



Website : <http://biz.lgservice.com>

WASHING MACHINE SERVICE MANUAL

▲ CAUTION

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

MODEL:WM2650H*A

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1. SPECIFICATIONS

ITEM		WM2650H*A
COLOR		W : BLUE White
POWER SUPPLY		AC 120 V, 60 Hz
PRODUCT WEIGHT		181.9lb(82.5kg)
ELECTRIC POWER CONSUMPTION	WASHING	280 W
	DRAIN MOTOR	80 W
	WASH HEATER	1000 W
REVOLUTION SPEED	WASH	46 rpm
	SPIN	0~1200 rpm
CYCLES		Cycle : 7
WASH/RINSE TEMPERATURES		5
SPIN SPEEDS		5
OPTIONS		FRESH CARE, COLD WASH, PRE-WASH, RINSE+SPIN, EXTRA RINSE, WATER PLUS, DELAY WASH
CONTROL TYPE		Electronic
WASH CAPACITY [cu.ft.]		(3.61DOE)
DIMENSIONS		27"(W) X 29 ³ / ₄ "(D) X 38 ¹¹ / ₁₆ "(H), 51"(D, door open)
DELAY WASH		up to 19 hours
DOOR SWITCH TYPE		PTC + Solenoid
WATER LEVEL		10 steps (by sensor)
LAUNDRY LOAD SENSING		Incorporated
ERROR DIAGNOSIS		Incorporated
AUTO POWER OFF		Incorporated
CHILD LOCK		Incorporated

▲ WARNING

To reduce the risk of injury to persons, adhere to all industry recommended safety procedures including the use of long sleeved gloves and safety glasses. Failure to follow all of the safety warnings in this manual could result in property damage, injury to persons or death.

2. FEATURES & TECHNICAL EXPLANATION

2-1. FEATURES



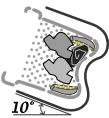
■ Ultra Capacity

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.



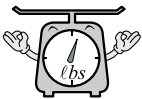
■ Direct Drive System

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.



■ Automatic Wash Load Detection

Automatically detects the load and optimizes the washing time.

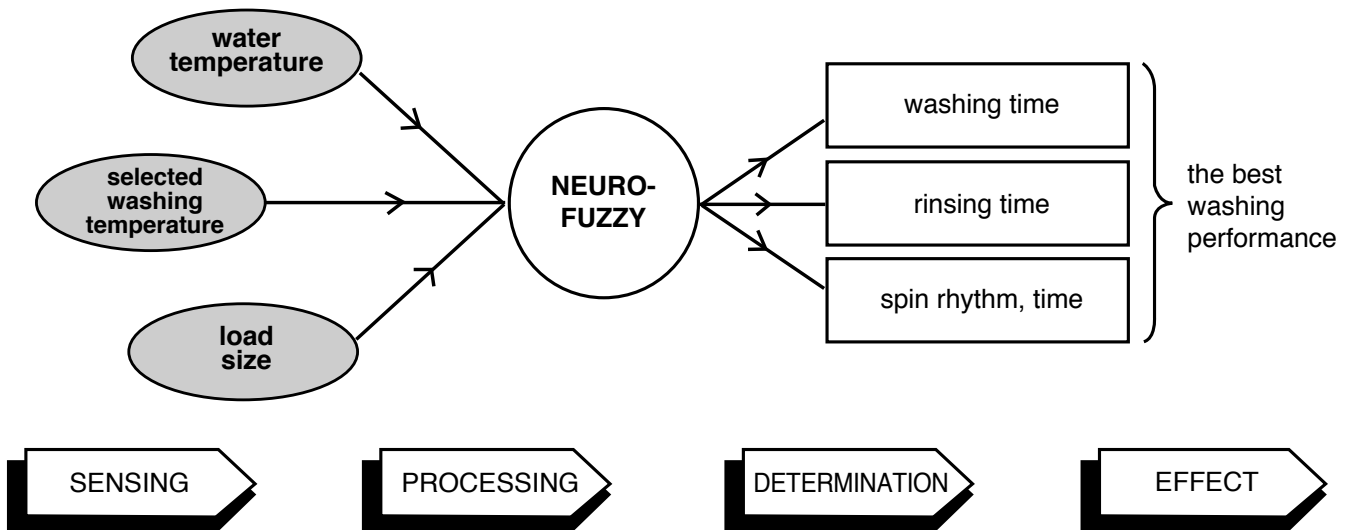


■ Child Lock

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 inertial 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.)

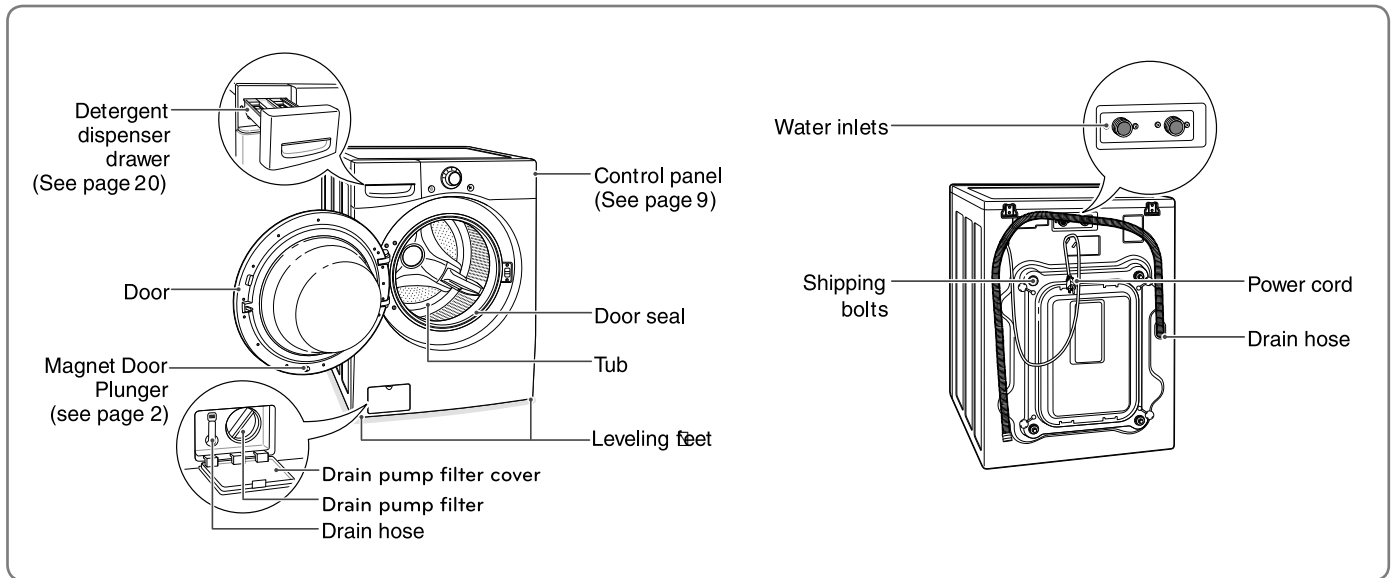
2-7. CHILD LOCK

- Use this option to prevent unwanted use of the washer. Press and hold STAIN CARE 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 controls of the washer while washing.
- CHILD LOCK lasts after the end of cycle. If you want to deactivate this function, Press and hold the STAIN CARE button for 3 seconds.

3. PARTS IDENTIFICATION

PART AND ACCESSORIES

Part



Accessories

INCLUDED ASSESSORIES

Hot/cold water hoses Non-skid pads Caps for covering shipping bolt holes

Wrench Tie strap Elbow bracket (for securing drain hose)

OPTIONAL ACCESORIES

Pedestal Stacking kit

14" Pedestal Color		Stacking Kit Color	
WDP4C	Chardonnay	CSTK1	Chardonnay
WDP4R	Wild Cherry Red	RSTK1	Wild Cherry Red
WDP4S	Titanium	SSTK1	Titanium
WDP4V	Stainless Silver	GSTK1	Pearl Gray
WDP4W	White	WSTK1	White
WDP4N	Navy Blue	NSTK1	Navy Blue

NOTE

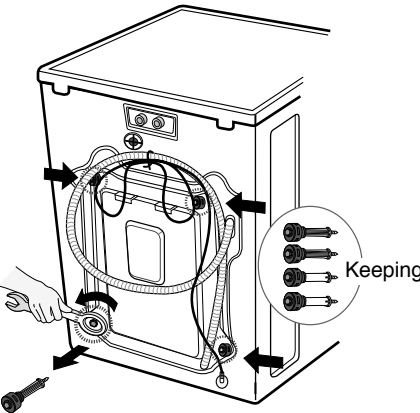
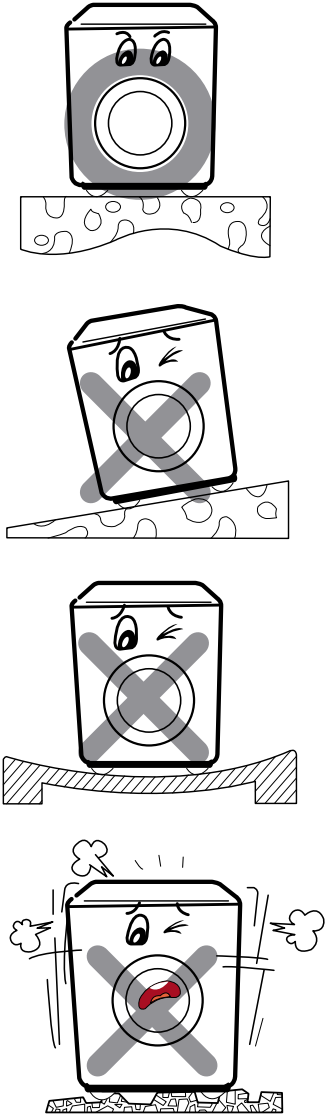
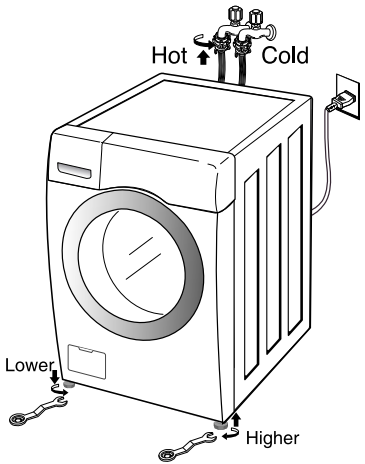
- Contact LG Customer Service at 1-800-243-0000 (1-888-542-2623 in Canada) if any accessories are missing.
- For your safety and for extended product life, use only authorized components. The manufacturer is not responsible for product malfunction or accidents caused by the use of separately purchased unauthorized components or parts.
- The images in this guide may be different from the actual components and accessories, and are subject to change by the manufacturer without prior notice for product improvement purposes.

4. INSTALLATION & TEST

- 1 Before servicing, ask the customer what the trouble is.
- 2 When installing or repairing the washer, put on long gloves and safety glasses.
- 3 Check the setup (power supply is 120 VAC, remove the transit bolts, level the washer, etc.)
- 4 Check with the troubleshooting guide.
- 5 Plan your service method by referring to the disassembly instructions.
- 6 Service the unit.
- 7 After servicing, operate the appliance to see whether it functions correctly.

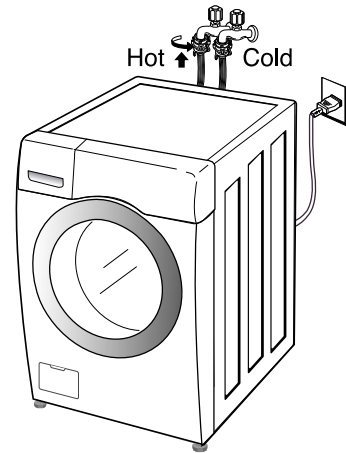
■ STANDARD INSTALLATION

The appliance should be installed as follows:

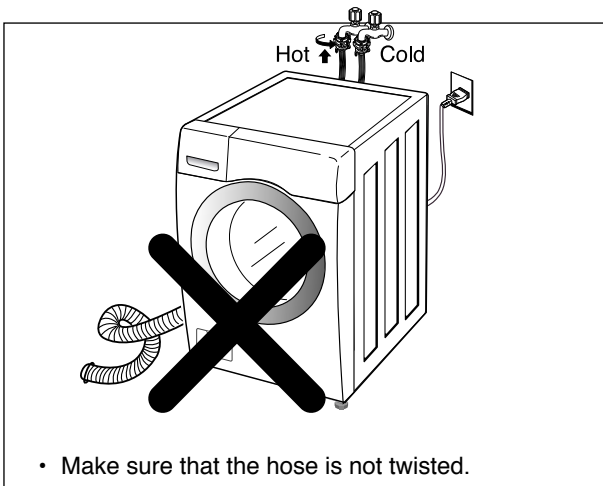
REMOVE THE SHIPPING BOLTS	INSTALL THE APPLIANCE ON A FLAT AND FIRM SURFACE	ADJUST THE LEVELING
<ul style="list-style-type: none"> • Remove the 4 shipping bolts with the supplied wrench. ※ Remove the lower bolts first. It is easier that way. • Keep the shipping bolts and spanner for future use. • Insert the 4 caps (provided) into the hole. 		<ul style="list-style-type: none"> • Turn the leveling feet to adjust the appliance.  <ul style="list-style-type: none"> • Turn clockwise to raise; counterclockwise to lower.

■ HOW TO CONNECT THE INLET HOSE

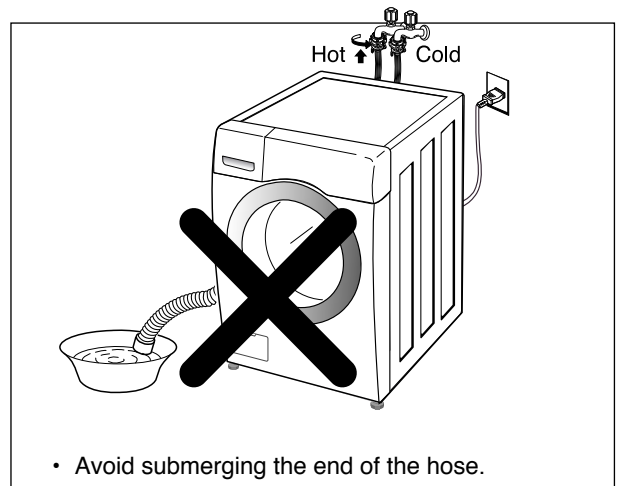
- Verify that the rubber washer is inside of the valve connector.
- Tighten the inlet hose securely to prevent leaks.
- Install the inlet hose to correct temperature water tap.
Otherwise, it cause drips on the drawer panel handle and drawer panel.



■ CONNECT THE DRAIN HOSE



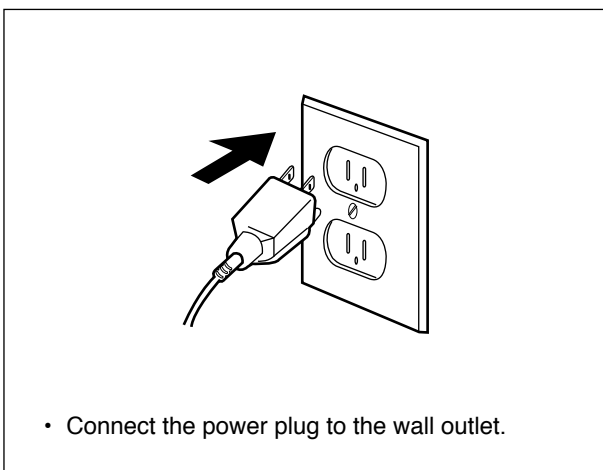
- Make sure that the hose is not twisted.



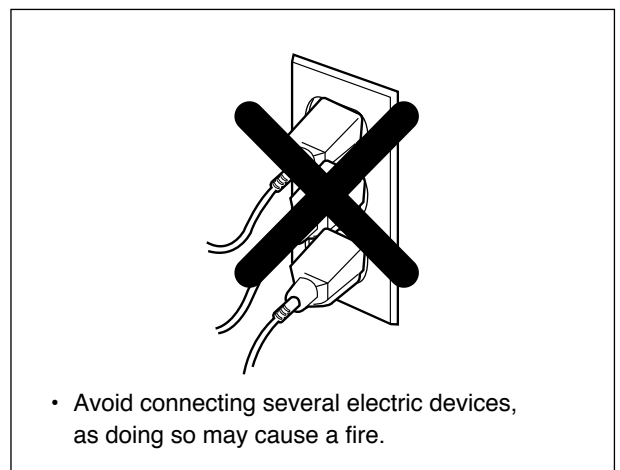
- Avoid submerging the end of the hose.

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

■ CONNECT POWER PLUG

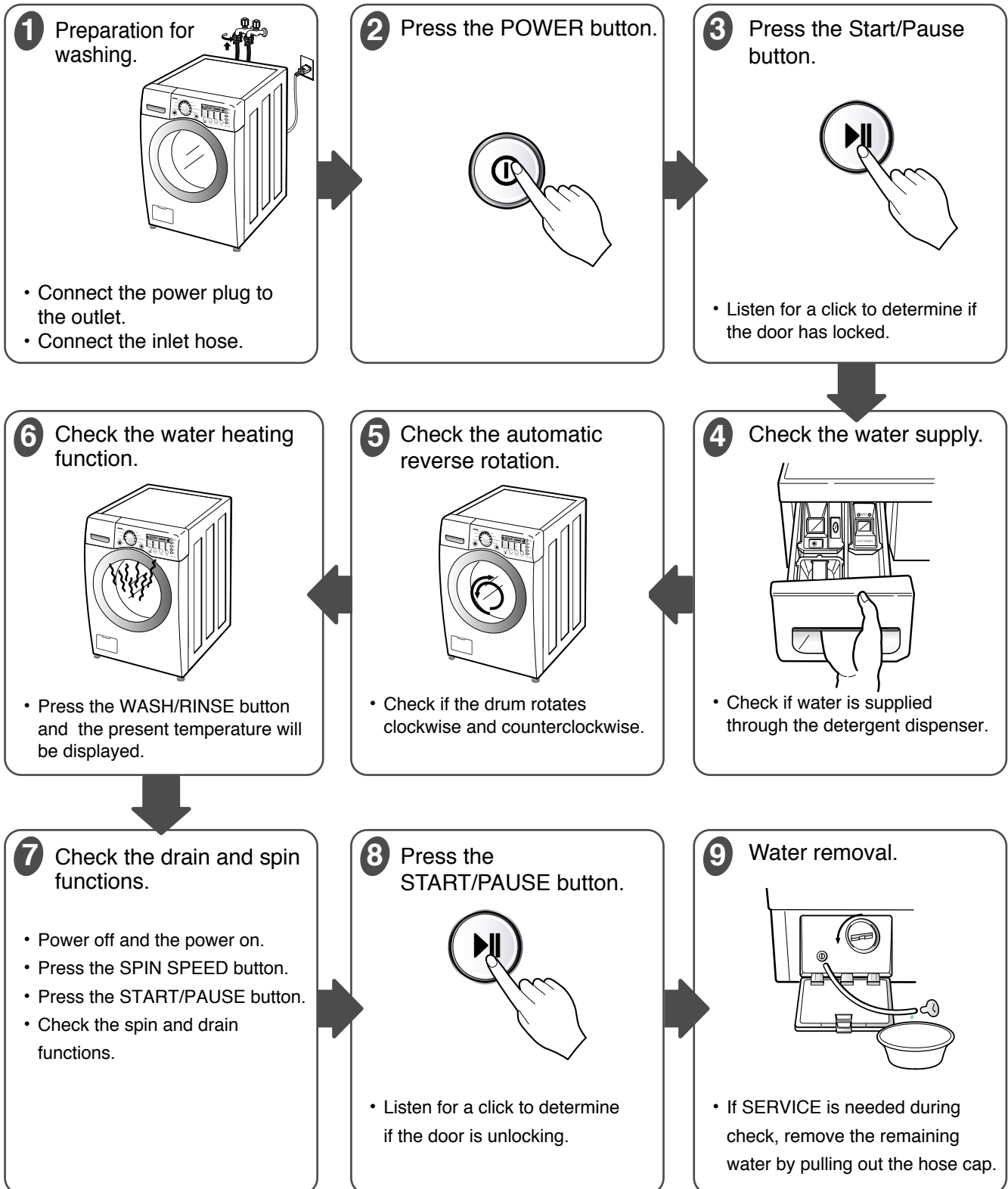


- Connect the power plug to the wall outlet.



- Avoid connecting several electric devices, as doing so may cause a fire.

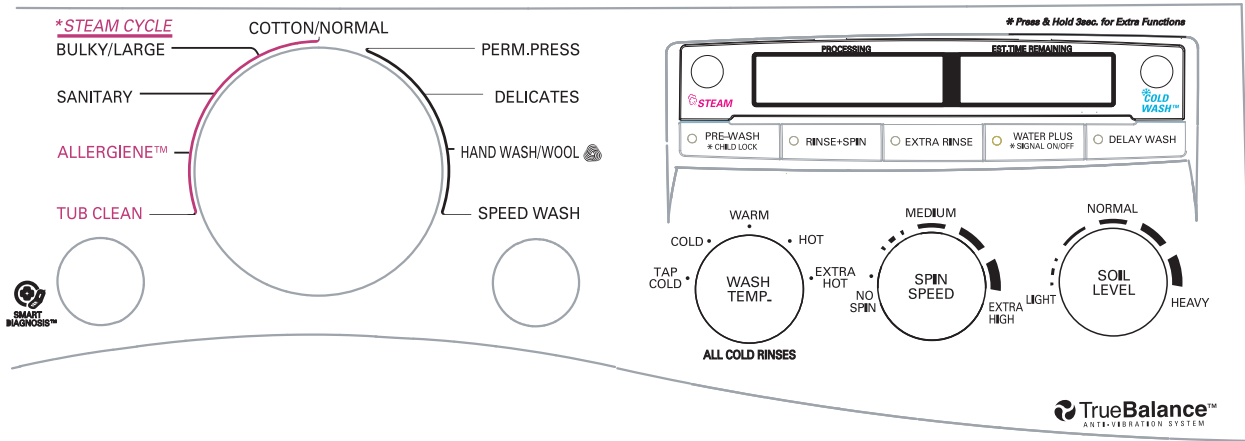
7 TEST OPERATION



5. OPERATION

5-1. CONTROL PANEL FEATURES

■ WM2650H*A

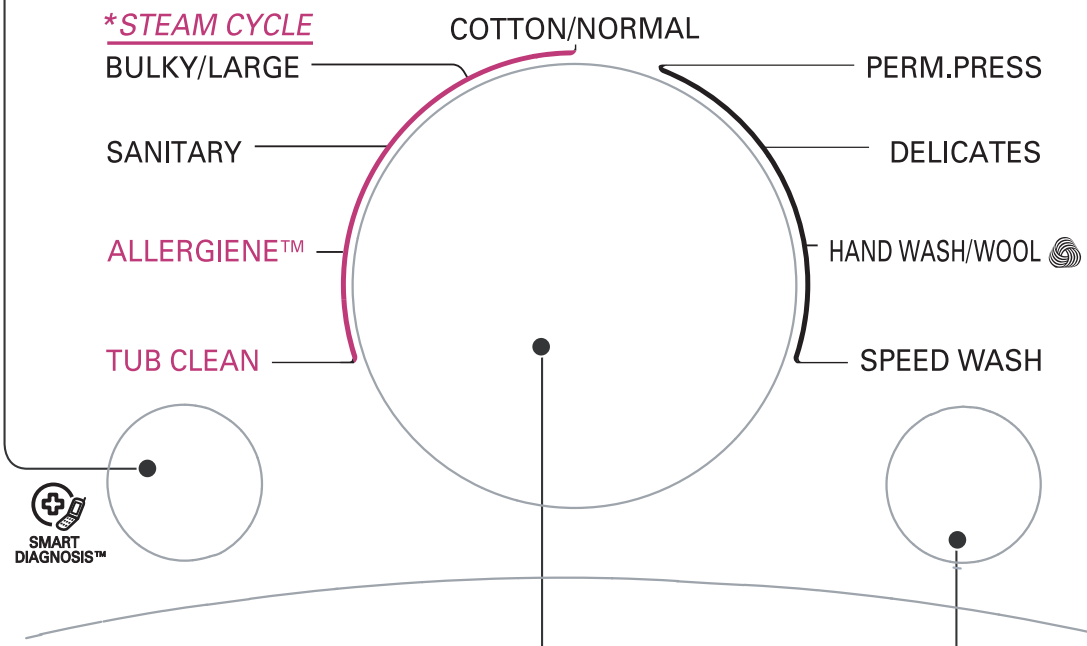


Power Button

- 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

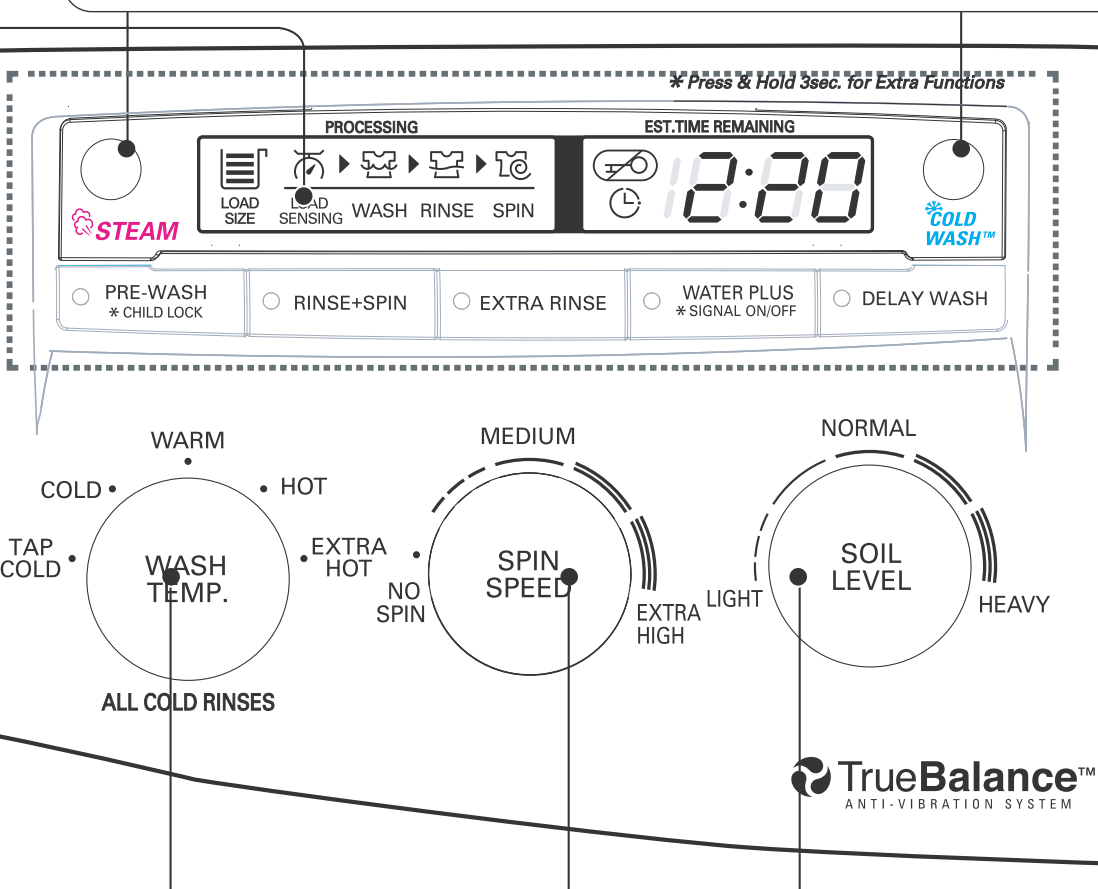
- Rotate the Cycle selector knob to select the cycle designed for different types of fabric and soil levels.

Start/Pause

- Use this button to Start/Stop the washer.

Option Button

- Rinse + Spin: Use this option to rinse and then spin.
- PRE-WASH: Use the PREWASH button to select to wash temporary before to start the course which you chosen.
- DELAY WASH: Once you have selected the cycle and other settings, press this button to delay the start of the wash cycle.
- COLDWASH™: Use this function to wash without hot water and heating.
- EXTRA RINSE: This option will add an extra rinse cycle to the selected cycle.
- WATER PLUS: You can rinse the load more thoroughly by adding extra water to the washing and rinse cycle.
- CHILD LOCK: Use this option to prevent unwanted use of the washer or to keep cycle settings from being changed while the washer is operating.
- STEAM: Use the STEAM button to add steam to the cycle for the extra deaning.



Wash/Rinse, Spin speed, Soil Level, Signal 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.
- Press repeatedly to adjust the volume of the Beeper.

5-2. Cycle Guide

The cycle guide below shows the options and recommended fabric types for each cycle.

● = Available option

CYCLE	FABRIC TYPE	DISPLAY TIME(MIN)	BASIC OPTION (★=DEFAULT)			ADDITIONAL OPTIONS							
			WASH TEMP.	SPIN SPEED	SOIL LEVEL	PRE-WASH	RINSE+ SPIN	EXTRA RINSE	WATER PLUS	DELAY WASH	STEAM	COLD WASH™	
TUB CLEAN	This cycle is designed to remove a mildew	89									●	●	
ALLERGIENE™	Cotton, underwear, pillow covers, bed sheets, baby wear	99~122		(=)EXTRA HIGH (=)HIGH★ (-)MEDIUM (---)LOW (•)NO SPIN			●	●	●	●	●		
SANITARY	Heavily soiled underwear, work clothes, diapers, etc.	98~105	EXTRA HOT★	(=)EXTRA HIGH (=)HIGH★ (-)MEDIUM (---)LOW (•)NO SPIN	HEAVY NORMAL★ LIGHT	●	●	●	●	●	●		
BULKY/ LARGE	Large items such as blankets and comforters	56	HOT WARM★ COLD TAP COLD	(-)MEDIUM★ (---)LOW (•)NO SPIN	HEAVY NORMAL★ LIGHT	●	●	●	●	●	●	●	
PERM. PRESS	Dress shirts/pants, wrinkle-free clothing, poly/cotton blend clothing, tablecloths	53~60	HOT WARM★ COLD TAP COLD	(=)HIGH (-)MEDIUM★ (---)LOW (•)NO SPIN	HEAVY NORMAL★ LIGHT	●	●	●	●	●			●
COTTON/ NORMAL	Cotton, linen, towels, shirts, sheets, jeans, mixed loads	49~74	HOT WARM★ COLD TAP COLD	(=)EXTRA HIGH (=)HIGH★ (-)MEDIUM (---)LOW (•)NO SPIN	HEAVY NORMAL★ LIGHT	●	●	●	●	●	●	●	
DELICATES	Dress shirts/blouses, nylons, sheer or lacy garments	41	WARM COLD★ TAP COLD	(-)MEDIUM★ (---)LOW (•)NO SPIN	HEAVY NORMAL★ LIGHT	●	●	●	●	●			●
HAND WASH/ WOOL 🐑	Items labeled "hand-washable"	55	WARM★ COLD TAP COLD	(---)LOW★ (•)NO SPIN	NORMAL★ LIGHT		●						●
SPEED WASH	Lightly soiled clothing and small loads	15	HOT★ WARM COLD TAP COLD	(=)EXTRA HIGH★ (=)HIGH (-)MEDIUM (---)LOW (•)NO SPIN	HEAVY NORMAL LIGHT★		●	●		●			●

Cycle time depends on water pressure, type and amount of load and chosen additional options.

To protect your garments, not every wash/rinse temperature, spin speed, soil level, or option is available with every cycle.

5-3. SPECIAL FUNCTIONS

The option buttons also activate special functions, including CHILD LOCK, LOAD SIZE, TUB CLEAN and SIGNAL ON/OFF. Press and hold the option button marked with the special function for 3 seconds to activate.

CHILD LOCK



Use this option to prevent unwanted use of the washer or to keep cycle settings from being changed while the washer is operating. Press and hold the PREWASH button for 3 seconds to activate or deactivate the child lock function.

The child lock indicator will be shown in the display, and all buttons are disabled except the ON/OFF button.

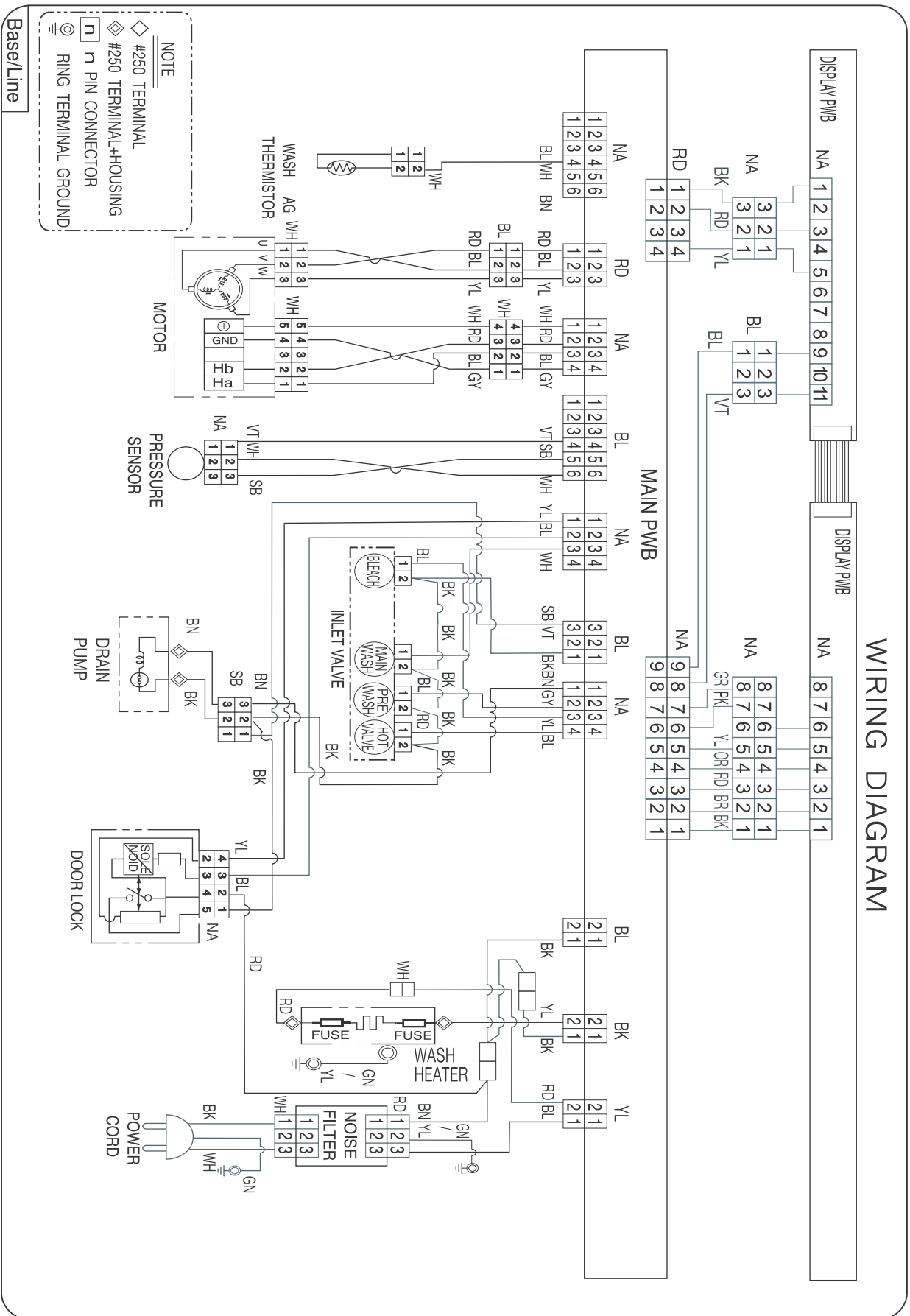
NOTE: CHILD LOCK lasts after the end of cycle. If you want to deactivate this function, Press and hold the STAIN CARE button for 3 seconds.

5-4. Explanation of each process

No.	Process	Explanation
1.	Stay	<ul style="list-style-type: none"> • Electrical power is supplied. • Washer is ready to work and the micom is in the active mode.
2.	Water supply	<ul style="list-style-type: none"> • After loading laundry and selecting a course and a cycle, water is supplied and drum rotates. • When a user selects Pre-wash course, water is supplied through pre wash valve.
3.	Soaking and washing laundry	<ul style="list-style-type: none"> • To get laundry wet, drum rotates clockwise and counterclockwise. • If water amount is insufficient at this time, the Inlet valve will supply water again.
4.	Heating and washing	<ul style="list-style-type: none"> • The heater heats the water in drum to the selected water temperature and drum rotates for washing.
5.	Washing and heating	<ul style="list-style-type: none"> • When the water temperature reaches to the selected temperature, the heating stops and only the drum rotates.
6.	/ washing	<ul style="list-style-type: none"> • If water temperature becomes lower than selected because of re-supplied water, the heating starts again.
7.	Washing	<ul style="list-style-type: none"> • Fuzzy logic decides washing time according to the laundry load, water temperature, and other factors.
8.	Drainage	<ul style="list-style-type: none"> • A pump motor drains the water from the drum. • After sensing drained water amount by water level frequency, spin starts. • When a heating course is selected, stay cooling process is performed to decrease the water temperature gradually to prevent laundry from being damaged and for safety reasons.
9.	Untangling (Sensing eccentricity)	<ul style="list-style-type: none"> • It balances laundry load and senses the eccentricity of the load, to only allow spinning without vibration. • If the eccentricity is worse than the allowed level, it repeats the disentangling process. When the repeated time is more than allowed level, it displays UE. • If the eccentricity is good, the intermittent spin starts. • During this process, the drain pump works for drainage intermittently.

No.	Process	Explanation
A.	Intermittent spin	<ul style="list-style-type: none"> To reach the correct set speed, the motor rotates clockwise and counterclockwise directions after spin process starts. If the water level frequency is lower than 23.0 kHz, a washer senses suds and starts suds removal process.
B.	Rinse spin	<ul style="list-style-type: none"> In this process, the remaining water during washing process is extracted and the selected speed is kept. Removing suds process is in active mode at this cycle.
C.	Remaining spin	<ul style="list-style-type: none"> After spin finishes, the drum rotates by remaining spin power until it stops. Motor power is off. This process is overlapped with next process.
D.	Rinse water supply	<ul style="list-style-type: none"> Water supply for rinse process.
E.	Rinse	<ul style="list-style-type: none"> Rinsing process.
F.	Last drainage	<ul style="list-style-type: none"> After spin finishes and power is not supplied to motor, the drum rotates by remaining spin power. If rinse hold is selected, the drainage is not proceeded after rinse finishes.
G.	Disentangling	<ul style="list-style-type: none"> The same as item 9.
H.	Intermittent spin	<ul style="list-style-type: none"> The same as item A.
I.	Main spin1	<ul style="list-style-type: none"> The same as item B.
J.	Main spin2	<ul style="list-style-type: none"> At the end of a main spin, the spin speed will reach the selected rpm.
K.	Remaining spin	<ul style="list-style-type: none"> The same with item C.
L.	Disentangling	<ul style="list-style-type: none"> After spin finishes, disentangling starts to remove unbalanced laundry.
M.	End	<ul style="list-style-type: none"> After 'end' signal is displayed, it stays for 8 seconds and power is automatically turned off. (Auto type door switch) After door switch is off, end signal is displayed in the case of manual type and it takes around 2 minute to turn off door switch.

6. WIRING DIAGRAM / PROGRAM CHART



PROGRAM CHART

* Water Supply: W-S * Intermittent Spin: I-S * Disentangle: D-T

COURSE	Wash										Rinse										Spin			A U T O O F F	**Approx. Working Time (Minutes)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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 Basic Cycle
 Optional Cycle
 Pre-Setting Time : Water Supply - 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.

7. TEST MODE

7-1. SAFETY CAUTION

- There's built-in AC 120V and DC power in output terminal of PWB assembly in common. Be careful electric shock when disconnecting parts while trouble shooting. (Wear Electro Static Discharge gloves when working.)
- After cutting off the power when changing PWB assembly, disconnect or assemble.
- Be careful static when handling PWB assembly, and use Electro Static Discharge plastic pack when delivering or keeping it.

7-2. LOAD TEST MODE

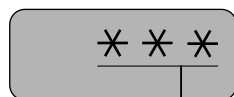
The washer must be empty and the controls must be in the off state.

1. Press the SPIN SPEED and SOIL LEVEL buttons simultaneously.
2. Press the Power (Ⓟ) 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.	LOAD TEST MODE
1 time	Tumble clockwise.	Rpm (45~50)
2 times	Low speed Spin.	Rpm (55~60)
3 times	High speed Spin.	Rpm (110~115)
4 times	Inlet valve for prewash turns on.	Water level frequency (0~255)
5 times	Inlet valve for main wash turns on.	Water level frequency (0~255)
6 times	Inlet valve for hot water turns on.	Water level frequency (0~255)
7 times	Inlet valve for steam turns on.	Water level frequency (0~255)
8 times	Inlet valve for bleach turns on.	Water level frequency (0~255)
9 times	Tumble counterclockwise.	rpm (42~50)
10 times	Heater turns on for 3 seconds.	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	Steam water level sensor operates.	AG tub water level frequency (0~255)
14 times	Steam heater turns on for 1.2sec.	Steam generator temperature
15 times	off	-

7-3. HOW TO CHECK THE WATER LEVEL FFREQUENCY

Press the WASH/RINSE and DELAY WASH 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


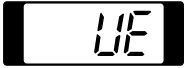
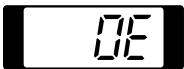
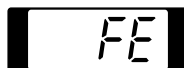
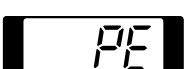
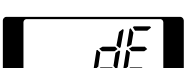
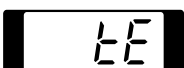
8. TROUBLESHOOTING

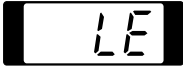
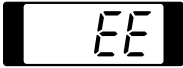
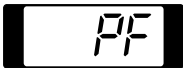
8-1. SAFETY CAUTION

- There's built-in AC 120V and DC power in output terminal of PWB assembly in common. Be careful electric shock when disconnecting parts while trouble shooting. (Wear Electro Static Discharge gloves when working.)
- After cutting off the power when changing PWB assembly, disconnect or assemble.
- Be careful static when handling PWB assembly, and use Electro Static Discharge plastic pack when delivering or keeping it.

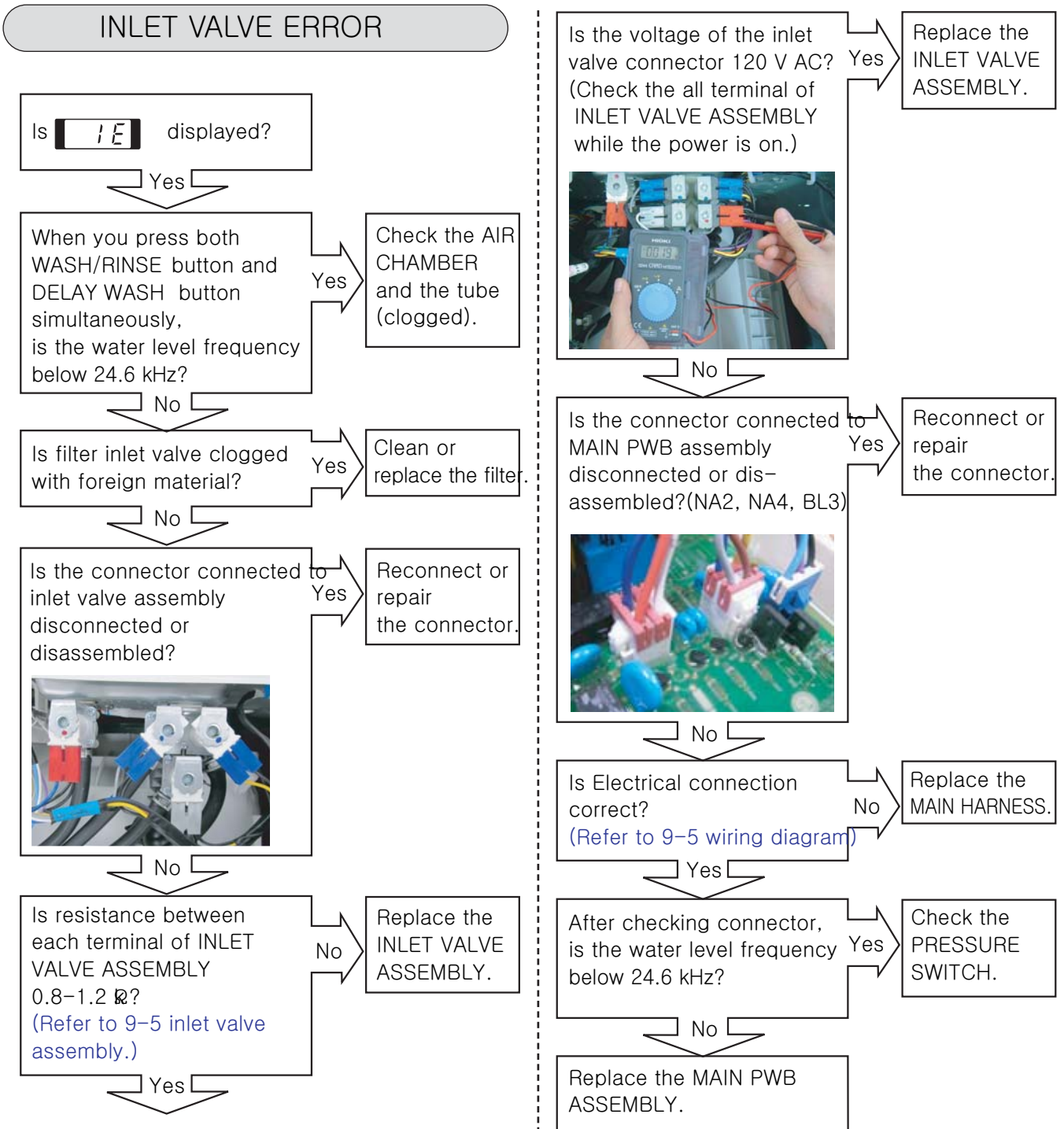
8-2. ERROR MODE SUMMARY

- 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 **PE**, **EE**, **DE** if the error is not resolved within 20 seconds, or the in case of other errors, if the error is not resolved within 4 minutes, power will be turned off automatically and the error code will blink. But in the case of **FE** power will not be turned off.

	ERROR	SYMPTOM	CAUSE
1	WATER INLET ERROR		<ul style="list-style-type: none"> • Correct water level (24.6kHz) is not reached within 8 minutes after water is supplied or it does not reach the preset water level within 20 minutes.
2	UNBALANCE ERROR		<ul style="list-style-type: none"> • 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		<ul style="list-style-type: none"> • Not fully drained within 10 minutes.
4	OVERFLOW ERROR		<ul style="list-style-type: none"> • Water is overflowing. (water level frequency is over 21.3kHz). ※ If FE is displayed, the drain pump will operate to drain the water automatically.
5	PRESSURE SENSOR ERROR		<ul style="list-style-type: none"> • The PRESSURE SENSOR ASSEMBLY is out of order. • When water level frequency maintain condition of below 10 kHz and over 30 kHz.
6	DOOR OPEN ERROR		<ul style="list-style-type: none"> • 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		<ul style="list-style-type: none"> • The THERMISTOR is out of order.

	ERROR	SYMPTOM	CAUSE
8	LOCKED MOTOR ERROR		<ul style="list-style-type: none"> • 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.
9	EEPROM ERROR		<ul style="list-style-type: none"> • EEPROM is out of order. <p>※ Displayed only when the START/PAUSE button is first pressed in the Load Test Mode.</p>
10	POWER FAILURE		<ul style="list-style-type: none"> • After the power supply is stopped while washing machine is working, the power is supplied rapidly.

8-4. TROUBLESHOOTING WITH ERROR



- [Note] Environmental safety check list
- 1) No water tap leakage
 - 2) No water tap freeze
 - 3) No entanglement of water supply hose
 - 4) No water shortage
 - 5) No shrinkage on water supply hose due to a possible misuse of hot and cold water
 - 6) No water supply hose leakage

DRAIN ERROR

Is DE displayed?

Yes

Is the connector connected to pump motor assembly disconnected or disassembled?

Yes

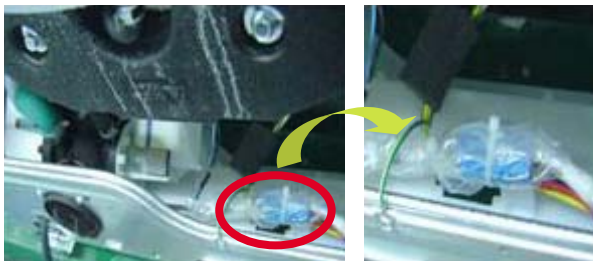
Reconnect or repair the connector.



Circulation pump



Drain pump



Connection connector

No

When you press both **WASH/RINSE** button and **DELAY WASH** button simultaneously, is the water level frequency below 25.0 kHz?

Yes

Check the AIR CHAMBER, the tube (clogged), and press switch.

No

Is the coil of the drain pump too high or low?
(resistance of the coil is 10-20Ω)
(Refer to 9-4 Pump motor assembly.)

Yes

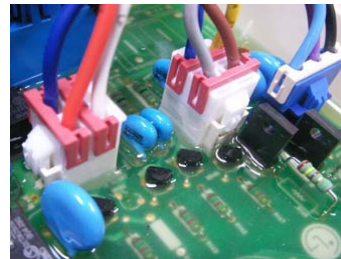
Replace the DRAIN PUMP ASSEMBLY.

No

Is the voltage between connectors out of range?
(NA2 pin1~ BL3 pin1)
- After remove Terminal Position Assurance (TPA) of connector, check as follows.

Yes

Replace the MAIN PWB ASSEMBLY.



- Pump running : 120V±5%
- Stopped Motor/Pump : 0~1V

Method

1. Press the Power button, while the SPIN SPEED button and SOIL LEVEL button is pressed simultaneously.
2. Press Start/Pause button.
 - : 1 time → Pump slow-speed running
 - : 2 times → Pump mid-speed running
 - : 3 times → Pump high-speed running
 - : 4 times → Stop the Motor/Pump

[Note] Environmental check list

- 1) The drainage hose must not stay in a lower position.
- 2) The drainage hose must not be bent or clogged in any way due to the surrounding physical configuration.
- 3) The drainage hose must not get frozen at all times.
- 4) The drainage pump must not have any improper substance or material inside that may cause a machine breakdown.

LOCKED MOTOR ERROR

Is **▲ LE ERROR** displayed?

Yes

Check the connectors below.
Is the connector disconnected or disassembled?
(motor hall sensor connector, motor drive connector.)
- **part of main PWB assembly (NA1, RD4)**



Motor Drive



Hall sensor

- part of wire



Motor Drive Hall Sensor

Yes

Reconnect the connector.
(connector / wire / motor)

- part of motor



Motor

Yes

Is rotor magnet cracked?



Magnet

Yes

Replace the ROTOR.

No

Is the resistance values in the range of 5 to 15 Ω ?
(U-V, V-W, W-V)
:U=1, V=2, W=3)
- After pull out the RD4 connector, check the terminal of the connector in wire. (Red 3P, male)

No

Replace the STATOR.



Yes

Is hall sensor out of order? (Refer to 9-3 Stator assembly/Hall sensor.)

Yes

Replace the Hall sensor.

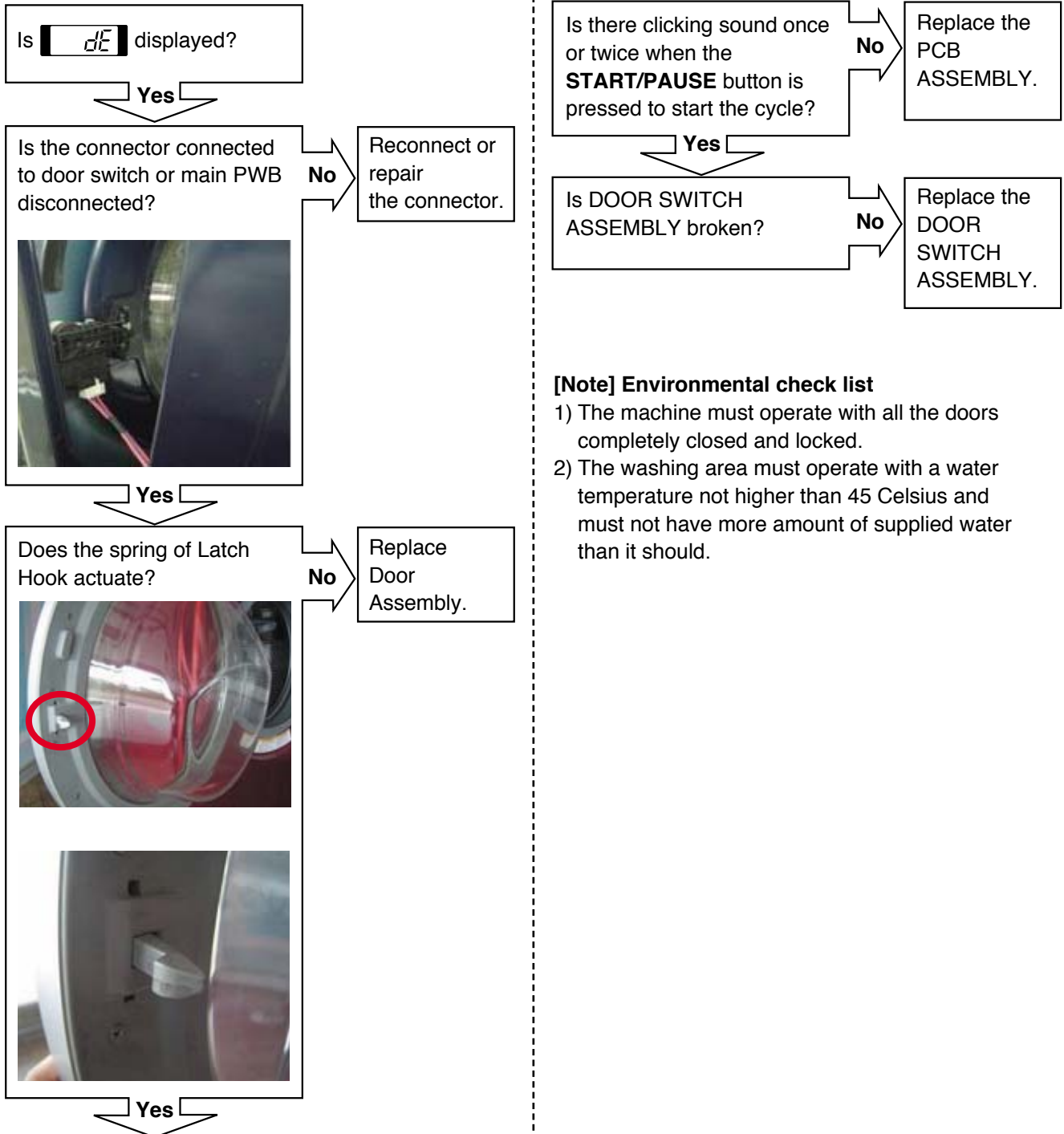
No

Check the IPM in the controller.

No

Replace the MAIN PWB ASSEMBLY.

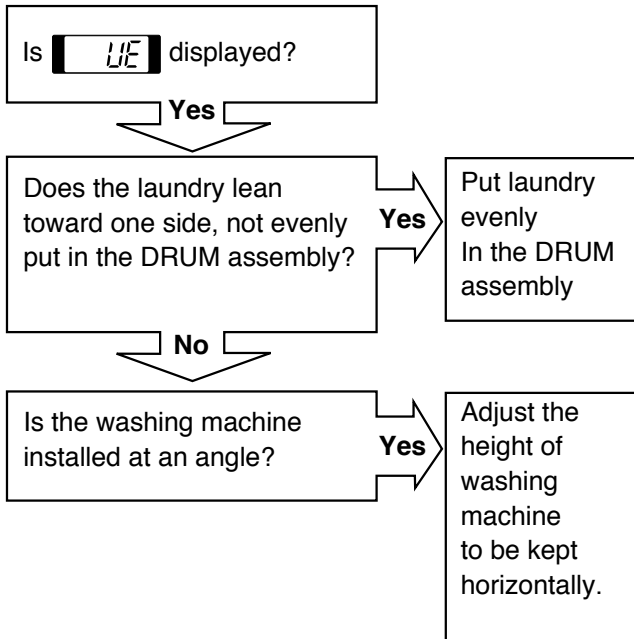
DOOR OPEN ERROR



[Note] Environmental check list

- 1) The machine must operate with all the doors completely closed and locked.
- 2) The washing area must operate with a water temperature not higher than 45 Celsius and must not have more amount of supplied water than it should.

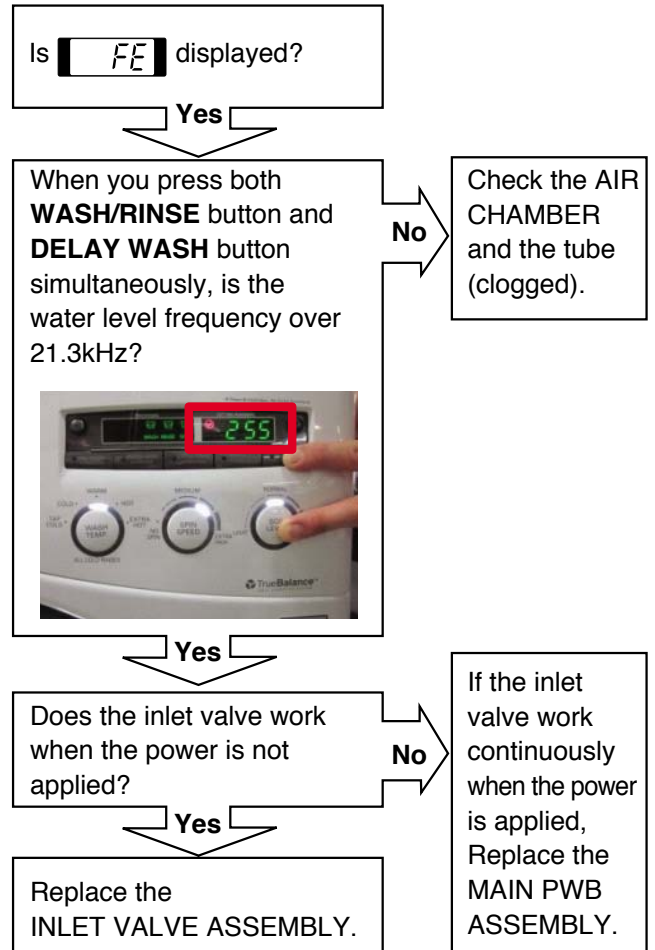
UNBALANCE ERROR



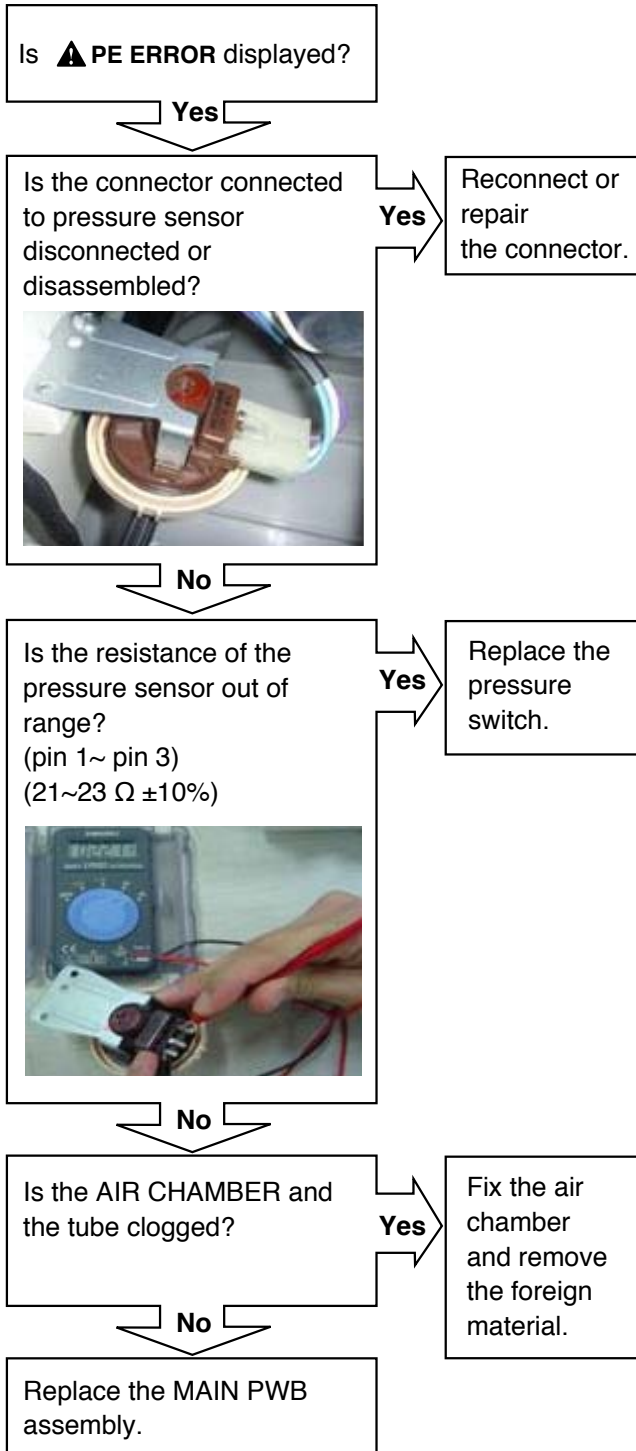
[Note] Environmental check list

- 1) Removal of transportation-based fixed bolt.
- 2) Confirmation on the material to see if it is capable of handling two different types of blanket materials.

OVER FLOW ERROR



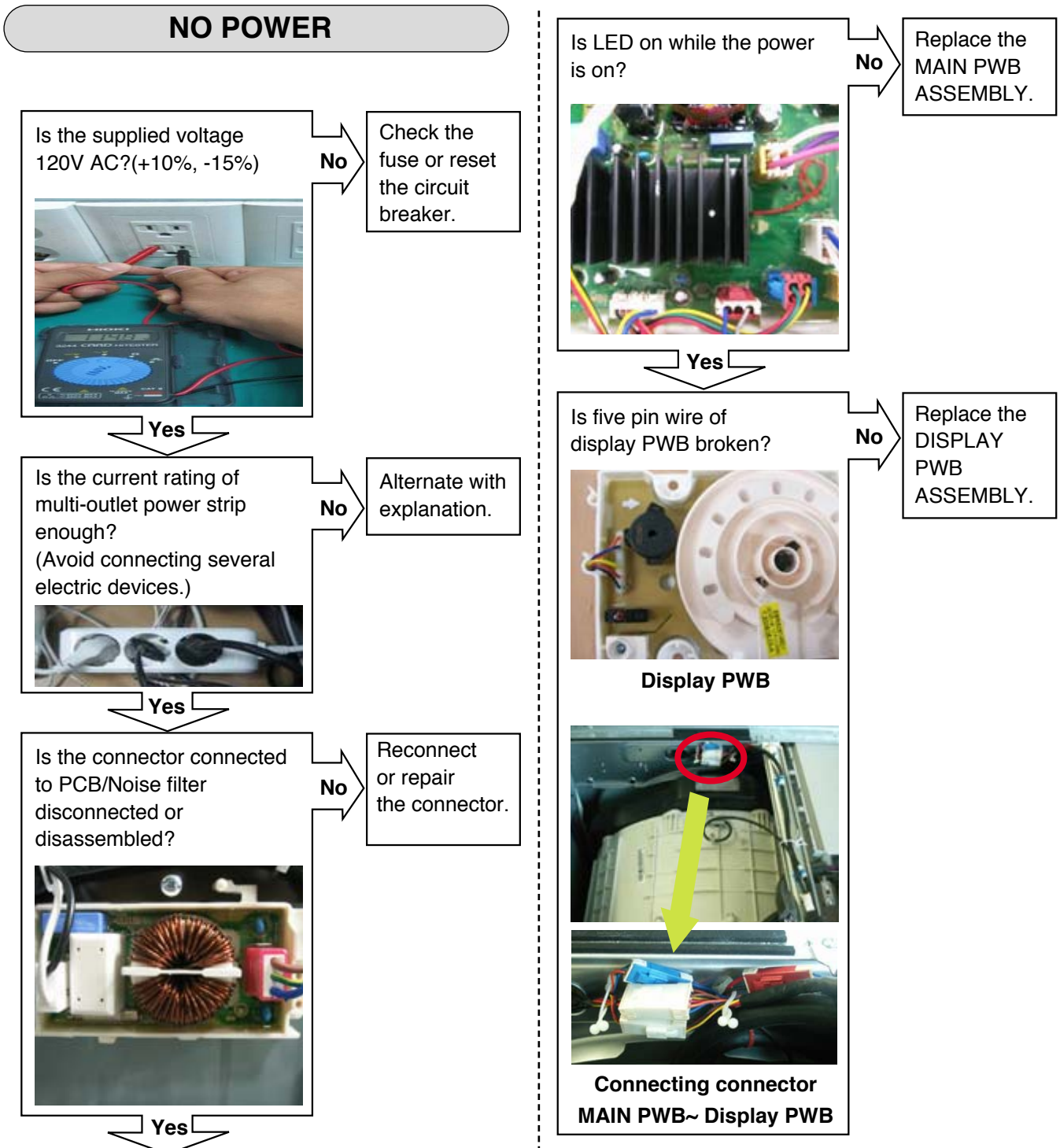
PRESSURE SENSOR ERROR



8-5. TROUBLESHOOTING ELSE

⚠ 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.



BUTTON DOESN'T WORK

Is the connector connected to Main PWB / Display PWB disconnected or disassembled?



Yes

Reconnect or Repair the connector.

No

Is the button of panel stuck?



Yes

Repair the button.



No

Is the display PCB broken? (check the buzzer sound and LED light while push the button.)

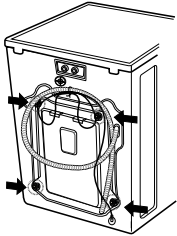
Yes

Replace the DISPLAY PWB ASSEMBLY.



VIBRATION & NOISE IN SPIN

Have all the transit bolts and base packing been removed?



No

Remove the transit bolts and Base packing.

Yes

Is the washer installed on a solidly constructed floor?

No

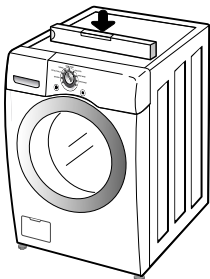
Move the washer or reinforce the floor.

Yes

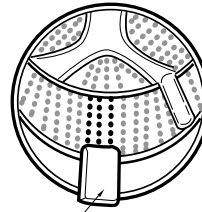
Check if the washer is perfectly level as follows:

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

Level



Put an unbalance part (rubber) inside of drum and start QC test mode and run in high spin. (Refer to section 7-2.) When the machine is spinning in high speed, verify that it is stable.

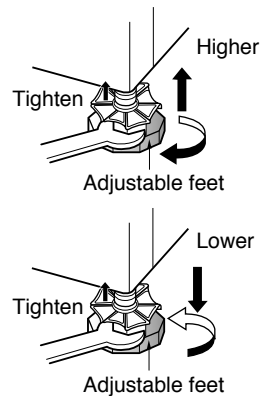


Unbalance Part

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.

Yes

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.



DETERGENT DOES NOT FLOW IN

Is water supplied? No

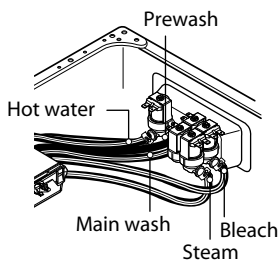
Yes

Refer to
**NO WATER
SUPPLY.**

Are receptacles correctly connected to the terminals of the INLET VALVE ASSEMBLY? No

Yes

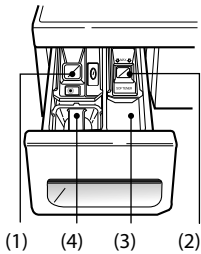
Check the wiring.



Has detergent been put in the correct compartment of the dispenser? No

Yes

Put the detergent in the correct place.



- (1) Liquid chlorine Bleach Compartment
- (2) Liquid fabric Softener Compartment
- (3) Prewash Compartment
- (4) Main Wash Compartment

Pre wash

●	●

Main wash

●	

● : Detergent

Is the detergent caked or hardened? Yes

No

Clean the dispenser.

LIQUID DETERGENT/SOFTENER/ BLEACH DOES NOT FLOW IN

Is water supplied? No

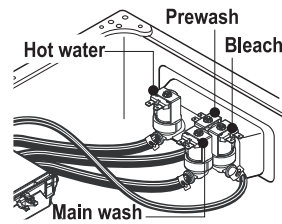
Yes

Refer to
**NO WATER
SUPPLY.**

Are the plugs correctly connected to the terminals of the INLET VALVE ASSEMBLY? No

Yes

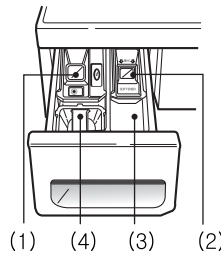
Check the wiring on the dispenser.



Is liquid detergent/softener/bleach put in the correct compartment of the drawer? No

Yes

Put it in the correct compartment.

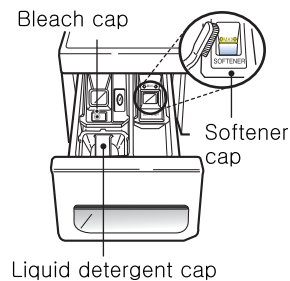


- (1) Liquid chlorine Bleach Compartment
- (2) Liquid fabric Softener Compartment
- (3) Prewash Compartment
- (4) Main Wash Compartment

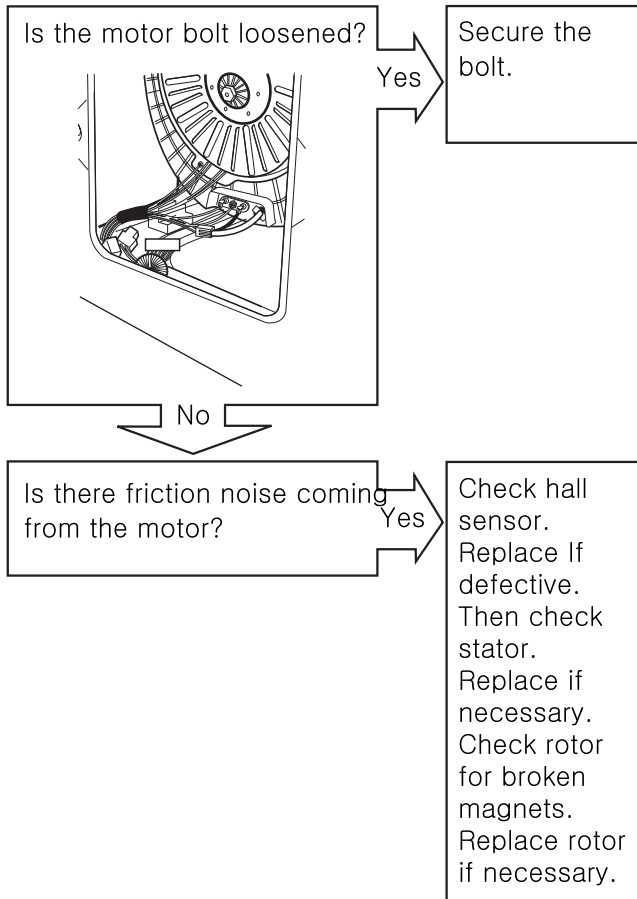
Is the liquid detergent/softener/bleach cap clogged? Yes

No

Clean the cap and container.



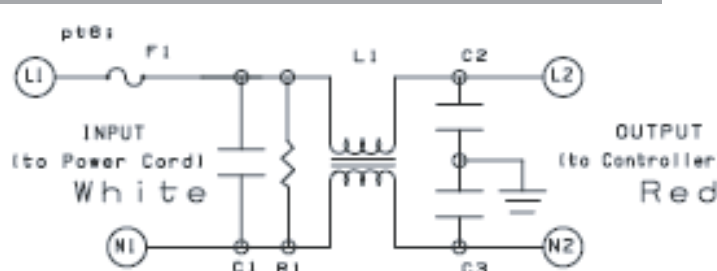

ABNORMAL SOUND



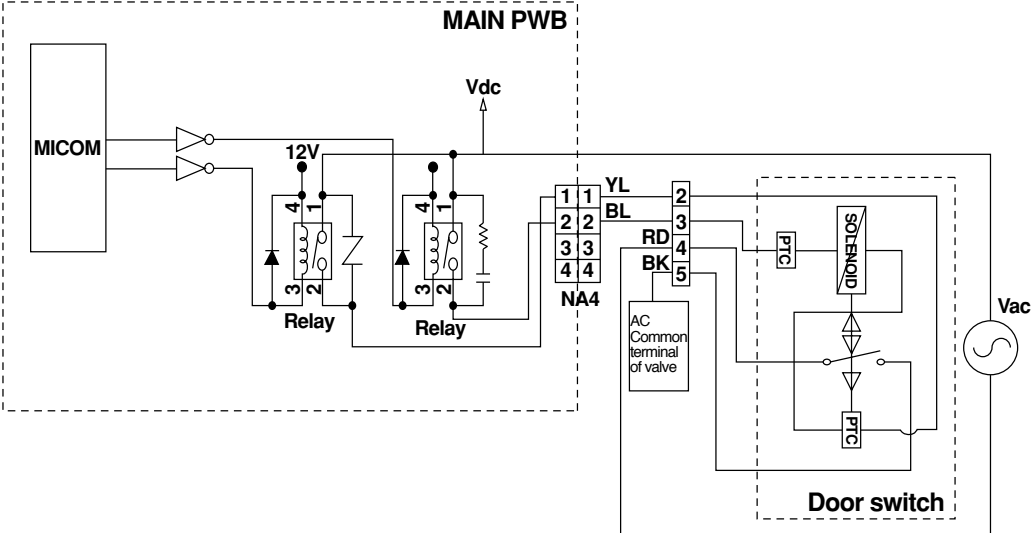
9. COMPONENT TESTING INFORMATION

⚠ WARNING When Resistance (Ohm) checking the Component, be sure to turn the power off, and do voltage discharge sufficiently.

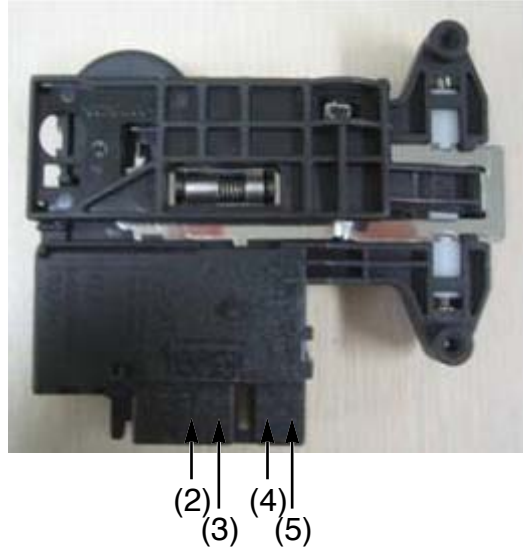
9-1. FILTER ASSEMBLY (LINE FILTER)

<p>Wiring diagram</p>	<p style="background-color: #cccccc; padding: 2px;">Circuit in the MAIN PWB / Wiring Diagram</p>  <p>1) (L1) - (L2), (N1) - (N2) 用测量仪测量时确认是否满足规格 2) (L2) - (N2) 间利用MULTI-TESTER确认是否满足1.5M欧</p>						
<p>Test points and Result</p>	 <table border="1" data-bbox="651 1366 1129 1523"> <thead> <tr> <th>Test Points</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>WH (1) to RD (3)</td> <td>0 Ω</td> </tr> <tr> <td>WH (3) to RD (1)</td> <td>0 Ω</td> </tr> </tbody> </table>	Test Points	Result	WH (1) to RD (3)	0 Ω	WH (3) to RD (1)	0 Ω
Test Points	Result						
WH (1) to RD (3)	0 Ω						
WH (3) to RD (1)	0 Ω						

9-2. DOOR LOCK SWITCH ASSEMBLY

<p>Wiring diagram</p>	<p style="text-align: center;">Circuit in the MAIN PWB / Wiring Diagram</p> 
<p>Function</p>	<p>The door lock switch assembly consists of a heating PTC, a bimetal, a protection PTC, and a solenoid. It locks the door during the wash cycle.</p> <ol style="list-style-type: none"> 1. Operation for door closing <ul style="list-style-type: none"> - After the system turns on, PTC heating starts up through terminals 2 and 4 authorizing the power on. - After PTC heating starts up and before solenoid operation is driven, force the system to the off position through CAM. ⇒ Door close - Authorizing one impulse through terminal 3~4 (PTC & solenoid) will make the door locked. - Door lock is detected when switches in terminal 4~5 are set closed. ⇒ CAM rotation will forcibly clear off the connection. <li style="padding-left: 20px;">The maximum, allowable number of impulse authorizations is 2. ⇒ Upon the third authorization of the impulse, the position of CAM goes back to the door-open position. - Authorizing the impulse occurs in 4.5 seconds upon input for max performance and two authorization processes are allowed at most. ⇒ Normal operation period of PTC heating: 1.5 – 5 seconds. (Defects from the development process.) 2. Operation for door opening <ul style="list-style-type: none"> - With a temporary stop, door automatically opens by CAM rotations after authorizing the impulse from the terminal, 3 ~ 4 and the power turns off – maximum of 3 times of the authorizing period. - Upon the fourth authorization of the impulse, the position of CAM goes back to the door-close position.

Test points



Result

Test Points	Result	Remarks
(2) to (4)	700-1500 Ω	At 77°F (25°C)
(3) to (4)	60-90 Ω	At 77°F (25°C)
(4) to (5)	Infinity	
(2) to (4)	120 Vac	Voltage Input

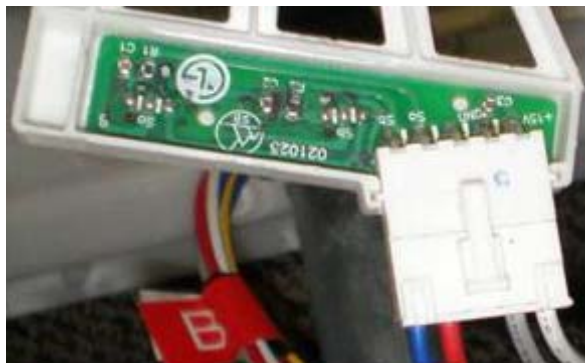
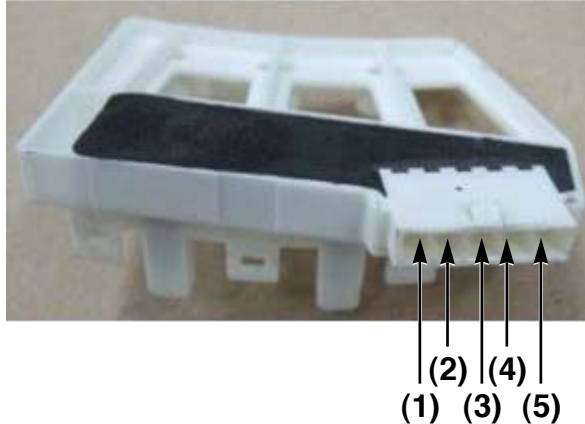
9-3. STATOR ASSEMBLY

<p>Wiring diagram</p>	<p style="text-align: center;">Circuit in the MAIN PWB / Wiring Diagram</p>								
<p>Function</p>	<p>The Direct Drive motor can be driven from stopped to maximum speed in infinite steps in either direction.</p> <p>There are 36 poles on the stator; 12 permanent magnets spaced around the rotor. There are no brushes to wear out. Unlike a more traditional brushless motor, the rotor surrounds the stator rather than being attached to it.</p>								
<p>Test points (Windings)</p>									
<p>Result (Windings)</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Points</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>5-15 Ω</td> </tr> <tr> <td>(2) to (3)</td> <td>5-15 Ω</td> </tr> <tr> <td>(3) to (1)</td> <td>5-15 Ω</td> </tr> </tbody> </table>	Test Points	Result	(1) to (2)	5-15 Ω	(2) to (3)	5-15 Ω	(3) to (1)	5-15 Ω
Test Points	Result								
(1) to (2)	5-15 Ω								
(2) to (3)	5-15 Ω								
(3) to (1)	5-15 Ω								

The hall sensor determines the speed and direction of the motor.
It also can read that the load is off balance when the drum speed fluctuates.

**Test point
and
Result
(Hall
Sensor)**

- Voltage Testing Hall Sensor at Stator



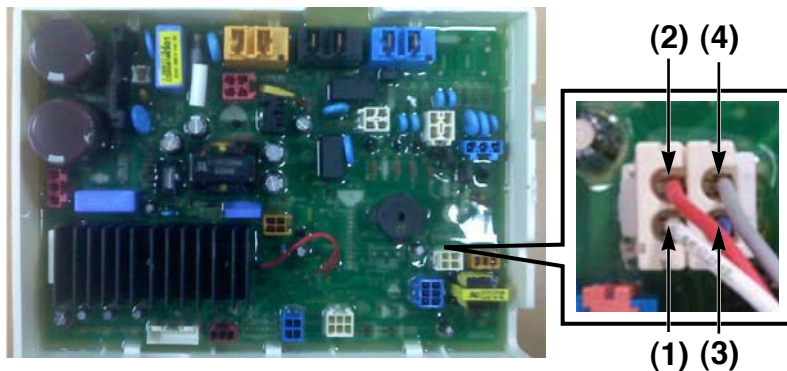
If measuring voltage from the Main PCB Assembly to the Hall Sensor, use the following steps:

1. Unplug power cord.
2. Remove rear washer panel.
3. Locate Hall sensor connector on the stator behind the rotor.
4. Place meter leads on terminals 5 to 4, white to gray.
5. Plug in power cord, close door, and press power button.
DO NOT PRESS START!
6. You should measure 10 to 15 V_{DC}. If 10 to 15 V_{DC} is present, control board, white wire, and gray wire are OK! If not, follow testing output voltages on control board in next section.

7. To measure output signal voltage from the hall sensor, carefully move test leads to terminals 1 to 4, blue and gray. Slowly rotate motor rotor by hand. You should read a pulsing 10 V_{DC}. If 10 V_{DC} is measured from 1 to 4, move lead on blue wire to red wire, terminal 2. Repeat rotating motor rotor by hand. You should read a pulsing 10 V_{DC} from red to gray.
8. If pulsing 10 V_{DC} is measured from 1 to 4 and 2 to 4, hall sensor is OK! If either test netted only 9 to 10 V_{DC} without changing (no pulsing) the hall sensor is likely defective. Disconnect power by unplugging washer and ohm check hall sensor to verify failure of the hall sensor.

**Test Point
and
Result
(Hall
Sensor)**


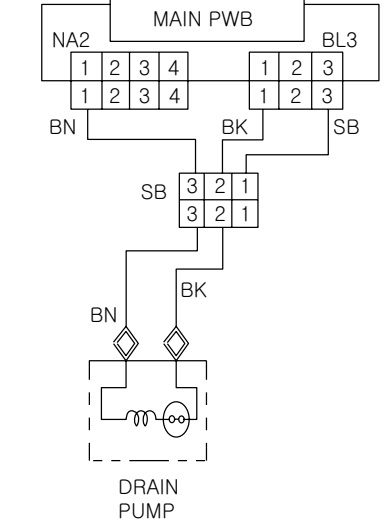

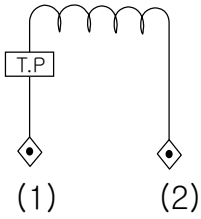
- Voltage Testing Hall Sensor from the Main PCB Assembly



1. Unplug power cord.
2. Remove rear panel.
3. Remove washer top.
4. Remove main PCB assembly cover as shown in figure below.
5. Locate the white hall sensor 4-wire connector using wiring diagram wire colors as your guide.
6. Plug in power cord, close door, and press the button. **DO NOT PRESS START!**
7. Place meter leads on White & Gray wires. You should read 10 to 15 V_{DC} output from the Main PCB Assembly to the Hall sensor. If no 10 to 15 V_{DC} is measured, the control board is defective.
8. Place meters leads on Blue to Gray. Turn motor rotor slowly by hand. You should measure a pulsing 10 V_{DC}. Place meter leads on Red to Gray. Turn motor rotor slowly by hand. You should measure a pulsing 10 V_{DC}. If both tests measure a pulsing 10 V_{DC}, hall sensor and harness OK. If either or both tests measures 9 to 10 volts, but does not pulse or change, Hall sensor has failed and must be replaced. IF zero (0) voltage is measured on either test, check red blue wires for continuity. Repair or replace harness as needed.

Test Points	Result	Remarks
(1) to (2)	8-12 kΩ	
(1) to (3)	8-12 kΩ	
(1) to (4)	10-15 V _{DC}	Voltage Input
(2) to (4)	10 V _{DC}	Pulsing Signal
(3) to (4)	10 V _{DC}	Pulsing Signal

9-4. PUMP MOTOR ASSEMBLY

<p>Wiring diagram</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Circuit in the MAIN PWB</p>  </div> <div style="text-align: center;"> <p>Wiring Diagram</p>  </div> </div> <p style="text-align: center;">* Each circuits of loads in wiring diagram are all same.</p>				
<p>Function</p>	<p>Two pump motors are used to drain the tub and to circulate the water / detergent solution.</p>				
<p>Test points</p>	<p style="text-align: center;">Drain Pump</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>(1)(2)</p> </div> <div style="text-align: center;">  </div> </div>				
<p>Result</p>	<p style="text-align: center;">Drain Pump</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Points</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>10-20Ω</td> </tr> </tbody> </table>	Test Points	Result	(1) to (2)	10-20Ω
Test Points	Result				
(1) to (2)	10-20Ω				

9-5. INLET VALVE ASSEMBLY

Wiring diagram

Circuit in the MAIN PWB

Wiring Diagram

* Each circuits of loads in wiring diagram are all same.

Function

Depending on the cycle and water temperature, the controller will energize the hot or cold water valve solenoids to meet the selected water temperature.

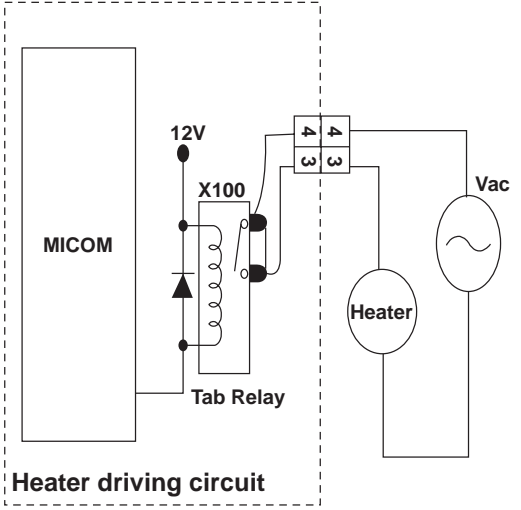
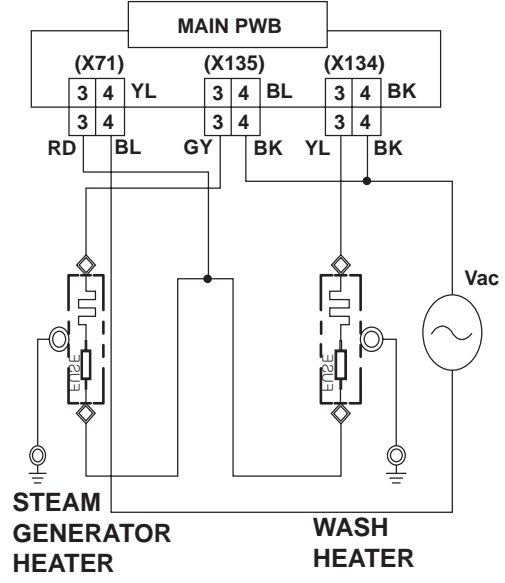
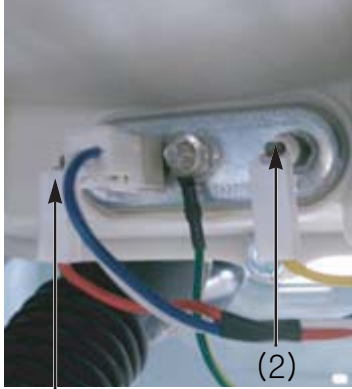
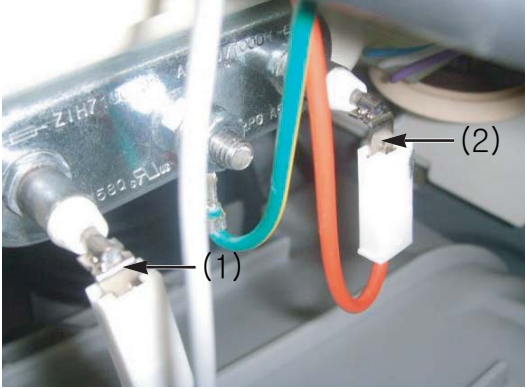
Test points and Result

After pull out the connector of defective valve, check the resistance.

Test points	(1)-(2)
Result	0.8-1.2 kΩ

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9-6. HEATER ASSEMBLY

<p>Wiring diagram</p>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 5px; background-color: #f0f0f0; width: 45%;"> <p style="text-align: center;">Circuit in the MAIN PWB</p>  <p style="text-align: center;">Heater driving circuit</p> </div> <div style="border: 1px solid gray; padding: 5px; background-color: #f0f0f0; width: 45%;"> <p style="text-align: center;">Wiring diagram</p>  <p style="text-align: center;">STEAM GENERATOR HEATER WASH HEATER</p> </div> </div>									
<p>Function</p>	<ol style="list-style-type: none"> 1. The wash heater is designed to raise the wash water to the desired temperature selection during certain wash cycles. 2. The steam generator heater is designed to make steam during steam cycles. 									
<p>Test points</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>(1) Wash Heater</p> </div> <div style="text-align: center;">  <p>Steam Generator Heater</p> </div> </div>									
<p>Result</p>	<p style="text-align: center;">Wash Heater</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Test Points</th> <th style="width: 50%;">Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>12-18 Ω</td> </tr> </tbody> </table>	Test Points	Result	(1) to (2)	12-18 Ω	<p style="text-align: center;">Steam Generator Heater</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Test Points</th> <th style="width: 50%;">Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>12-18 Ω</td> </tr> </tbody> </table>	Test Points	Result	(1) to (2)	12-18 Ω
Test Points	Result									
(1) to (2)	12-18 Ω									
Test Points	Result									
(1) to (2)	12-18 Ω									

9-7. THERMISTOR ASSEMBLY

<p>Wiring diagram</p>	<p style="text-align: center;">Circuit in the MAIN PCB / Wiring Diagram</p> <p style="text-align: center;">WASH THERMISTOR</p>
<p>Function</p>	<p>The thermistor (temperature sensor) is used to monitor water temperature in the tub or steam generator.</p>
<p>Test points</p>	<p style="text-align: center;">Wash Thermistor</p>

Result**Wash Thermistor**

Test Points	Result (tolerance $\pm 5\%$)	Remarks
(1) to (2)	39.5 k Ω	At 86°F (30°C)
	26.1 k Ω	At 104°F (40°C)
	12.1 k Ω	At 140°F (60°C)
	8.5 k Ω	At 158°F (70°C)
	3.8 k Ω	At 203°F (95°C)
	2.8 k Ω	At 221°F (105°C)

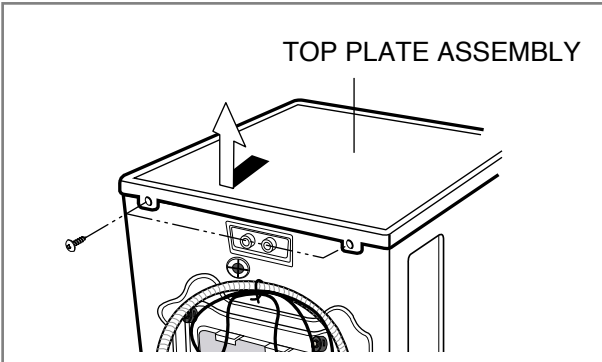
Steam generator Thermistor

Test Points	Result (tolerance $\pm 5\%$)	Remarks
(1) to (2)	39.5 k Ω	At 86°F (30°C)
	26.1 k Ω	At 104°F (40°C)
	12.1 k Ω	At 140°F (60°C)
	8.5 k Ω	At 158°F (70°C)
	3.8 k Ω	At 203°F (95°C)
	2.8 k Ω	At 221°F (105°C)
	2.1 k Ω	At 241°F (116°C)
	1.4 k Ω	At 266°F (130°C)
	1.0 k Ω	At 293°F (145°C)
	0.7 k Ω	At 320°F (160°C)
	0.4 k Ω	At 356°F (180°C)

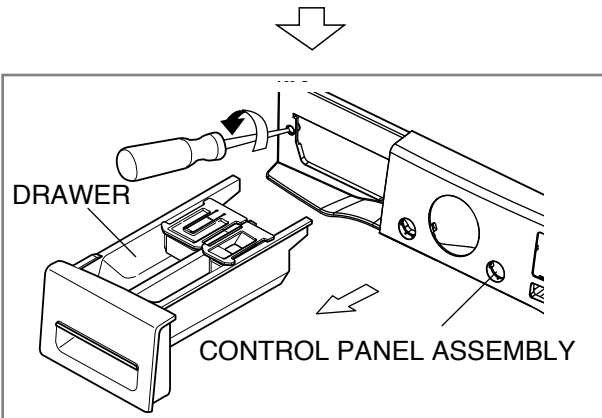
10. DISASSEMBLY INSTRUCTIONS

* Be sure to unplug the machine before disassembling and repairing the parts.

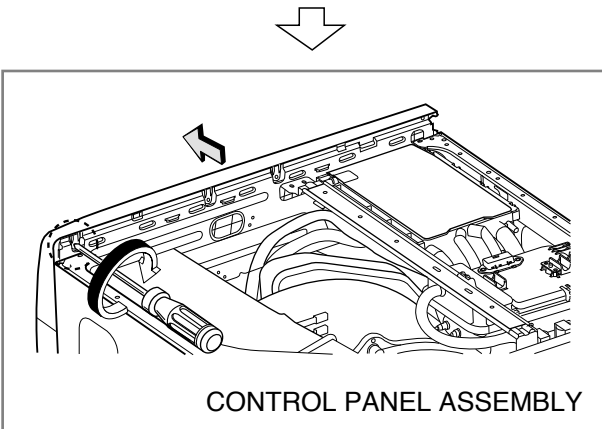
CONTROL PANEL



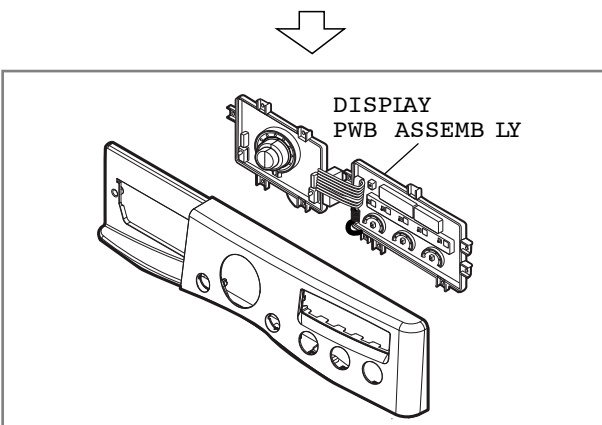
- ① Unscrew 2 screws on the back of the top plate.
- ② Pull the top plate backward and upward as shown.



- ③ Disconnect the Display PWB assembly connector from the cabling.
- ④ Pull out the drawer and unscrew 2 screws.

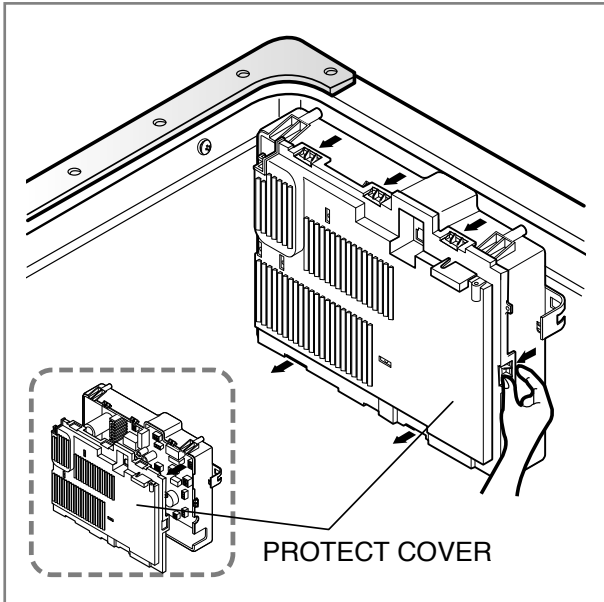


- ⑤ Remove one screw.
- ⑥ Lift the side the control panel assembly and pull it out.

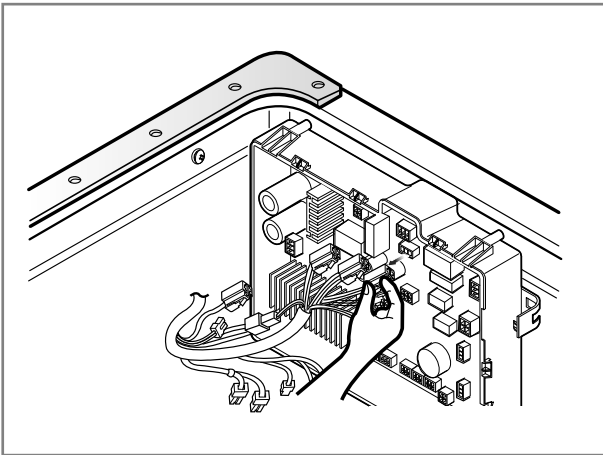


- ⑦ Unscrew the 8 screws from the control panel assembly.
- ⑧ Disassemble the display PWB assembly.

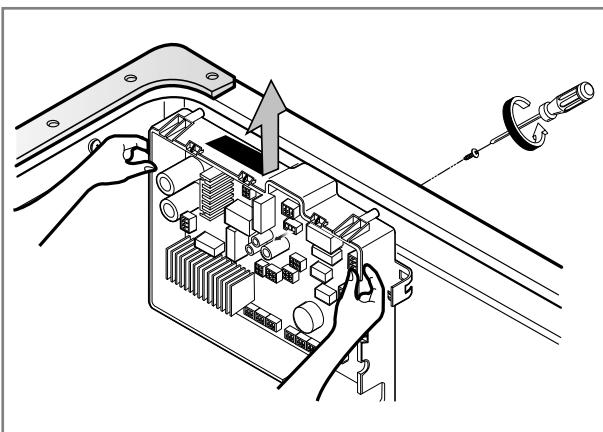
MAIN PWB ASSEMBLY



- ① Disconnect the POWER connector and the pressure switch assembly.
- ② Remove the protective cover.

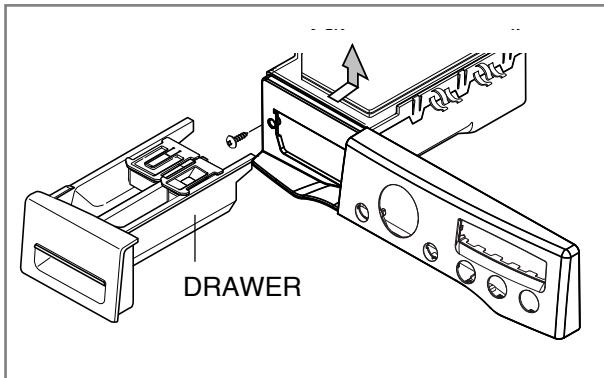


- ③ Disconnect the connectors.

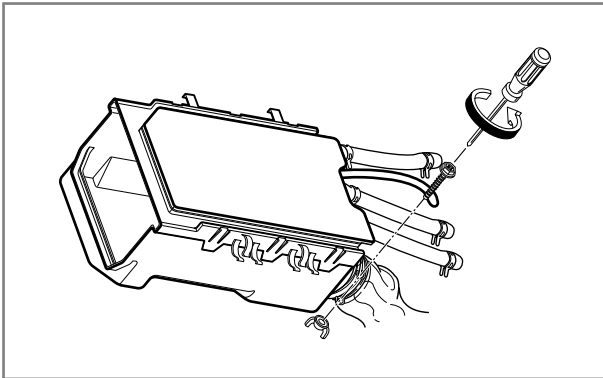


- ④ Unscrew 1 screw on the back.
- ⑤ Remove the main PWB.

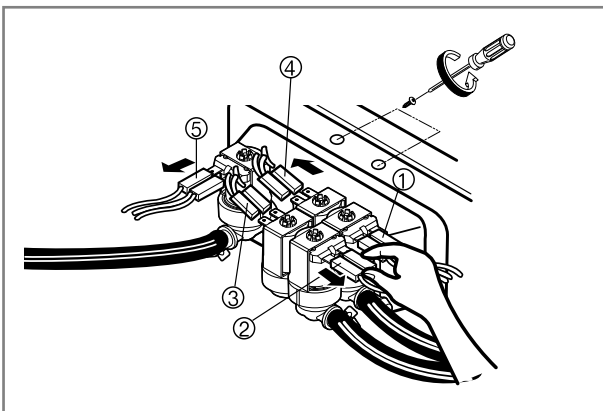
DISPENSER ASSEMBLY



- ① Disassemble the top plate assembly.
- ② Pull out the drawer.
- ③ Push out the dispenser assembly after unscrewing 2 screws.



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



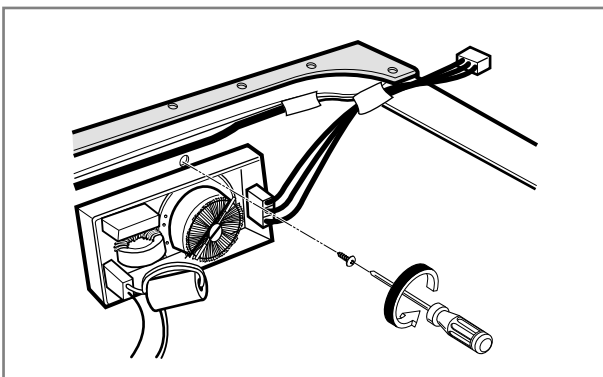
- ⑤ Disassemble the 4 connectors from the valves.

※ Wire Color

- ① Blue Housing (YL-BK)
- ② Red Housing (VT-BK)
- ③ White Housing (WH-BK)
- ④ Blue Housing (GY-BK)
- ⑤ Red Housing (BL-BK)

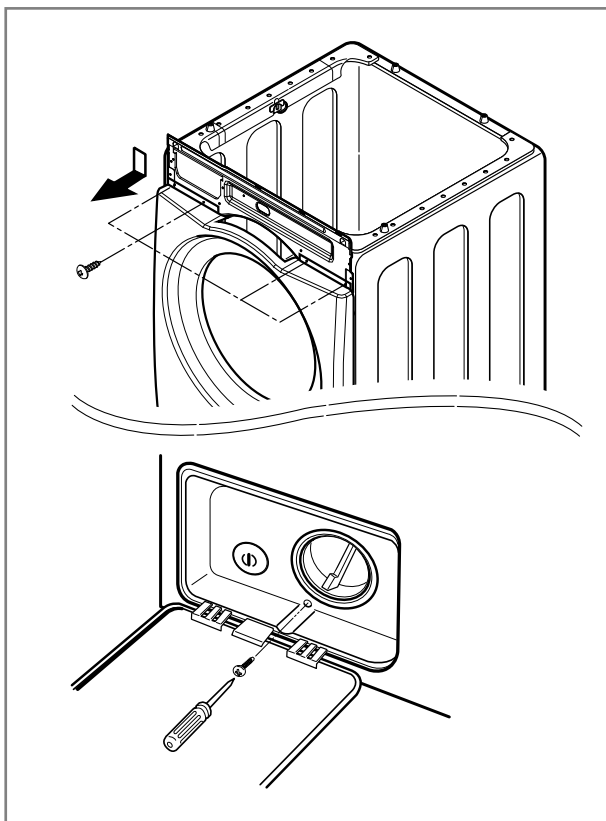
- ⑥ Unscrew 2 screws from the back of the cabinet.

NOISE FILTER

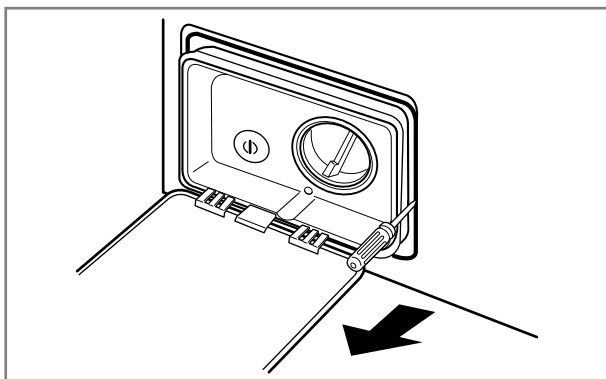


- ① Disassemble two (or three) connectors from the noise filter.
- ② Unscrew a screw from the top bracket.

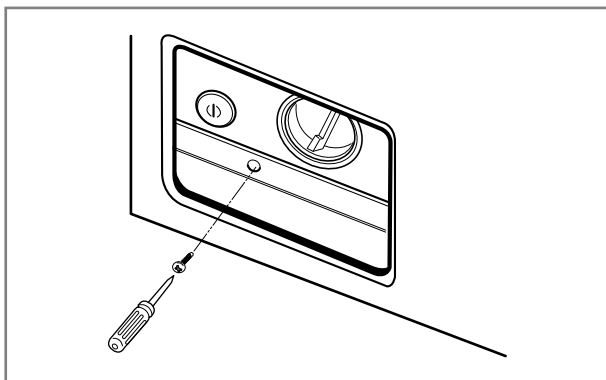
CABINET COVER



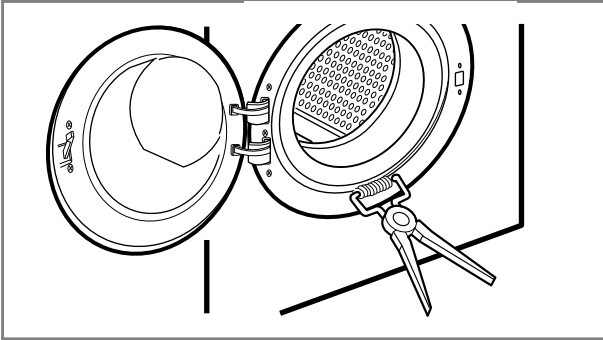
- ① Unscrew the 5 screws from upper of the cabinet cover.
- ② Unscrew the screw from filter cover.



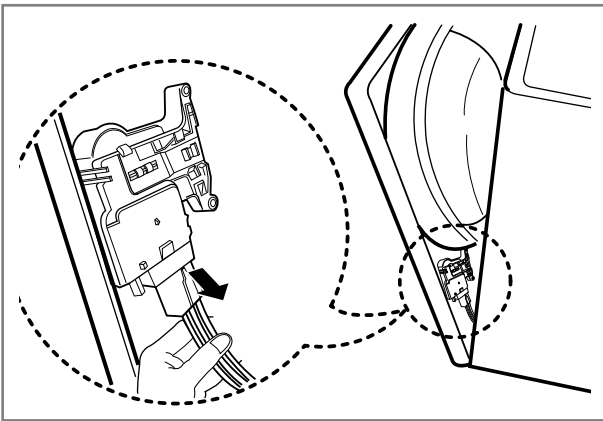
- ③ Put a flat (-) screwdriver or putty knife into the hinge slots at the bottom of the cover and pry it out.



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

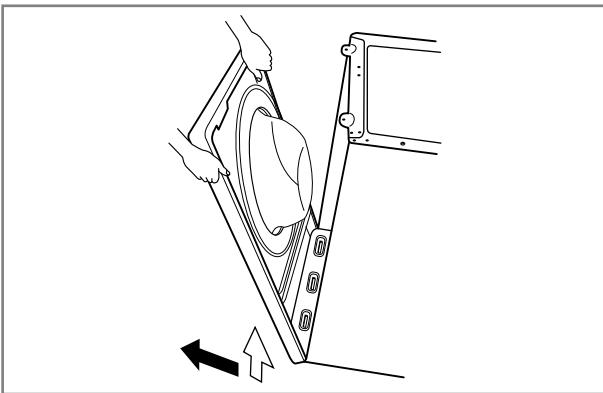


- ⑤ Open the door.
- ⑥ Disassemble the clamp assembly.

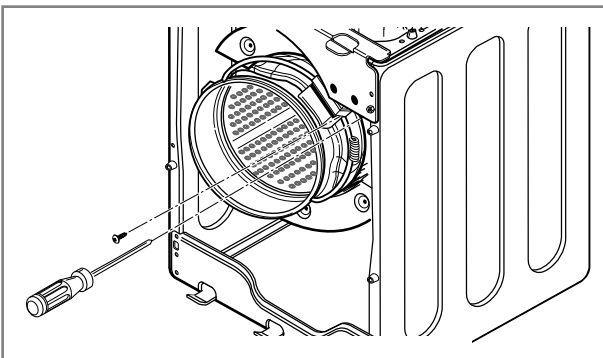


- ⑦ Tilt the cabinet cover.
- ⑧ Disconnect the door switch connector.

※ **NOTE** : When assembling the CABINET COVER, connect the door switch connector.

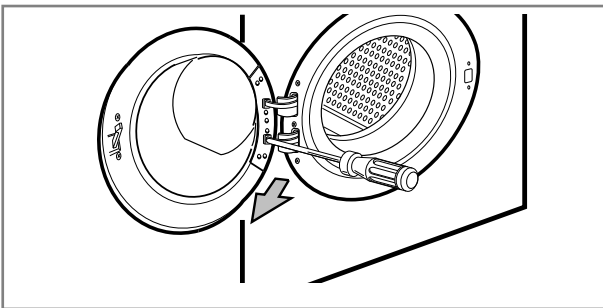
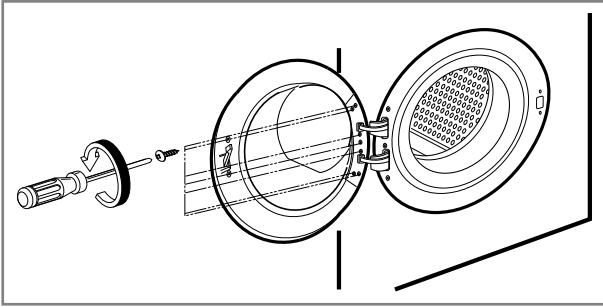


- ⑨ Lift and separate the cabinet cover.



- ⑩ Disassemble the clamp assembly.
- ⑪ Disassemble the gasket.

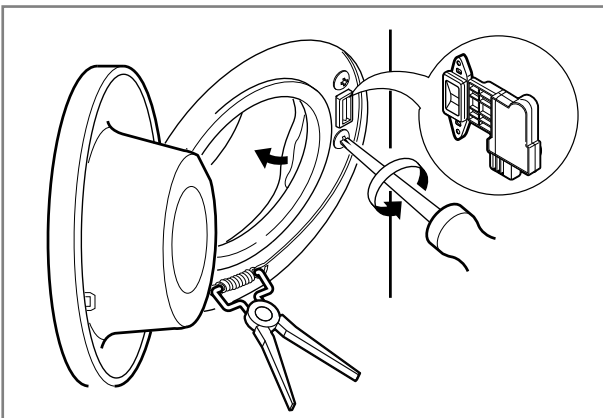
DOOR



- ① Open the door.
- ② Unscrew the 4 screws from the hinge.
(Use the 8mm tool.)

- ③ Disassemble the door upward.

DOOR LOCK SWITCH ASSEMBLY

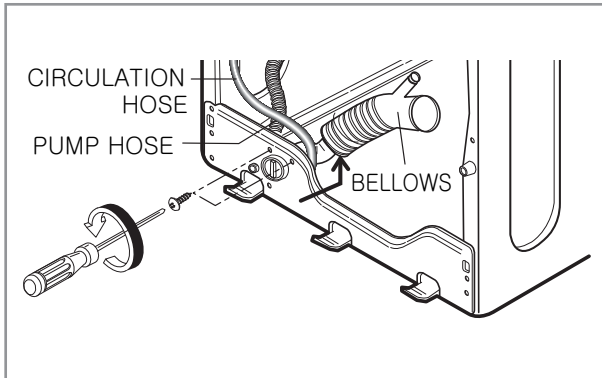


- ① Open the door and disassemble the CLAMP ASSEMBLY.
- ② Unscrew the 2 screws.

※ NOTE

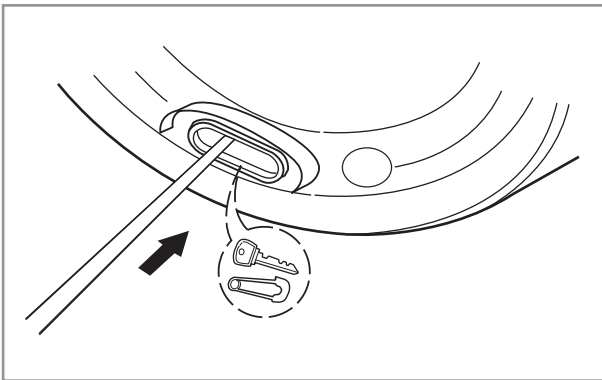
- Reconnect the connector after replacing the DOOR SWITCH ASSEMBLY.

PUMP



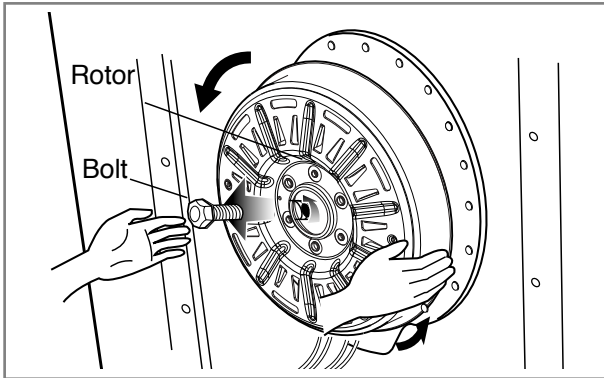
- ① Disassemble the cabinet cover.
- ② Separate the pump hose, the bellows, the circulation hose assembly from the pump assembly.
- ③ Disassemble the pump assembly.

WHEN FOREIGN OBJECT IS STUCK BETWEEN DRUM AND TUB

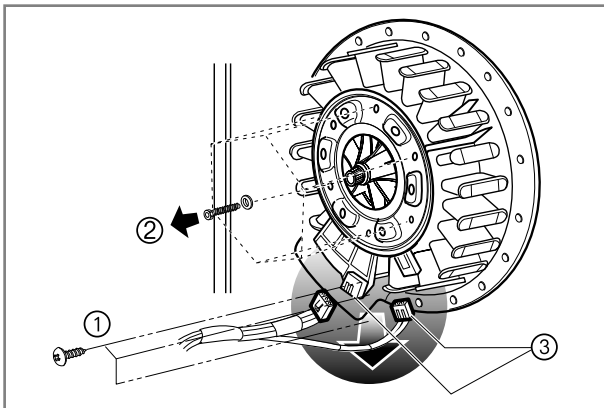


- ① Disassemble the cabinet cover.
- ② Separate the heater from the tub.
- ③ Remove any foreign objects (wire, coin, etc.) by inserting a long bar in the opening.

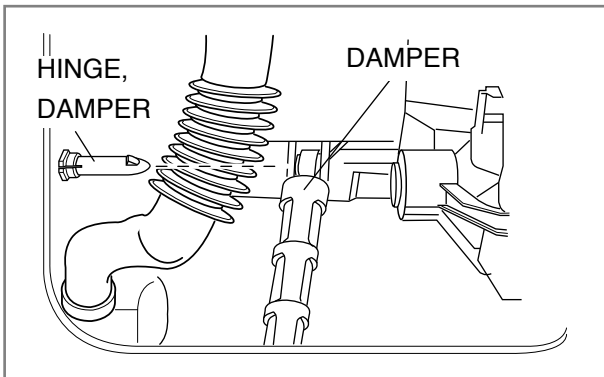
MOTOR/DAMPER



- 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.

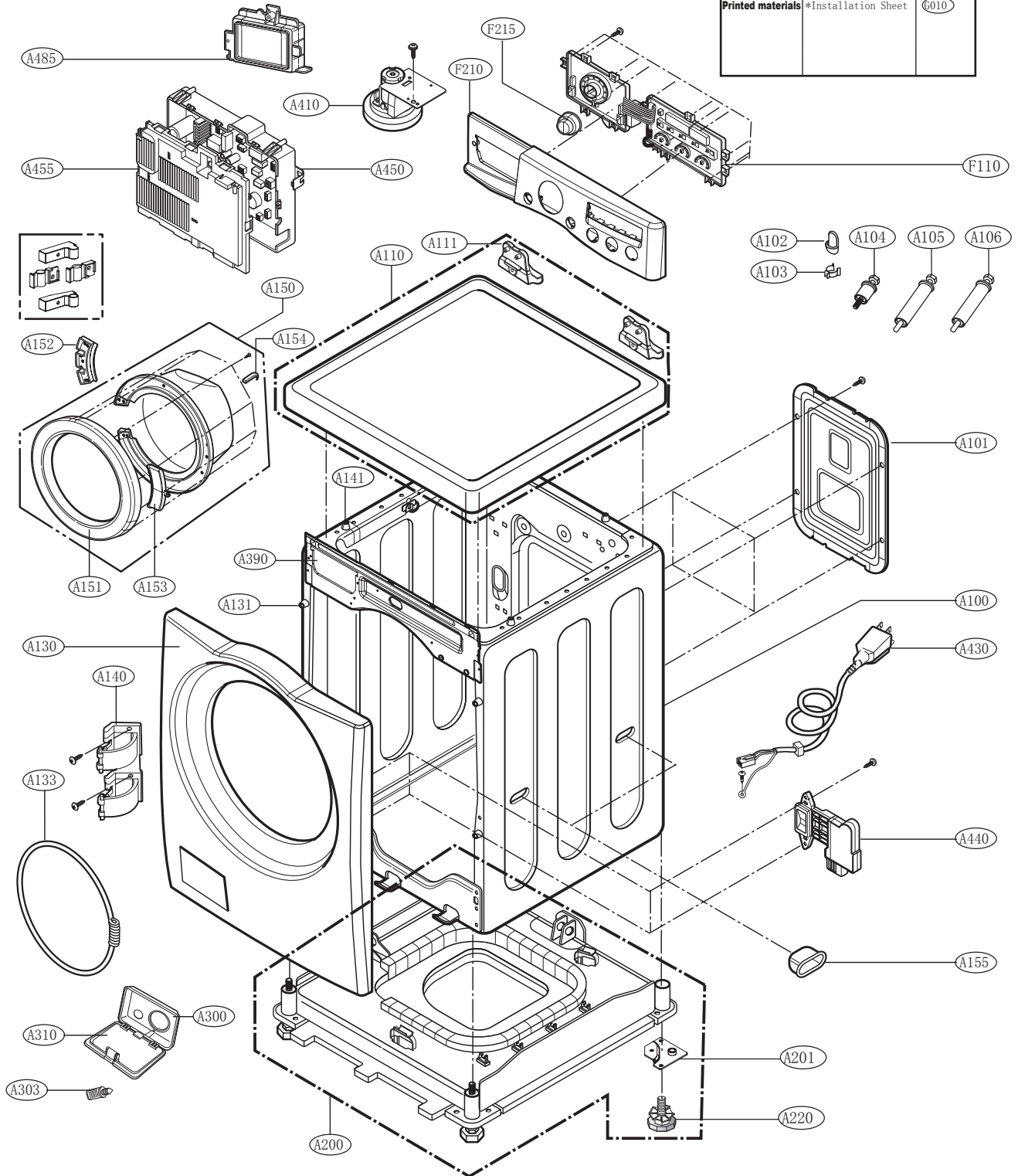
※ NOTE

- If you pull the dampers apart, they must be replaced. If you do not separate them, they can be re-used.

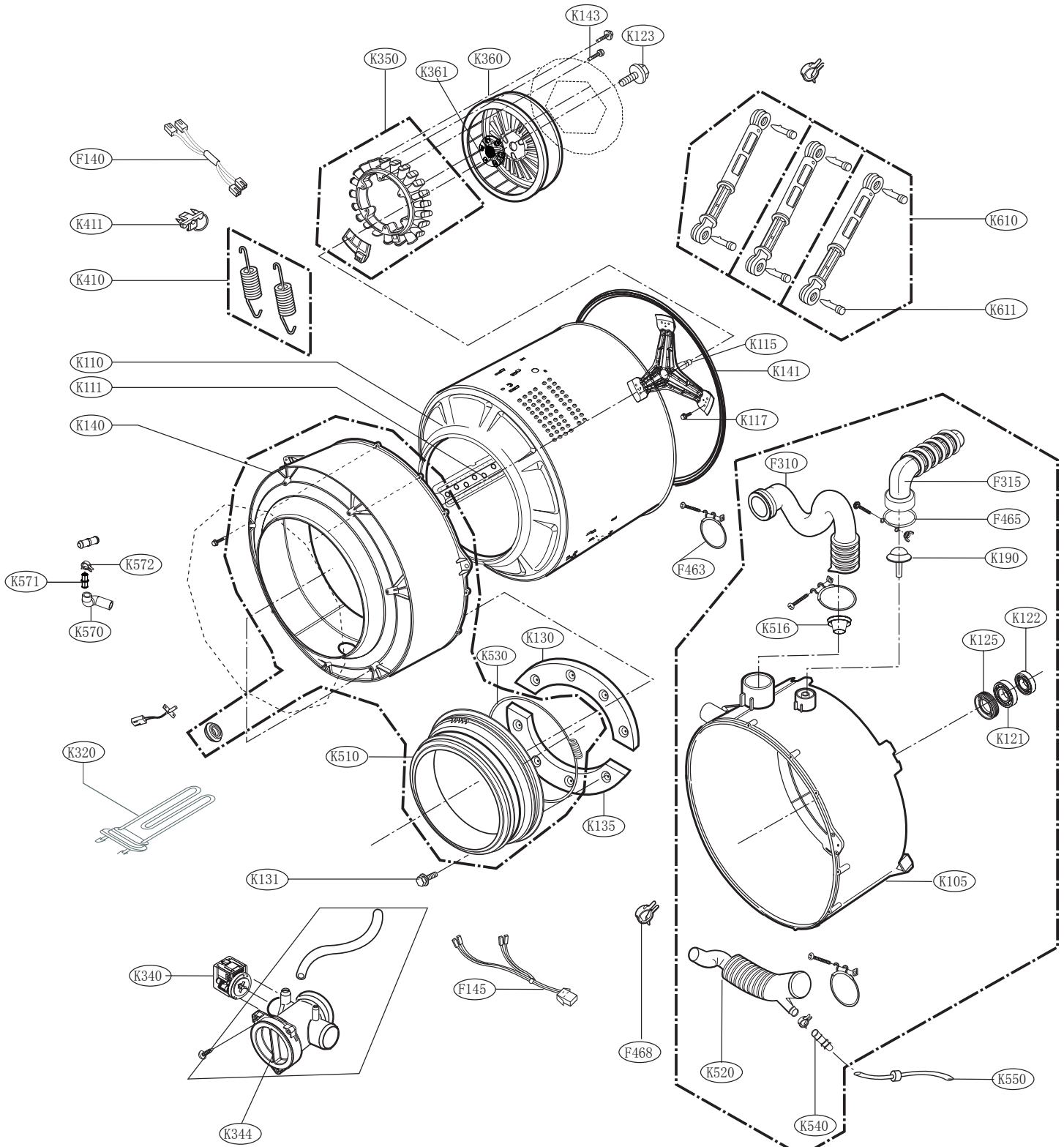
11. EXPLODED VIEW

11-1. CABINET & CONTROL PANEL ASSEMBLY

"The following parts are not illustrated"		
	Description	Loc No.
Printed materials	*Installation Sheet	6010



11-2. DRUM & TUB ASSEMBLY

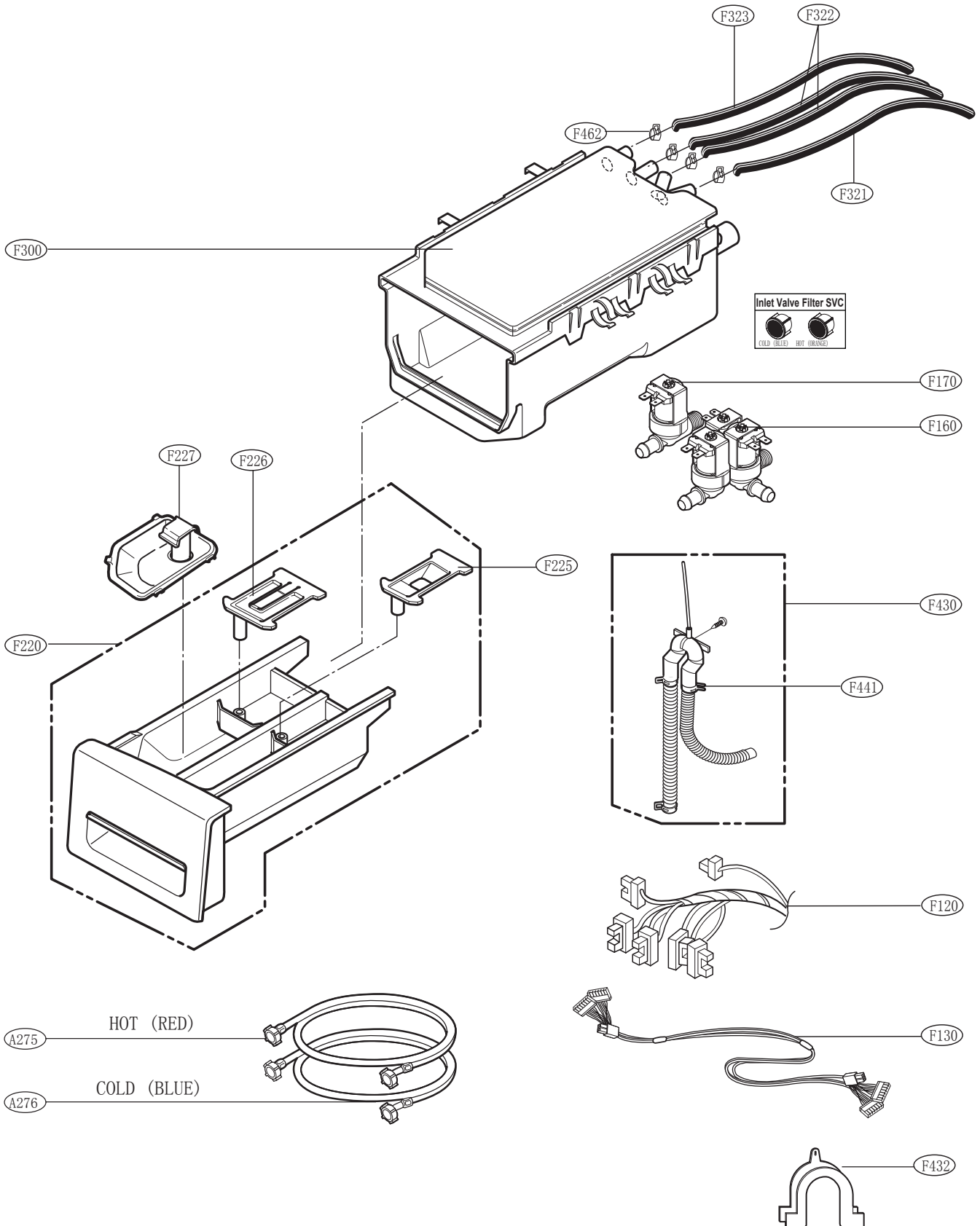


※ In case of replacing THERMISTOR of HEATER ASSEMBLY(K320), replace HEATER ASSEMBLY(K320), HEATER ASSEMBLY(K320) includes THERMISTOR.

※ 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).

※

11-3. DISPENSER ASSEMBLY





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