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# WASHING MACHINE SERVICE MANUAL

## CAUTION

READ THIS MANUAL CAREFULLY TO DIAGNOSE TROUBLE  
CORRECTLY BEFORE OFFERING SERVICE.

MODEL : F1\*20TD(1~9) / F1\*22TD(1~9)/F1\*56\*D/WD-\*0690TDK





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## 1. SPECIFICATION

ITEM	F1*20TD(1~9) / F1*22TD(1~9)/F1*56*D/WD-*690TDK		
POWER SUPPLY	220-240V~, 50Hz		
PRODUCT WEIGHT	64kg		
ELECTRICITY CONSUMPTION	WASHING	135W	
	SPIN (1400rpm)	530W	
	DRAIN MOTOR	30W	
	WASH HEATER	2000W	
REVOLUTION SPEED	WASH	50rpm	
	SPIN	F10**TD	No Spin~1000 rpm
		F12**TD	No Spin~1200 rpm
		F14**TD	No Spin~1400 rpm
OPERATION WATER PRESSURE	0.3-10kgf/cm <sup>2</sup> (30-1000kPa)		
CONTROL TYPE	Electronic		
WASH CAPACITY	Cotton 8kg (Max.)		
DIMENSION	600mm(W)x550mm(D)x850mm(H)		
DOOR SWITCH TYPE	Bi-Metal type		
WATER LEVEL	9 steps (by sensor)		
DELAY FINISH TIME	From 3 hours to 19 hours		
SENSING OF THE LAUNDRY AMOUNT	Available		
FUZZY LOGIC	Available		
DISPLAY OF THE REMAINING TIME	Available		
ERROR DIAGNOSIS	10 items		
POWER AUTO OFF	Available		
CHILD LOCK	Available		
AUTO RESTART	Available		

## 2. FEATURES & TECHNICAL EXPLANATION

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### 2-1. FEATURES



- **Anti Crease function**

With the alternate rotation of the drum, creasing in the laundry is minimized.



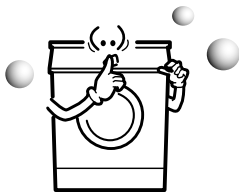
- **More economical by Fuzzy Logic System**

FUZZY Logic System detects the amount of load and water temperature, and then determines the optimum water level and washing time to minimize energy and water consumption.



- **Child-Lock**

The Child-Lock system has been developed to prevent children from pressing any button (except Power button) to change the programme during operation.



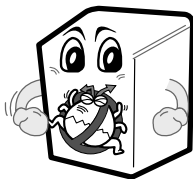
- **Low noise speed control system**

By sensing the amount of load and balance, this system automatically distributes load evenly to minimize the spinning noise level.



- **Direct Drive System**

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



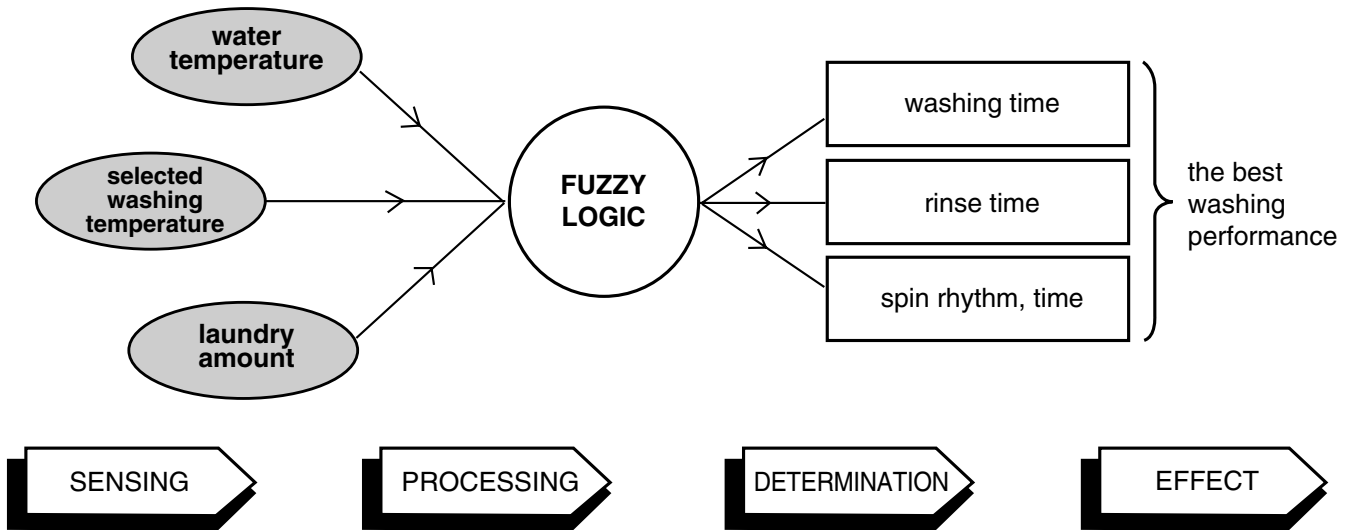
- **Built-in heater**

Internal heater automatically heats the water to the best temperature on selected cycles.

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## 2-2. DETERMINE WASHING TIME BY FUZZY LOGIC

To get the best washing performance optimal time is determined by sensing of water temperature, selected washing temperature and laundry amount.



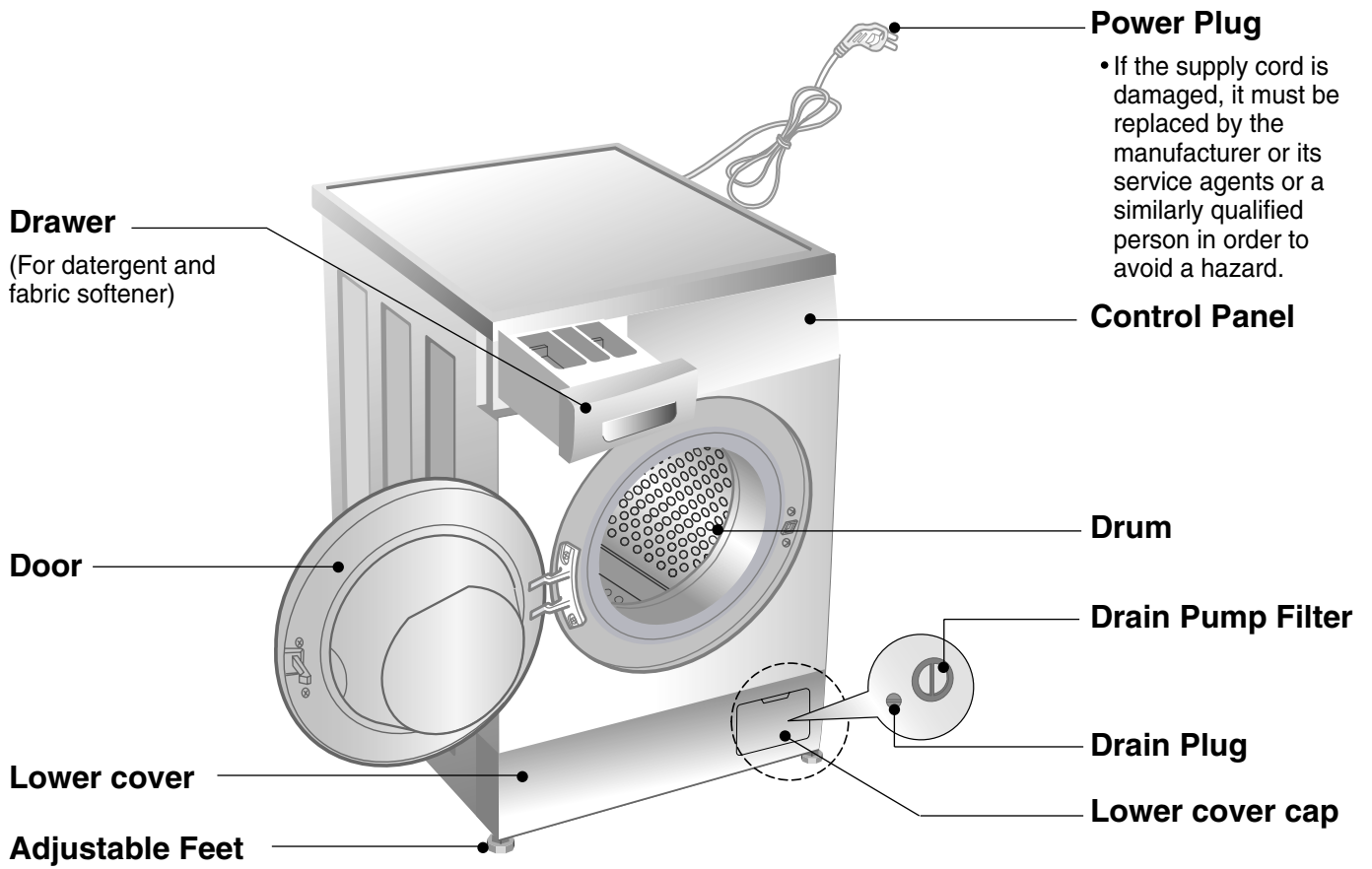
## 2-3. WATER LEVEL CONTROL

- This model uses a pressure sensor to determine the water level in the tub.
- When the preset water level reached, water supply is stopped and the program proceeds.
- Water needs to be below a preset level before spinning will proceed.

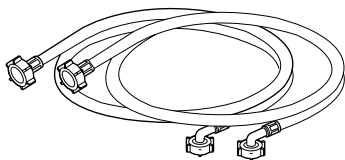
## 2-4. THE DOOR CAN NOT BE OPENED

- While program is operating.
- While **Door Lock** light turns on.

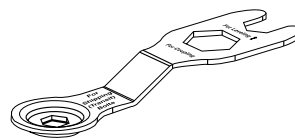
# 3. PARTS IDENTIFICATION



## ■ ACCESSORIES



Inlet hose(1EA) \* Option : Hot / Cold(2EA)



Spanner

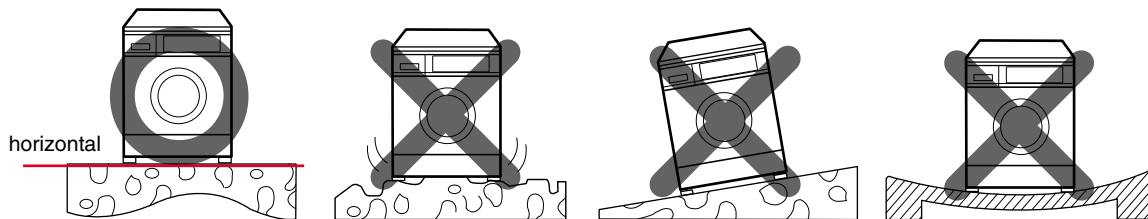
# 4. INSTALLATION

## ■ INSTALLATION

The appliance should be installed as follows.

### 1 Check the conditions of installation area.

#### 1. Check level ground.



On raised foundations or upper level homes, the **vibrations** can be caused by the type of flooring. It may be **necessary to move the machine** to a different area in the home or have the floor reinforced to properly support the operation of the unit.

#### 2. Check humidity or any foreign objects under the feet.

Clean the floor, and there should not be any foreign objects under the feet. If the unit has foreign objects underneath the feet, this will prevent the unit from being leveled properly and will cause **vibrations** and **slipping**.

**Remove any foreign objects**, if any from underneath the machine and level unit properly.

See below for examples of foreign objects.



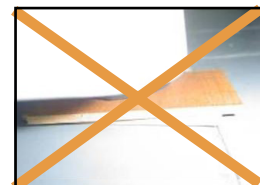
**Purchased stopper**



**Capet**

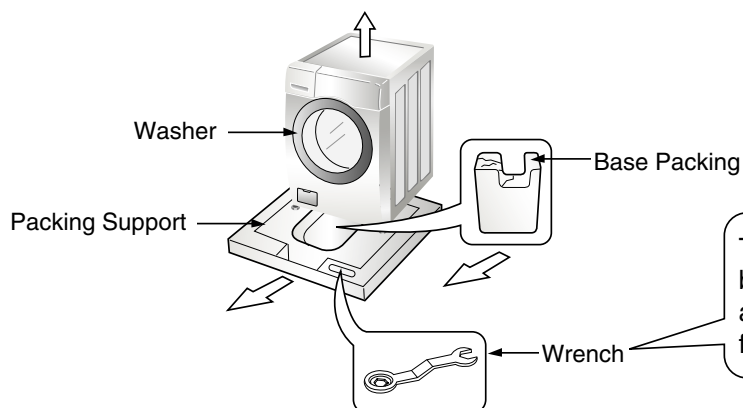


**Paper**



**Laminated paper**

### 2 Open the box and check appliance condition.



This leveling (or spanner) wrench must be used to remove the shipping bolts and level the unit. This should be kept for future use.



### 3 Use spanner to remove transit bolts.



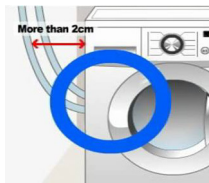
X 4 EA

Transit bolts

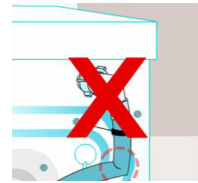
※ Without removal of transit bolts  
▶ **Spin noise** and **shaking**.

### 4 Confirm the distance between the appliance and the wall.

More than 2cm



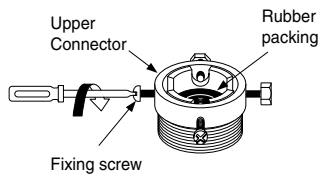
※ If the distance is less than 2cm,  
the water supply hose will  
**kink** or **fold**.



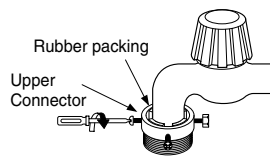
### 5 The tap connection and hose connection must be parallel.

#### 1. Normal Tap without thread & screw type inlet hose.

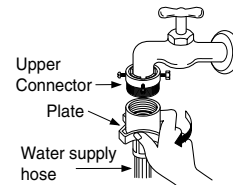
1. Unscrew the fixing screw to attach the tap.



2. Push the connector up till the rubber packing is in tight contact with the tap. Then tighten the 4 screws.

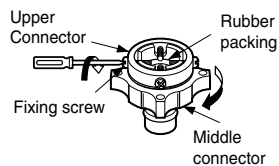


3. Push the water supply hose vertically upwards so that the rubber packing within in the hose can adhere completely to the tap and then tighten it by screwing it to the right.

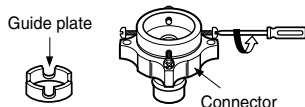


#### 2. Normal Tap without thread & one touch type inlet hose (Single inlet models)

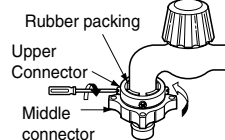
1. Untighten the upper connector screw.



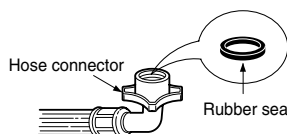
• In case the diameter of the tap is large remove the guide plate.



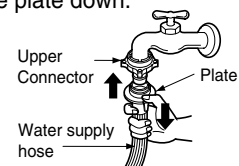
2. Push the upper connector up till the rubber packing is in tight contact with the tap. Then tighten the 4 screws.



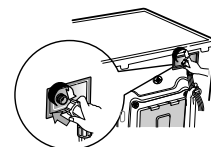
• Turn the middle connector not to have water leaked.  
• Make sure that the rubber seal is inside the hose connector.



3. Connect the water supply hose to the middle connector, pushing the plate down.



• To separate the water supply hose from the middle connector shut off the tap. Then pull the inlet hose down, pushing the plate down.



• Make sure that there are no kinks in the hose and that it is not crushed.

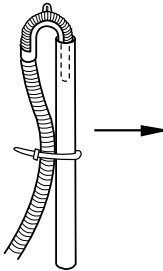
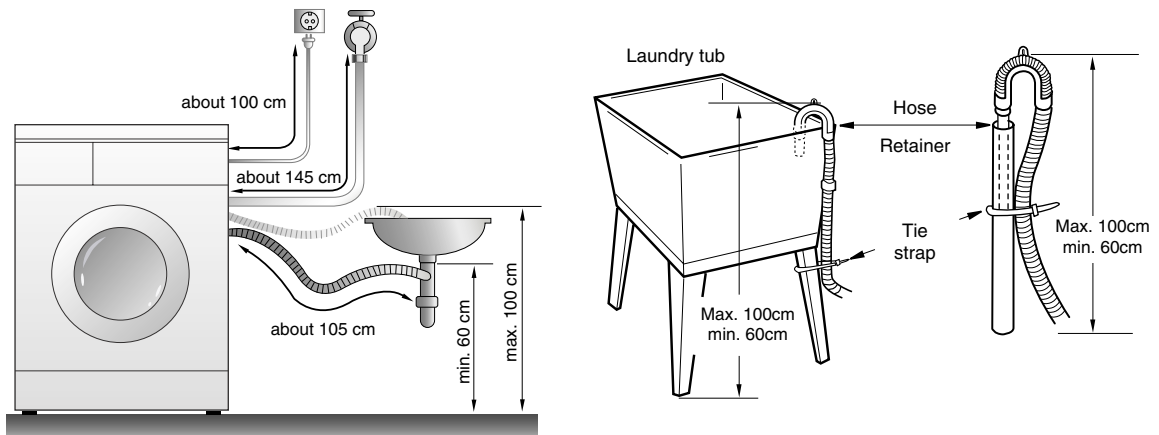
## 6 Connect Drain Hose.

If the drain hose is not installed properly, the unit will not drain properly.

This allows water to back flow into the unit which can cause odors.

Refer to Owner Manual for proper drain hose installation.

The odor could also be coming from the home's drain to which the drain hose is attached.



In this type of drain hose installation, the odor could be coming from the standpipe.

This odor can come up the drain hose and into the unit.

Pour a cup or two of bleach or vinegar down the home drain

and let it sit for 24 hours before running another cycle.

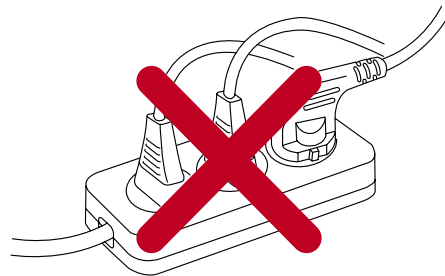
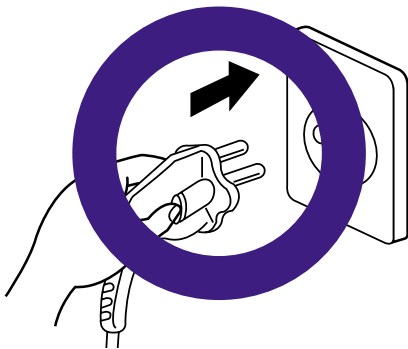
This will help eliminate odor from the home drain.

If a cycle is started too soon after doing this, it will not help the issue.

## 7 Connect power plug.

Connect the power plug to the wall outlet.

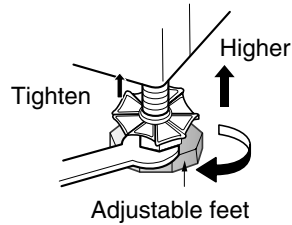
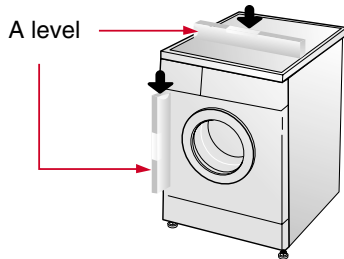
Avoid connecting several electric devices, it may be the cause of a fire.



## 8 Check the horizontality with a level (Gage).

### 1 Step

If washing machine legs are loose or not screwed, then **screw up** with the spanner wrench. Using the level, level the washing machine from front to back and side to side.



### 2 Step

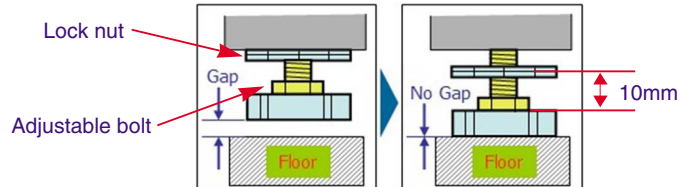
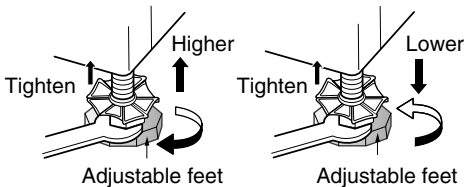
Using the spanner wrench to adjust leg for **horizontality** and try for **Diagonal test**.

#### Diagonal test



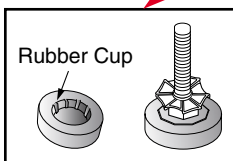
#### ※ How to perform a diagonal test:

Place your right hand on the back, right corner and your left hand on the front, left corner of the unit, then attempt to rock the unit from corner to corner. Then, move your right hand to the front, right side and your left hand to the back, left corner and attempt to rock the unit from corner to corner. If the unit is level, it will not rock. However, if the unit is not level, it will rock. If the unit rocks, it will be necessary to adjust the leveling feet of the unit. Adjust the foot under the hand that is on the front of the machine.



Lower the foot until there is no gap between floor and foot.

And only use **adjustment rubber** when difference at the leg adjustment is more than **10mm**.



### 3 Step

Perform a Rinse and Spin with some clothing in the machine.

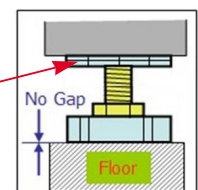
To do this, put 2~3kg of clothing in the unit, power on the unit, press the Rinse and Spin button, and then start. When the unit reaches the spin cycle, watch for vibrations.

If the unit is vibrating, make small adjustments to the leg until they subside. (Try 2Step again)

### 4 Step

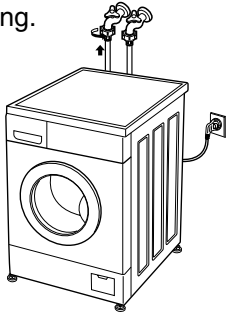
**Tighten** the lock nut against the base of the machine to **lock** the **position leg**.

Tighten the lock nut



## 9 Test operation

### 1 Preparation for washing.



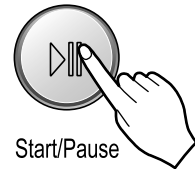
- Connect the power plug to the outlet.
- Connect the inlet hose.

### 2 Press the power button.

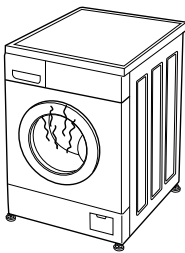


- In case of cotton program.

### 3 Press the START/PAUSE button.

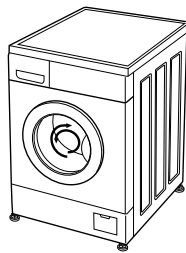


### 6 Check the water heating.



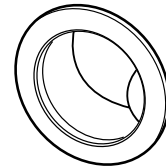
- Press "Temp." button, the present temperature will be displayed.

### 5 Check automatic reverse turn.



- Check if the drum rotates clockwise and counterclockwise.

### 4 Check the water supply.



- Check if water is supplied through the detergent dispenser.



### 7 Check drain and spin.

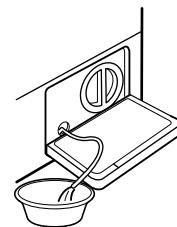
- Power off and then power on. Turn on Spin lamps after pressing the Start/Pause button and Start the machine again.
- Check drain and spin.

### 8 Power off and open the door.



- Power off and then power on.
- Check if the door can be opened after **Door Lock** lamp turns off.

### 9 Water removal.



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

# 5. OPERATION

## 5-1. F1\*22TD(1~9)

### Option

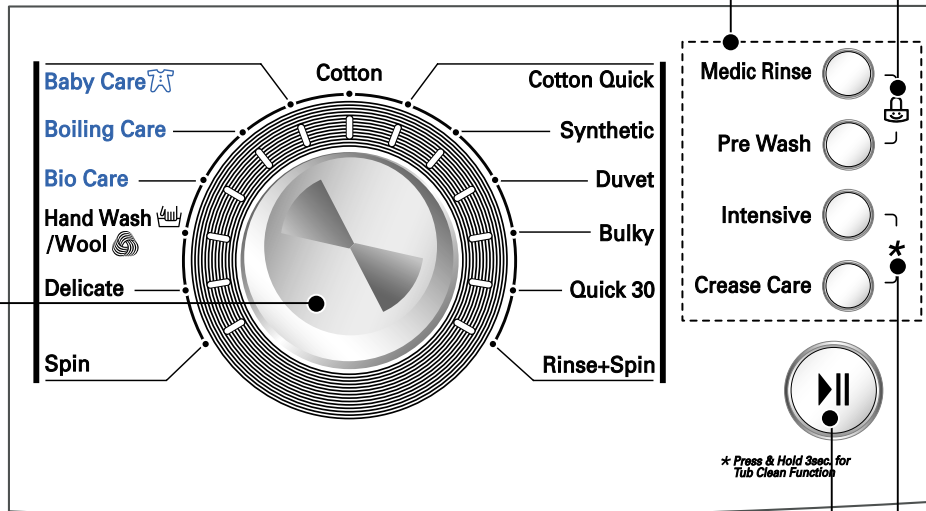
- **Medic Rinse** : Function that offers more purity in rinse operation by maintaining the optimum temperature for elimination of remnant detergent. It can be selected in all courses with the exception of Quick 30. Hand Wash/Wool, Delicate course.
- **Intensive** : • If the laundry is heavily soiled "Intensive" option is effective.
  - By selecting the Intensive option, the wash time may be extended, depending on the program selected.
- **Pre Wash** : If the laundry is heavily soiled, "Pre Wash" course is effective. Pre Wash is available in Cotton and Synthetic Program.
- **Crease Care** : If you want to prevent crease, select this button with spin

### Child -Lock

- **Child Lock** system can be set and canceled by pressing and holding both **Medic Rinse** button and **Pre Wash** button simultaneously more than 3 seconds.

### Wash program selector

- 13 programs can be set depending on the type of the laundry.
- If the power button is pressed, all lamps are on
- By turning the dial, [Cotton - Cotton Quick - Synthetic - Duvet - Bulky - Quick 30 - Rinse+Spin - Spin - Delicate - Hand Wash/Wool - Bio Care - Boiling Care - Baby Care] can be selected. This is a bi-directional selector.



### Start/Pause button

- Use the button to start or pause wash cycle.
- The power turns off automatically 4 minutes after the pause button is pressed.

### Tub Clean

- Tub Clean course can be set by pressing and holding **Intensive** and **Crease Care** button simultaneously.
- Tub Clean is special cycle to clean the inside of the washer.

### \* LOAD TEST MODE Page 19

- Press and Hold '**Temp.**' & '**Spin**' buttons and then press '**Power**' button.

### \* Water level frequency

- Press and Hold '**Temp.**' & '**Medic Rinse**' buttons simultaneously.

#### LED display

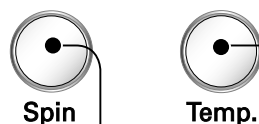
- Display the estimated remaining time (Hour : Minute) to finish.
- In case of abnormal operation, error indications are displayed.  
( *IE, OE, UE, dE, tE, FE, PE, CE, LE, PF* )
- See troubleshooting guide.

#### Time Delay & Beep ON/OFF

- Press the button when reservation washing is needed.
- When the button is pressed, [ 3:00 ] is displayed, maximum delay of [ 19:00 ] hours can be set.
- Each press advances time delay by the hour.
- Use [Power] button to cancel [Time Delay]
- [Time Delay] means the time required from the present to the completion of washing.
- The Beep on/off function can be set by pressing and holding the Time Delay button (About 3 seconds).  
The Beep on/off function can be set at any time and it is automatically cancelled in the event of a power cut.  
The Beep on/off function also works when power is off.



- |                                  |   |                            |
|----------------------------------|---|----------------------------|
| <input type="radio"/> 1200       | : | <input type="radio"/> 95°C |
| <input type="radio"/> 800        | : | <input type="radio"/> 60   |
| <input type="radio"/> 400        | : | <input type="radio"/> 40   |
| <input type="radio"/> No Spin    | : | <input type="radio"/> 30   |
| <input type="radio"/> Rinse Hold | : | <input type="radio"/> Cold |



#### Power button

- Press the button to turn power on and off.
- Press the button to cancel the time delay.

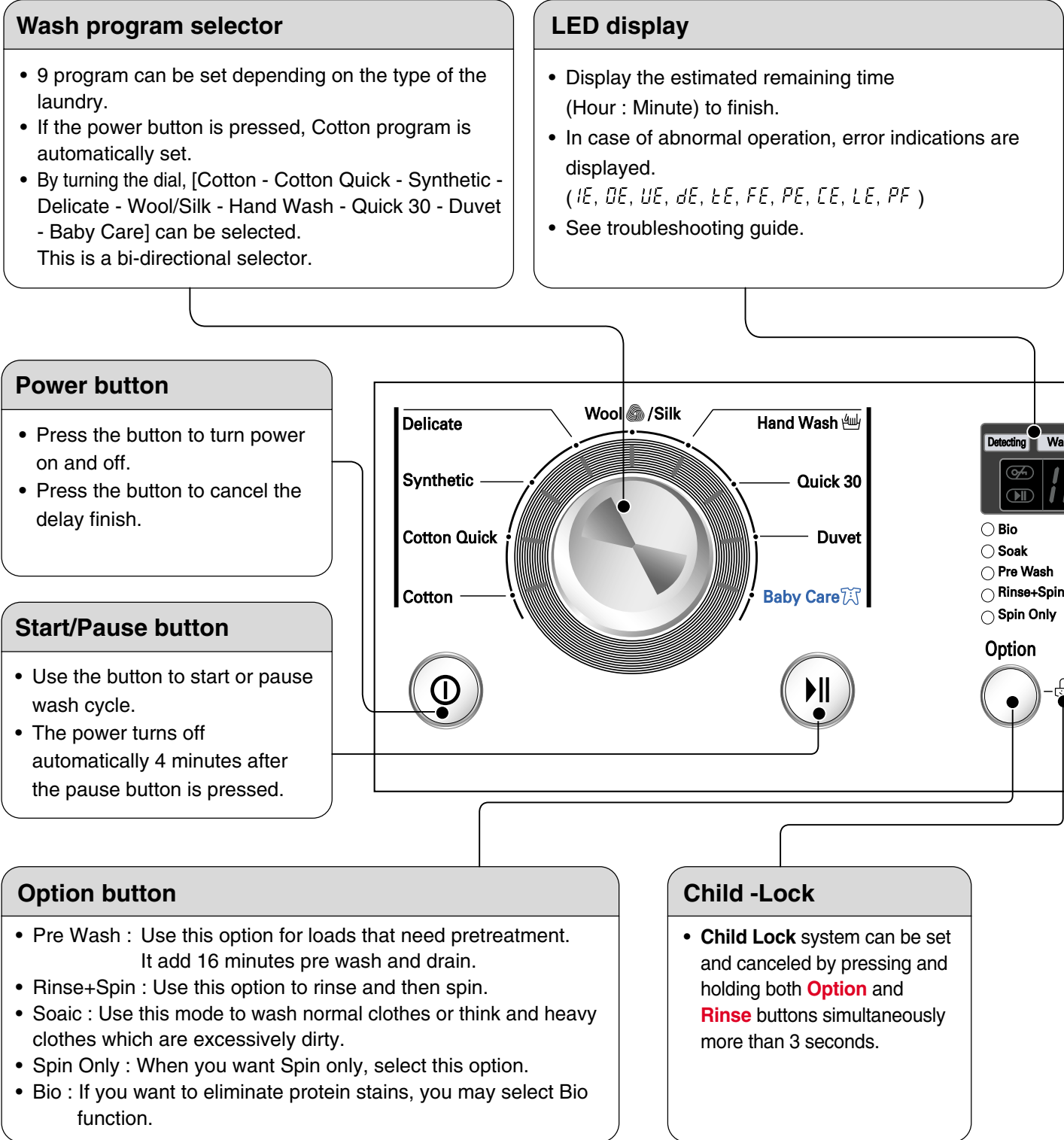
#### Spin Button

- By pressing the Spin Button the spin speed can be chosen
- F10\*\*TD(1~9)  
⇒ Rinse Hold/No spin/400/800/1000
- F12\*\*TD(1~9)  
⇒ Rinse Hold/No spin/400/800/1200
- F14\*\*TD(1~9)  
⇒ Rinse Hold/No spin/400/800/1200/1400

#### Water temperature selector

- Press the button to select water temperature.
- 95°C is selected for Cotton and Baby Care only.
- By pressing the button while operating the washer, the present temperature is displayed.

## 5-2. F1\*20TD(1~9)



\* **LOAD TEST MODE**  Page 19

- Press and Hold '**Option**' & '**Spin**' buttons and then press '**Power**' button.

\* **Water level frequency**

- Press and Hold '**Intensive**' button.

**Time Delay & Beep ON/OFF**

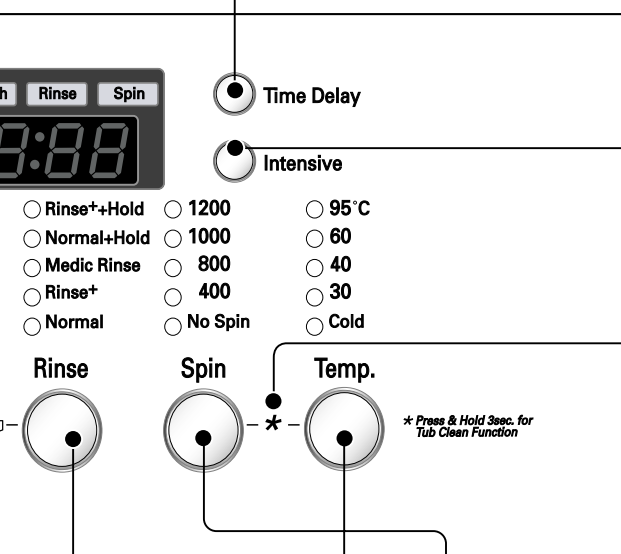
- Press the button when delayed washing is needed.
- When the button is pressed, [3:00] is displayed, maximum delay of [19:00] hours can be set.
- Each press advances time delay by the hour.
- Use [Power] button to cancel [Time Delay]
- [Time Delay] means the time required from the present to the completion of washing.
- The Beep on/off function can be set by pressing and holding the Time Delay button (About 3 seconds).  
The Beep on/off function can be set at any time and it is automatically cancelled in the event of a power cut.  
The Beep on/off function also works when power is off.

**Intensive**

- If the laundry is heavily soiled "Intensive" option is effective.
- By selecting the Intensive option, the wash time may be extended, depending on the program selected.

**Tub Clean**

- Tub Clean course can be set by pressing and hold **Spin** and **Temp.** button simultaneously.
- Tub Clean is special cycle to clean the inside of the washer.



**Rinse**

- By pressing the Rinse button, the Rinse type can be selected.

**Spin Button**

- By pressing the Spin Button the spin speed can be chosen
- F10\*\*TD(1~9)  
⇒ No Spin/400/600/800/1000
- F12\*\*TD(1~9)  
⇒ No Spin/400/800/1000/1200
- F14\*\*TD(1~9)  
⇒ No Spin/400/800/1000/1400

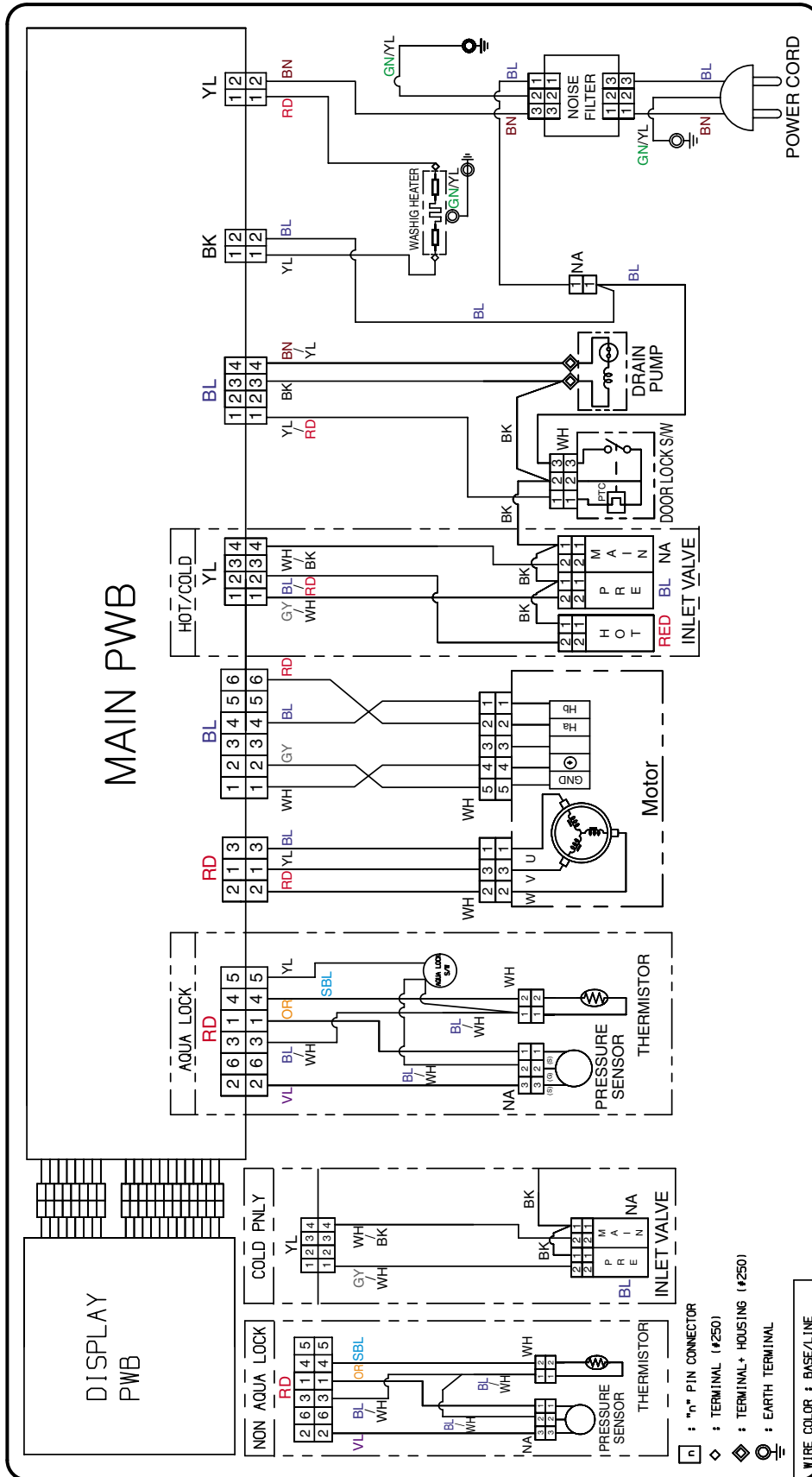
**Water temperature selector**

- Press the button to select water temperature.
- 95°C is selected for Cotton and Baby Care only.
- By pressing the button while operating the washer, the present temperature is displayed.

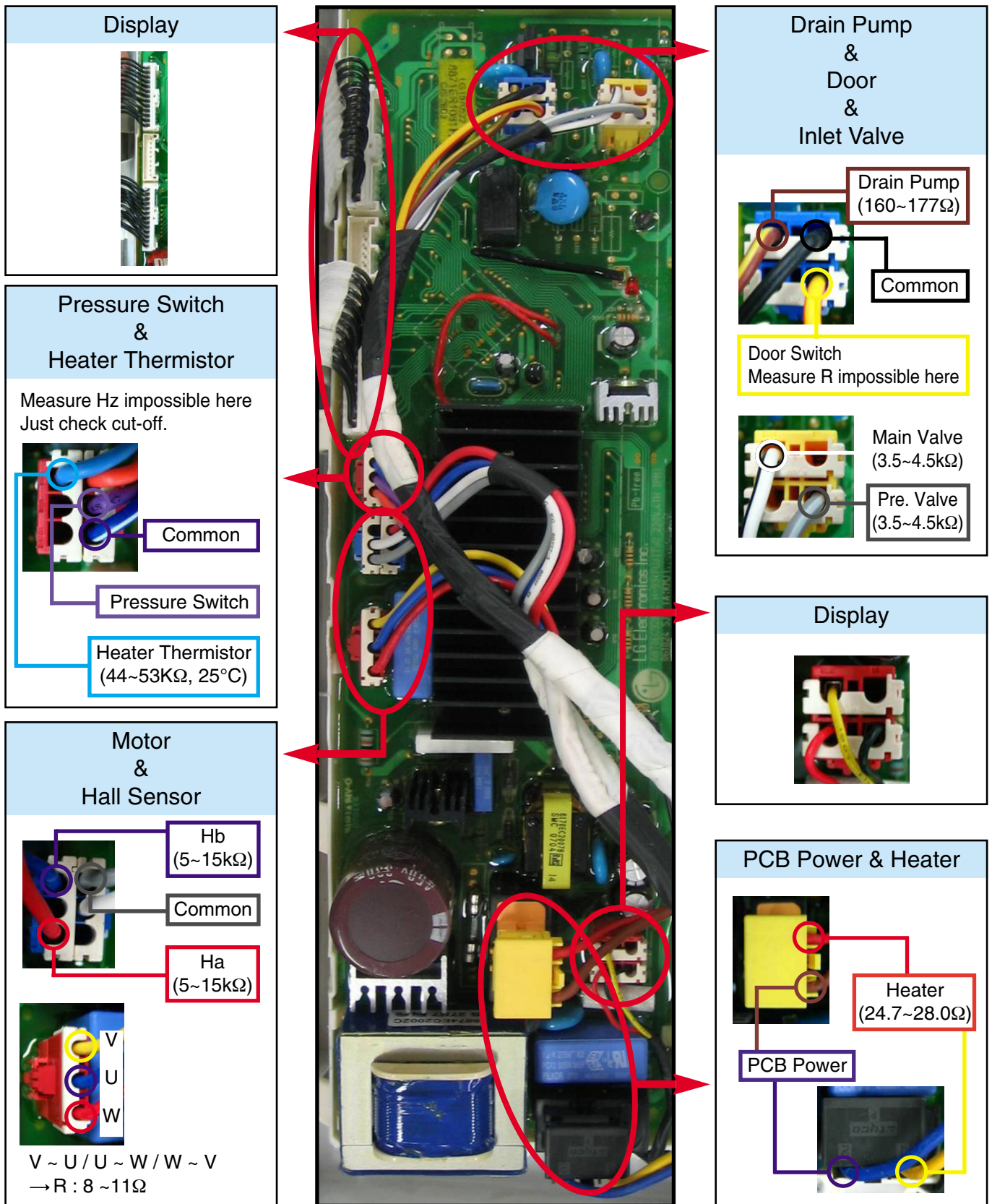


# 6. WIRING DIAGRAM / PCB LAYOUT / PROGRAM CHART

## ■ Wiring Diagram



## ■ PCB Layout



# Program Chart

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

C Y C L E S T E P C O U R S E	Washing										Rinse								Spin			Normal Working Time (Hour:Minute)														
	Pre					Main					Normal				Rinse +				Spin																	
						Washing	Heating	W·S		I·S		Drain		Rinsing		W·S		I·S		Drain			Rinsing		W·S		I·S		Drain		D-T					
	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	30	31				
Time (SEC)	120	MIN 60	240	120						60	360	120	180	60	360	120	180	60	360	120	180	60	360	120	180	60	780	780	360	360	20	20				
Cotton	8	8				49																														About 1:55(53)
Synthetic	8	8				34																													About 1:17	
Delicate						23																													About 52	
Bedcover						20																													About 1:29	
Hand Wash/Wool						11																													About 49	
Quick 30						12																													About 30	
Rinse+Spin																																			About 26(24)	
Bio Care	8	8																																	About 2:27(25)	
Baby Care	8	8																																	About 2:24<2:14>	

\* Basic Cycle

\* Optional Cycle

\* Pre Setting Time : Water Supply - 120 sec

Drain - 60 sec

\* ~ Time for varies as the temperature or the amount of laundry

\* Basic time is minute in washing chart

\* The actual program time can be varied with the load amount,

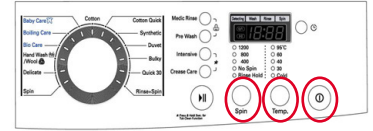
water temperature or ambient temperature

# 7. TROUBLESHOOTING

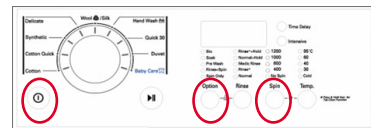
## 7-1. BEFORE PERFORMING SERVICE

- ① Before servicing ask the customer what the trouble is.
- ② Check the adjustments. (Power supply :220-240V~, Removal of transit bolts etc..)
- ③ Check the troubles referring to the troubleshooting.
- ④ Decide service steps referring to disassembly instructions.
- ⑤ Then, service and repair.
- ⑥ After servicing, operate the appliance to see whether it works OK or NOT.

F1\*22TD



F1\*20TD



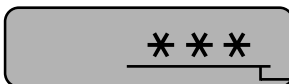
## 7-2. LOAD TEST MODE

- ① F1\*22TD : Press and Hold **'Temp.'** & **'Spin'** buttons and then press **'Power'** button.  
F1\*20TD : Press and Hold **'Option'** & **'Spin'** buttons and then press **'Power'** button.
- ② The washer must be empty and the controls must be in the off state.
- ③ Press Power with above two buttons pressed and then buzzer will sound.
- ④ Press the Start/Pause button repeatedly to cycle through the test modes

Pressing number of [Start/Pause] button	Checking Point	Display Status
None	All lamps turn on	12:00
1 time	Clockwise spin (right)	Motor rpm (About 47)
2 times	Low speed Spin	Motor rpm (About 590~650)
3 times	High speed Spin	Motor rpm (About 950~1050) : F10**TD(1~9)
		Motor rpm (About 1100~1250) : F12**TD(1~9)
		Motor rpm (About 1350~1400) : F14**TD(1~9)
4 times	Inlet valve for pre-wash operation	Water level frequency (225~265)
5 times	Inlet valve for main-wash operation	Water level frequency (225~265)
	Hot inlet valve in case of hot water fill	
6 times	Inlet valve for main-wash operation	Water level frequency (225~265)
7 times	Counterclockwise spin (left)	Motor rpm (About 47)
8 times	A Heater is in operation for 3 sec.	Water Temperature
9 times	Draining pump operation	Water level frequency
10 times	Auto off operation	

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

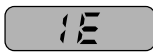









- \* F1\*22TD : Press and Hold **'Temp.'** & **'Medic Rinse'** buttons simultaneously.  
F1\*20TD : Press and Hold **'Intensive'** button.



The digits means water level frequency (10<sup>-1</sup>kHz)  
ex) 241 : Water level frequency = 241 X 10<sup>-1</sup> kHz  
= 24.1kHz

## 7-4. ERROR DISPLAY

- If you press the [Start/Pause] button when an error is displayed, any error except software ERROR will disappear and the machine will change into pause status.
- In case of *PE*, *LE*, *OE*, if the error is not resolved within 15 sec. In case of other errors, if the error is not resolved within 4 min. Power will be turned off automatically and the error only will be blinked. But in the case of *FE*, power will not be turned off.

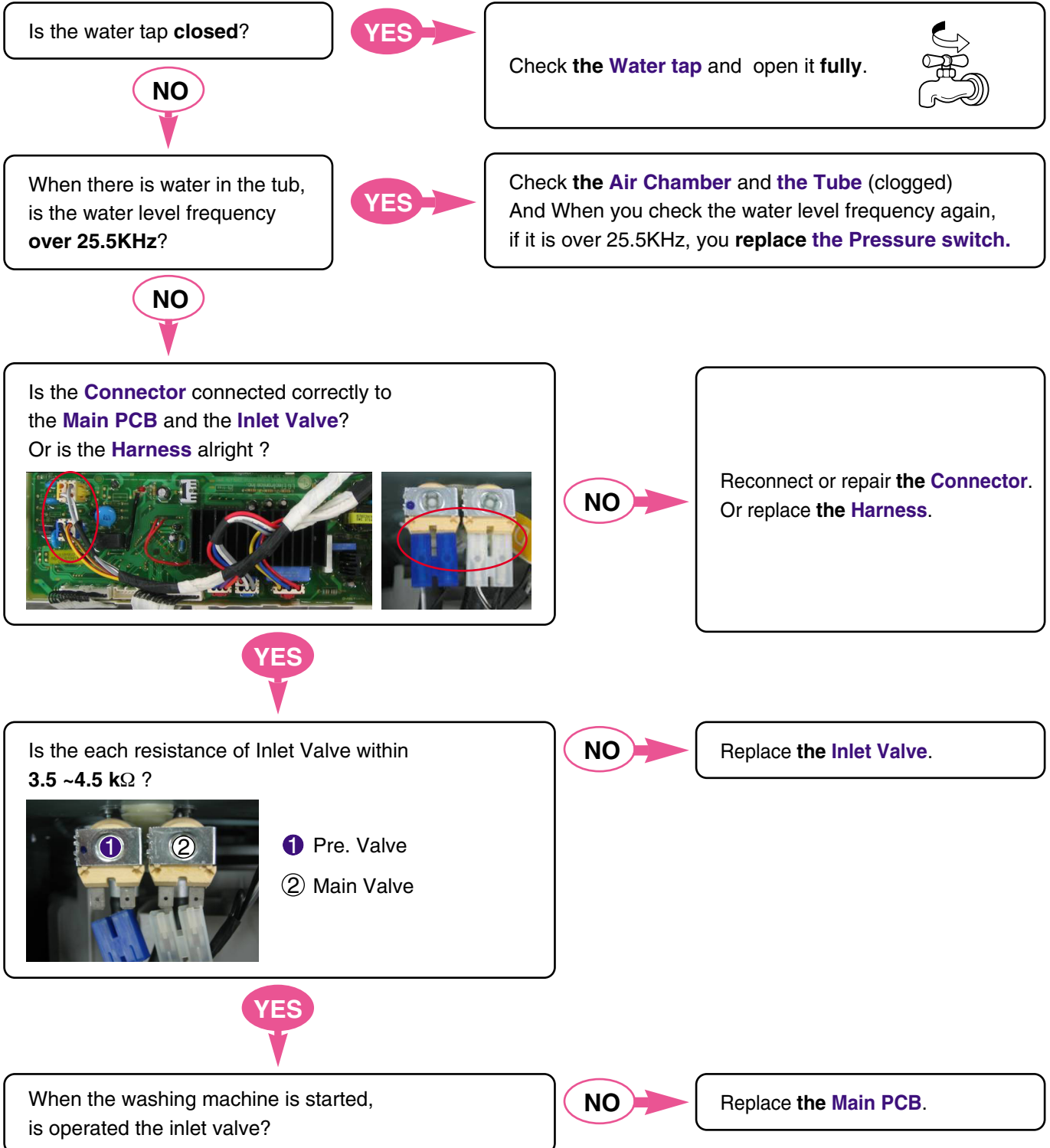
	<b>ERROR</b>	<b>SYMPTOM</b>	<b>CAUSE</b>
1	WATER INLET ERROR		<ul style="list-style-type: none"> <li>○ Water has not reached to the pre-set level within 4 min. since inlet valve operated, or water has not reached to the normal level within 25 min. <a href="#">👉 Page 21</a></li> </ul>
2	UNBALANCED ERROR		<ul style="list-style-type: none"> <li>○ The appliance is tilted.</li> <li>○ Laundry is gathered to one side.</li> <li>○ Non distributable things are put into the drum. <a href="#">👉 Page 22</a></li> </ul>
3	WATER OUTLET ERROR		<ul style="list-style-type: none"> <li>○ Water has not drained enough within 8 min. <a href="#">👉 Page 23</a></li> </ul>
4	OVERFLOW ERROR		<ul style="list-style-type: none"> <li>○ Water is automatically being pumped out because too much water is in the tub. <a href="#">👉 Page 25</a></li> </ul>
5	PRESSURE SENSOR S/W ERROR		<ul style="list-style-type: none"> <li>○ The sensor pressure switch is out of order. <a href="#">👉 Page 26</a></li> </ul>
6	DOOR OPEN ERROR		<ul style="list-style-type: none"> <li>○ The [Start/Pause] button is pressed with the door open.</li> <li>○ The door switch is out of order. <a href="#">👉 Page 27</a></li> </ul>
7	THERMISTOR(HEATING) ERROR		<ul style="list-style-type: none"> <li>○ The thermistor is out of order. <a href="#">👉 Page 28</a></li> </ul>
8	CURRENT ERROR		<ul style="list-style-type: none"> <li>○ PWB ASSEMBLY (Main) is out of order <a href="#">👉 Replace the PWB assembly (Main)</a></li> <li>○ Winding in the MOTOR is short-circuited. <a href="#">👉 Replace the MOTOR</a></li> </ul>
9	MOTOR LOCKED ERROR		<ul style="list-style-type: none"> <li>○ The Connector (3-pin, male, white) in the wire harness is not connected to the Connector (3-pin, female, white) of MOTOR. <a href="#">👉 Reconnect or repair the connector</a></li> <li>○ The electric contact between the connectors [3-pin, male, white in the wire harness and 6-pin, female, white in the PWB ASSEMBLY (Main)] is bad or unstable. <a href="#">👉 Reconnect or repair the contact in the connector</a></li> <li>○ The wire harness between the MOTOR and PWB ASSEMBLY (Main) is cut (open circuited).</li> <li>○ The hall sensor is out of order/defective. <a href="#">👉 Page 29</a></li> </ul>
10	POWER FAILURE		<ul style="list-style-type: none"> <li>○ The washer experienced a power failure.</li> </ul>

## 7-5. TROUBLESHOOTING WITH ERROR

### Water Inlet Error (IE)

[Note] Environmental safety check list

1. No water tap leakage & freeze.
2. No entanglement of water supply hose.
3. No water shortage.
4. No water supply hose leakage.
5. No the inlet filter clogged.



## Unbalanced Error (UE)

Does the load lean toward **one side**, or is the load a **few items**?

YES

The few items of clothing will clump together and their weight will be in one place on the drum, throwing the weight off during spin mode.

**So add some laundry to overcome UE error. And rearrange load to allow proper spinning.**

NO

Is the laundry **mixed**?

YES

Try **rearranging** the laundry in drum  
Or the laundry is **separated** by size, type, and color.



Separate by size,  
type and color



NO

Is the washing machine **installed** at an **angle**?

YES

Adjust the height of washing machine to be kept **horizontally**.  
(Page 7)

## Water Outlet Error (OE)

Is the drain hose kinked ?

YES

Check drain hose for kink and **straighten the Hose.**



Drain Hose



NO

Is the **Pump filter** clogged ?

YES

Check & Clean **Pump Filter.**

This kind of accumulation on the drain filter not only prevents proper drainage, but also will promote bacteria growth and cause odors. This drain filter should be cleaned once a month.

NO

Next Page

### \* How to disassemble and clean pump filter

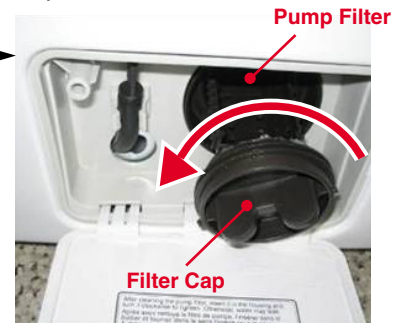
Open the Cover by coin or finger(only new model)



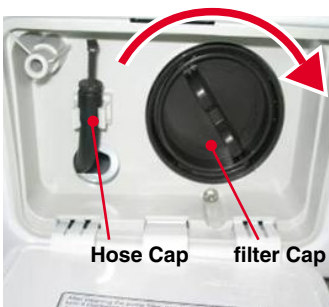
Drain water by removing the hose cap.



Disassemble the pump filter by turning the filter cap counterclockwise.



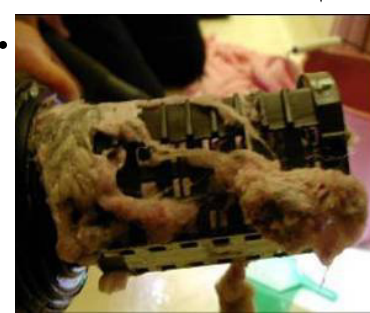
Assemble & close cap



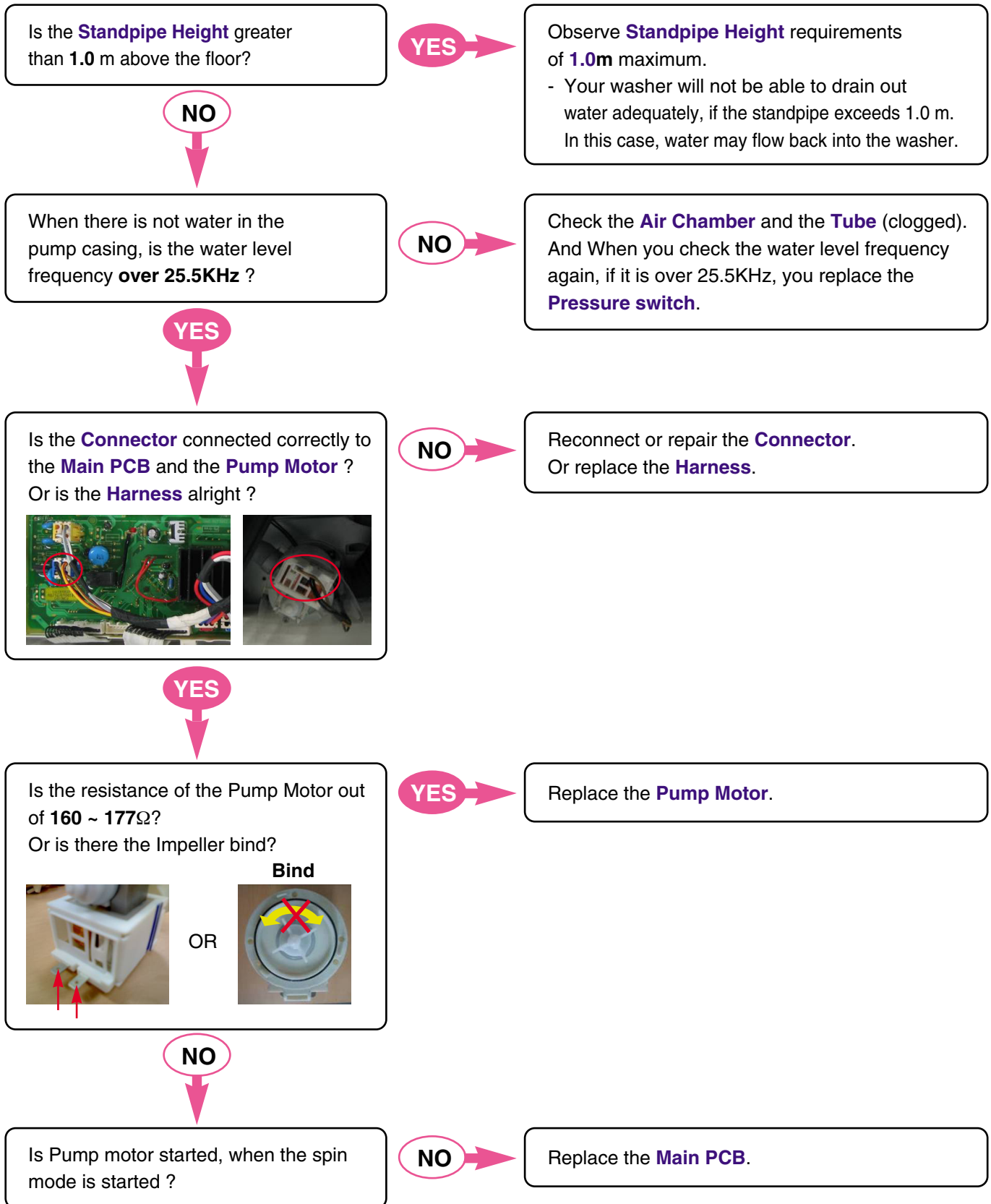
Filter clogged by foreign objects



Clean the filter







## Over Flow Error (FE)

Is the water coming in drawer **continuously**?



**YES**

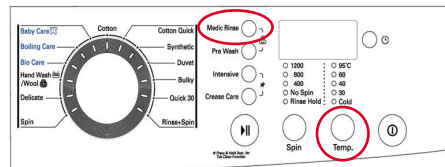
Replace the **Inlet Valve assembly**.

**NO**

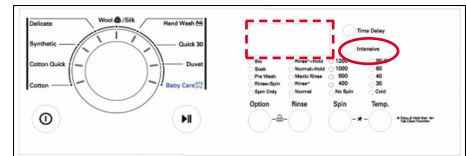
After power off for 10 sec. and power on.

Does the water level over reference line **and** Is **not** the water level frequency 25.5Khz or 26.1Khz ?

Or does **not** the water level over reference line **and** is the water level frequency 25.5Khz or 26.1Khz?



F1\*22TD → Press  
"Temp." and "Medic Rinse"



F1\*20TD → Press "Intensive"

**YES**

Replace the **Main PCB**.

**NO**

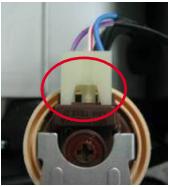
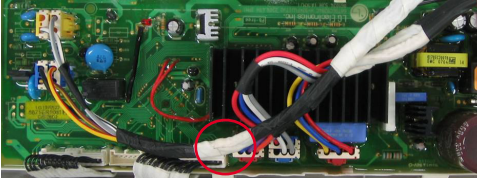
Check the **Air Chamber** and the **Tube** (clogged).

If FE is displayed again,  
then replace the **Pressure Switch**.

If FE is displayed again,  
then replace the **Main PCB**.

## Pressure Sensor S/W Error (PE)

Is the **Connector** connected correctly to the **Main PCB** and the **Pressure Switch** ?  
Or is the **Harness** alright ?

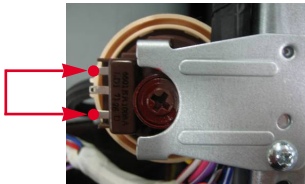


NO

Reconnect or repair the **Connector**.  
Or replace the **Harness**.

YES

Is the resistance of the **Pressure Switch** out of range?  
[Pin1 ~ Pin3  
→ 21~23Ω)



YES

Replace the **Pressure Switch**.

NO

Is the air chamber and the tube clogged?

YES

Check air chamber and remove the foreign material.

NO

Replace the **Main PCB**.

## Door Open Error (dE)

Is the door closed?

**NO**

Close the door totally.

**YES**

Is the Door assembly in line with door switch ?

**YES**

Lift up & Close the door.  
If the dE is displayed, Replace the **Door Bracket**.

Scratch by Latch Hook

or

Touching



**NO**

Does the **Spring** of **Latch Hook** actuate?

**NO**

Replace the **Latch Hook**.



**YES**

Is the **Connector** connected correctly to the **Main PCB** and the **Door Switch**?  
Or is the **Harness** alright ?

**NO**

Reconnect or repair the **Connector**.  
Or replace the **Harness**.

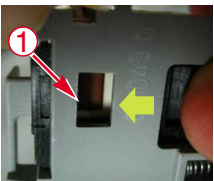


**YES**

Does the **Door Switch** operate as follows?

**NO**

Replace the **Door switch**.

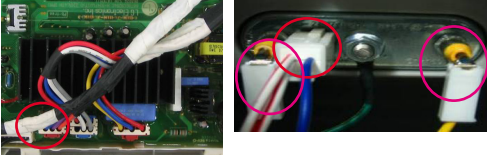


\* Door Locking time : 1~8 sec.  
Check the time between from input the power to parts ① move up, then Door locked.

\* Door Releasing time : 25~100 sec.  
Check the time between from off the power to parts ① move down, then Door released.

## Thermistor (Heating) Error (tE)

Is the **Connector** connected correctly to the **Main PCB** and the **Thermistor** and the **Heater**? Or is the **Harness** alright ?



YES

Reconnect or repair the **Connector**.  
Or replace the **Harness**.

NO

Is the resistance of the **Thermistor** out of range **44 ~ 53 K $\Omega$**  at **25°C**?  
(Page 17)

YES

Replace the **Thermistor**.

NO

Is the resistance of the **Heater** out of range **24.7 ~ 28.0 $\Omega$**  ? (Page 17)

YES

Replace the **Heater**.

NO

Replace the **Main PCB**.

### [Note] Thermistor Spec

S P E C	Temp	Resistance (k $\Omega$ )		
		MIN	STD	MAX
	30 °C	36.35	39.45	42.72
	40 °C	24.20	26.05	27.97
	60 °C	11.43	12.12	12.82
	70 °C	8.088	8.514	8.940
	95 °C	3.544	3.791	4.045
	105 °C	2.617	2.816	3.023

## Motor Locked Error (LE)

[Pre Check]

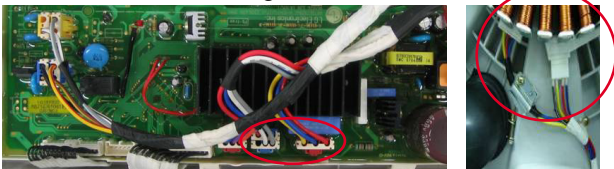
- Gentle wash cycles, such as Perm Press, Delicates, Hand Wash, and Wool/Silk should only be used for smaller loads. Because these cycles are more gentle in tumbling and spinning, putting too much in the drum can register an issue with the motor. Remove items, reset unit and test with a Rinse/Spin cycle.
- Don't replace the PCB, when the hall sensor is replaced.  
Replace the PCB, when the LE is displayed after replacing the hall sensor.

Press the **Power** button & **Start / Pause** button.

Does the **Drum stop** when the start/pause button is pressed to start the cycle ?  
Or Sometimes does the **Drum** rotate **weakly** (under 15rpm)?

YES

Is the **Connector** connected correctly to the **Main PCB** and the **Motor**?  
Or is the **Harness** alright ?

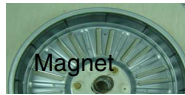


NO

Reconnect or repair the **Connector**.  
Or replace the **Harness**.

YES

Disassemble the **Rotor**.  
Are the **Magnet** of rotor **cracked** or **broken**?

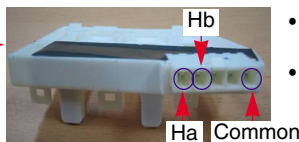


YES

Replace the **Rotor**.

NO

Are the resistance of the **Hall Sensor** 5~15kΩ?



- Ha ~ Common : 5 ~ 15 kΩ
- Hb ~ Common : 5 ~ 15 kΩ

NO

Replace the **Hall Sensor**.  
→ Disassemble **hall sensor** carefully.  
**(Next page)**

YES

Are the resistance same between **Stator** points?

※ V~U / U~W / W~V : 8~11Ω



NO

Replace the **Stator**.

YES

Replace the **Main PCB**.

## 1 Disassemble the Hall Sensor

1) Disassemble the hook of Hall Sensor by (-) driver.



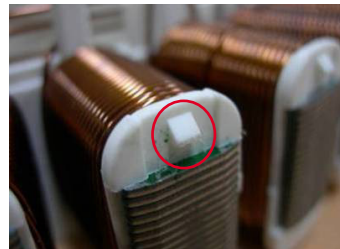
2) Pull up Hall Sensor slowly as shown in picture.



### ☆ Caution

If you disassemble by force, not following the directions, the hooks of stator (red circled) might break up. Hence need change of stator assembly.

**So disassemble cautiously.**



## 2 Assemble the Hall Sensor

1) Adjust the hole of Hall Sensor to the hooks of stator as picture. (red circled)



2) Push down the Hall sensor, and assemble to the hook for sure.



### [Note]

#### Hall Sensor Part No.


• 24" / 25" : 6501KW2001A

• 27" : 6501KW2002A

# 8. TROUBLESHOOTING WITHOUT ERROR CODES

## No Power

Is the Power Plug connected firmly to the power outlet?  
And is the supply voltage 220~240V AC?



**NO** → Reconnect **Power Plug** firmly.  
Check the fuse or reset the circuit breaker.

YES


Is Multi-plug socket used ?



**YES** → Don't use **Multi-plug** socket.  
Use **Single Plug** socket for washing machine.

NO

Is the **Connector** connected correctly to the **Main PCB** and the **Noise Filter**?  
Or is the **Harness** alright ?




**Noise Filter**                      **PCB**

**NO** → Reconnect or repair the **Connector**.  
Or replace the **Harness**.

YES

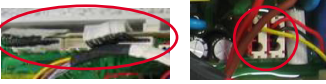
Is **Red LED ON** while power supplied ?



**NO** → Check and replace **Main PCB**.

YES

Is the connectors connected Correctly to the Display PCB?

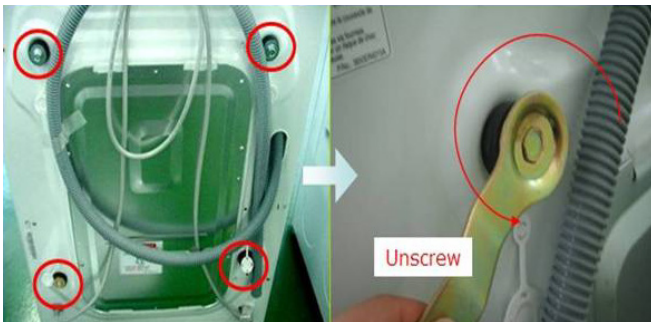
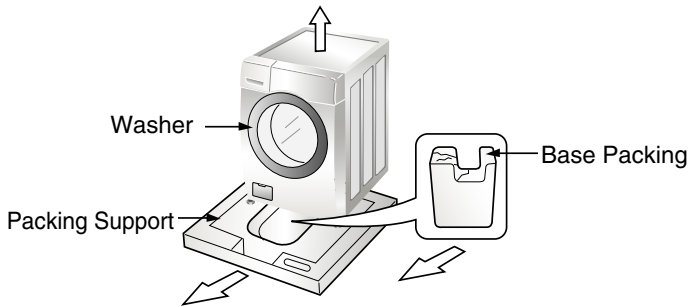


**YES** → Check connectors otherwise.  
Replace **Display PCB**.



## Vibration & Noise In Spin

Have all the **Transit Bolts** and the **Base Packing** been removed?



**NO**

Remove the **Transit Bolts** and the **Base Packing**.

**YES**

Refer to **INSTALLATION**. (Page 7)

## Detergent & Softener does not flow in

Is water supplied?

**NO**

Refer to [Water Inlet Error (IE)]  
 (page 21)

**YES**

Is detergent & softener put in the correct compartment of the drawer?



**NO**

Put it in the **Correct Position**.

**YES**

Is the **Detergent** caked or hardened?

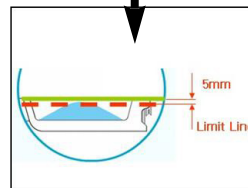
※ Reference (Amount of Detergent & Softener)

**Detergent**

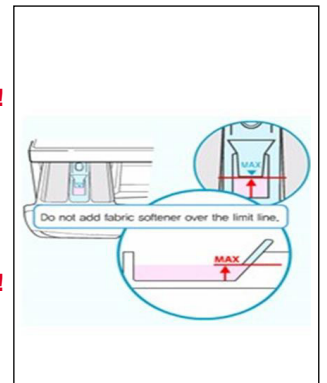
**Softener**



**NO!!**



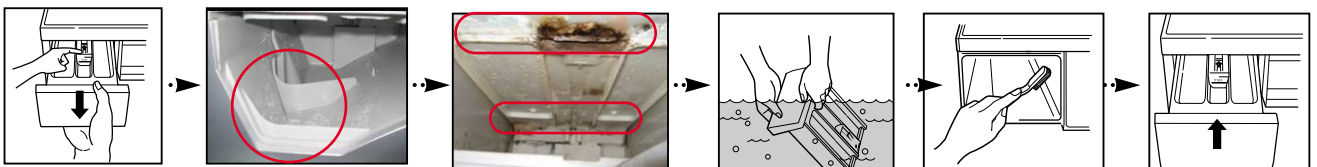
**OK!!**



**YES**

Clean the drawer and dispenser.

 ※ Check point



# Water Leak

## 1. Water Leak from Dispenser

Is the **Dispenser Tray** Damaged or warped?



**YES**

Replace the **Dispenser Tray**.

**NO**

Is detergent & softener put in the correct compartment of the drawer?



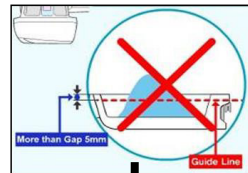
**NO**

Put it in the **Correct Position**.

**YES**

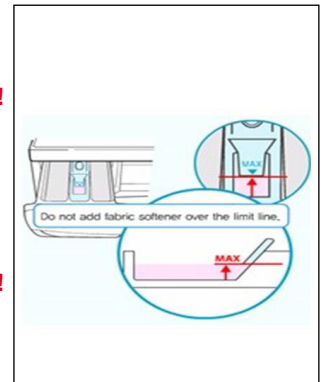
※ Reference (Amount of Detergent & Softener)

**Detergent**



**NO!!**

**Softener**



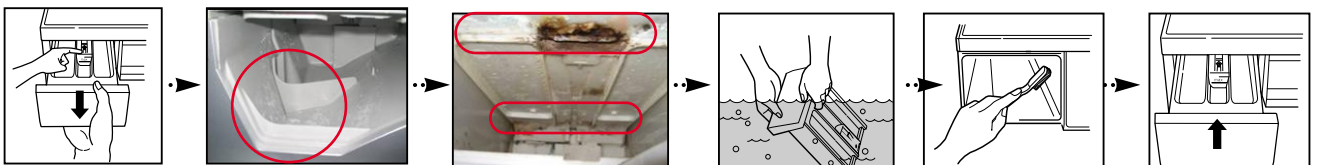
**OK!!**

Is the **Detergent** caked or hardened?

**YES**

Clean the drawer and dispenser.

○ ※ Check point



## 2. Water Leak from Dispenser

Are the gasket (seal) and door cleaned regularly?

**NO**

Clean the periphery of **Gasket** and **Door** regularly.



**YES**

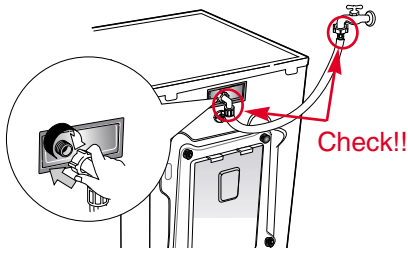
Is the door or gasket damaged?

**YES**

Replace the damaged parts.

## 3. Unknown – Water on Floor

Are the inlet hoses loose or cracked/split?



**YES**

Replace the **Inlet Hoses**.

**NO**

Is the washer horizontal ?

**NO**

Adjust the height of washing machine to be kept horizontally. (Page 7)

**YES**

Are the drain filter and manual drain hose open?

**NO**

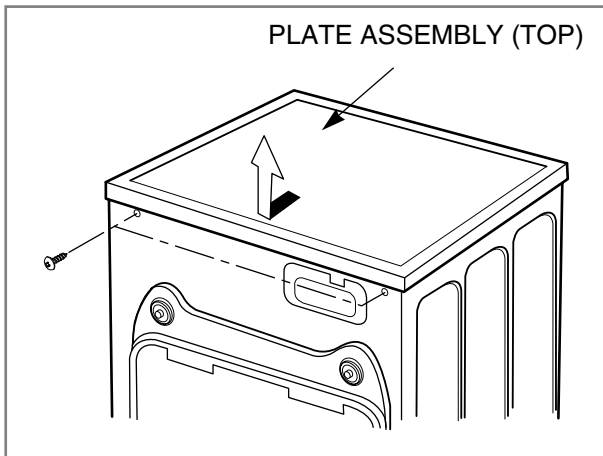
Turn the filter cap clockwise to close.



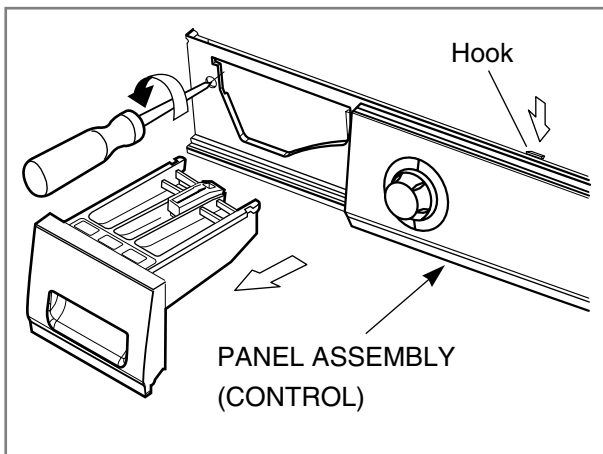
# 9. DISASSEMBLY INSTRUCTIONS

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

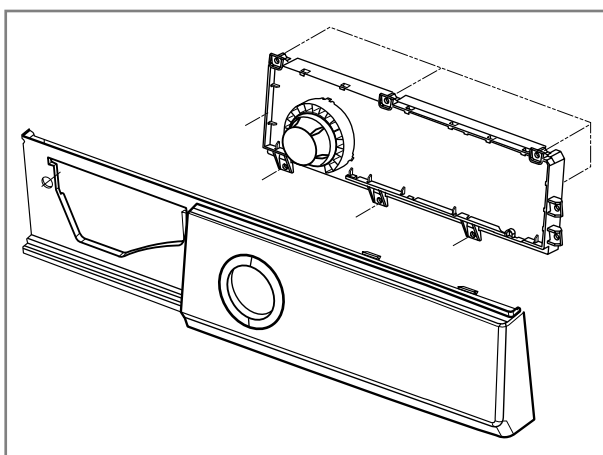
## CONTROL PANEL



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

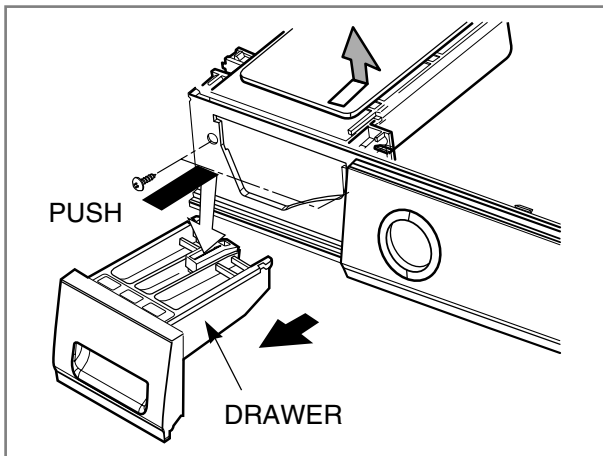


- ① Disconnect the PWB assembly connector from Main lead wire assembly.
- ② Pull out the drawer and unscrew 2 screws.
- ③ Push upper hooks down on the top and pull the control panel.

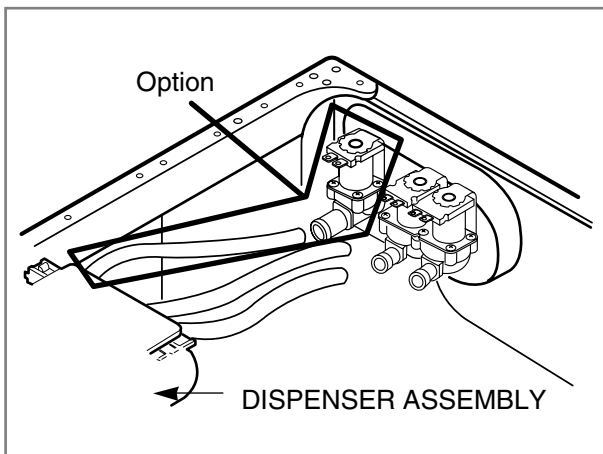


- ① Disconnect the PWB assembly (Main & Display) from control panel by unscrewing 7 screws.

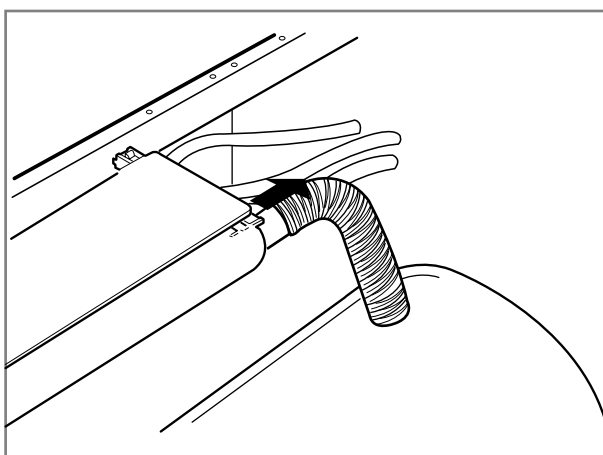
## DISPENSER ASSEMBLY



- ① Disassemble the top plate assembly.
- ② Pull out the drawer to arrow direction.
- ③ Unscrew 2 screws.

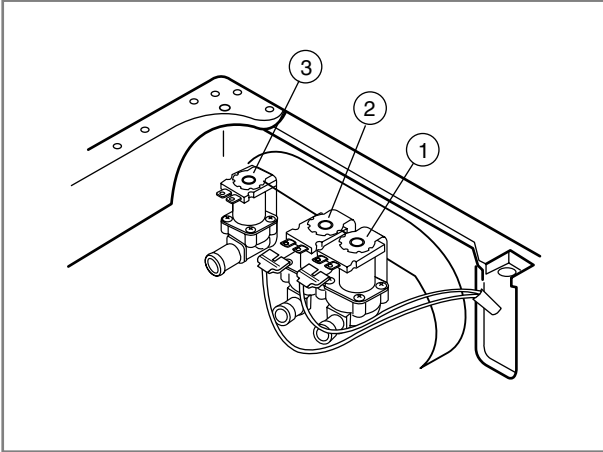


- ① The hose clamps and the hose are disassembled.



- ① The ventilation bellows and the water inlet bellows are disassembled on the tub.

## INLET VALVE



① Disconnect the wiring receptacle.

② Unscrew 2 screws from the back.

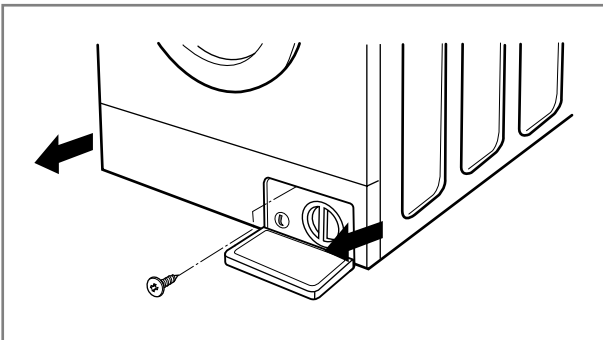
※ When reconnecting the connector

VALVE #1 (MAIN)	White / Black - Black
VALVE #2 (PRE)	Gray / White - Black
VALVE #3 (HOT)	Blue / Red - Black

• Rating : 220/240V 50/60Hz

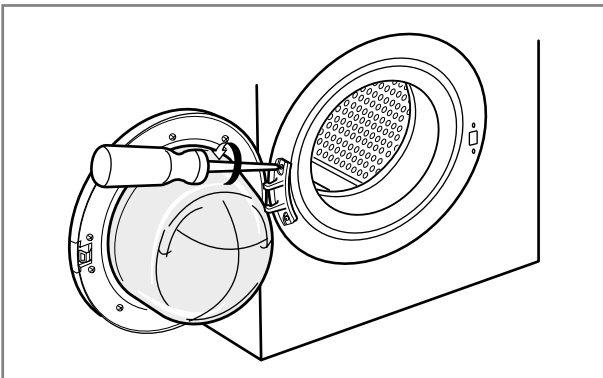
• Resistant : 3.5~4.5kΩ

## LOWER COVER



- Open the lower cover cap by using coin and pull out the lower cover to the arrow direction after a screw is unscrewed.

## DOOR

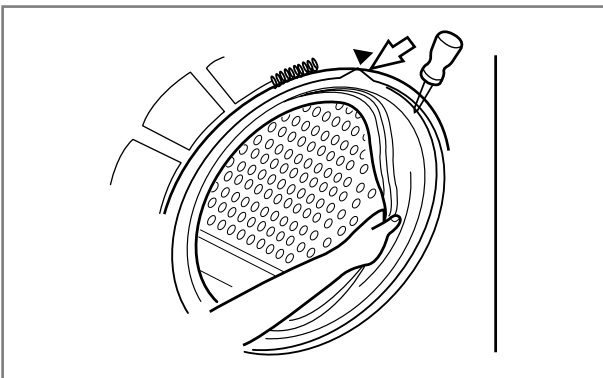
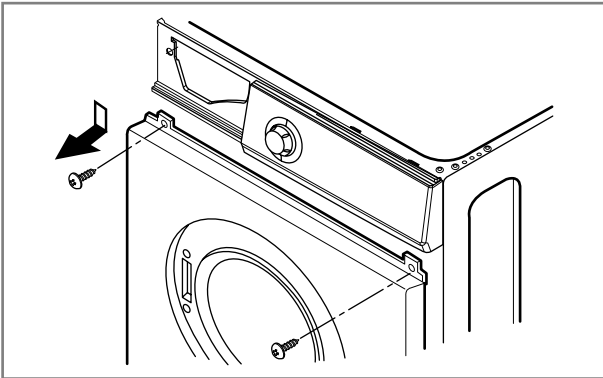
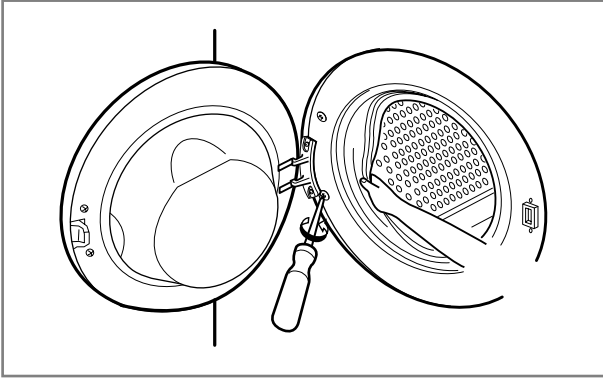


① Open the door completely.

② Remove the two screws from the hinge.

- ※ When removing the door assembly, it is necessary to hold the bracket that is inner of the cabinet cover.

## GASKET ASSEMBLY



- ① Take apart the cabinet gasket clamp.
- ② Unscrew 2 screws from the cabinet cover.
- ③ Open the lower cover cap and unscrew 1 screw inside.
- ④ Take apart the lower cover.

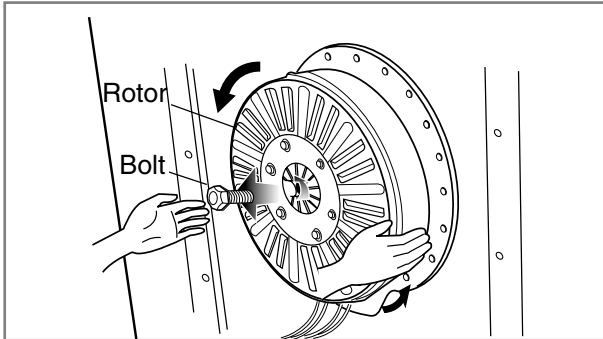
- ① Disassemble the control panel. (page 24)
- ② Unscrew all the screws on the upper and lower sides of the cabinet cover.

- ① Take apart the tub gasket clamp.
- ② Make sure that the drain hole of the gasket is put beneath when reassembling the gasket.

※ Refer to the arrow mark on the tub cover.

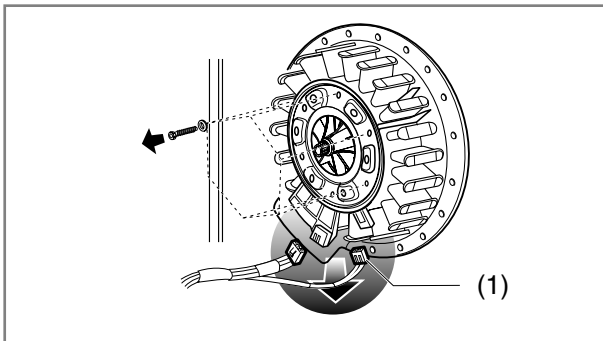


## ROTOR ASSEMBLY, STATOR ASSEMBLY, FRICTION DAMPER ASSEMBLY



(ROTOR ASSEMBLY)

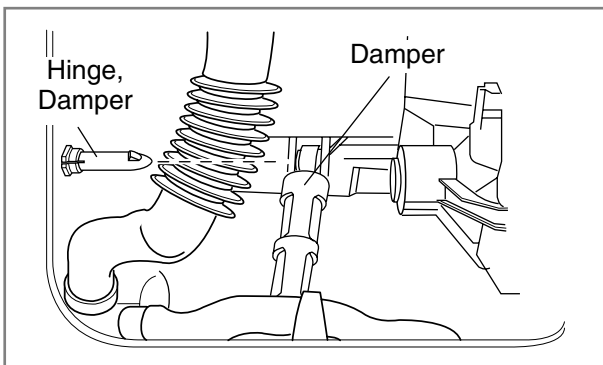
- ① Remove the BACK COVER.
- ② Unscrew the bolt to pull out the ROTOR assembly.



(STATOR ASSEMBLY)

- ① Disconnect the wiring connector.
- ② Unscrew 6 bolts from the STATOR.
- ③ Remove the STATOR.

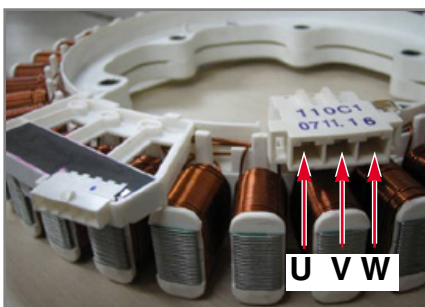
\* Note : Hook of connector (1) is on the backside



(DAMPER)

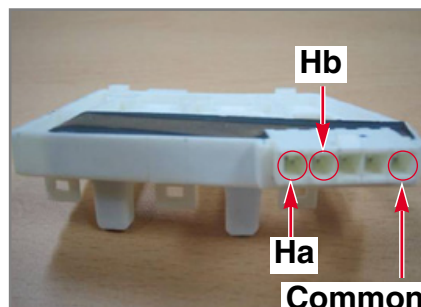
- ① Pull out the hinge, pressing its snap.
- ② Do not use the pulled-out hinge again. It may be taken off during operation.

### Motor Stator



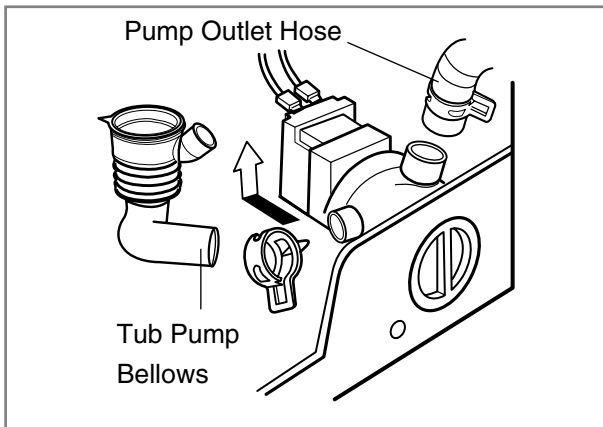
- V ~ U (8~11Ω)
- U ~ W (8~11Ω)
- W ~ V (8~11Ω)

### Hall Sensor



- Common ~ Ha (5~15kΩ)
- Common ~ Hb (5~15kΩ)

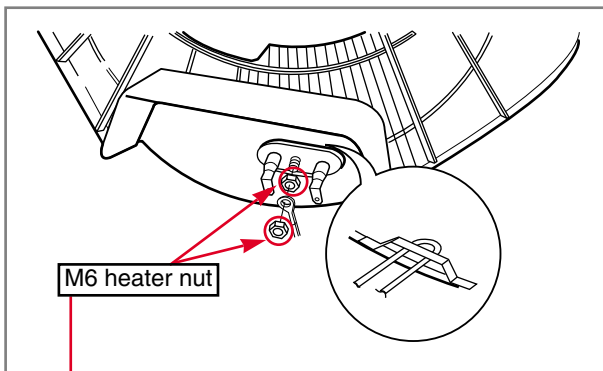
## PUMP



- ① Remove pump outlet hose.
- ② Remove tub pump bellows.
- ③ Remove cap (Remaining Hose.)
- ④ Disconnect the wiring.
- ⑤ Unscrew 2 screws.
- ⑥ Remove the pump.

- Rating : 220~240V 50HZ 30W
- Resistant : 160~177Ω

## HEATER



- ① Loosen the M6 heater nut to pull out the heater.

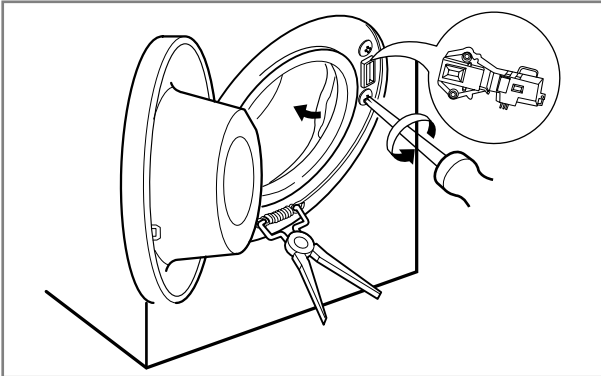
### CAUTION

When mounting the heater, be sure to insert the heater into the heater clip on the bottom of the tub.

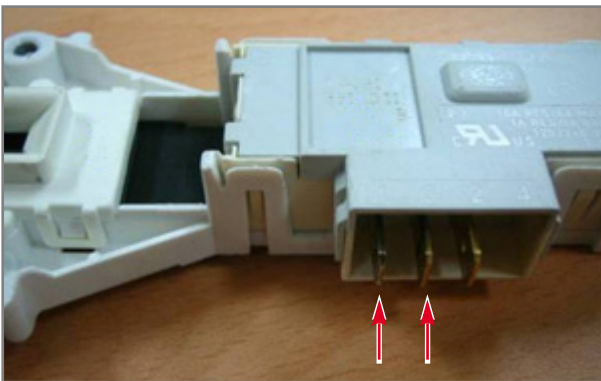
- Rating : 220~240V 2000W
- Resistant : 24.7~28.0Ω



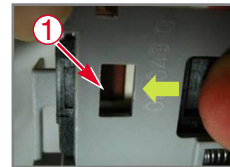
## SWITCH ASSEMBLY, DOOR LOCK



- ① Take apart the cabinet cover clamp and release the gasket.
- ② Unscrew 2 screws holding the door lock.
- ③ Disconnect the door lock from the wiring connector.



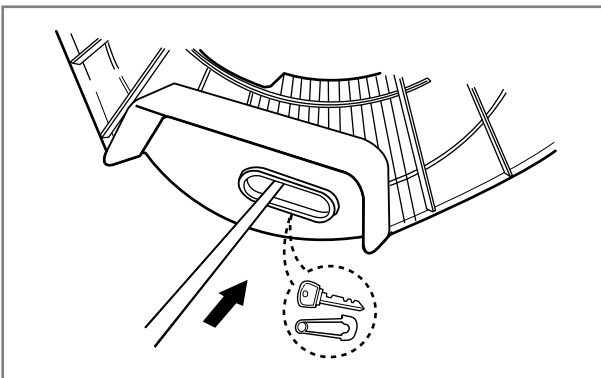
- Just check cut-off.
- Check the operating time.



\* Door Locking time : 1~8 sec.  
Check the time between from input the power to parts ① move up, then Door locked.

\* Door Releasing time : 25~100 sec.  
Check the time between from off the power to parts ① move down, then Door released.

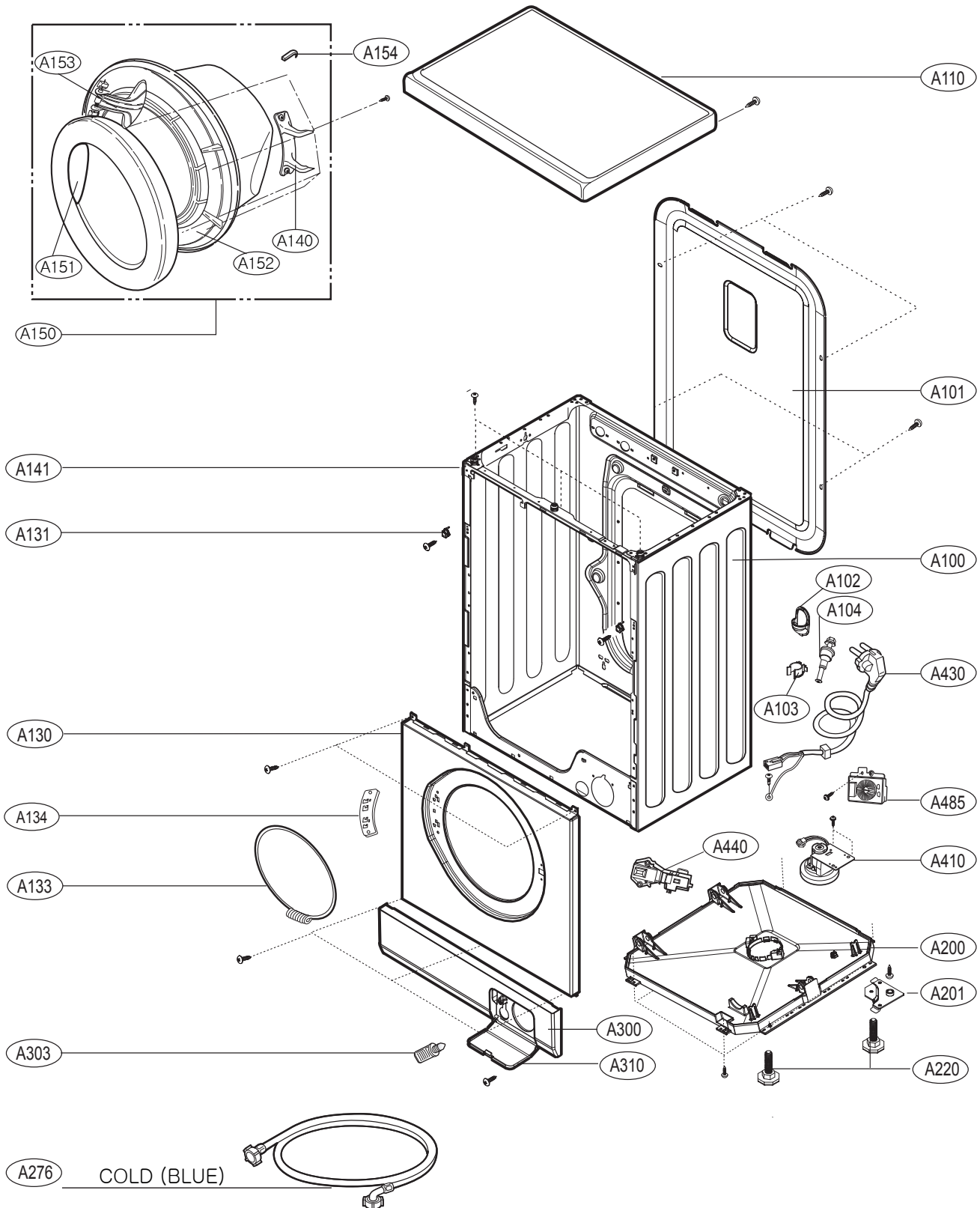
## WHEN FOREIGN MATERIAL IS STUCK BETWEEN DRUM AND TUB



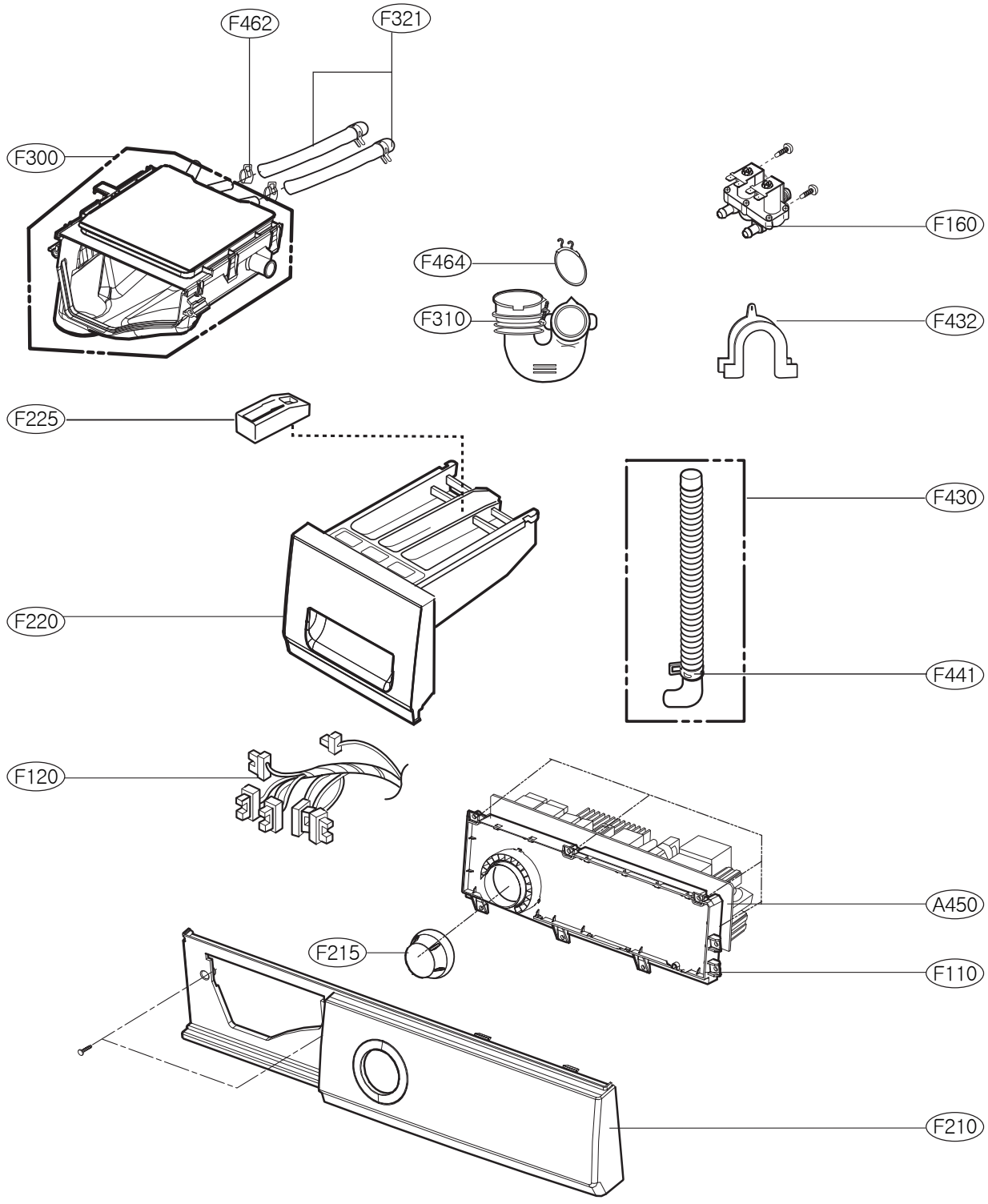
- ① Remove the heater.
- ② Remove the foreign material (wire, coin and others) by inserting a long bar through the hole.

# 10. EXPLODED VIEW

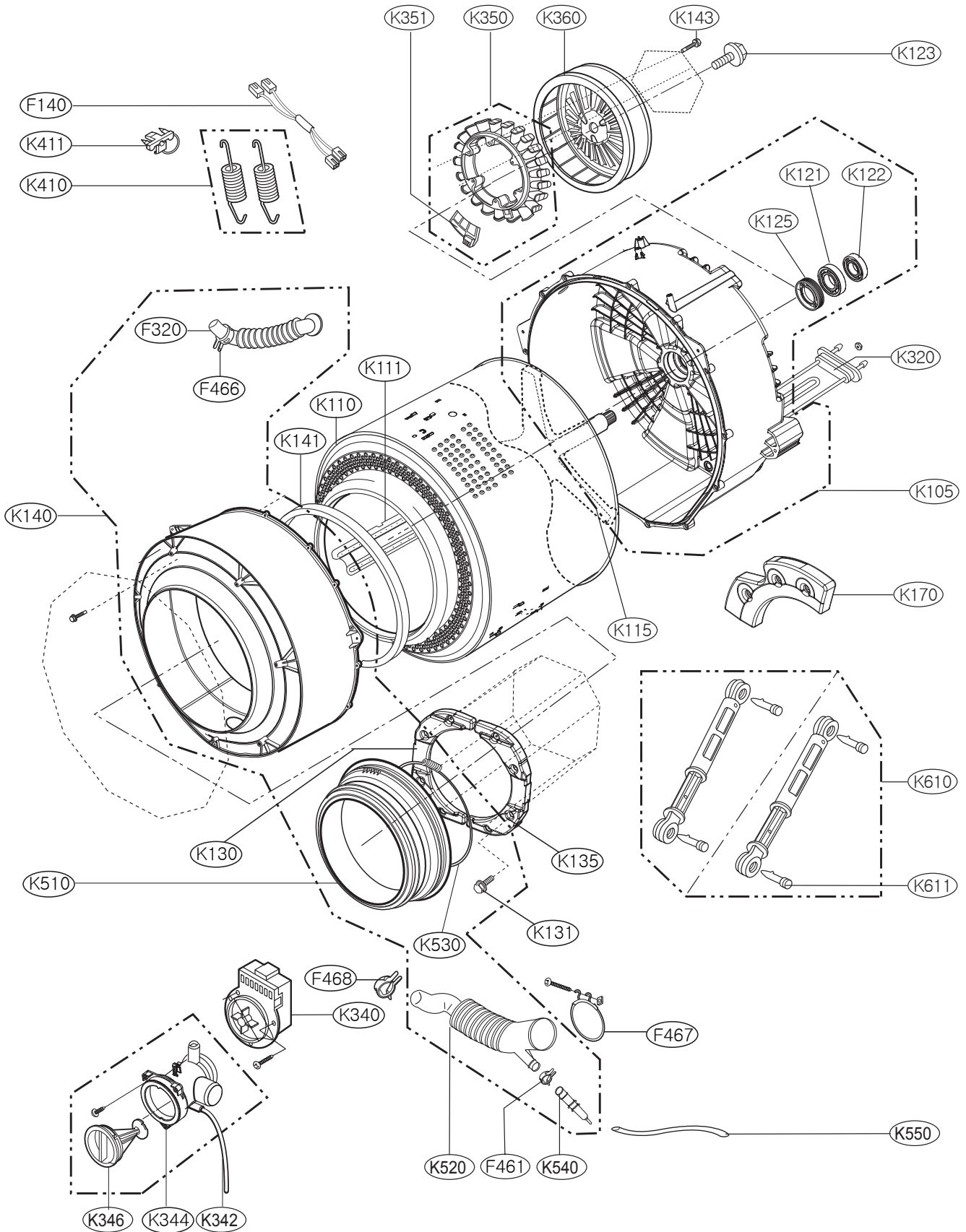
## 10-1. THE EXPLODED VIEW OF CABINET ASSEMBLY



# 10-2 THE EXPLODED VIEW OF CONTROL PANEL & DISPENSER ASSEMBLY



# 10-3 THE EXPLODED VIEW OF DRUM & TUB ASSEMBLY



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