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WASHING MACHINE SERVICE MANUAL

CAUTION

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

MODEL: WD(M)-16350(5)FD / WD-16320(5)FD

WD(M)-16351(6)FD / WD-14320(5)FD

WD(M)-14350(5)FD / WD-12320(5)FD

WD(M)-14351(6)FD

WD(M)-12350(5)FD

WD(M)-12351(6)FD



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1. SPECIFICATION

l	ГЕМ	WD(M)-16350(5)FD WD(M)-16351(6)FD WD-16320(5)FD	WD(M)-14350(5)FD WD(M)-14351(6)FD WD-14320(5)FD	WD(M)-12350(5)FD WD(M)-12351(6)FD WD-12320(5)FD							
POWER	SUPPLY	220-240V~, 50Hz									
PRODUC	T WEIGHT		65kg								
	WASHING		230W								
ELECTRICITY	SPIN		600W								
CONSUMPTION	DRAIN MOTOR		38W								
	WASH HEATER		2000W								
	WASH		45rpm								
REVOLUTION		1600 rp	m : 400/800/1000/1200/16	600 rpm							
SPEED	SPIN	1400 rp	m : 400/800/1000/1200/14	100 rpm							
		1200rp	m: 400/600/800/1000/120	00 rpm							
OPERATION WA	ATER PRESSURE	0	3-10kgf/cm² (30-1000kPa)							
CONTR	OL TYPE	Electronic									
MACHE	A DA CITY	Cotton (Rating)									
WASH C	CAPACITY	Synthetic (3.5kg), Hand Wash/Wool (2kg), Delicate (3kg), Quick 30(2kg), Baby Care(6kg)									
DIME	NSION	600mm(W) × 600mm(D) × 850mm(H)									
WASH P	ROGRAM	Cotton, Synthetic, Hand Wash/Wool, Spin, Delicate, Quick 30, Rinse+Spin, Baby Care									
OP ⁻	TION	Intensive, Rinse ⁺ , Pre Wash, Medic Care Rinse									
DOOR SV	VITCH TYPE	Bi-Metal type									
WATER	RLEVEL	9 steps (by sensor)									
RESEF	RVATION	From 3 hours to 19 hours									
SENSING OF THE	LAUNDRY AMOUNT	Adapted									
FUZZY	LOGIC /	Adapted									
DISPLAY OF THE	REMAINING TIME	Adapted									
ERROR D	DIAGNOSIS	10 items									
POWER /	AUTO OFF	Adapted									
CHILE	LOCK	Adapted									
AUTO F	RESTART	Adapted									
RA	APID		Adapted								

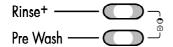
2. FEATURES & TECHNICAL EXPLANATION

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

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

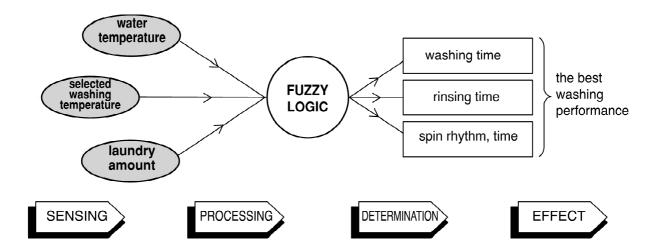
Although the washing machine is turned off by a power failure, it restarts automatically where it stopped when power is supplied again. And it will be the same the machine is unplugged and is plugged in again.

■ Safety device (Aqua lock) [WD(M)-16350(5)FD/14350(5)FD/12350(5)FD]

Aqua lock System is designed for detecting water leak during operation to prevent water from flooding over the floor.

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.



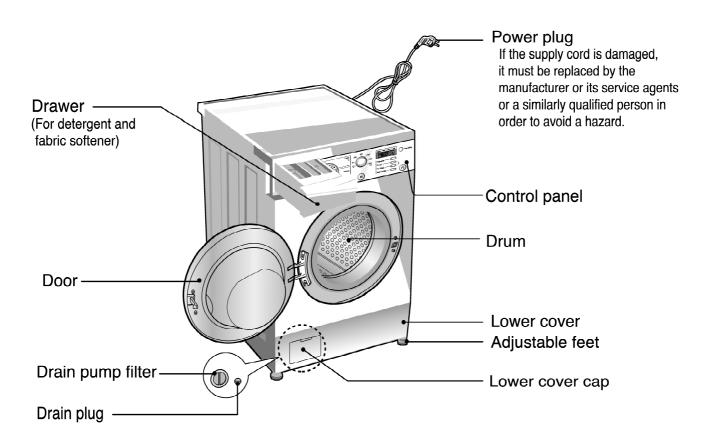
2-3.WATER LEVEL CONTROL

- 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.

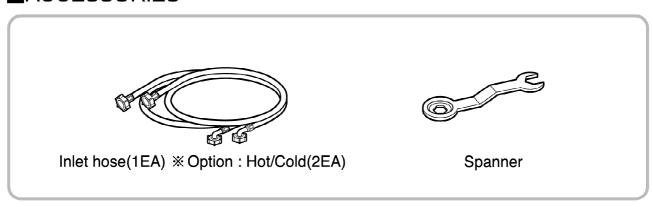
2-4.THE DOOR CAN NOT BE OPENED

- While program is operating.
- While Door lock light turns on.

3. PARTS IDENTIFICATION



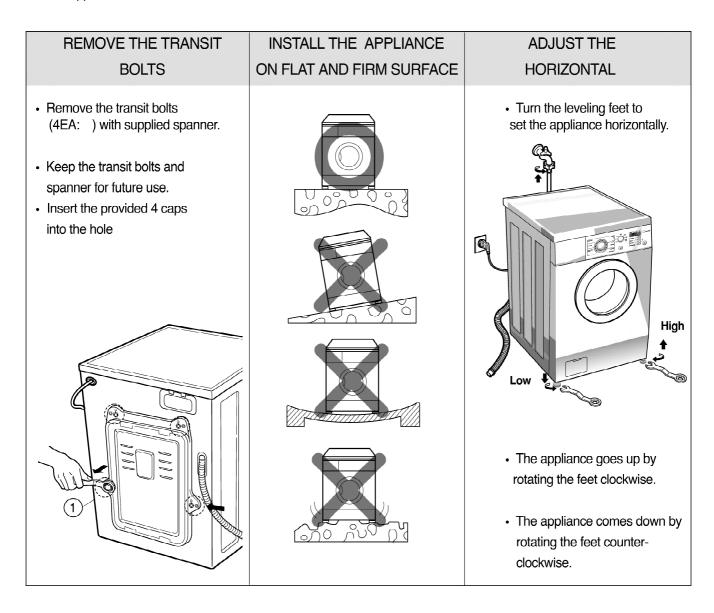
ACCESSORIES



4. INSTALLATION

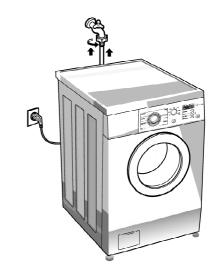
- 1 Before servicing ask the customer what the trouble is.
- 2 Check the adjustment (power supply is 220-240V~, remove the transit bolts....)
- [3] Check the troubles referring to the troubleshooting.
- 4 Decide service steps referring to disassembly instructions.
- (5) Then, service and repair.
- 6 After servicing, operate the appliance to see whether it works O·K or NOT.
- **STANDARD INSTALLATION**

The appliance should be installed as follows.

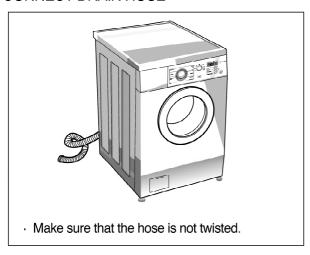


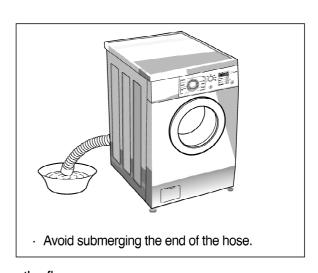
■ HOW TO CONNECT INLET HOSE

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



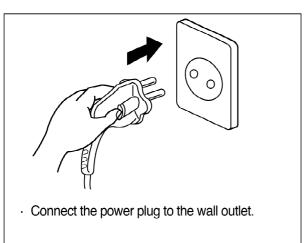
■ CONNECT DRAIN HOSE

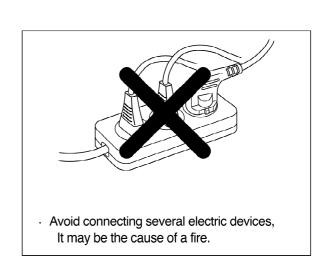




** The drain hose should be placed under 100cm from the floor.

■ CONNECT POWER PLUG





7 TEST OPERATION



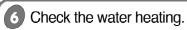
2 Press the power button.



Press the Start/Pause button.



· In case of coloureds program.



Connect the inlet hose.



 Press both Time Delay and Rinse Hold buttons simultaneously and the present temperature will be displayed. Check automatic reverse turn.

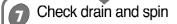


· Check if the drum rotates clockwise and counterclockwise.

4 Check the water supply.



 Check if water is supplied through the detergent dispenser



- Turn off Wash and Rinse after pressing the Start/Pause button and start the machine again.
- · Check drain and spin.

8 Power off and open the door



- \cdot Power off and then power on.
- Check if the door can be opened after 3 minutes.

Water removal



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

Wash program selector

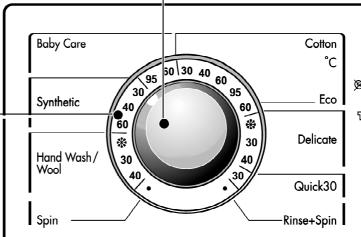
- 8 program can be set depending on the type of the laundry.
- If the power button is pressed, Cotton program is automatically set.
- By turning the dial, [Cotton-Delicate-Quick 30 -Rinse+Spin-Spin-Hand Wash/Wool-Synthetic-Baby Care]can be selected. (The opposite is possible)

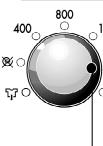
LED display

- Display the estimated remaining time (Hour : Minute) to finish.
- In case of abnormal operation, error indications are displayed.
 (IE, DE, UE, dE, LE, FE, PE, EE, LE, RE)
- · See troubleshooting guide.

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.





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.

Spin Dial

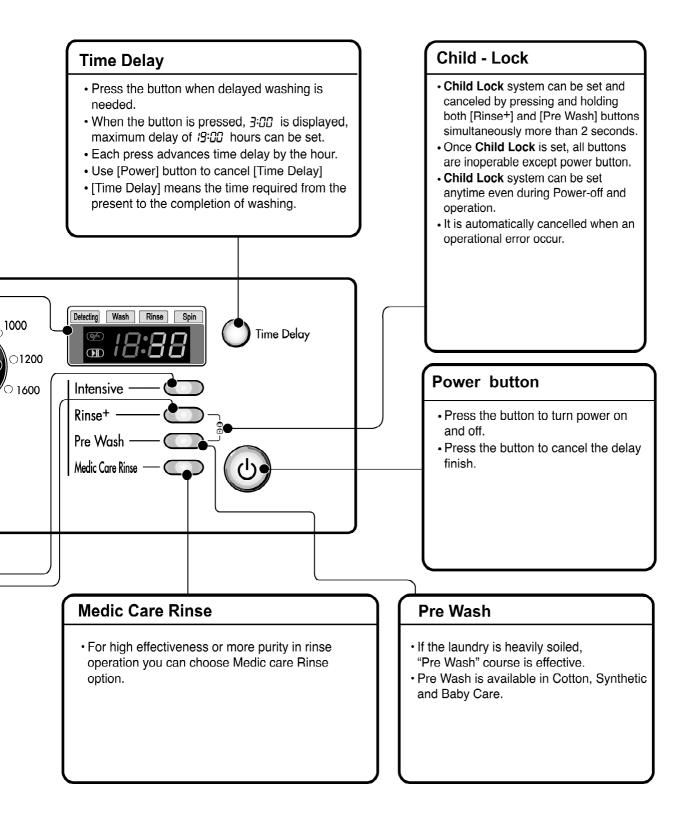
 By turning the Spin dial the spin speed can be chosen.

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.
- This option is not available with Quick 30 program

Rinse+

- For additional rinse which may assist in removing traces of detergent residue.
- By selecting Rinse+ function, the rinse time and the rinse water are increased.



6. WIRING DIAGRAM / PROGRAM CHART

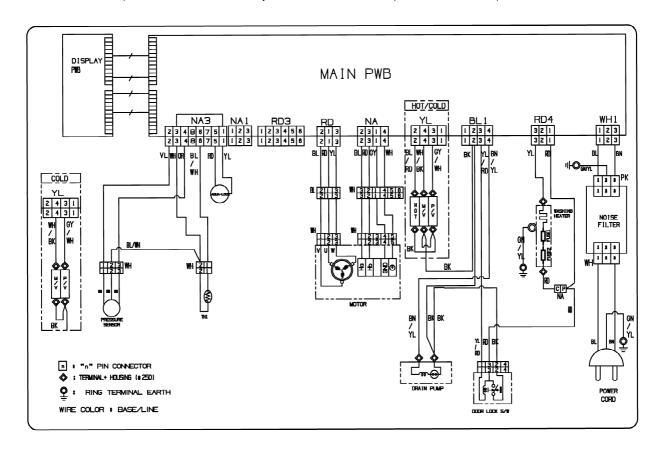
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5	Spin	1		About 18(13)																															

^{* () -} WD-1235*FD/WD-12320(5)FD

- * 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.

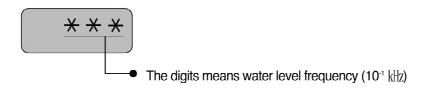
- ① Press Intensive and Rinse+ button simultaneously.
- ② Power supply on with pressing upper two buttons. Then buzzer sound twice.
- ③ Press the Start/Pause button as follows.

[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	(18:88)			
1 time	Counterclockwise spin (left)	Drum rpm (About 40~50)			
2 times	Low speed Spin	Drum rpm (About 53~65)			
3 times	High speed Spin	Drum rpm (About 120~160)			
4 times	Inlet valve for prewash operation	Water level frequency (25~65)			
E Aires e e	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	Clockwise spin (right)	Drum rpm (About 40~50)			
8 times	Heater is in operation for 3 sec.	Water temperature			
9 times	Draining pump operation	Water level frequency			
10 times	Circulation pump operation	Water level frequency			
11 times	Auto off operation				

7-3.HOW TO KNOW THE WATER LEVEL FREQUENCY

* Press the Time Delay and Rinse+ button simultaneously.



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

7-4.ERROR DISPLAY.

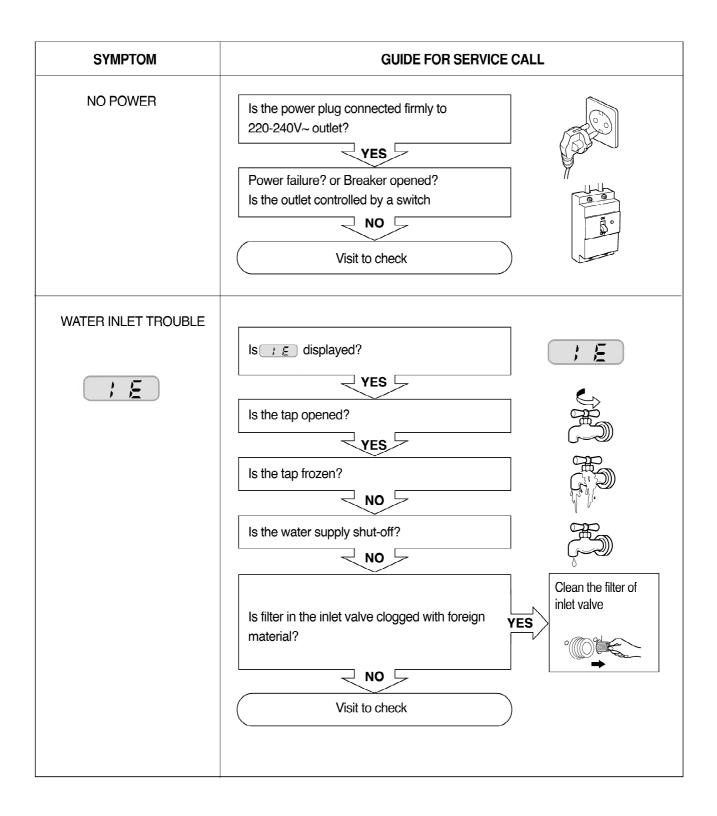
- If you press the Start/Pause button when an error in displayed, any error except **PE** will disappear and the machine will change into pause status.
- In case of *PE*, *LE*, *dE*, if the error is not resolved within 15 sec. and in case of other errors, if the error is not resolved within 4 min., power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

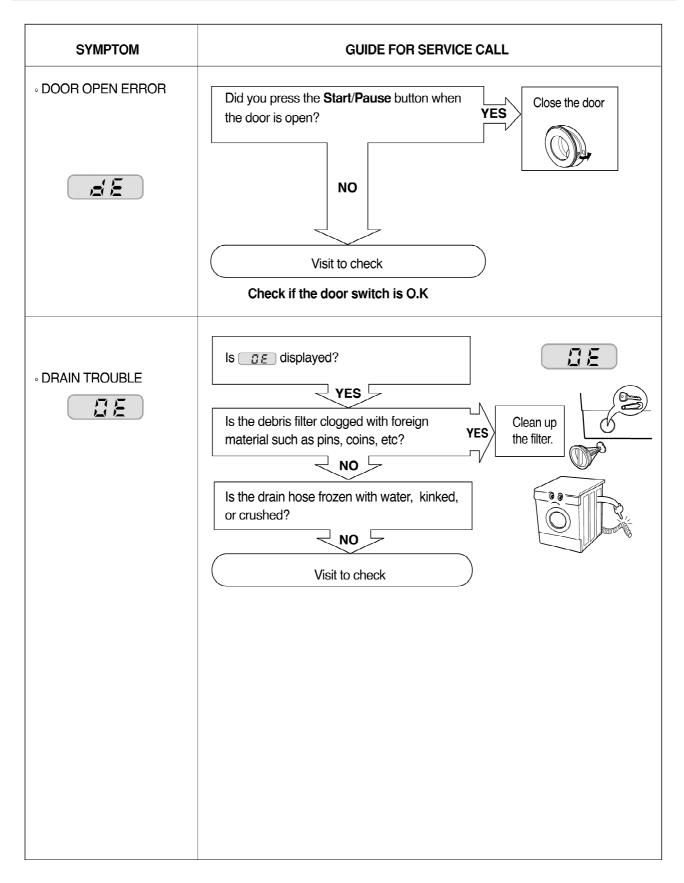
	ERROR	SYMPTOM	CAUSE
	Lillion		OAGGE
1	WATER INLET ERROR	;	 Water has not reached to the pre-set level within 8 min. since inlet valve operated, or water has not reached to the normal level within 25 min.
2	IMBALANCE ERROR	LIE	 Load is too small. The appliance is tilted. Laundry is gathered to one side.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

	ERROR	SYMPTOM	CAUSE
8	CURRENT ERROR	<u>E</u> E	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
10	AQUA LOCK	AE	• Water leaks. [WD(M)-16350(5)FD/14350(5)FD/12350(5)FD]

8. ERROR DIAGNOSIS AND CHECK LIST

8-1.DIAGNOSIS AND ANSWER FOR ABNORMAL OPERATION



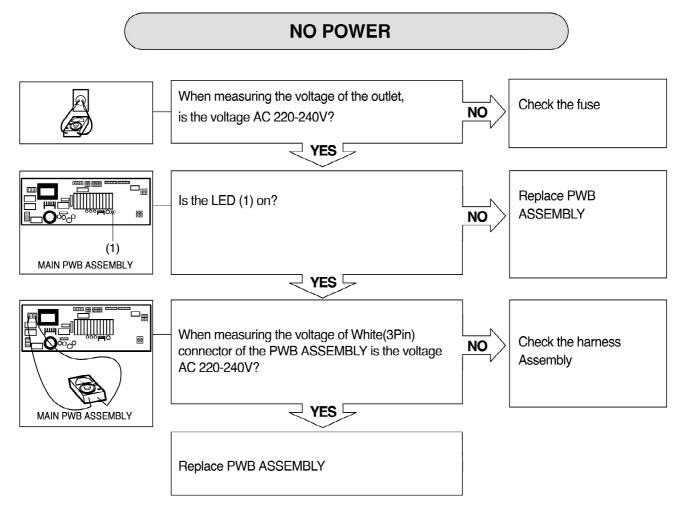


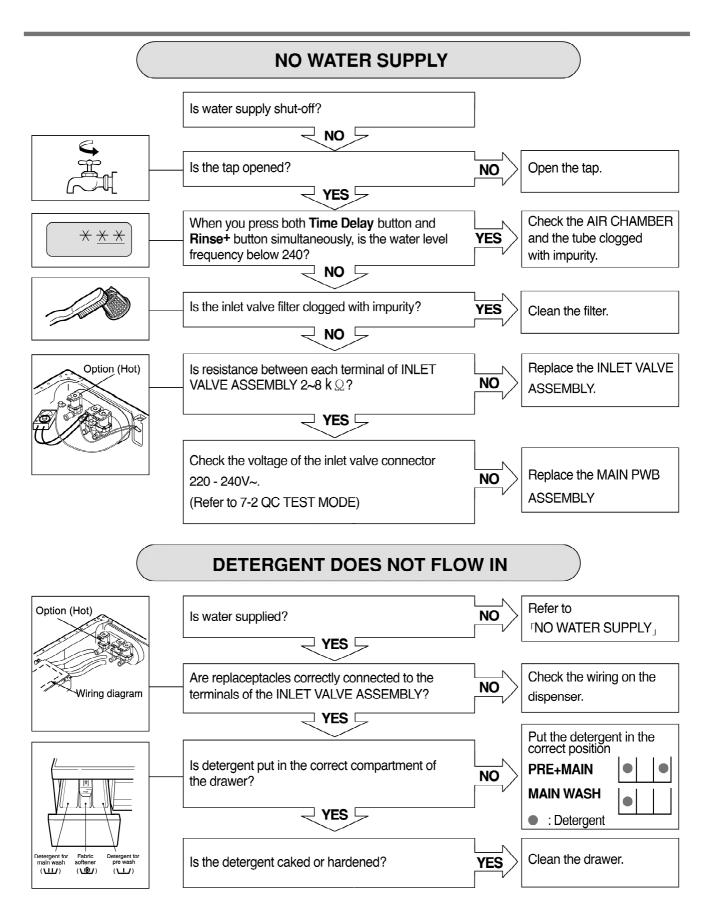
SYMPTOM	GUIDE FOR SERVICE CALL
Suds overflow from the appliance. (In this condition, wash and spin do not operate normally)	Is low-sudsing detergent for the drum washing machine used? YES Is the proper amount of detergent used as recommended? YES Recommend to reduce the amount of detergent. * This appliance has the automatic suds sensing function which operates under much suds condition for good rinse and preventing overflow. * When much suds are sensed, the suds removing function such as drain, water input, and pause will operate without rotating the drum.
No effect of softener	Is softener put in the correct compartment of the drawer? Is the drawer closed during wash? Is the softener cap clogged? Explain how to use softener Clean the compartment for softener
FE LE FE LE EE RE	Visit to check

8-2. FAULT DIAGNOSIS AND TROUBLESHOOTING

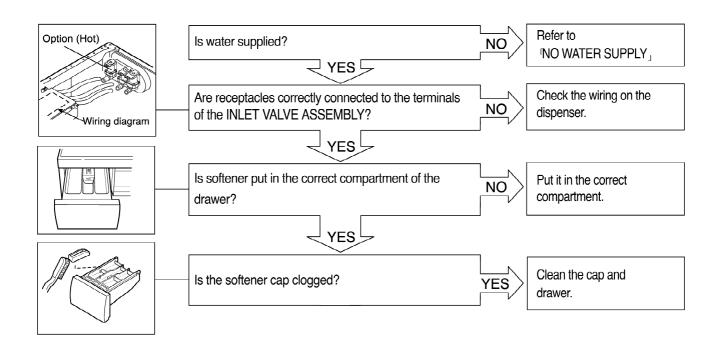
CAUTION

- 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.

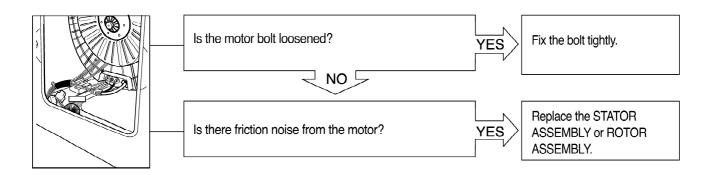




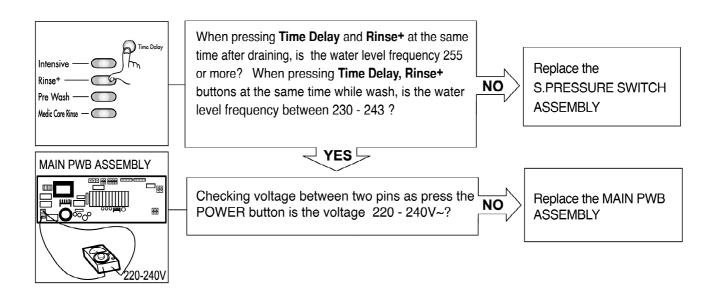
SOFTENER DOES NOT FLOW IN



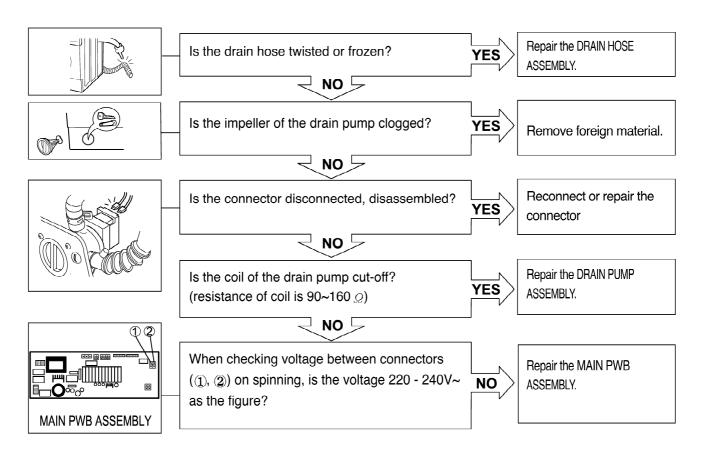
ABNORMAL SOUND

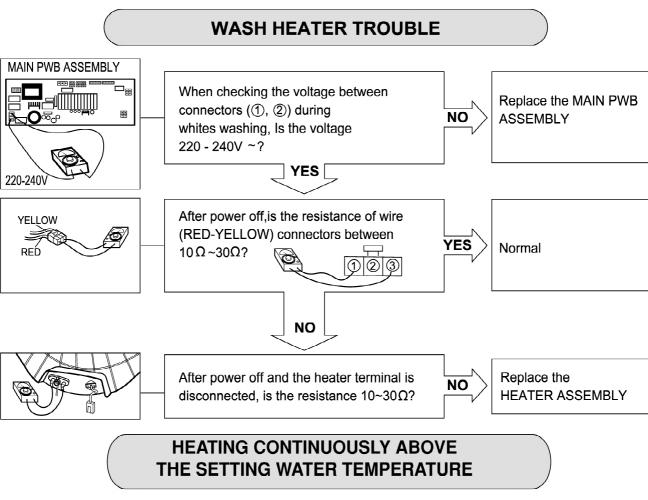


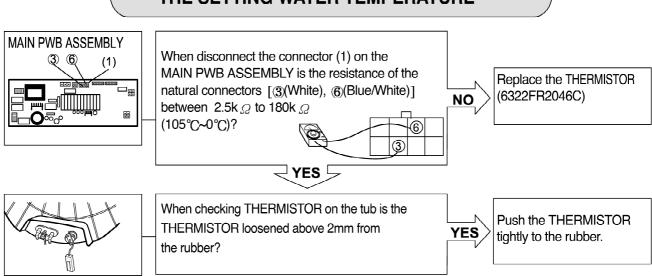
HEATING WITHOUT WATER



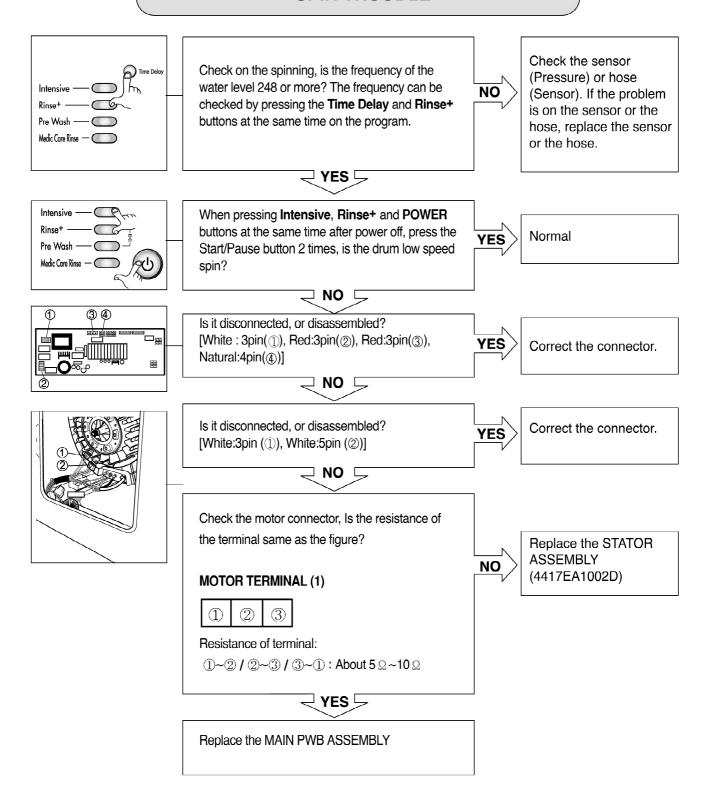
DRAIN MALFUNCTIONING







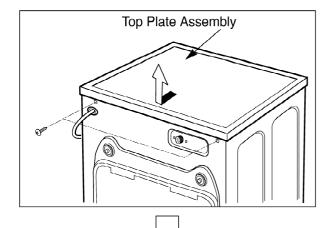
SPIN TROUBLE



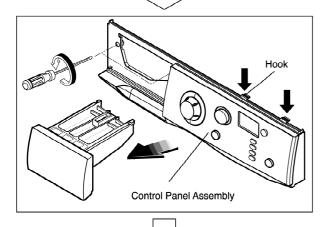
9. DISASSEMBLY INSTRUCTIONS

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

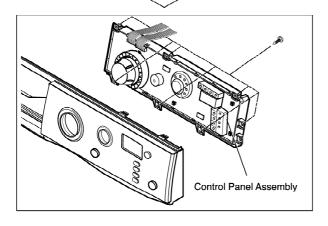
CONTROL PANEL ASSEMBLY



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

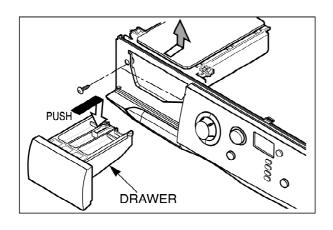


- ① Disconnect the ASSEMBLY connector.
- 2 Pull out the drawer and unscrew 2 screws.
- 3 Push 2 upper hooks down and pull the control panel.

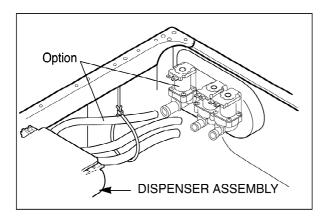


① Disconnect the PWB ASSEMBLY from the control panel by unscrewing 7 screws.

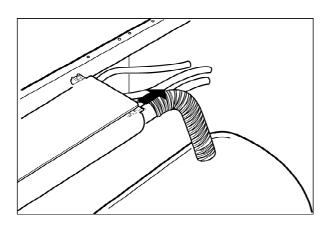
DISPENSER ASSEMBLY



- ① Disassemble the TOP PLATE ASSEMBLY.
- ② Pull out the drawer slightly upward.
- ③ Unscrew 2 screws.

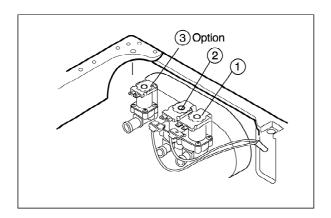


① Disassemble hose clamps and hoses.



① Disassemble the ventilation bellows and the water inlet bellows from the tub.

INLET VALVE ASSEMBLY



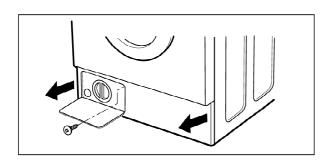
- ① Disconnect the wiring connector.
- 2 Unscrew 2 screws from the back.
- * When reconnecting the connector
- * Cold only model

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

* Cold and Hot model

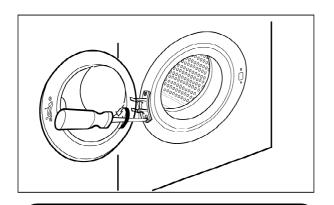
VALVE #1 (MAIN)	Whited/Black-Black
VALVE #2 (PRE)	Gray/ White - Black
VALVE #3 (HOT)	Blue/Red - Black

LOWER COVER



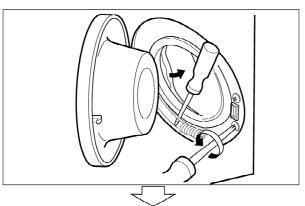
① Open the lower cover CAP by using coin and pull out the lower cover in the arrow direction after a screw is unscrewed.

DOOR ASSEMBLY

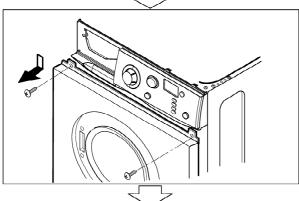


- ① Open the door completely.
- ② Remove the two screws from the hinge.
- When removing the DOOR ASSEMBLY, it is necessary to hold the BRACKET that is inner of the CABINET COVER.

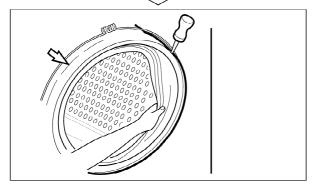
GASKET



- ① Take apart the CLAMP ASSEMBLY (cabinet).
- 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.

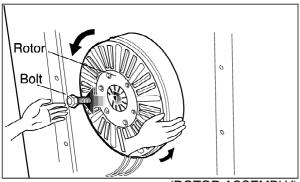


- (1) Disassemble the CONTROL PANEL ASSEMBLY. (Refer to page 26)
- ② Unscrew all the screws on the upper and lower sides of the CABINET COVER.

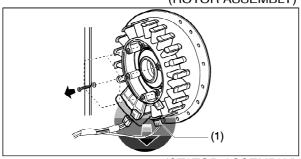


- ① Take apart the tub CLAMP ASSEMBLY
- ② Make sure that the drain hole of the GASKET is put beneath when reassembling the GASKET.
- * Refer to the arrow mark on the TUB COVER.

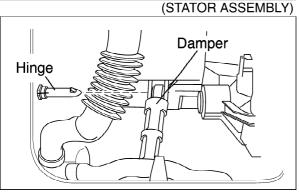
ROTOR ASSEMBLY, STATOR ASSEMBLY, FRICTION DAMPER ASSEMBLY)



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



- (ROTOR 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

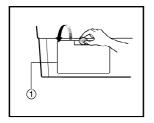


- $\ensuremath{\text{\textcircled{1}}}$ Pull out the HINGE, pressing its snap.
- ② Do not use the pulled out HINGE again It may be taken off during operation.

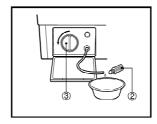
(FRICTION DAMPER ASSEMBLY)

■Clean the drain pump filter

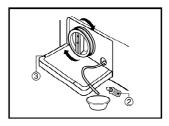
1. Open the lower cover cap () by using a coin. Turn the drain plug () to pull out the hose.



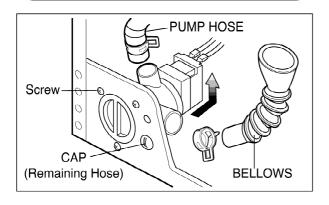
2. Unplug the drain plug (), allowing the water to flow out. At this time use a vessel to prevent water flowing on to the floor. When water does not flow any more, turn the pump filter () to open to the left.



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

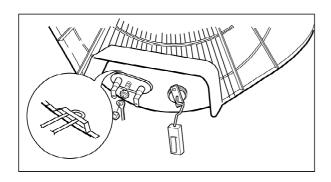


DRAIN PUMP ASSEMBLY



- ① Remove PUMP HOSE.
- 2 Remove BELLOWS..
- ③ Disconnect the wiring.
- ① Unscrew 2 screws
- (5) Remove the DRAIN PUMP ASSEMBLY.

HEATER ASSEMBLY

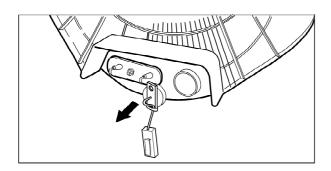


① Loosen the M6 heater nuts to pull out the HEATER ASSEMBLY.

CAUTION

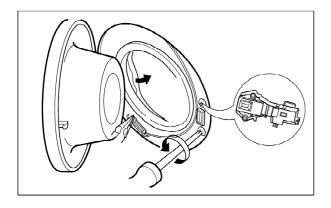
When mounting the HEATER ASSEMBLY be sure to insert the HEATER ASSEMBLY into the heater clip on the bottom of the tub.

THERMISTOR



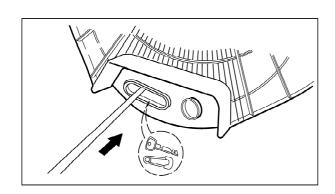
- ① Pull it out by holding the THERMISTOR bracket.
- * If it is pulled by the wire, it may be broken.
- ② When mounting the THERMISTOR again, make sure that it is got back tight to the bushing.

SWITCH ASSEMBLY, DOOR LOCK



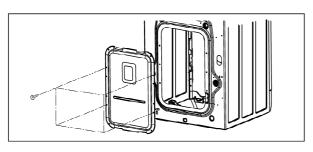
- (1) Take apart the CLAMP ASSEMBLY (cabinet) and release the GASKET.
- ② Unscrew 2 screws holding the DOOR SWITCH ASSEMBLY.
- ③ Disconnect the door lock from the wiring connector.

WHEN FOREIGN MATERIAL IS STUCK BETWEEN DRUM AND TUB

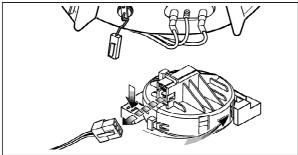


- ① Remove the HEATER ASSEMBLY.
- ② Remove the foreign material (wire, coin and others) by inserting a long bar through the hole.

SWITCH ASSEMBLY, SAFETY [WD(M)-16350(5)FD/14350(5)FD/12350(5)FD]



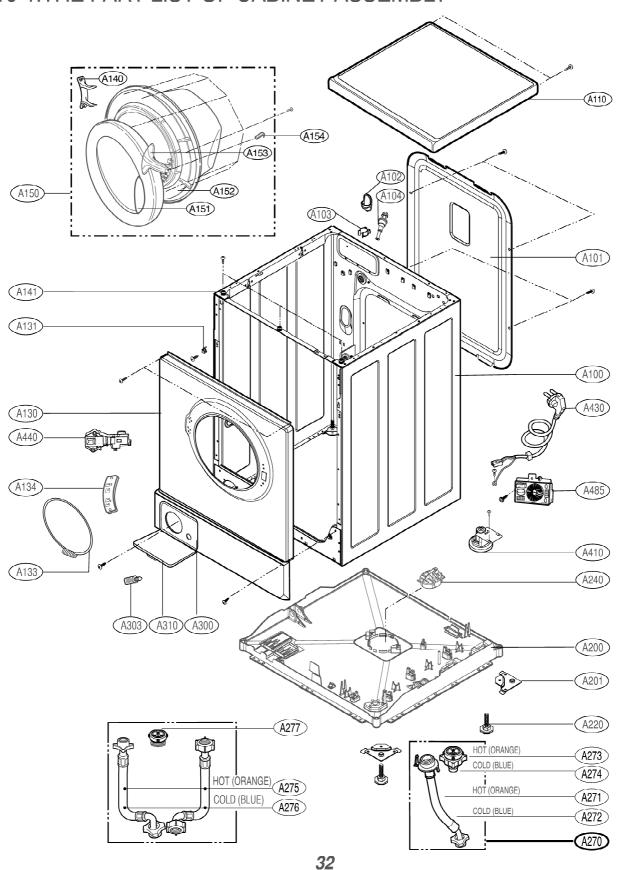
① Unscrew 4 screws from the back cover.



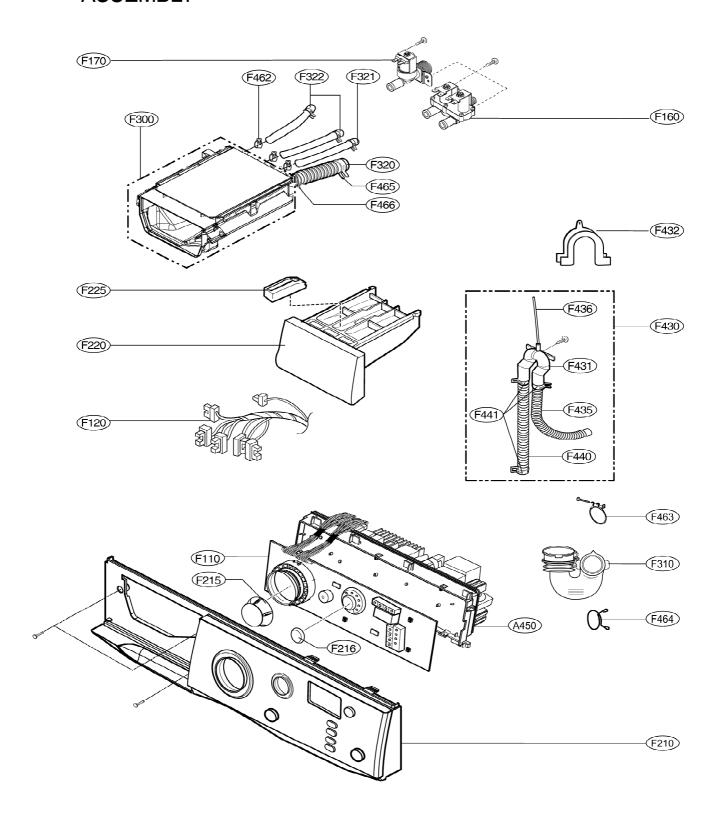
- ② Disconnect the wiring connector.
- 3 Turn and press hook of switch assembly safety.

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

