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WASHING MACHINE SERVICE MANUAL

CAUTION

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

MODEL : WD(M)-16220(5)FD/16220(5)FDB(N) WD(M)-14220(5)FD/14220(5)FDB(N) WD(M)-12220(5)FD/12220(5)FDB(N) WD(M)-10220(5)FD/10220(5)FDB(N) WD-16222FD/16221FD WD(M)-11(3,5)220(5)FD



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	ГЕМ	WD(M)-16220(5)FD/16220(5)FDB(N) WD(M)-14220(5)FD/14220(5)FDB(N) WD(M)-15220(5)FD	WD(M)-12220(5)FD/12220(5)FDB(N) WD(M)-10220(5)FD/10220(5)FDB(N) WD-16222FD/16221FD					
POWER	SUPPLY	220-240V~, 50Hz						
PRODUC	T WEIGHT	65	kg					
	WASHING	NG 230W						
ELECTRICITY	SPIN (1400rpm)	440	W					
CONSUMPTION	DRAIN MOTOR	38	W					
	WASH HEATER	200	WO					
	WASH	45r	pm					
		1600 rpm : 400/800)/1200/1600 rpm					
REVOLUTION SPEED		1500 rpm : 400/800)/1200/1500 rpm					
	SPIN	1400 rpm : 400/800)/1000/1400 rpm					
		1200 rpm : 400/800/1000/1200 rpm						
		1000 rpm : 400/600/800/1000 rpm						
OPERATION WA	TER PRESSURE	0.3-10kgf/cm² (30-1000kPa)						
CONTR	OL TYPE	Electronic						
		Refer to the Rating Label						
WASH C	APACITY	Synthetic (3.5kg), Wool/Silk (2kg), Hand Wash (2kg), Delicate (3kg), Quick 30(5kg)						
DIME	NSION	600mm(W) × 600mm(D) × 850mm(H)						
WASH P	ROGRAM	Cotton, Synthetic, Wool/Silk, Hand Wash, Delicate, Quick 30						
RI	NSE	Super, Normal, Rinse Hold						
DOOR SV	VITCH TYPE	Bi-Metal type						
WATEF	RLEVEL	9 steps (by sensor)						
RESEF	VATION	From 3 hours to 19 hours						
SENSING OF THE	LAUNDRY AMOUNT	Adapted						
FUZZY	' LOGIC	Adapted						
DISPLAY OF THE	REMAINING TIME	Adapted						
ERROR D	IAGNOSIS	9 items						
POWER	AUTO OFF	Adapted						
CHILD) LOCK	Adapted						
AUTO F	RESTART	Adapted						
RA	PID	Ada	pted					

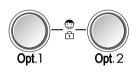
2. FEATURES & TECHNICAL EXPLANATION

2-1.FEATURES















Jumbo drum

LG's jumbo drum can wash about 40% more load than conventional washing machine. A bigger drum improves the wash performance.

More economical by Intelligent Wash System

Intelligent Wash 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.

Direct Drive system

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

Child-Lock

The Child-Lock system has been developed to prevent children from pressing any button to change the program during operation.

Low noise speed control system

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

Auto Restart

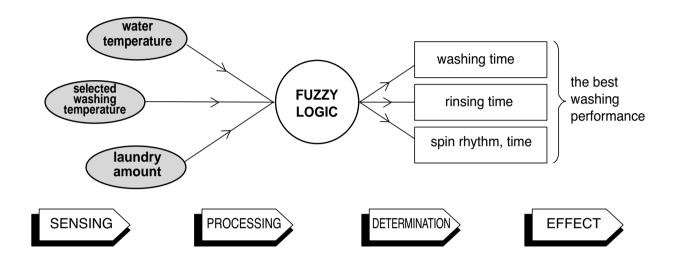
Although the washing machine is turned off by a power failure, it restarts automatically where it stopped when power is supplied again. And it will be the same the machine is unplugged and is plugged in again.

Water circulation

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

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.



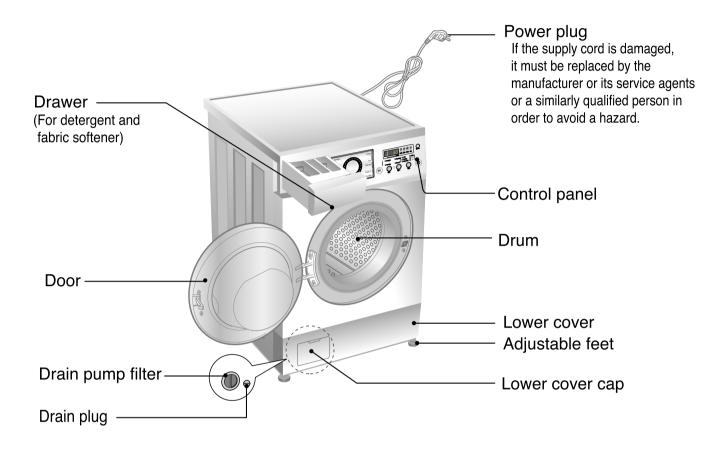
2-3.WATER LEVEL CONTROL

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

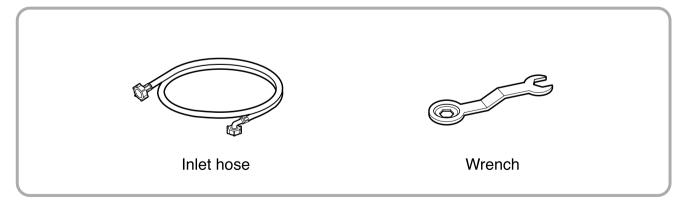
2-4.THE DOOR CAN NOT BE OPENED

• While program is operating.

3. PARTS IDENTIFICATION



ACCESSORIES

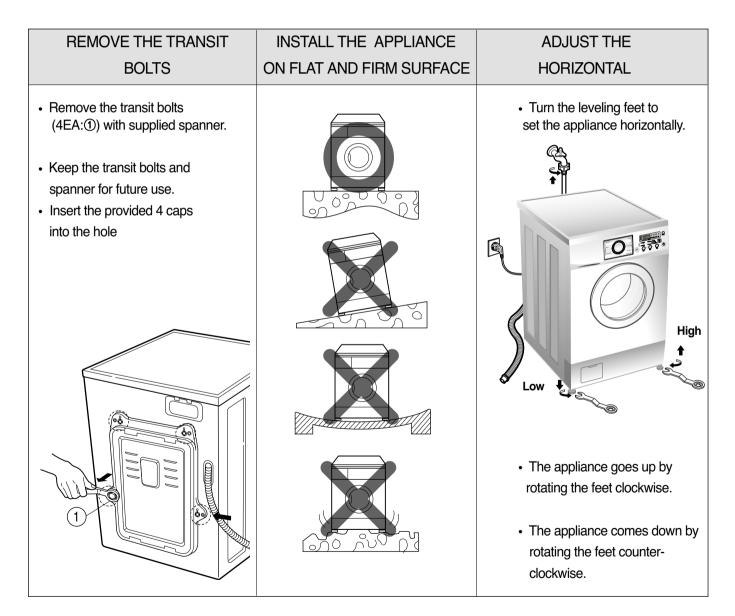


4. INSTALLATION

- 1 Before servicing ask the customer what the trouble is.
- 2 Check the adjustment (power supply is 220-240V~, remove the transit bolts....)
- 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 O·K or NOT.

STANDARD INSTALLATION

The appliance should be installed as follows.

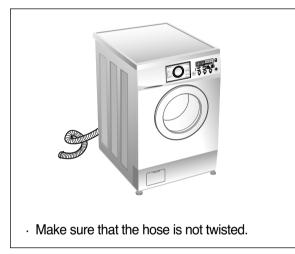


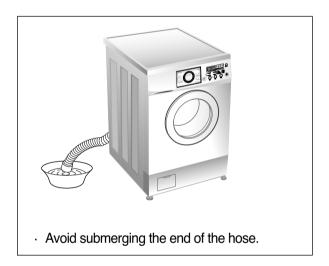
■ HOW TO CONNECT INLET HOSE

- Check that the rubber washer is inside of the valve connector.
- Connect the inlet hose firmly to prevent leak.



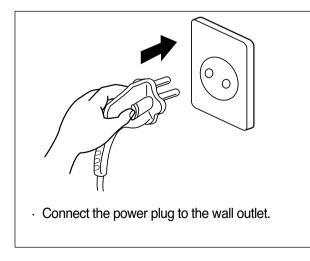
CONNECT DRAIN HOSE

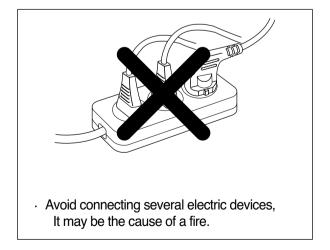




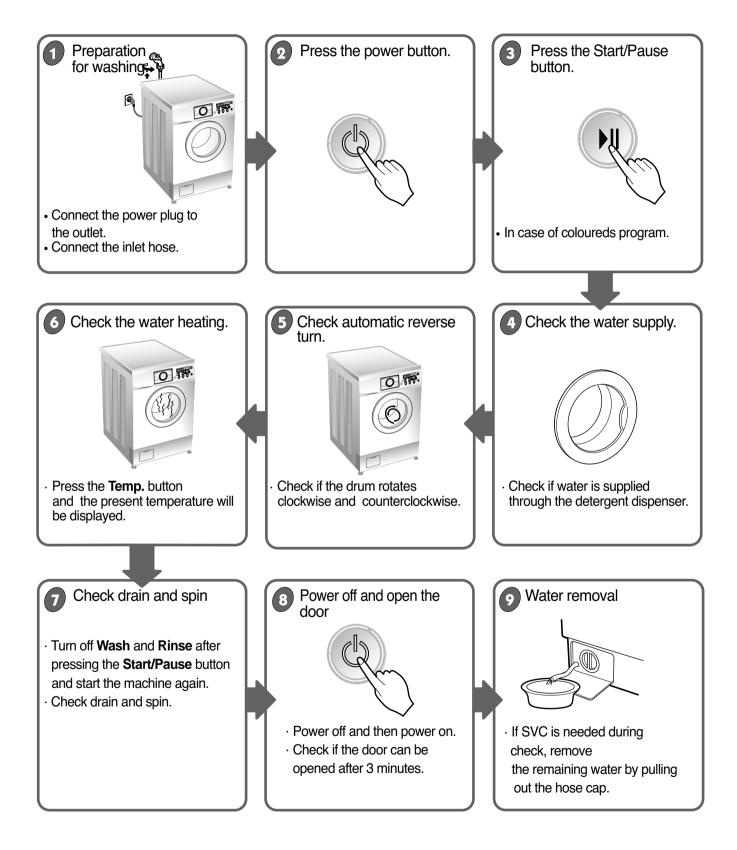
% The drain hose should be placed under 100cm from the floor.

CONNECT POWER PLUG

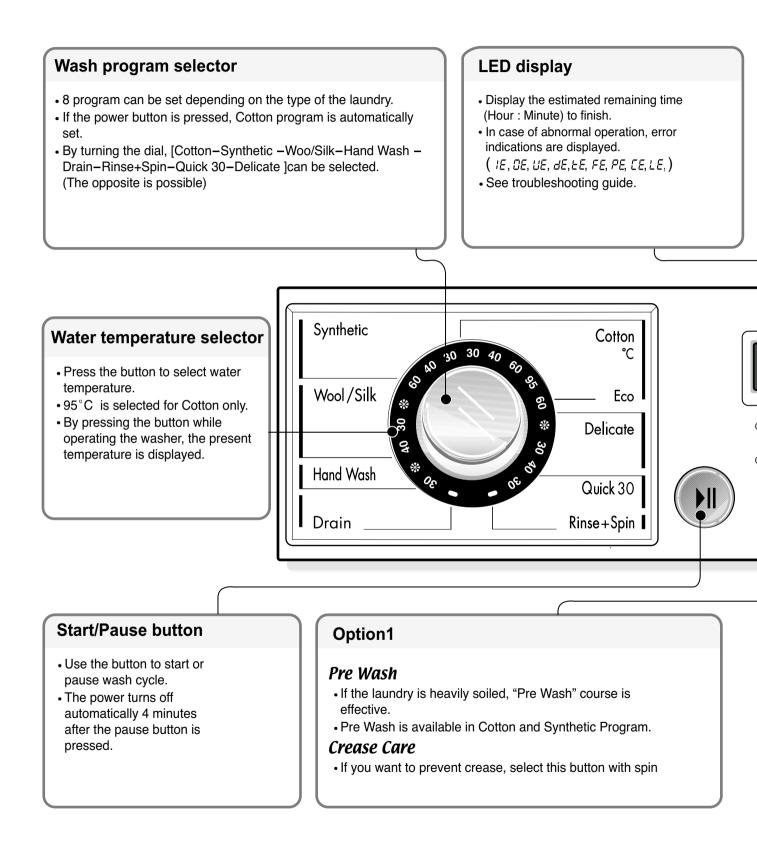


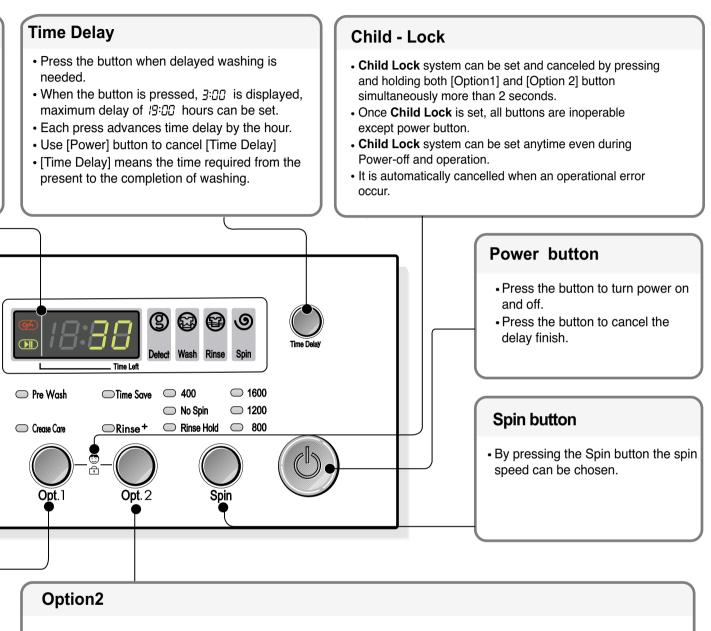


7 TEST OPERATION



5. OPERATION





Time Save

• By selecting the Time Save option, the wash time may be reduced, depending on the program selected.

• This option is available with Cotton, Synthetic program.

Rinse+

• If you wish to rinse more, the Rinse+ option will remove any trace of detergents.

6. WIRING DIAGRAM / PROGRAM CHART

															*	Wa	ter	Sup	oply	: W	∕∙s		*	ntei	mit	ten	t Sp	oin	: ŀS	;	*	Dise	entangle : D·T
C		Washing				Rinse													Spin			Α											
\\\\Y_			Pi	re				Ма	Main Normal Rinse +										Spin			E	UT										
///c	,	×	5				Wa	shing	Sta	ycoo	ling		1				2	2			3	3			4						N	ò	Normal
	E	v ∙ S	Washing	Drain	 S	W · S	Heating	Washing	W · S	Rinsing	Drain	Drain	 S	W · S	Rinsing	Drain	<u>-</u> . 8	W · S	Rinsing	Drain	 S	W · S	Rinsing	Drain	l S	W · S	Rinsing	Drain	Spin	Ρ.T	D	O F F	Working Time (Hour:Minute)
U \ \	\ P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	20	20	(Frout initiato)
R ∖⊤ S ↓		120	MIN	60	240	120		MIN	120	60	60	60	240	120	360	60	240	120	360	60	240	120	360	60	240	120	360	60	480	120	20	20	
Cotton	(BIG)		8					42 87		\succ																							About 2:45
Cotton	Small)		8					42		\succ																							About 2:41
Synthe	etic		\geq	\leq	\leq			26 51		\succ	\leq																						About 1:39
Delica	ate		>	<	\leq			4 18		\succ	\leq																						About 1:03
Wool/S	Silk		\geq	\leq				4 18		\succ	\leq																						About 1:01
Handw	∕ash		\geq	\leq	\leq			4 24		\geq	\leq																						About 55
Quic	:k	$\langle \rangle$	>	<	\leq					\succ	\langle																						About 30
Rinsin + Spi							>	<	\leq	\leq																							About 23
Drai	n																																About 1

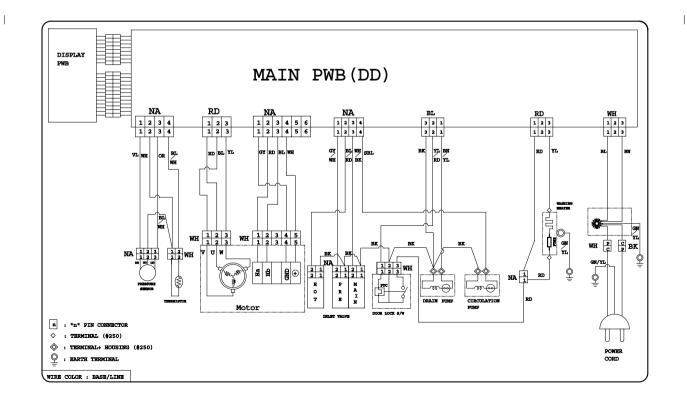
Basic Cycle

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

- Be careful of electric shock or disconnecting the parts while troubleshooting.
- Voltage of each terminal in 220-240V~ and DC while applying an electric current.

7-2.QC TEST MODE.

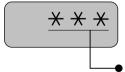
- ① Pressing Option1, and Spin button simultaneously.
- ② Power supply on with pressing upper two button. Then buzzer sound twice.
- ③ Press the Start/Pause button as follows.

[Press the Start/Pause button more 4 times until stop spinning]

Pressing number of [Start/Pause] button	Checking Point	Display Status				
None	All lamps turn on					
1 time	Clockwise spin (right)	Drum rpm (About 40~50)				
2 times	Low speed Spin	Drum rpm (About 53~65)				
3 times	High speed Spin	Drum rpm (About 140~160)				
4 times	Inlet valve for prewash operation	Water level frequency (25~65)				
E times	Inlet valve for mainwash operation	Water level frequency (25, 65)				
5 times	Hot inlet valve in case of hot water fill	Water level frequency (25~65)				
6 times	Inlet valve for mainwash operation	Water level frequency (25~65)				
7 times	Counterclockwise spin (left)	Drum rpm (About 40~50)				
8 times	Heater is in operation for 3 sec.	Water temperature				
9 times	Circulation pump operation	Water level frequency				
10 times	Draining pump operation	Water level frequency				
11 times	Auto off operation					

7-3. HOW TO KNOW THE WATER LEVEL FREQUENCY

* Press the Rinse and Spin button simultaneously.



The digits means water level frequency (10⁻¹ kHz)

ex) 241 : Water level frequency = 241×10^{-1} kHz = 24.1 kHz

7-4.ERROR DISPLAY.

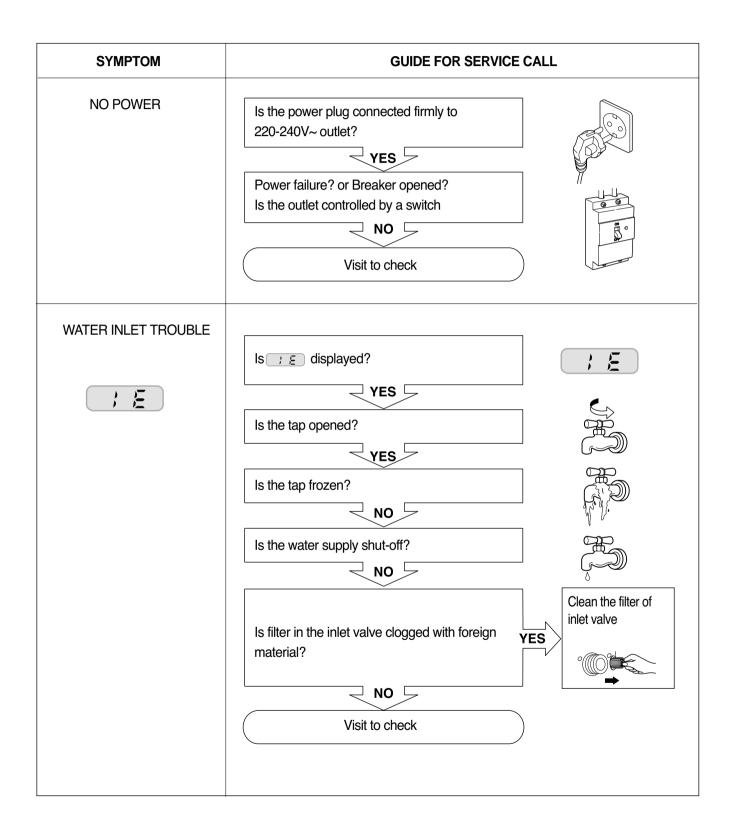
- If you press the Start/Pause button when an error in displayed, any error except *PE* will disappear and the machine will change into pause status.
- In case of PE, EE, dE, if the error is not resolved within 20 sec. In the case of other errors, if the error is not resolved within 4 min., power will be turned off automatically and the error only will be blinked. But in the case of FE, power will not be turned off.

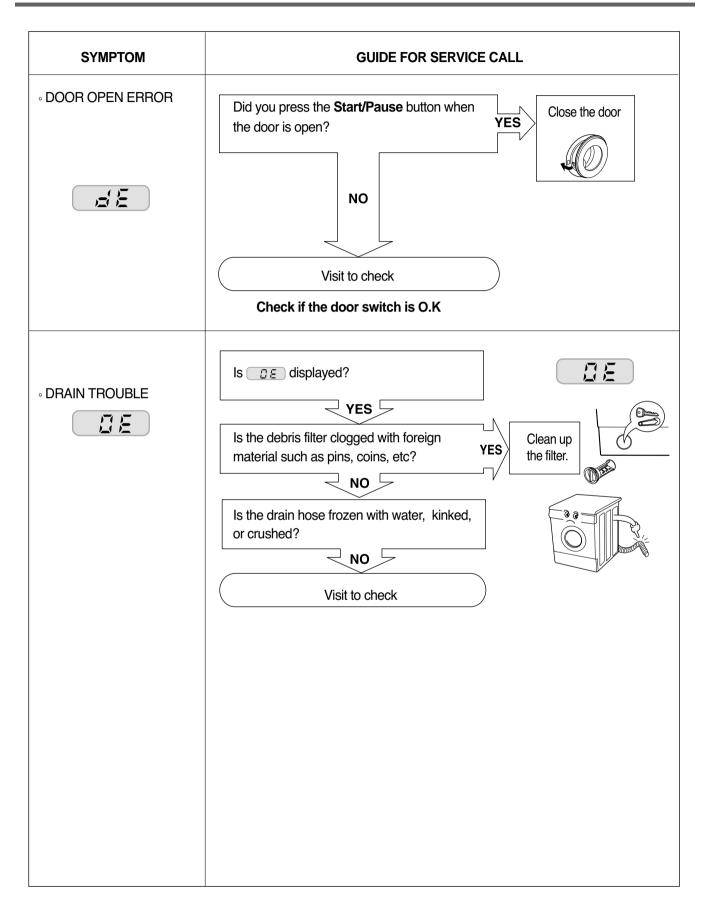
	ERROR	SYMPTOM	CAUSE
1	WATER INLET ERROR	; ;	 Water has not reached to the pre-set level within 8 min. since inlet valve operated, or water has not reached to the normal level within 25 min.
2	IMBALANCE ERROR		 Load is too small. The appliance is tilted. Laundry is gathered to one side. Non-distributable things are put into the drum.
3	DRAIN ERROR		$_{\odot}$ Water has not drained enough within 10 min.
4	OVERFLOW ERROR	<u>, </u>	 Water is automatically being pumped out because too much water is in the tub.
5	SENSOR PRESSURE S/W ERROR	, - , <u>,</u>	○ The sensor pressure switch is out of order.
6	DOOR OPEN ERROR		 The Start/Pause button is pressed with the door open. The door switch is out of order.
7	HEATING ERROR	<u> </u>	○ The THERMISTOR is out of order.

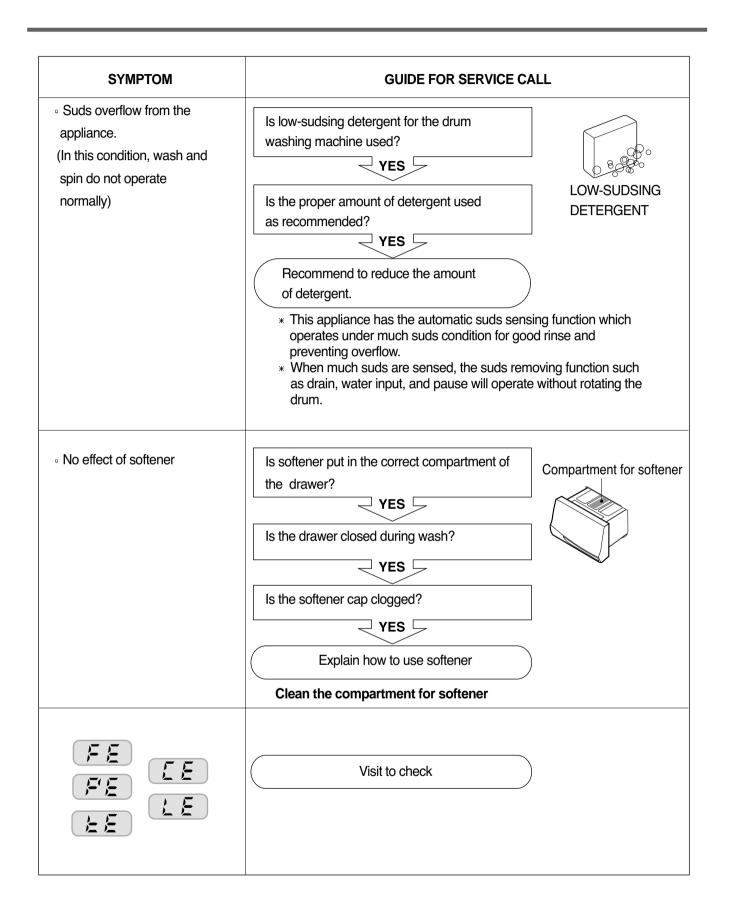
	ERROR	SYMPTOM	CAUSE
8	CURRENT ERROR		 MAIN PWB ASSEMBLY is out of order Replace the MAIN PWB ASSEMBLY Winding in the STATOR ASSEMBLY is short-circuited. Replace the STATOR ASSEMBLY
9	LOCK ERROR	LE	 The connector (3-pin, male, white) in the LEAD WIRE ASSEMBLY is not connected to the connector (3-pin, female, white) of STATOR ASSEMBLY. Reconnect or repair the connector The electric contact between the connectors [3-pin, male, white in the LEAD WIRE ASSEMBLY and 4-pin, female, natural in the MAIN PWB ASSEMBLY is bad or unstable. Reconnect or repair the contact in the connector The LEAD WIRE ASSEMBLY between the STATOR ASSEMBLY and MAIN PWB ASSEMBLY is cut (open circuited). Repair the damaged (open-circuited) the LEAD WIRE ASSEMBLY The hall sensor is out of order/defective. Replace the STATOR ASSEMBLY

8. ERROR DIAGNOSIS AND CHECK LIST

8-1.DIAGNOSIS AND ANSWER FOR ABNORMAL OPERATION



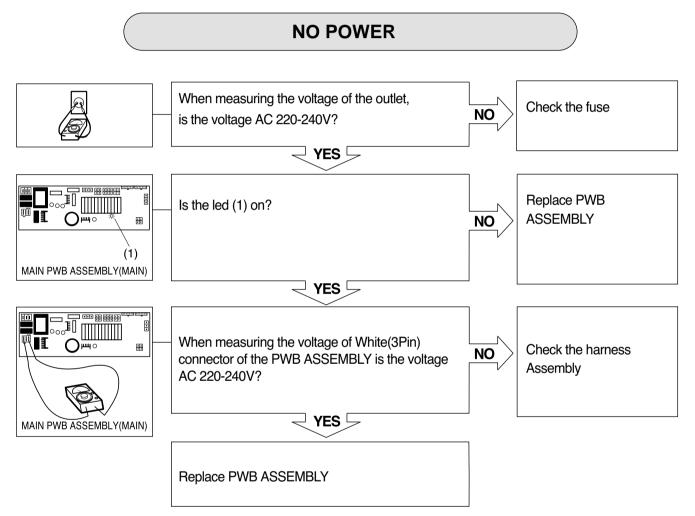


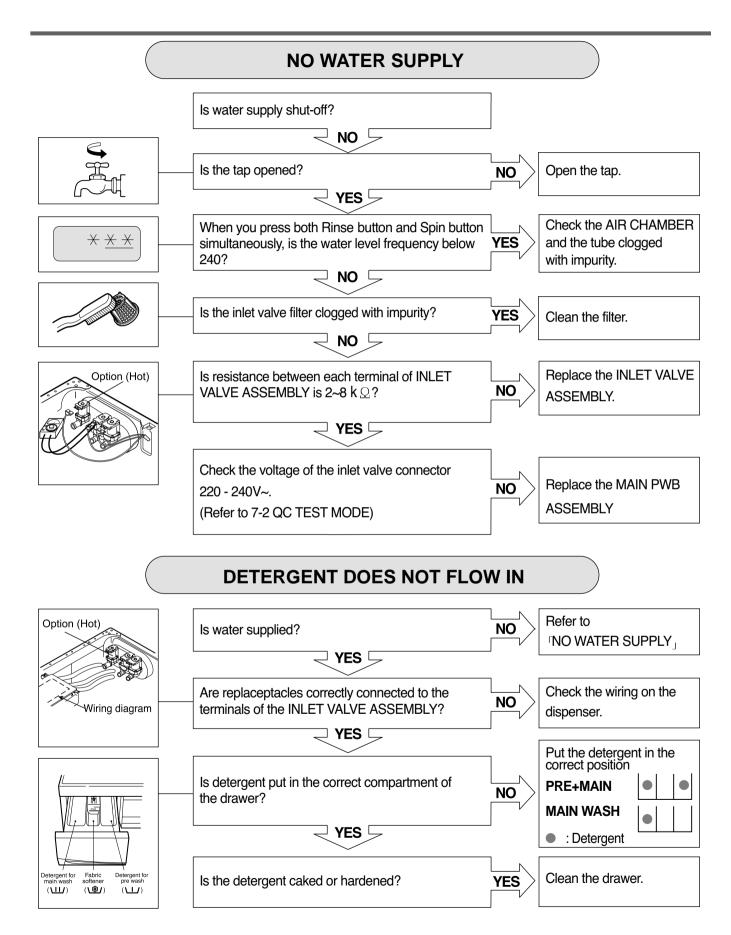


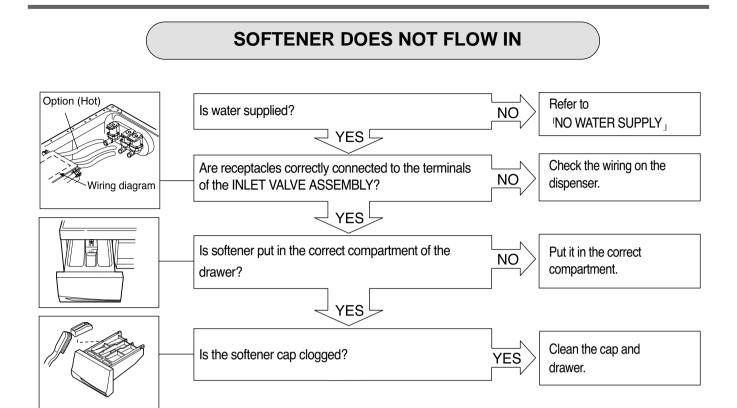
8-2.FAULT DIAGNOSIS AND TROUBLESHOOTING

CAUTION

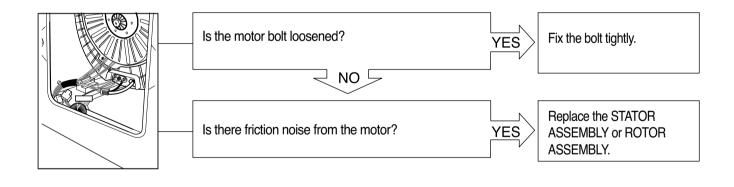
- 1. Be careful of electric shock or disconnecting the parts while troubleshooting.
- 2. First of all, check the connection of each part terminal with wiring diagram.
- 3. If you replace the MAIN PWB ASSEMBLY, put in the connectors correctly.

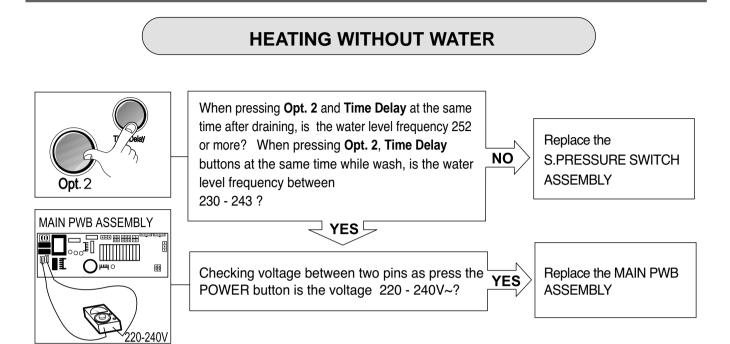




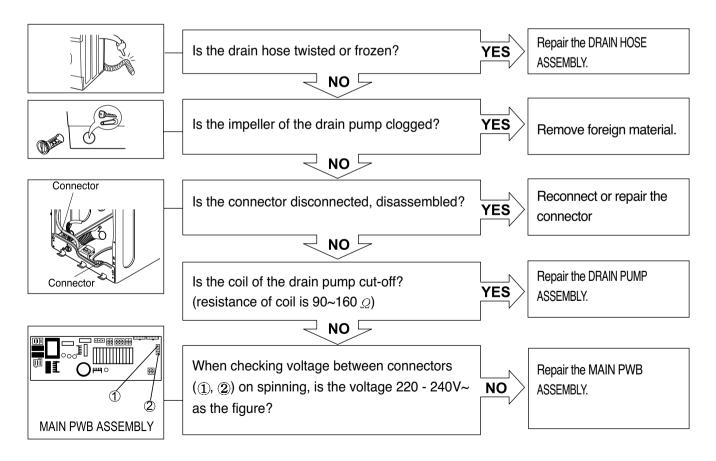


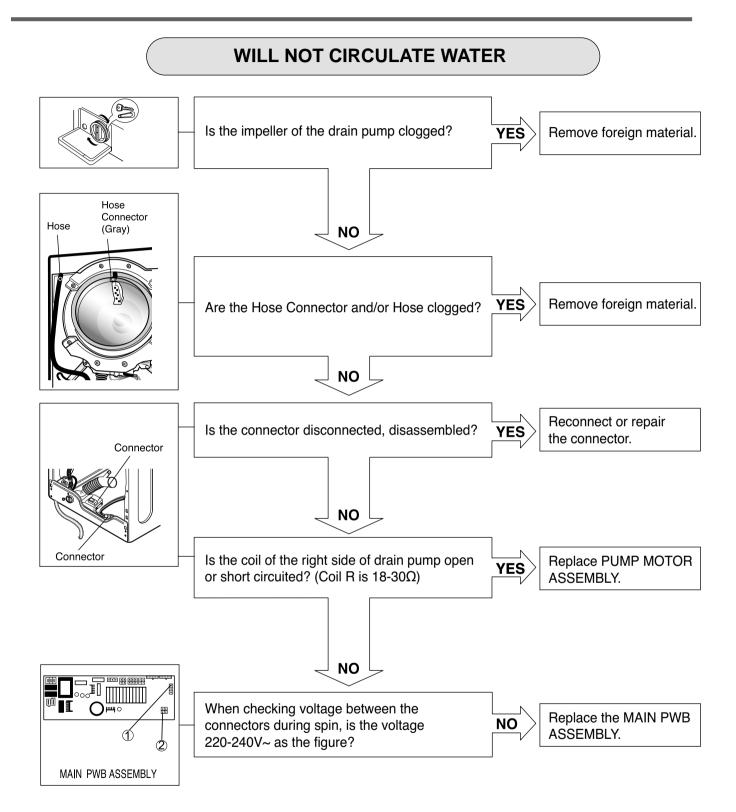
ABNORMAL SOUND

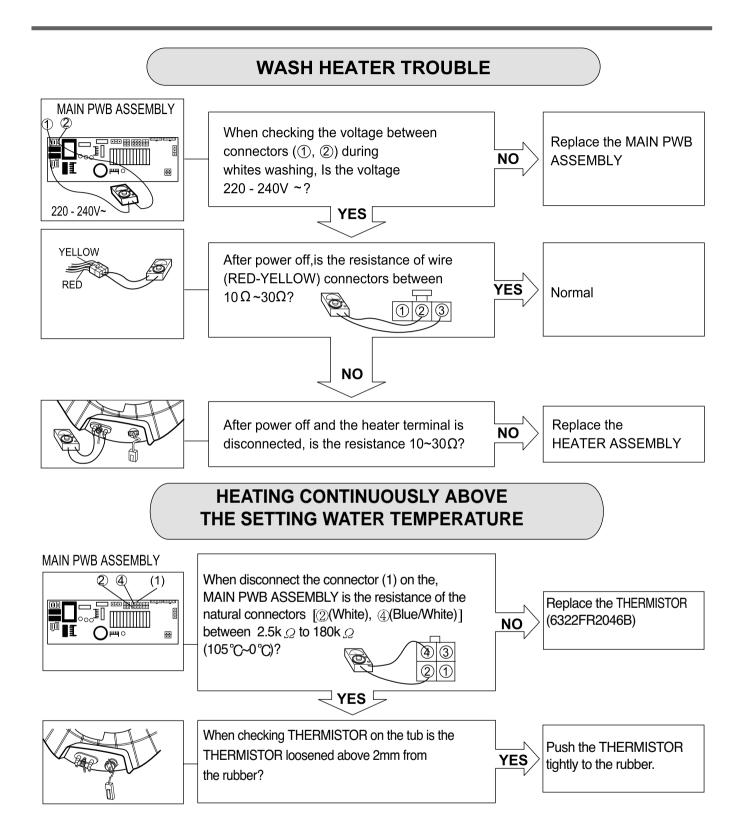


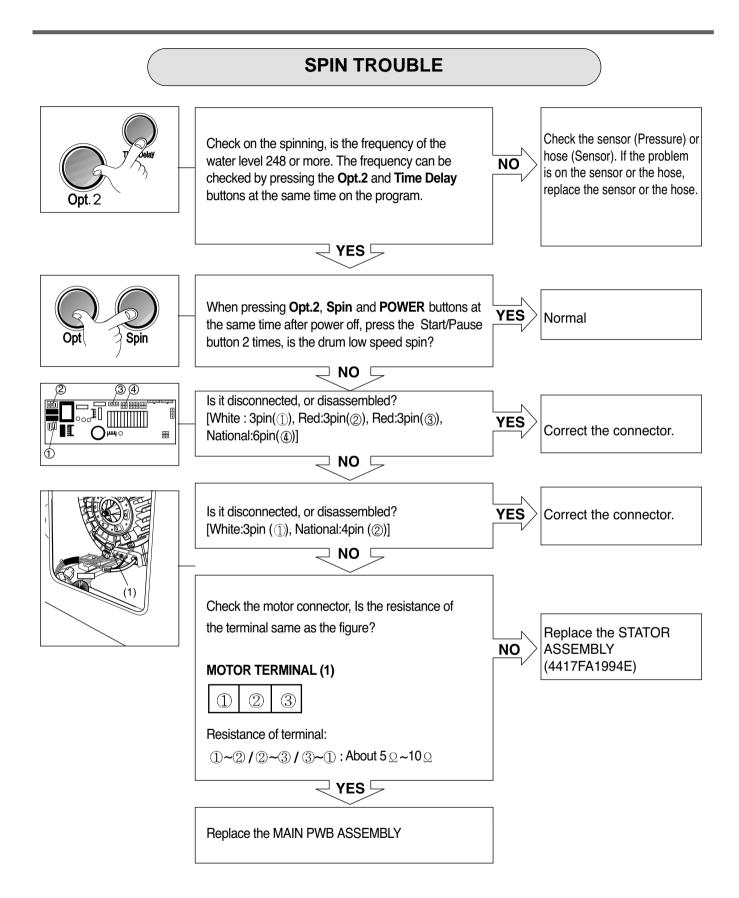


DRAIN MALFUNCTIONING





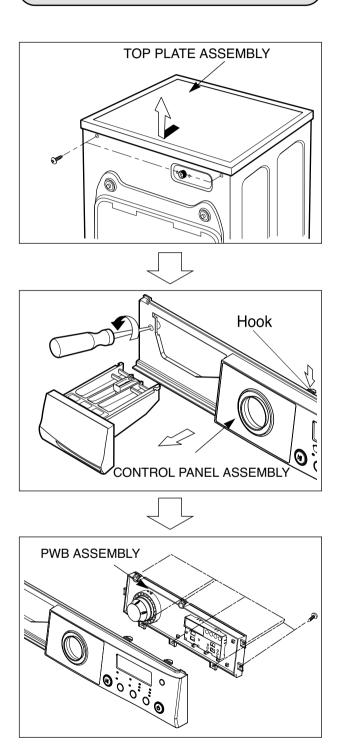




9. DISASSEMBLY INSTRUCTIONS

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

CONTROL PANEL ASSEMBLY

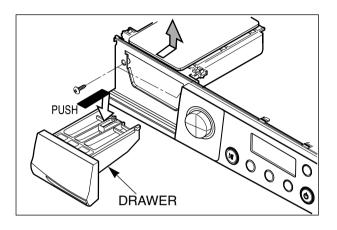


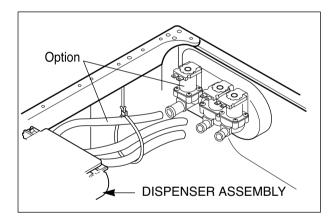
Unscrew 2 screws on the back of the top plate.
 Pull the top plate backward and upward as shown.

- ① Disconnect the ASSEMBLY connector.
- 2 Pull out the drawer and unscrew 2 screws.
- (3) Push 2 upper hooks down and pull the control panel.

 Disconnect the PWB ASSEMBLY from the control panel by unscrewing 7 screws.

DISPENSER ASSEMBLY

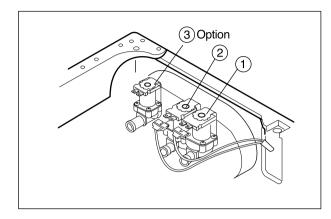




- $(\widehat{1})$ Disassemble the TOP PLATE ASSEMBLY.
- 2 Pull out the drawer slightly upward.
- (3) Unscrew 2 screws.

- ① Disassemble hose clamps and hoses.
- ② Disassemble the ventilation bellows and the water inlet bellows from the tub.

INLET VALVE ASSEMBLY



- 1 Disconnect the wiring connector.
- 2 Unscrew 2 screws from the back.
- * When reconnecting the connector

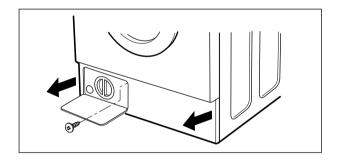
* Cold only model

VALVE#1 (MAIN)	Whited/Black-Black
VALVE#2 (PRE)	Gray/ White - Black

* Cold and Hot model

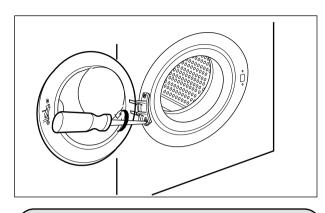
VALVE #1 (MAIN)	Whited/Black-Black
VALVE #2 (PRE)	Gray/ White - Black
VALVE #3 (HOT)	Blue/Red - Black

LOWER COVER

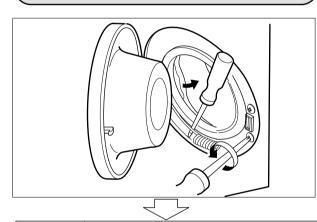


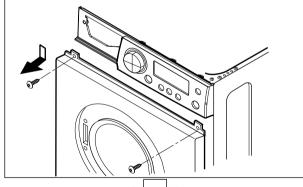
 Open the lower cover CAP by using coin and pull out the lower cover in the arrow direction after a screw is unscrewed.

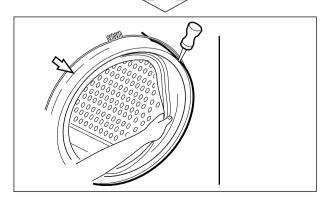
DOOR ASSEMBLY



GASKET







① Open the door completely.

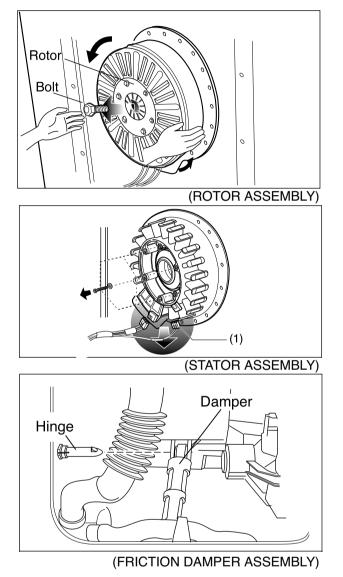
② Remove the two screws from the hinge.

- When removing the DOOR ASSEMBLY, it is necessary to hold the BRACKET that is inner of the CABINET COVER.
- 1 Take apart the CLAMP ASSEMBLY (cabinet).
- 0 Unscrew 2 screws from the CABINET COVER.
- 3 Open the lower cover cap and unscrew 1 screw inside
- 4 Take apart the LOWER COVER.

- Disassemble the CONTROL PANEL ASSEMBLY. (Refer to page 26)
- ② Unscrew all the screws on the upper and lower sides of the CABINET COVER.

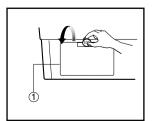
- ① Take apart the tub CLAMP ASSEMBLY
- 2 Make sure that the drain hole of the GASKET is put beneath when reassembling the GASKET.
 * Refer to the arrow mark on the TUB COVER.

ROTOR ASSEMBLY, STATOR ASSEMBLY, FRICTION DAMPER ASSEMBLY

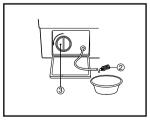


Clean the drain pump filter

 Open the lower cover cap (①) by using a coin. Turn the drain plug (②) to pull out the hose.



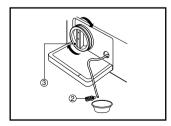
2. Unplug the drain plug (2), allowing the water to flow out. At this time use a vessel to prevent water flowing on to the floor. When water does not flow any more, turn the pump filter (3) open to the left.



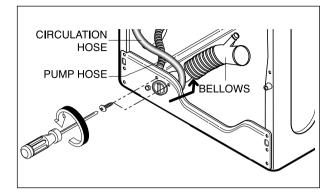
Remove the BACK COVER.
 Unscrew the bolt to pull out the ROTOR ASSEMBLY.

- ① Disconnect the wiring connector.
- (2) Unscrew 6 bolts from the STATOR.
- ③ Remove the BODY FRAME. (Only 1400 rpm models)
- * Note : Hook of connector (1) is on the backside
- 1 Pull out the HINGE, pressing its snap.
- ② Do not use the pulled out HINGE again It may be taken off during operation.

3. Remove any foreign material from the pump filter (③). After cleaning, turn the pump filter (③) clockwise and insert the drain plug (②) to the original place. close the lower cover cap.



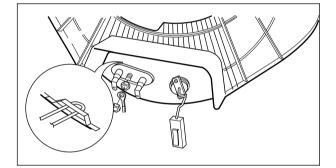
DRAIN PUMP ASSEMBLY



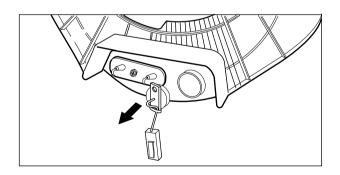
Remove PUMP and CIRCULATION HOSE. Remove BELLOWS..

- (3) Disconnect the wiring.
- (4) Unscrew 2 screws
- (5) Remove the DRAIN PUMP ASSEMBLY.

HEATER ASSEMBLY



THERMISTOR



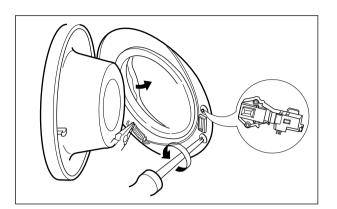
 Loosen the M6 heater nuts to pull out the HEATER ASSEMBLY.

CAUTION

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

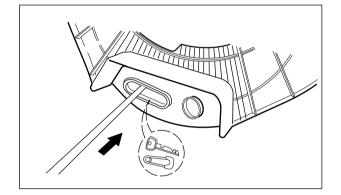
- ① Pull it out by holding the THERMISTOR bracket.
- * If it is pulled by the wire, it may be broken.
- ② When mounting the THERMISTOR again, make sure that it is got back tight to the bushing.

SWITCH ASSEMBLY, DOOR LOCK



- ① Take apart the CLAMP ASSEMBLY (cabinet) and release the GASKET.
- ② Unscrew 2 screws holding the DOOR SWITCH ASSEMBLY.
- 3 Disconnect the door lock from the wiring connector.

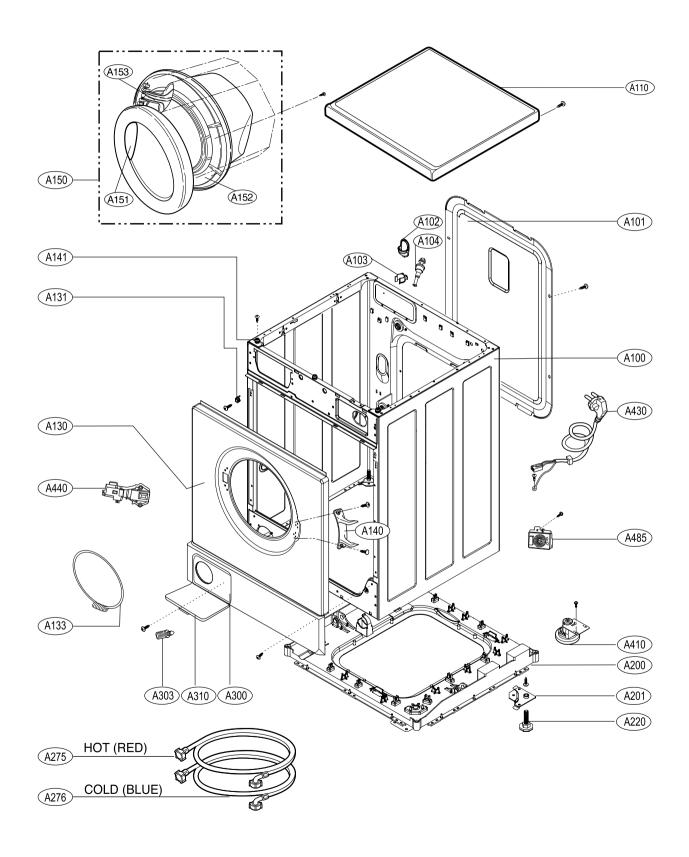
WHEN FOREIGN MATERIAL IS STUCK BETWEEN DRUM AND TUB



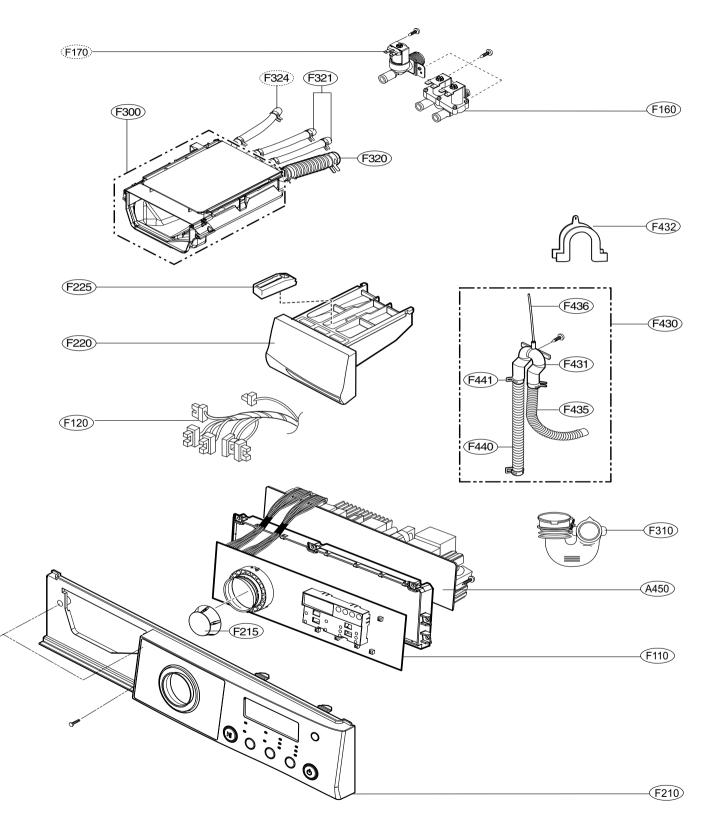
- ① Remove the HEATER ASSEMBLY.
- ② Remove the foreign material (wire, coin and others) by inserting a long bar through the hole.

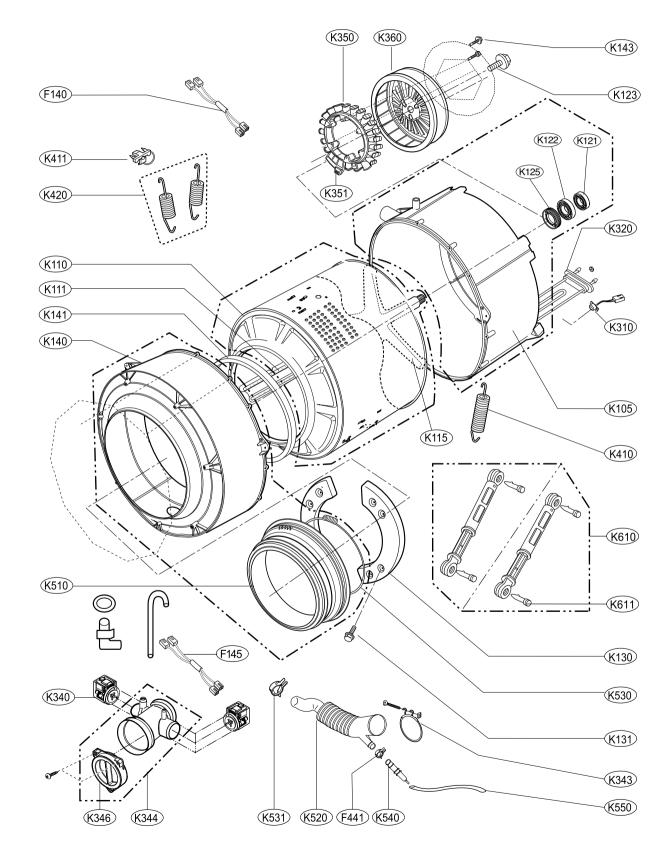
10. EXPLODED VIEW AND PART LIST

10-1.THE PART LIST 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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