



# WASHING MACHINE SERVICE MANUAL

#### **A** CAUTION

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

MODEL: WM2455H\*



P/No.: MFL30599107

MAR. 2007 PRINTED IN KOREA

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# 1. SPECIFICATIONS

ITEM		WM2455H*						
COLOR		W:BLUE WHITE, G:PEARLY GRAY						
POWER SUPPLY	<b>Y</b>	AC 120 V, 60 Hz						
PRODUCT WEIGH	łT	192 lbs (87kg)						
ELECTRIC POWER	WASHING	280 W						
ELECTRIC POWER CONSUMTION	DRAIN MOTOR	80 W						
CONSUMITION	WASH HEATER	1000 W						
REVOLUTION SPEED	WASH	46 rpm						
REVOLUTION OF LED	SPIN	0-1200 rpm						
CYCLES		9						
WASH/RINSE TEMPER	RATURES	5						
SPIN SPEEDS		4						
OPTIONS		Prewash, Rinse+Spin, Extra Rinse, Water Plus, Stain Cycle						
WATER CIRCULATI	ION	_						
OPERATIONAL WATI	ER PRESSURE	14.5-116 psi (100-800 kPa)						
CONTROL TYPE		Electronic						
WASH CAPACITY [c	eu.ft]	3.47 (4.0 IEC)						
DIMENSIONS		27" (W) X 29 <sup>3</sup> / <sub>4</sub> " (D) X 38 <sup>11</sup> / <sub>16</sub> " (H), 50 <sup>13</sup> / <sub>16</sub> " (D, door open)						
DELAY WASH		up to 19 hours						
DOOR SWITCH TY	PE	PTC + Solenoid						
WATER LEVEL		10 steps (by sensor)						
LAUNDRY LOAD SEN	ISING	Incorporated						
ERROR DIAGNOS	IS	Incorporated						
AUTO POWER OF	F	Incorporated						
CHILD LOCK		Incorporated						
RLM ENABLE		_						
STEAM		_						

# 2. FEATURES & TECHNICAL EXPLANATION

#### 2-1. FEATURES





The Larger drum enables not just higher head drop and stronger centrifugal force, but also less tangling and wrinkling of the laundry. Heavier loads, such as king size comforters, blankets, and curtains, can be washed.

#### Direct Drive System

**Ultra Capacity** 



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

#### Tilted Drum and Extra Large Door Opening



Tilted drum and extra large opening make it possible to load and unload clothing more easily.

#### RollerJets



Washing ball enhances the wash performance and reduces damage

to the 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



Internal heater helps to maintain water temperature at its optimum level for selected cycles.

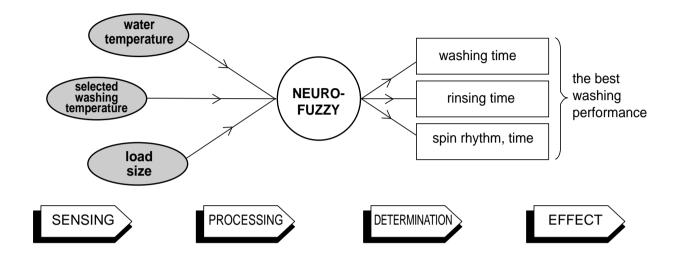
#### Child Lock



The Child lock prevents children from pressing any button 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.
- While the motor is in the process of intertial rotating, through the operation is paused.

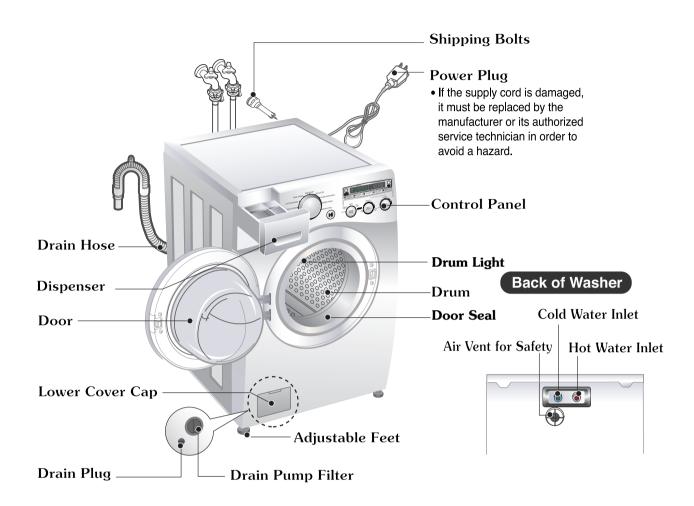
#### 2-6. DOOR LOCKED LAMP LIGHTS

- 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)

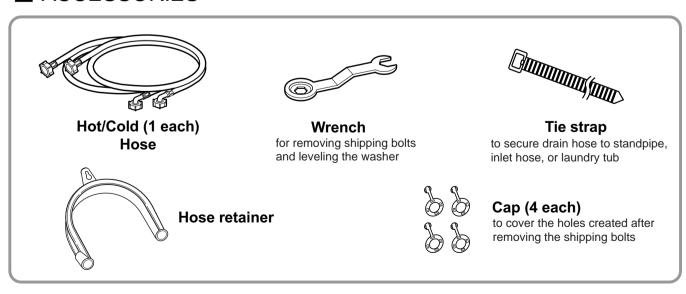
#### 2-7. CHILD LOCK

- 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.

# 3. PARTS IDENTIFICATION



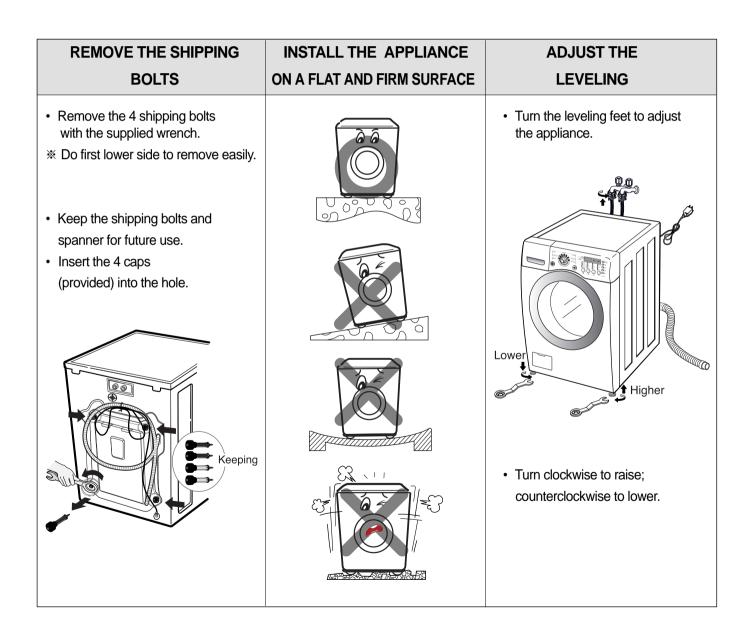
## ACCESSORIES



# 4. INSTALLATION & TEST

- 1 Before servicing, ask the customer what the trouble is.
- 2 Check the setup (power supply is 120 V 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:

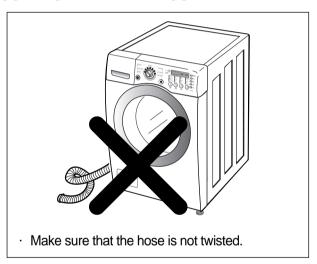


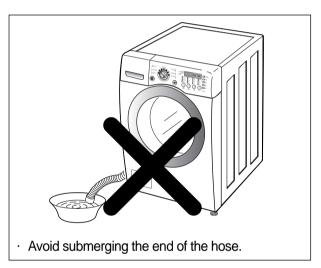
#### ■ HOW TO CONNECT THE INLET HOSE

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



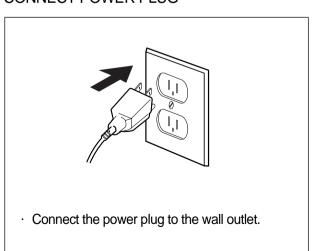
#### ■ CONNECT THE DRAIN HOSE

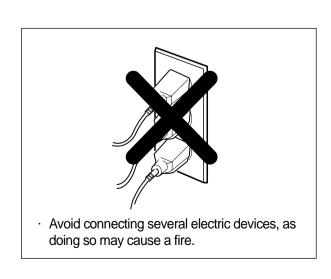




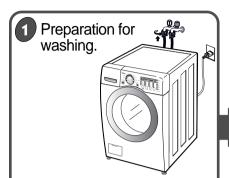
 $\divideontimes$  The end of the drain hose should be placed less than 96" from the floor.

#### **■** CONNECT POWER PLUG





#### **I TEST OPERATION**



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

2 Press the POWER button.



Press the Start/Pause button.



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

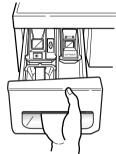
Check the water heating function.



 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. Check the water supply.



 Check if water is supplied through the detergent dispenser.

- Check the drain and spin functions.
- 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 SVC is needed during check, remove the remaining water by pulling out the hose cap.

# 5. OPERATION

#### ■ WM2544H\*



# 5. OPERATION

#### Delay Wash, CUSTOM PROGRAM

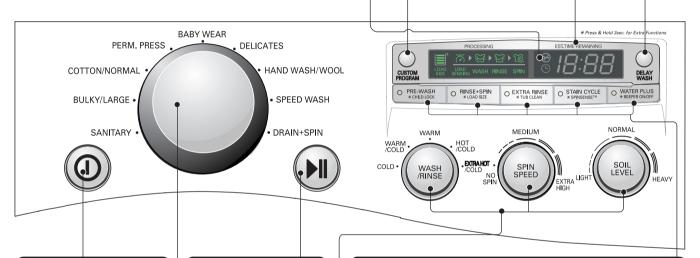
- Delay Wash allows the start of any cycle to be delayed for 1~19 hours.
- CUSTOM PROGRAM allows you to store a customized wash cycle for future use.

#### **EST. TIME REMAINING**

- This display shows:
- a) the estimated time remaining in the cycle when operation.
- b) an error code when an error has been detected.

#### **DOOR LOCKED lamp**

- Light whenever the door of the washer is locked.
- The door can be unlocked by pressing the **Start/Pause** button to stop the washer.



#### **POWER button**

 Use this button to turn power On/Off.

#### START/PAUSE button

 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 drain.
- Rinse + Spin: Use this option to rinse and then spin.
- **EXTRA RINSE:** Select this option to rinse and spin a load separately from a regular cycle.
- Stain Cycle: Add time to the wash and rinse for better stain removal. Automatically provide a rinse.
- WATER PLUS:Select this option to add extra water to the wash and rinse cycles for superior results, especially with large or bulky items.

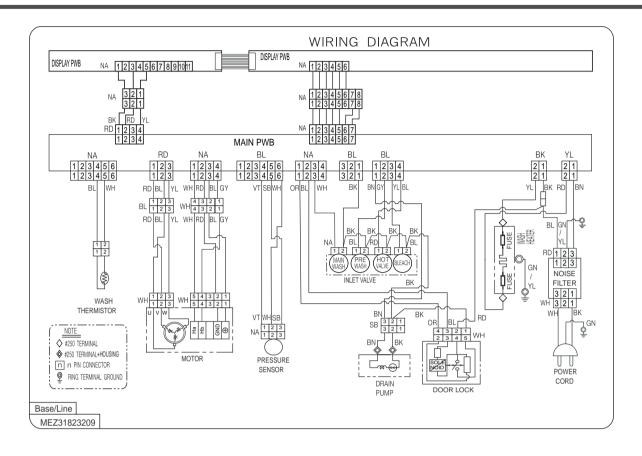
#### **CYCLE SELECTOR**

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

#### Wash, Rinse temp., Spin speed, Soil Level

- · 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.

# 6. WIRING DIAGRAM/PROGRAM CHART



PROGRA	PROGRAM CHART									* Water Supply: W-S * Intermittent Spin: I-S											* Disentangle: D <del>-</del> T											
	Wash									Rinse														Spin A								
		Pre Main									Normal								Ext	extra or Stain Extra & Stain						ain	Ľ	phili		]_	U T	
1/2					-	W	ash	Cod	ol-do	wn		1				2				3				3		·				]E N	0	**Approx.
CS/C	W - S	Wash	Drain	<u>І</u> s	W S	Heat	Wash	W S	Rinse	Drain	Drain	<u>-</u> s	W - S	Rinse	Drain	<u> </u>	W - s	Rinse	Drain	<u>-</u> s	W - s	Rinse	Drain	<u>-</u> s	W S	Rinse	Drain	Spin	D T	D	O F F	Working Time (Minutes)
U E E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	20	20	(Williates)
S Time	60		60	300	60		*	60	60	60	60	360	60	240	60	360	60	240	60	300	60	240	60	300	60	240	60	360 ~ 660	60 ~ 180	20	20	
Sanitary		8	-	۰			60 67	1	TIMI																							98
Cotton /Normal		8					13		<u> </u>																							51
Bulky		8					20	$\leq$	$\overline{}$	$\geq$																						57
/Large	-	8					25	$\leq$		$\geq$																			F	$\Box$	$\Box$	
Perm Press							18		$\simeq$	$\leq$																						55
Delicates		8	-				14		><	<		-												>	<	$\leq$	┢					40
Baby Wear		$\geq$	<	$\overline{}$			70		$\times$	$\overline{}$																						111
Hand Wash /Wool		>	<	$\geq$			14		$\times$	$\leq$														>	<							40
Speed Wash		>	<				8		><	<		 		120				120				120		>	<		-					20
Drain+Spin					,									1120				120								(						13
Wash + Rinse		8					19		$\times$	$\overline{}$																	F		$\geq$	$\overline{<}$		
Rinse	$\vdash$				_	<u> </u>	119		_	$\Rightarrow$	_	_							H	_	_	<u> </u>		_	_	_						18
+ Spin	+ Spill									10																						
Pre-Setting	Basic Cycle  Optional Cycle  Pre-Setting Time: Water Supply - 60 sec. Drain - 60 sec.  Drain - 60 sec.  * Wash time is in minutes.  ** The total working time will vary with the load size, water temperature and ambient temperature.																															

<sup>13</sup> 

# 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.

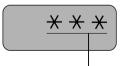
The washer must be empty and the controls must be in the off state.

- 1. Press the WASH/RINSE and SPIN SPEED 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 (42~50)						
2 times	Low speed Spin.	rpm (55~65)						
3 times	High speed Spin.	rpm (105~115)						
4 times	Inlet valve for prewash turns on.	Water level frequency (225~265)						
5 times	Inlet valve for main wash turns on.	Water level frequency (225~265)						
6 times	Inlet valve for hot water turns on.	Water level frequency (225~265)						
7 times	Inlet valve for bleach turns on.	Water level frequency(225~265)						
8 times	Tumble counterclockwise.	rpm (42~50)						
9 times	Water Temperature (Thermistor)	Water Temperature [°C]						
10 times	Drain pump turns on.	Water level frequency (225~265)						
11 times	Off							

# 7-3. HOW TO CHECK THE WATER LEVEL FREQUENCY

\* Press the CUSTOM PROGRAM and PRE-WASH buttons simultaneously.



The digits indicate the water level frequency.

A display indicating 41 means a water level frequency of 24.1 kHz.

#### 7-4. ERROR DISPLAY

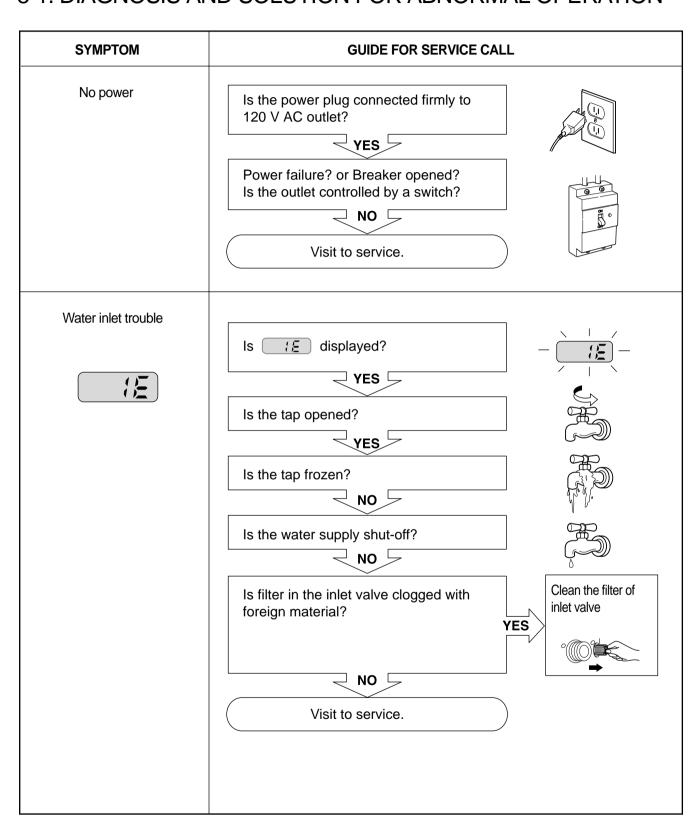
- If you press the START/PAUSE button when an error is displayed, any error except  ${}^{\mathbb{F}}P\mathcal{E}_{\mathbb{F}}$  will disappear and the machine will go into the pause status.
- In case of <code>FE</code> <code>, FE</code> <code>, FdE</code> if the error is not resolved within 20 sec., 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>

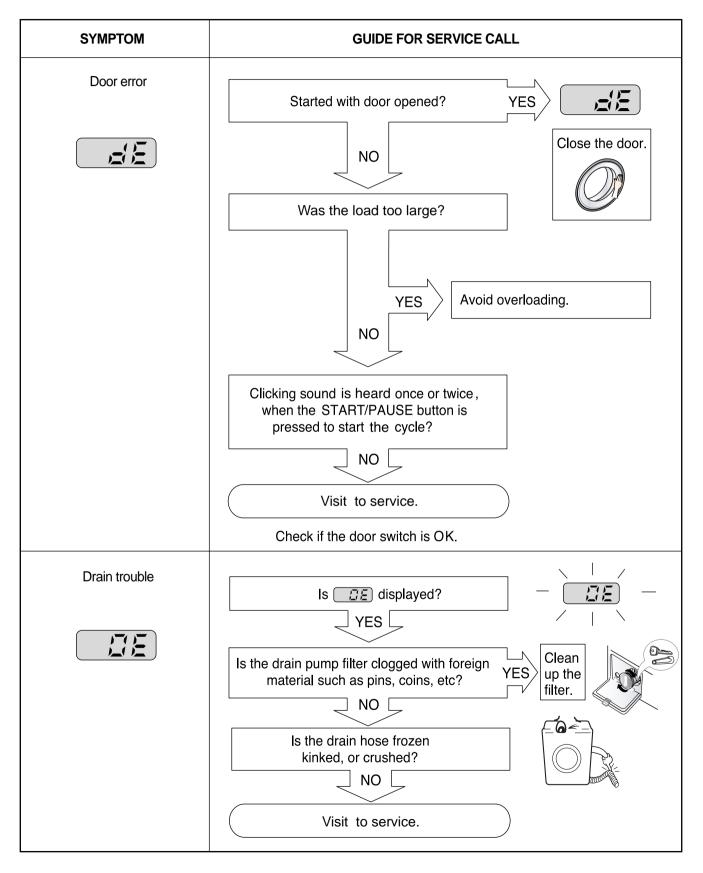
	T		
	ERROR	SYMPTOM	CAUSE
1	WATER INLET ERROR	HE	Correct water level (246) is not reached within 8 minutes after water is supplied or it does not reach the preset water level within 25 minutes.
2	IMBALANCE ERROR		<ul> <li>The load is too small.</li> <li>The appliance is tilted.</li> <li>Laundry is gathered to one side.</li> <li>Non distributable things are put into the drum.</li> </ul>
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	E	<ul> <li>Door not all the way closed.</li> <li>Loose electrical connections at Door switch and PWB Assembly.</li> <li>The DOOR SWITCH ASSEMBLY is out of order.</li> </ul>
7	HEATING ERROR	<u> </u>	The THERMISTOR is out order.

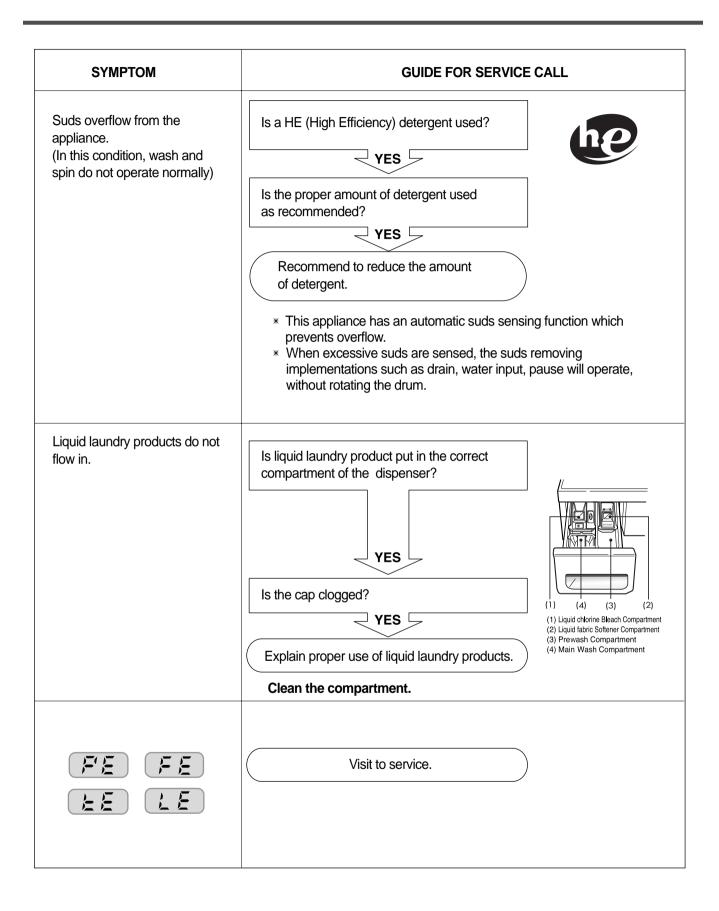
	ERROR	SYMPTOM	CAUSE
8	LOCKED MOTOR ERROR	LE	<ul> <li>The connector (3-pin, male, white) in the MOTOR HARNESS is not connected to the connector (3-pin, female, white) of STATOR ASSEMBLY.</li> <li>The electric contact between the connectors (3-pin, male, white) in the MOTOR HARNESS and 4-pin, female, white connector in the MAIN PWB ASSEMBLY is bad or unstable.</li> <li>The MOTOR HARNESS between the STATOR ASSEMBLY and MAIN PWB ASSEMBLY is cut (open circuited).</li> <li>The hall sensor is out of order/defective.</li> </ul>
9	EEPROM ERROR	EE	EEPROM is out of order.     ** Displayed only when the START/PAUSE button is first pressed in the QC Test Mode.
10	POWER FAILURE	<i>;</i> =' <i>;</i> =	The washer experienced a power failure.

# 8. ERROR DIAGNOSIS AND CHECK LIST

## 8-1. DIAGNOSIS AND SOLUTION FOR ABNORMAL OPERATION



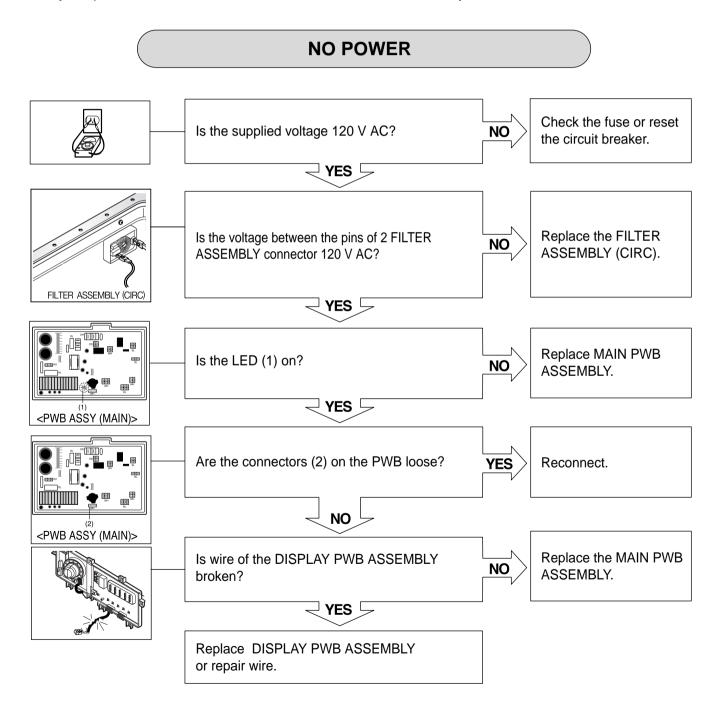




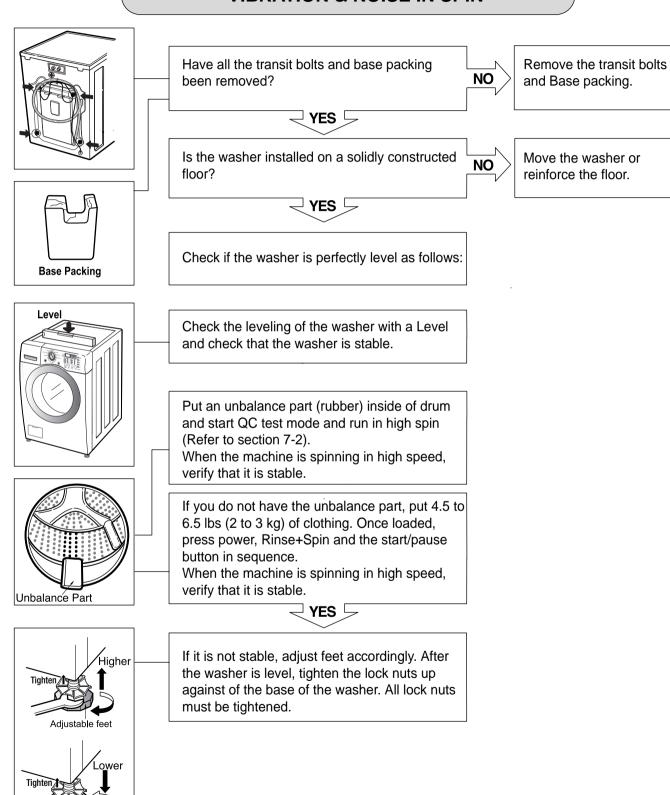
## 8-2. FAULT DIAGNOSIS AND TROUBLESHOOTING

## **▲** CAUTION

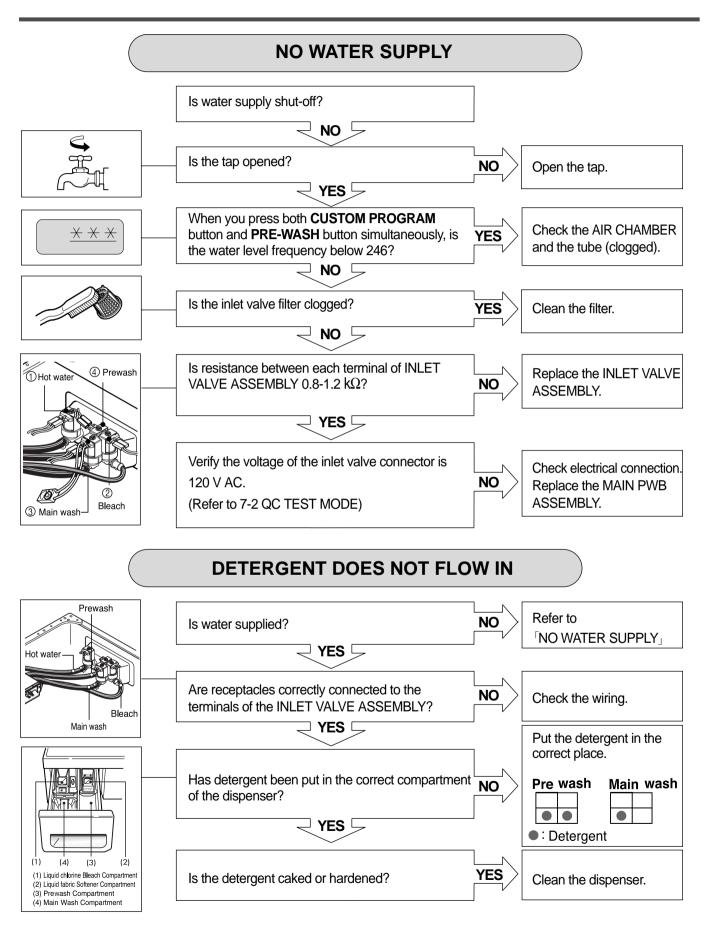
- 1. Be careful of electric shock if disconnecting parts while troubleshooting.
- 2. First of all, check the connection of each electrical terminal with the wiring diagram.
- 3. If you replace the MAIN PWB ASSEMBLY, reinsert the connectors correctly.



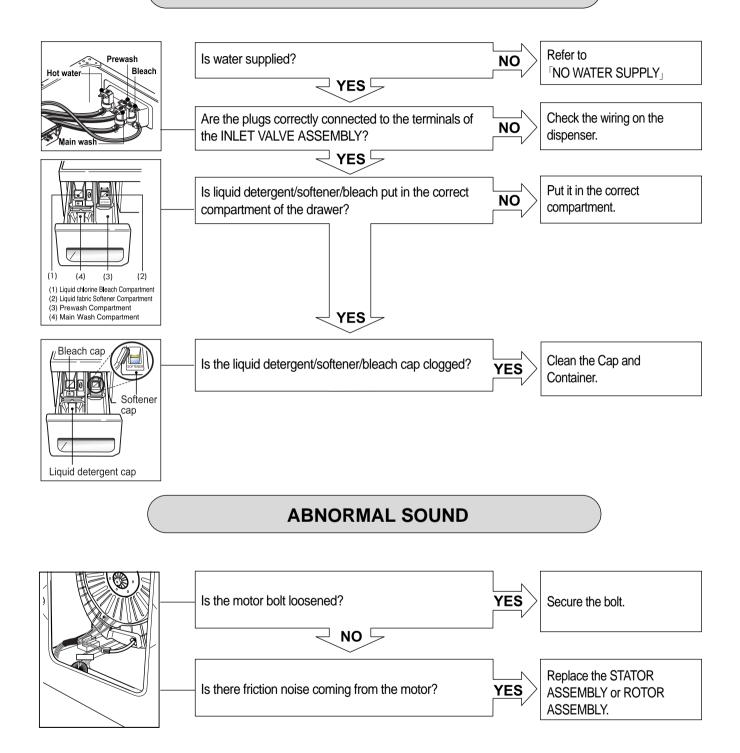
#### **VIBRATION & NOISE IN SPIN**



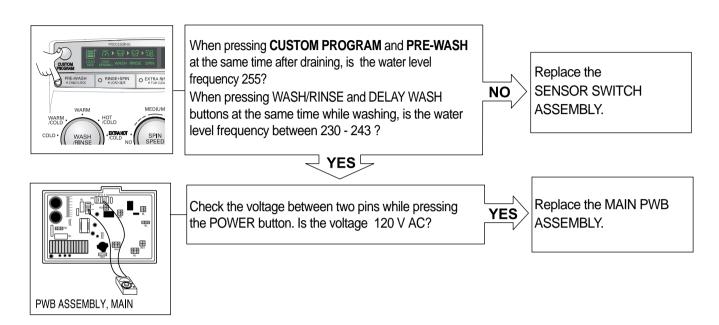
Adjustable feet



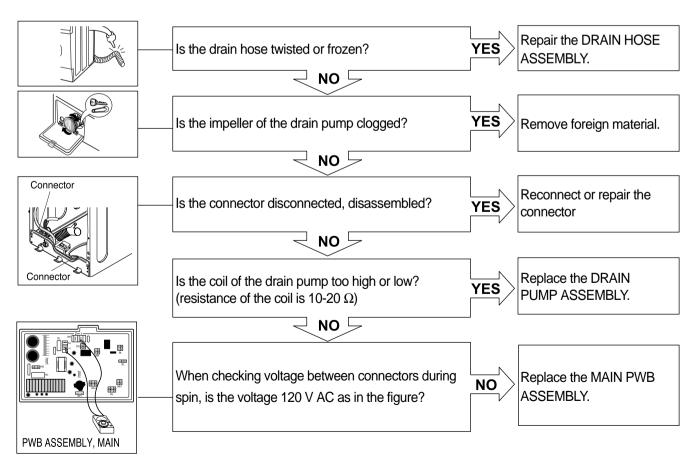
#### (LIQUID DETERGENT/SOFTENER/BLEACH DOES NOT FLOW IN)



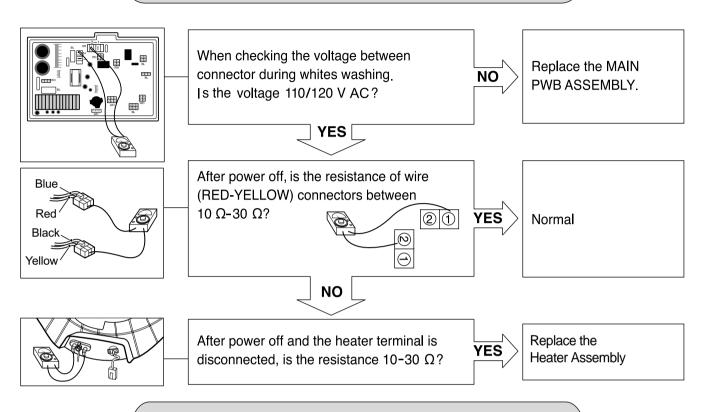
#### **HEATING WITHOUT WATER**



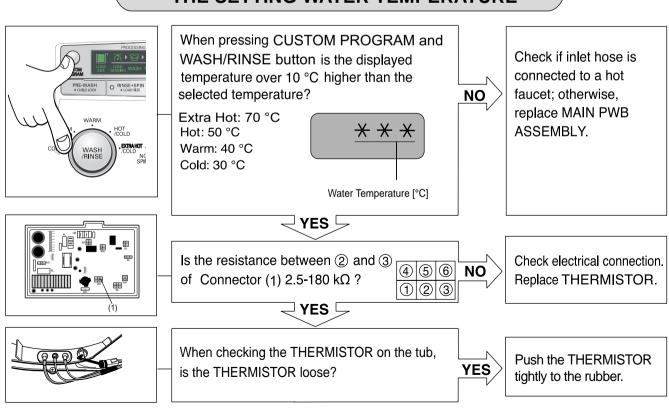
#### **DRAIN MALFUNCTION**



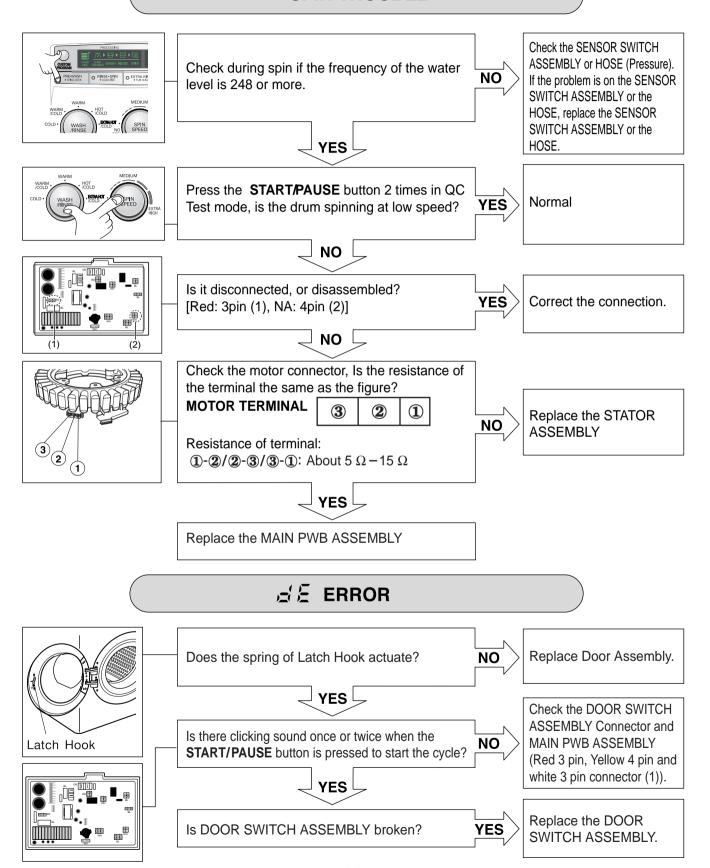
#### **WASH HEATER TROUBLE**



# HEATING CONTINUOUSLY ABOVE THE SETTING WATER TEMPERATURE



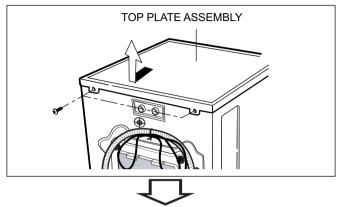




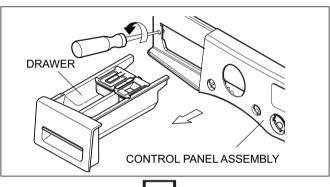
# 9. DISASSEMBLY INSTRUCTIONS

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

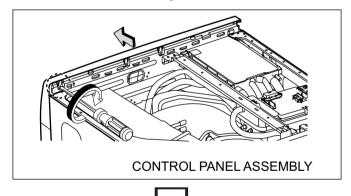
#### CONTROL PANEL ASSEMBLY



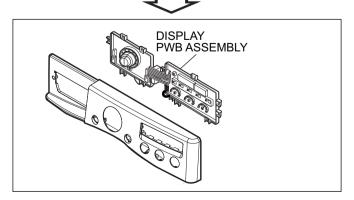
- ① Unscrew 2 screws on the back of the top plate.
- ② Pull the top plate backward and upward as shown.



- ③ Disconnect the Display PWB Assembly connector from Trans cable.
- 4 Pull out the drawer and unscrew 2 screws.

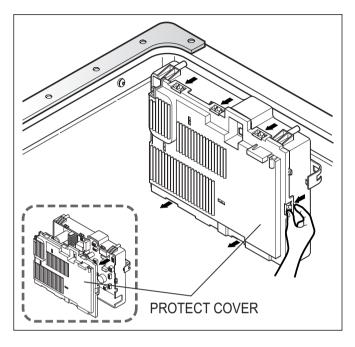


- (5) Taking out 1 screw.
- ⑥ Lift the side the Control Panel Assembly and pull it out

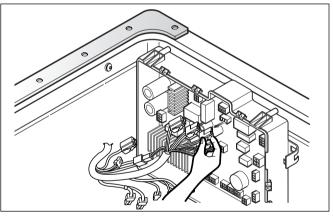


- ① Unscrew the 8 screws from the Control Panel Assembly.
- (8) Disassemble the Display PWB Assembly.

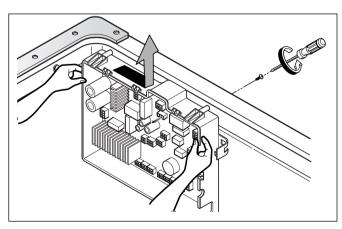
## MAIN PWB ASSEMBLY



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

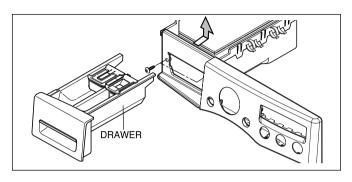


③ Disconnect the connectors.

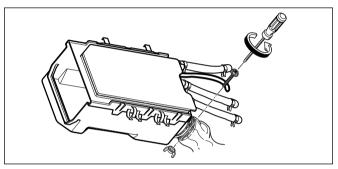


- ① Unscrew 1 screw on the back.
- ⑤ Disassemble the Main PWB.

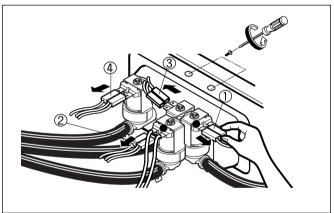
#### **DISPENSER ASSEMBLY**



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

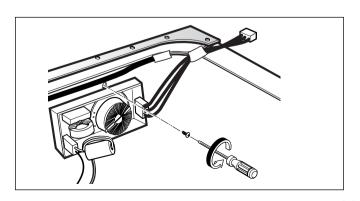


4 Unscrew the nut at the lower part of the dispenser.



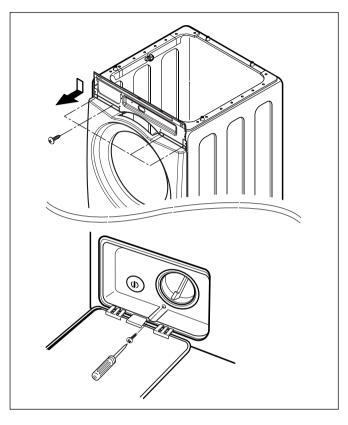
- ⑤ Disassemble the 4 connectors from the valves.
  - ★ Wire Color
  - ① Blue Housing (YL-BK)
  - ② White Housing (WH-BK)
  - 3 Blue Housing (GY-BK)
  - (4) Red Housing (BL-BK)
- (6) Unscrew 2 screws from the back of the cabinet.

#### **NOISE FILTER**

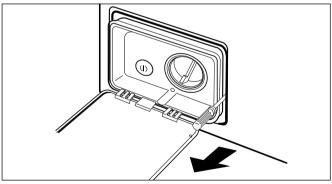


- ① Disassemble two (or three) connectors from the NOISE FILTER.
- 2 Unscrew a screw from the TOP BRACKET.

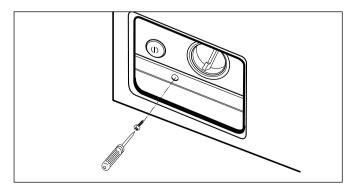
## **CABINET COVER**



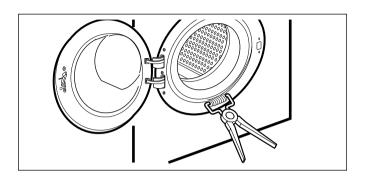
- ① Unscrew the 5 screws from upper of the canbinet cover.
- ② Unscrew the screw from filter cover.



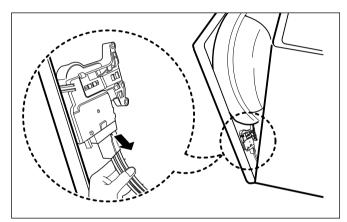
③ Put a flat ( – ) screwdriver or putty knife into the both sides of the filter cover, and pull it out.



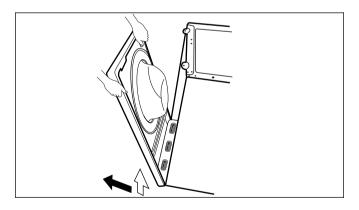
4 Unscrew the screw from the lower side of the cabinet cover.



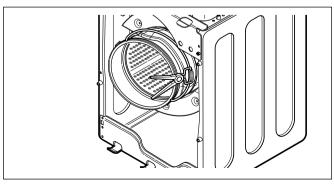
- ⑤ Open the door.
- **(6)** Disassemble the clamp assembly.



- ① Tilt the cabinet cover.
- ® Disconnect the door switch connector.
  - **NOTE**: When assembling the CABINET COVER, connect the connector.

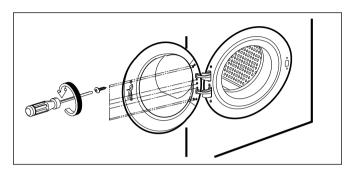


Lift and separate the cabinet cover.

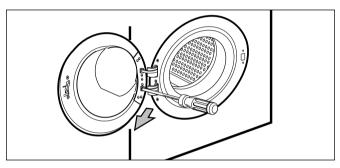


- 1 Disassemble the clamp assembly.
- $\ensuremath{\mathfrak{T}}$  Disassemble the Gasket.

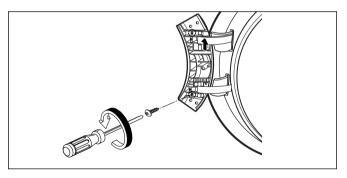
#### **DOOR**



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



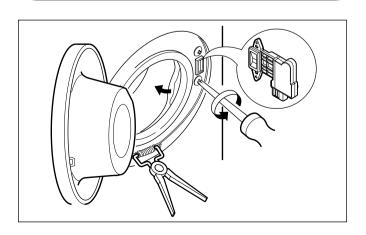
③ Put a flat ( - ) screwdriver into the opening of the hinge, and pull out the hinge cover.



- 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

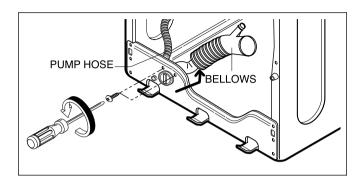


- ① Open the door and disassemble the CLAMP ASSEMBLY.
- 2 Unscrew the 2 screws.

#### **\* NOTE**

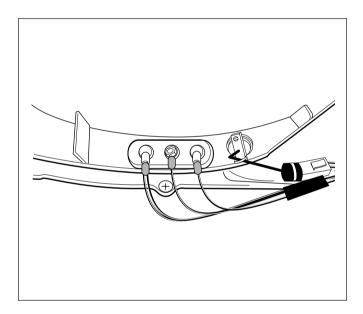
 Reconnect the connector after replacing the DOOR SWITCH ASSEMBLY.

#### **PUMP**



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

#### **HEATER**

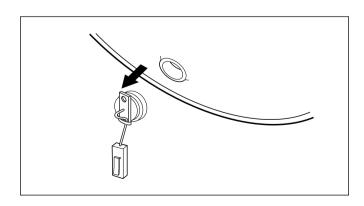


- 1) Disassemble the cabinet cover.
- ② Separate 2 connectors from the heater.
- 3 Loosen the nut and pull out the heater.

#### **\* CAUTION**

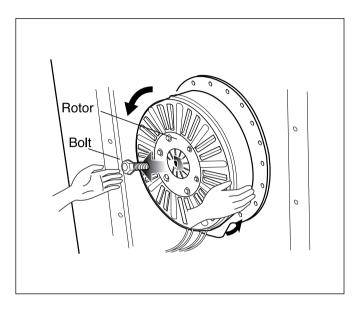
- When assembling the heater, insert the heater into the heater clip on the bottom of the tub.
- Tighten the fastening nut so the heater is secure.

#### **THERMISTOR**

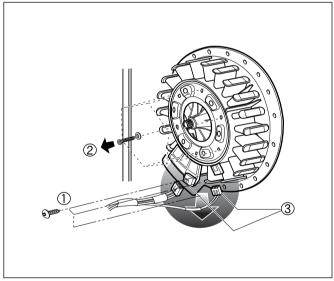


- 1 Disassemble the cabinet cover.
- ② Unplug the white connector from the thermistor.
- ③ Pull it out by holding the bracket of the thermistor.

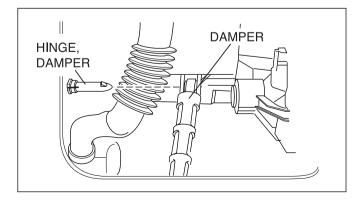
# MOTOR/DAMPER



- 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.



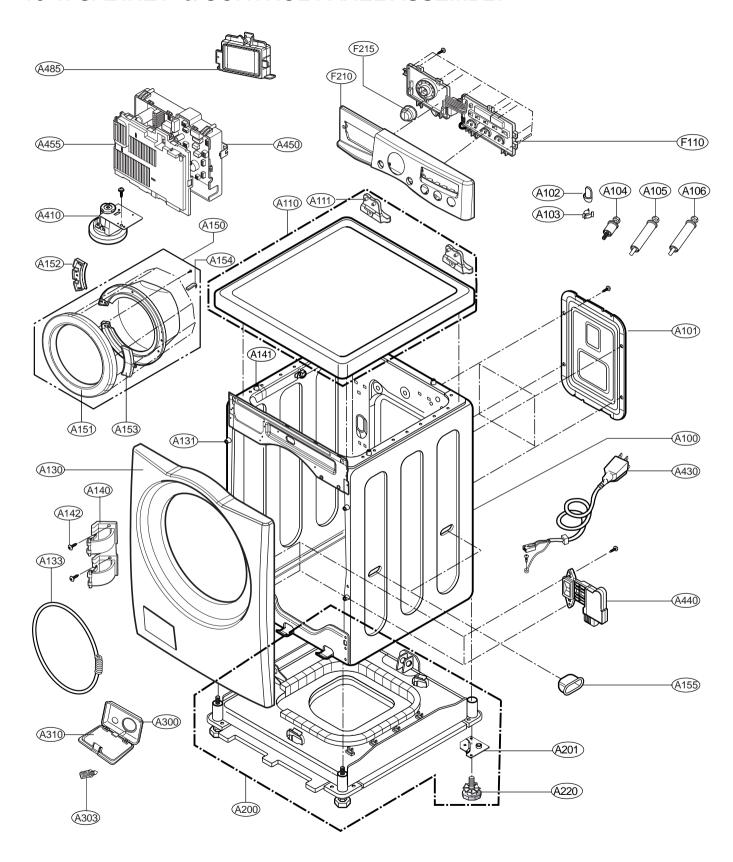
- ① Disassemble the damper hinges from the tub and base.
- ② Separate the dampers.

#### **\* NOTE**

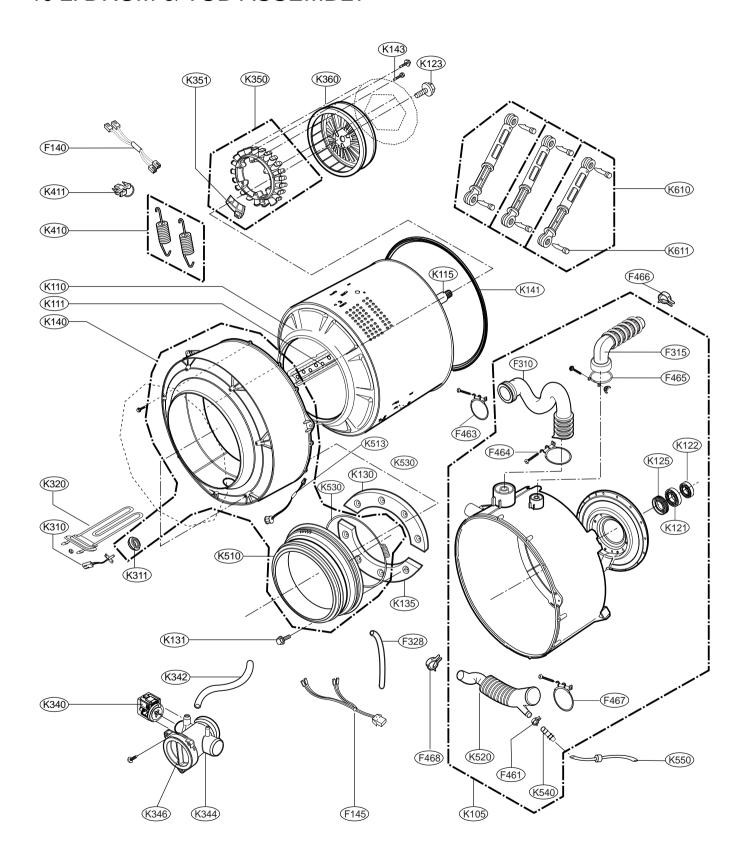
• Once removed, replace the damper with new one.

# 10. EXPLODED VIEW

# 10-1. CABINET & CONTROL PANEL ASSEMBLY



# 10-2. DRUM & TUB ASSEMBLY



# 10-3. DISPENSER ASSEMBLY

