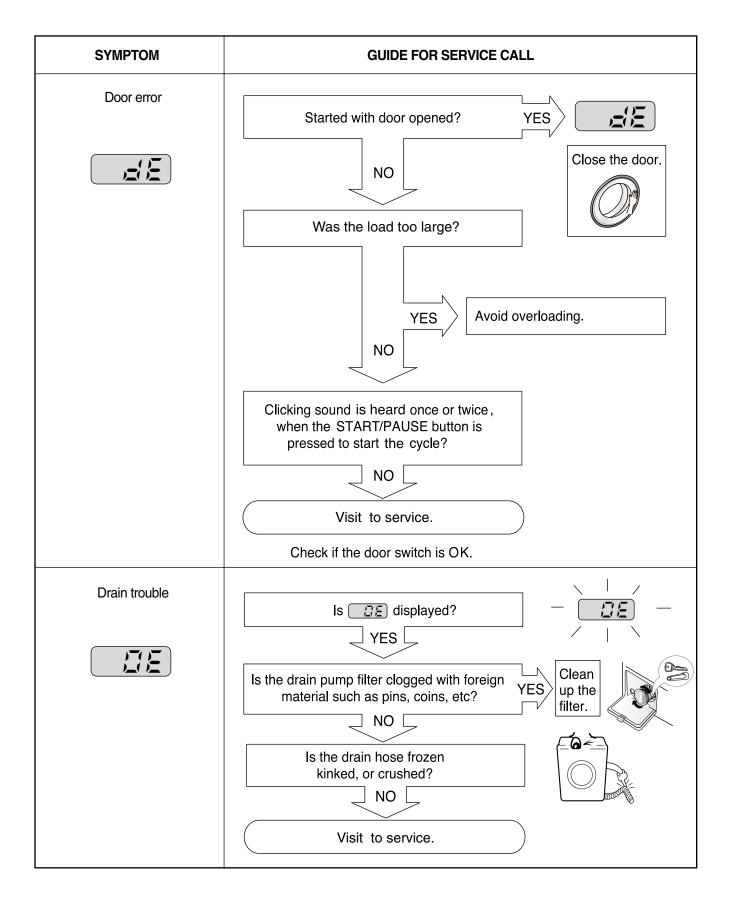
	ERROR	SYMPTOM	CAUSE
1	WATER INLET ERROR	SE	Correct water level (246) is not reached within 8 minutes after water is supplied or it does not reach the preset water level within 25 minutes.
2	IMBALANCE ERROR		 The load is too small. The appliance is tilted. Laundry is gathered to one side. Non distributable things are put into the drum.
3	DRAIN ERROR		Not fully drained within 10 minutes.
4	OVER FLOW ERROR	FE	Water is overflowing (water level frequency is over 213). ** If FE is displayed, the drain pump will operate to drain the water automatically.
5	PRESSURE SENSOR ERROR	FE	The SENSOR SWITCH ASSEMBLY is out of order.
6	DOOR OPEN ERROR	<u> </u>	 Door not all the way closed. Loose electrical connections at Door switch and PWB Assembly. The DOOR SWITCH ASSEMBLY is out of order.
7	HEATING ERROR	E	The THERMISTOR is out order.

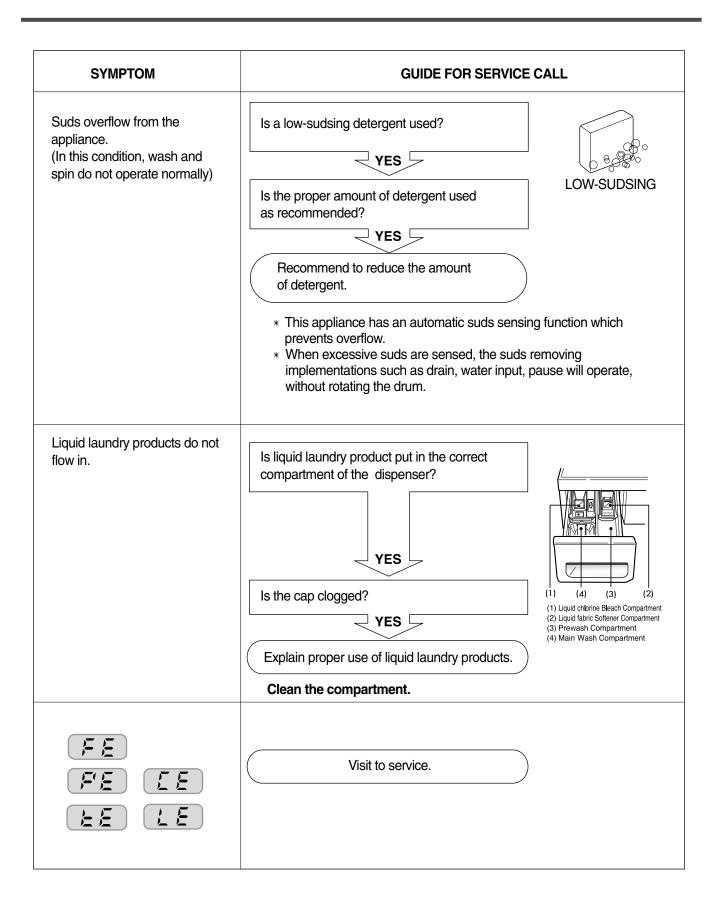
	ERROR	SYMPTOM	CAUSE
8	OVER CURRENT ERROR		MAIN PWB ASSEMBLY is out of order. Winding in the STATOR ASSEMBLY is short-circuited.
9	LOCKED MOTOR ERROR	L E	 The connector (3-pin, male, white) in the MOTOR HARNESS is not connected to the connector (3-pin, female, white) of STATOR ASSEMBLY. The electric contact between the connectors (3-pin, male, white) in the MOTOR HARNESS and 4-pin, female, white connector in the MAIN PWB ASSEMBLY is bad or unstable. The MOTOR HARNESS between the STATOR ASSEMBLY and MAIN PWB ASSEMBLY is cut (open circuited). The hall sensor is out of order/defective.
10	BALL SENSOR ERROR	5 E	Loose Ball Sensor Connector. Ball Sensor is out of order. Displayed only when the START/PAUSE button is first pressed in the QC Test Mode.
11	EEPROM ERROR	EE	EEPROM is out of order. ** Displayed only when the START/PAUSE button is first pressed in the QC Test Mode.
12	POWER FAILURE	F F	The washer experienced a power failure.
13	DRY HEATER ERROR		 The Dry Heater is out of order. Replace the Dry Heater The connector of the Dry Heater is not connected properly to the connector in the main PWB ASSEMBLY. Reconnect or repair the cannector. The Dry Fan Motor is out of order. Replace the fan motor.

8. ERROR DIAGNOSIS AND CHECK LIST

8-1. DIAGNOSIS AND SOLUTION FOR ABNORMAL OPERATION



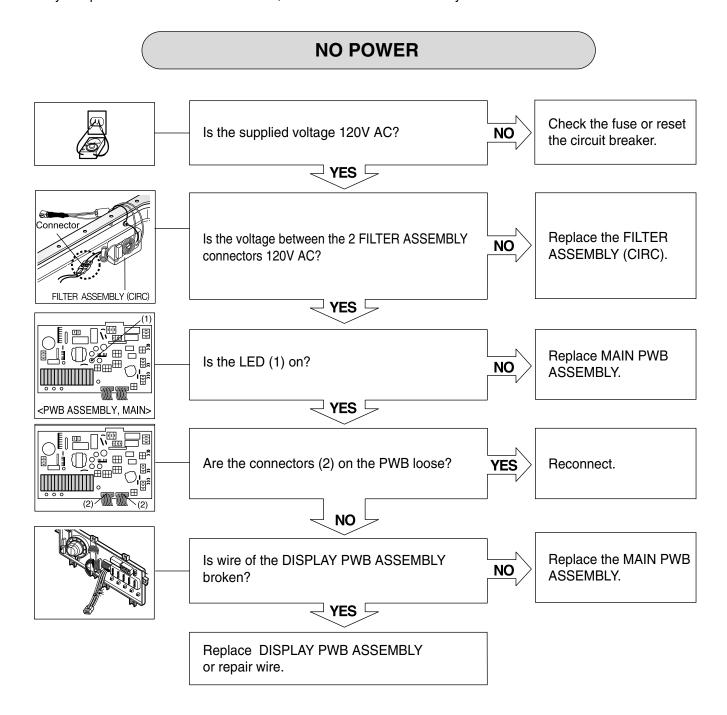




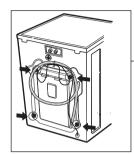
8-2. FAULT DIAGNOSIS AND TROUBLESHOOTING

▲ CAUTION

- 1. Be careful of electric shock if disconnecting parts while troubleshooting.
- 2. First of all, check the connection of each electrical terminal with the wiring diagram.
- 3. If you replace the MAIN PWB ASSEMBLY, reinsert the connectors correctly.



VIBRATION & NOISE IN SPIN



Have all the transit bolts and base packing been removed?

NO

Remove the transit bolts and Base packing.



Is the washer installed on a solidly constructed floor?

NO

Move the washer or reinforce the floor.

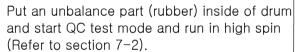


Check if the washer is perfectly level as follows:

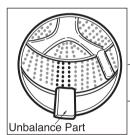
 $\overline{\mathord{\hspace{1pt} extstyle \hspace{1pt} extstyle \hspace{1pt}}}$ yes $\overline{\mathord{\hspace{1pt} extstyle \hspace{1pt}}}$



Check the leveling of the washer with a Level and check that the washer is stable.



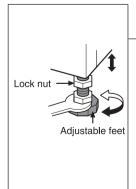
When the machine is spinning in high speed, verify that it is stable.



If you do not have the unbalance part, put 4.5 to 6.5 lbs (2 to 3 kg) of clothing. Once loaded, press power, Rinse+Spin and the start/pause button in sequence.

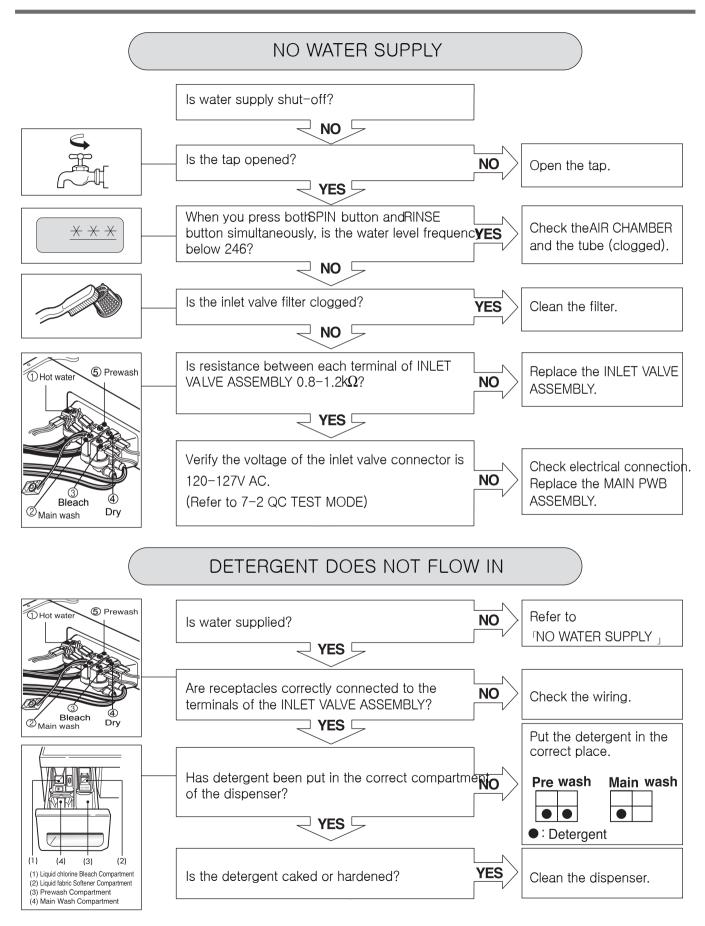
When the machine is spinning in high speed, verify that it is stable.



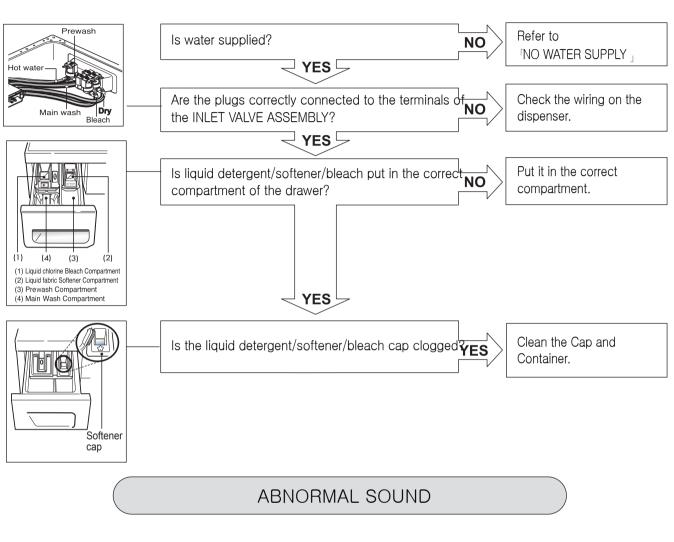


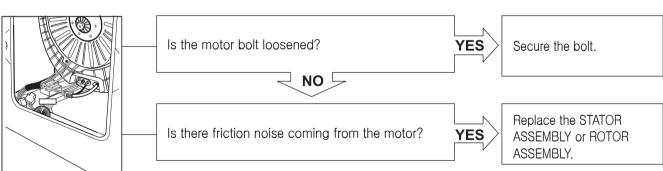
If it is not stable, adjust feet accordingly. After the washer is level, tighten the lock nuts up against of the base of the washer. All lock nuts must be tightened. If it still has severe vibration and noise, regulate a specific spin speed that generates excessive vibration and noise as follows:

- 1) Put an unbalance part (rubber) inside of the drum.
- 2) Start the QC test mode (Refer to section 7-2).
- 3) Press Delay Wash button, then ' \(\begin{aligned} \frac{1}{2} \beta \end{aligned} \) is displayed.
- 4) Press the Spin Speed button repeatedly to select Extra High.
- 5) Press the Quick Cycle button, the spin speed is displayed.
- 6) Press the Start/Pause button.
- 7) Press the Beeper button repeatedly to set spin speed (600, 800, 1000, 1200 rpm) and check if there is vibration and noise.
- 8) If there is no vibration and noise, increase the spin speed by pressing Beeper button.
- 9) If there is vibration and noise, rotate the Cycle selector knob clockwise to reduce the Spin Speed (reduce by 50 and 100 rpm). In case of 600 rpm, it can not reduce the spin speed.
- 10) If vibration and noise are reduced, press the Quick Cycle button to store (2 beep sounds).
- * If you want to return to factory default spin speed setting, repeat above steps except step 9).

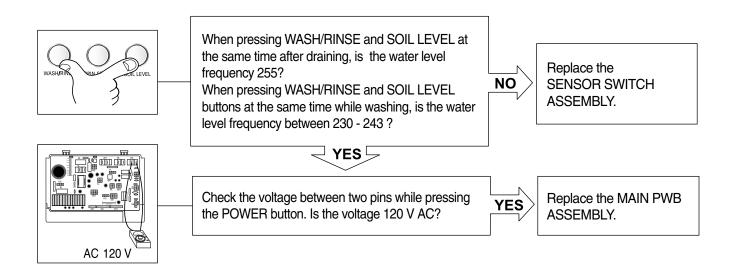


LIQUID DETERGENT/SOFTENER DOES NOT FLOW IN

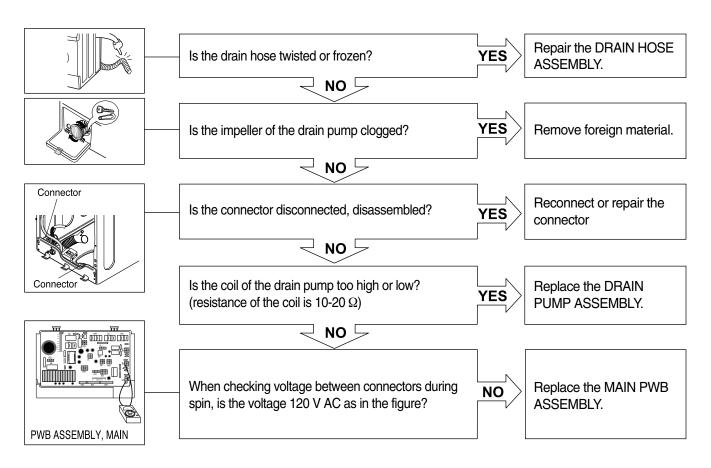




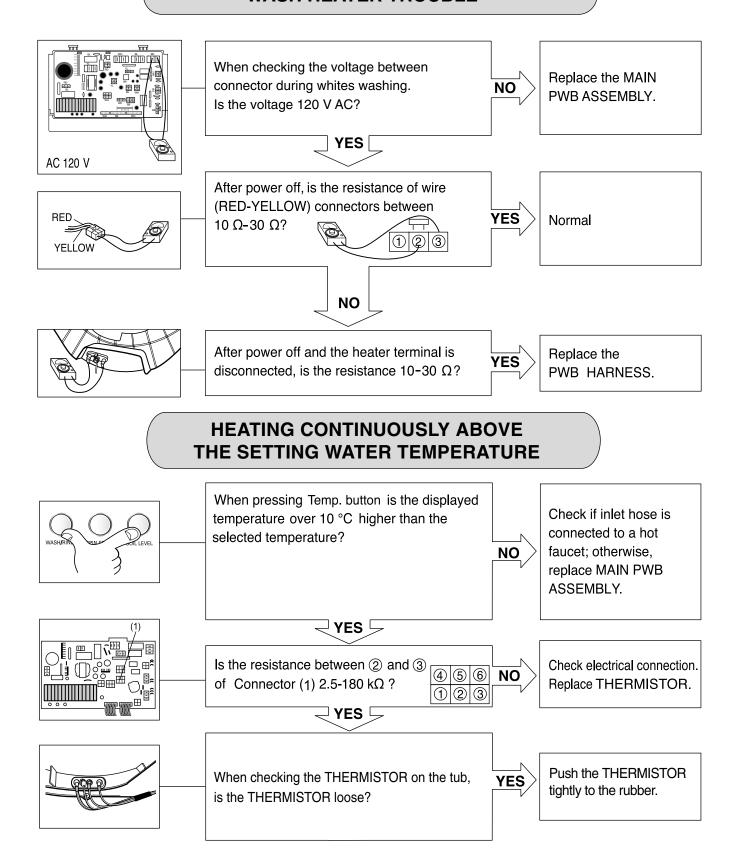
HEATING WITHOUT WATER



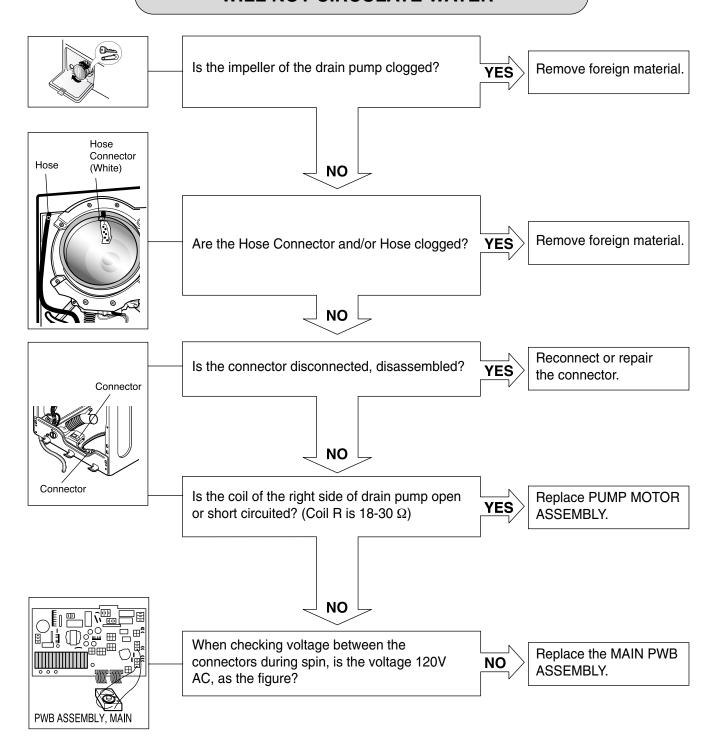
DRAIN MALFUNCTION

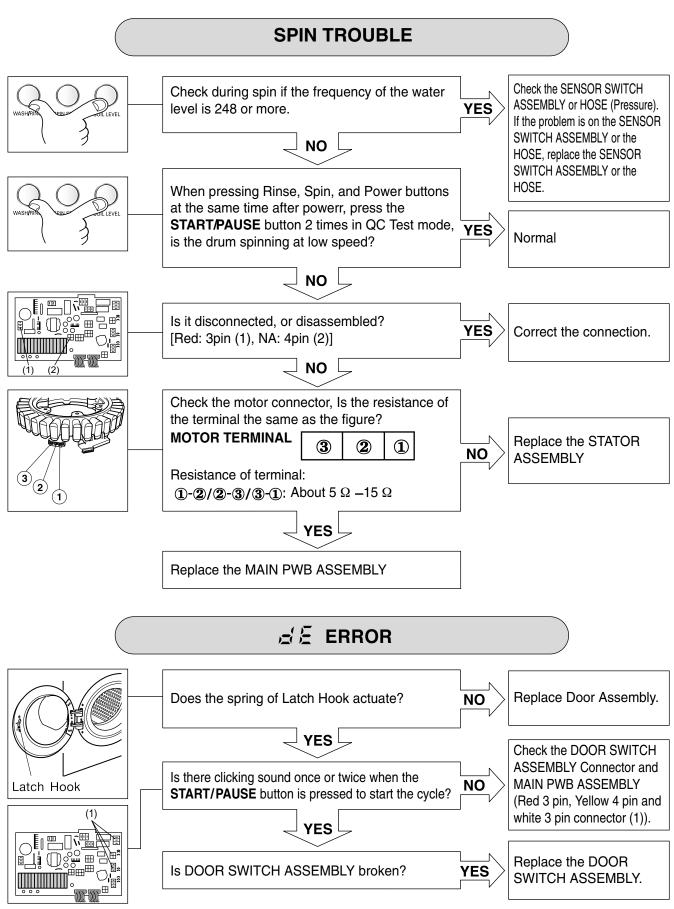


WASH HEATER TROUBLE

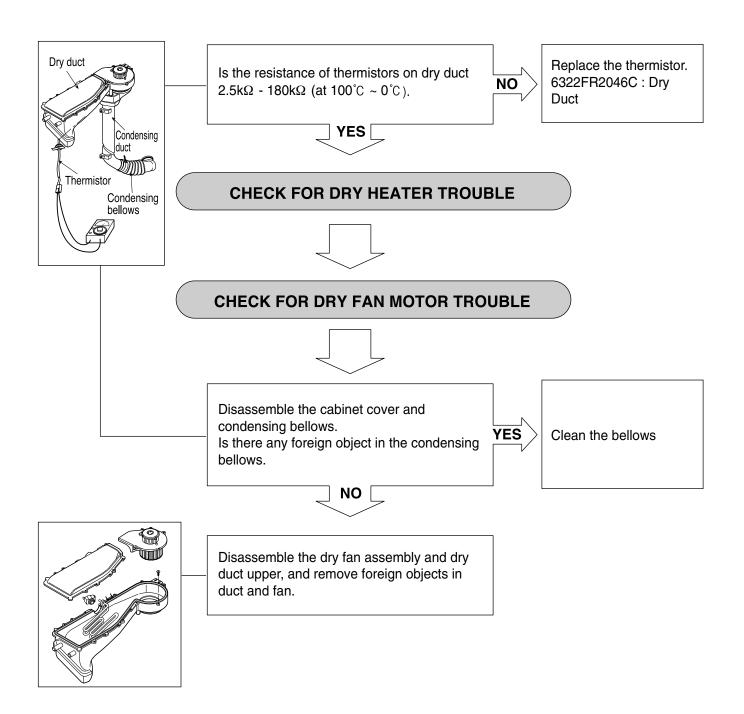


WILL NOT CIRCULATE WATER

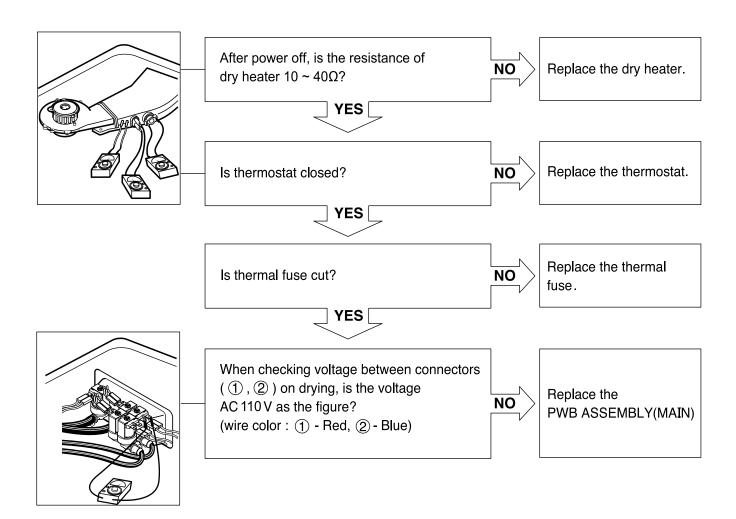




= 片层 ERROR DISPLAY



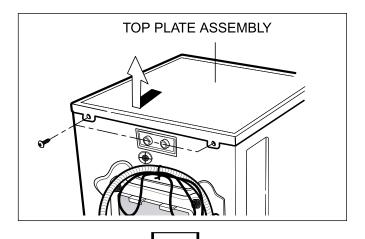
DRY HEATER TROUBLE



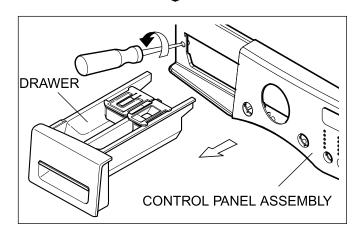
9. DISASSEMBLY INSTRUCTIONS

st Be sure to unplug the machine out of the outlet before disassembling and repairing the parts.

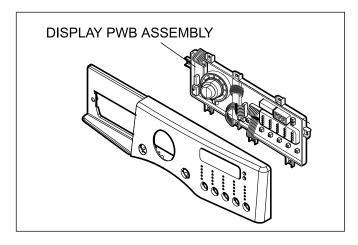
CONTROL PANEL ASSEMBLY



- ① Unscrew 2 screws on the back of the top plate.
- ② Pull the top plate backward and upward as shown.

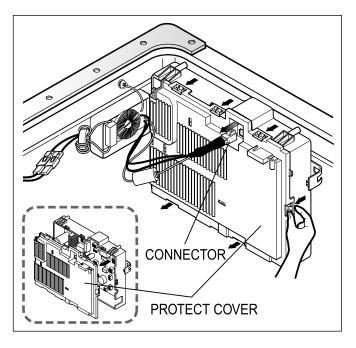


- ③ Disconnect the Display PWB Assembly connector from Trans cable.
- 4) Pull out the drawer and unscrew 2 screws.
- ⑤ Lift the left side of the Control Panel Assembly and pull it out.

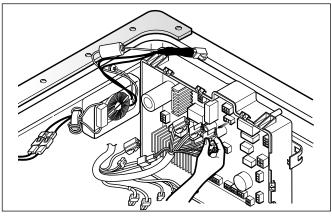


- ⑤ Unscrew the 9 screws from the Control Panel Assembly.
- $\ensuremath{{\bigcirc}}$ Disassemble the Display PWB Assembly.

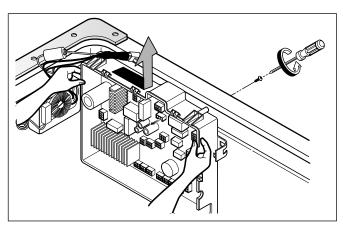
MAIN PWB ASSEMBLY



- ① Disconnect the POWER connector and SENSOR SWITCH ASSEMBLY.
- ② Remove the Protect Cover.

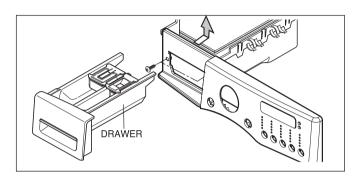


③ Disconnect the connectors.

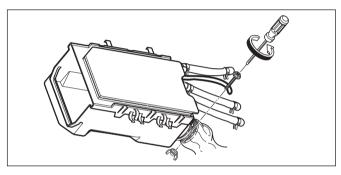


- 4 Unscrew 1 screw on the back.
- ⑤ Disassemble the Main PWB.

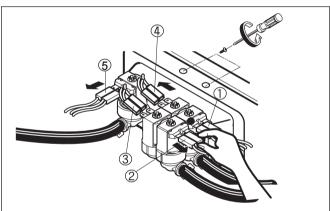
DISPENSER ASSEMBLY



- ① Disassemble the top plate assembly.
- ② Pull out the drawer.
- ③ Push out the DISPENSER ASSEMBLY after unscrew 2 screws.



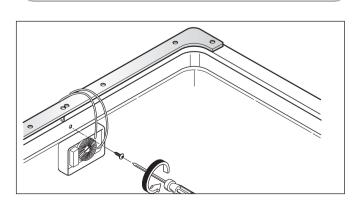
④ Unscrew the nut at the lower part of the dispenser.



⑤ Disassemble the 4 connectors from the valves.

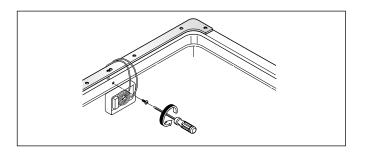
- Wire Color
- ① Blue Housing (YL-BK)
- ② Red Housing(VT-BK)
- 3 White Housing(WH-BK)
- Blue Housing(GY-BK)
- ⑤ Red Housing(BL-BK)
- © Unscrew 2 screws from the back of the cabinet.

NOISE FILTER



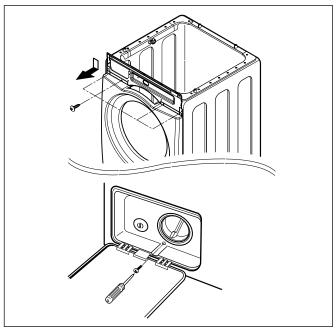
- ① Unscrew a screw from the TOP BRACKET.
- ② Disassemble two connectors from the POWER CORD.

REACTOR

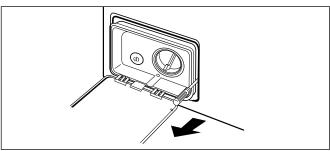


- ① Unscrew the a screw from the Top Bracket.
- ② Disassembly one connector from the Main PWB.

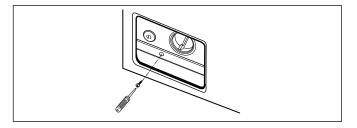
CABINET COVER



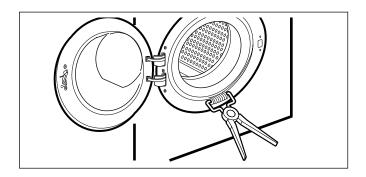
- ① Unscrew the 4 screws from upper of the canbinet cover.
- ② Unscrew the screw from filter cover.



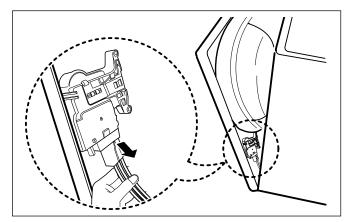
③ Put a flat (–) screwdriver or putty knife into the both sides of the filter cover, and pull it out.



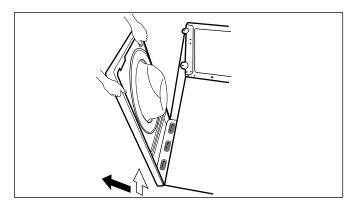
④ Unscrew the screw from the lower side of the cabinet cover.



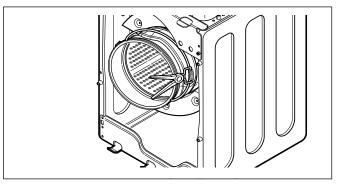
- ⑤ Open the door.
- ⑥ Disassemble the clamp assembly.



- Tilt the cabinet cover.
- (8) Disconnect the door switch connector.
 - * NOTE: When assembling the CABINET COVER, connect the connector.

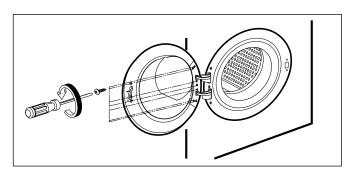


(9) Lift and separate the cabinet cover.

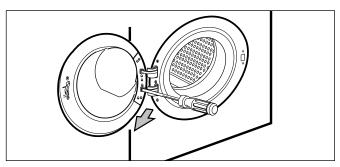


- (i) Disassemble the clamp assembly.
- (1) Disassemble the Gasket.

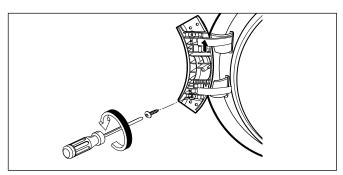
DOOR



- ① Open the door.
- ② Unscrew the 7 screws from the HINGE COVER.

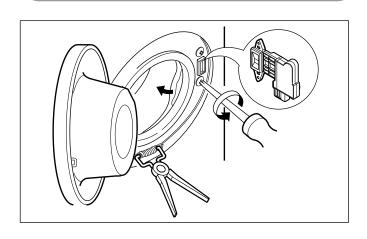


③ Put a flat (-) screwdriver into the opening of the hinge, and pull out the hinge cover.



- ④ Unscrew a screw from the lower side of door.
- ⑤ Disassemble the door upward.
 - **※ Be careful!** The door is heavy.

DOOR LOCK SWITCH ASSEMBLY

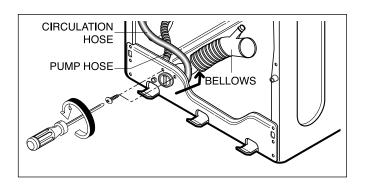


- ① Open the door and disassemble the CLAMP ASSEMBLY.
- ② Unscrew the 2 screws.

*** NOTE**

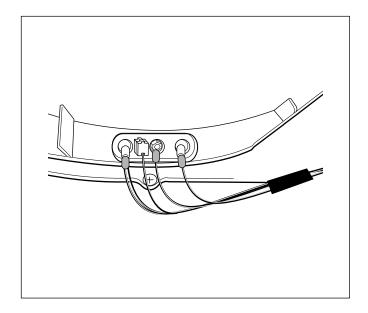
• Reconnect the connector after replacing the DOOR SWITCH ASSEMBLY.

PUMP



- ① Disassemble the cabinet cover.
- ② Separate the pump hose, the bellows and the circulation hose assembly from the pump assembly.
- ③ Disassemble the pump assembly in arrow direction.

HEATER & THERMISTOR

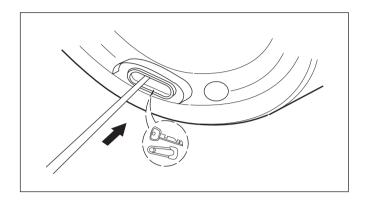


- ① Disassemble the cabinet cover.
- ② Separate 2 connectors from the heater.
- 3 Loosen the nut and pull out the heater.

*** CAUTION**

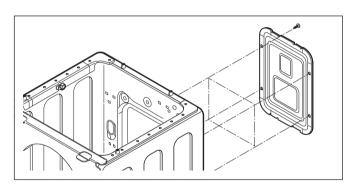
- When assembling the heater, insert the heater into the heater clip on the bottom of the tub.
- Tighten the fastening nut so the heater is secure.

WHEN FOREIGN OBJECT IS STUCK BETWEEN DRUM AND TUB

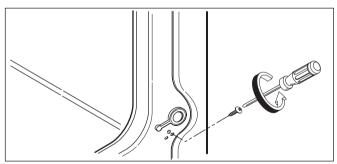


- ① Disassemble the cabinet cover.
- ② Separate the heater from the tub.
- ③ Remove any foreign objects (wire, coin, etc.) by inserting a long bar in the opening.

SENSOR ASSEMBLY (BALL SENSOR)

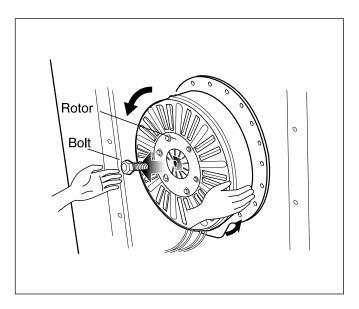


① Unscrew the 4 screws from the back cover.

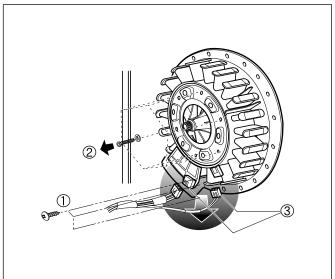


② Unscrew the single screw from the lower-right side of the cabinet.

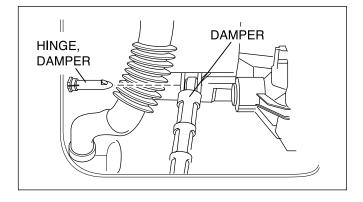
MOTOR/DAMPER



- ① Disassemble the back cover.
- ② Remove the bolt.
- ③ Pull out the Rotor.



- ① Unscrew the 2 screws from the tub bracket.
- ② Remove the 6 bolts on the stator.
- ③ Unplug the 2 connectors from the stator.

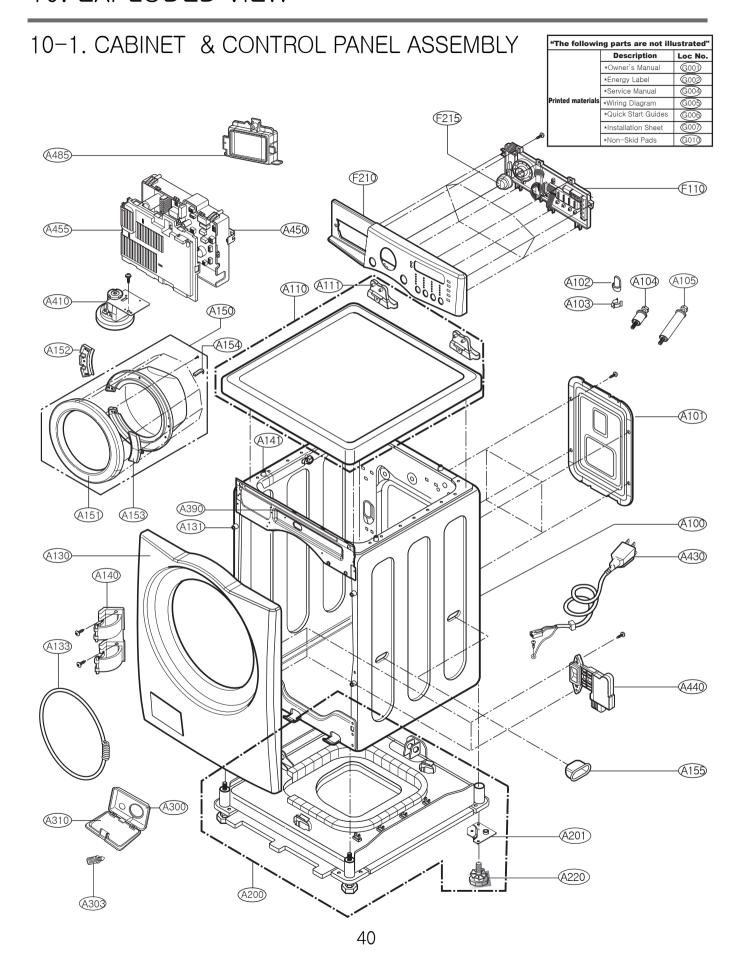


- ① Disassemble the damper hinges from the tub and base.
- ② Separate the dampers.

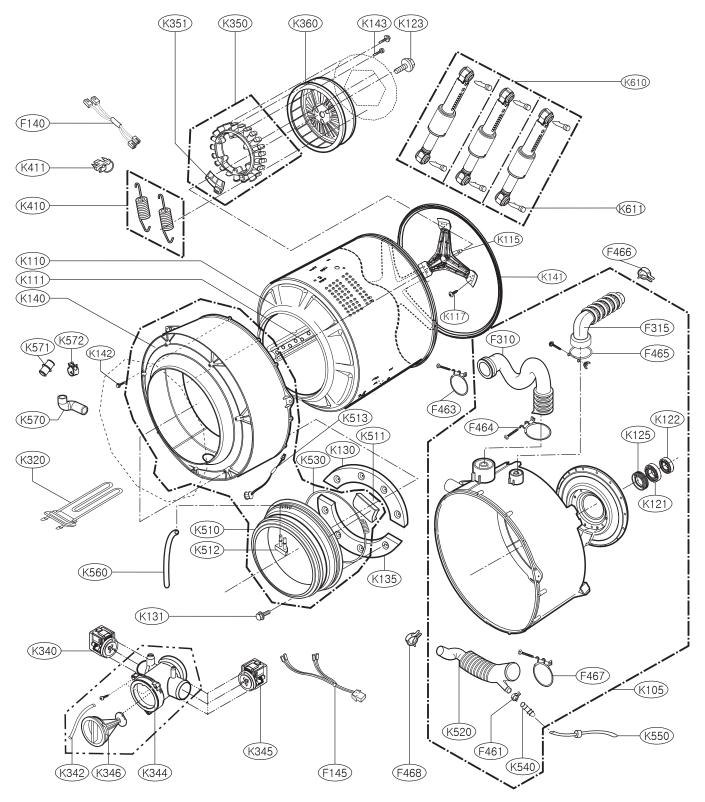
*** NOTE**

• Once removed, replace the damper with new one.

10. EXPLODED VIEW

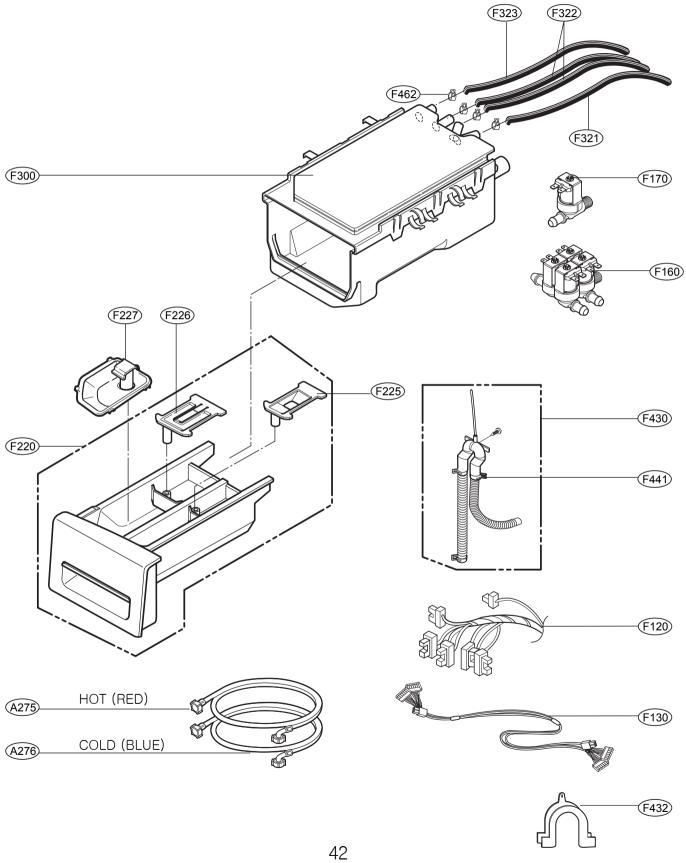


10-2 .DRUM & TUB ASSMEBLY



- ** In case of replacing THERMISTOR of HEATER ASSEMBLY(K320), replace HEATER ASSEMBLY(K320), HEATER ASSEMBLY(K320) includes THERMISTOR.
- In case of replacing BEARING, BALL (K121, K122) and GASKET (K125), replace TUB ASSEMBLY, OUTER (K105), TUB ASSEMBLY, OUTER (K105) includes BEARING, BALL (K121, K122) and GASKET (K125).
- * Part Assembly(K142) includes 10 screws.

10-3.DISPENSER ASSEMBLY



10-4. DRYER

