

SAMSUNG

WASHING MACHINE
DRUM TYPE

Basic Model :	WF45R6100AP/US (WF6000R)	
Model Name :	WF45R6100A* WF45R6300A* (WF6000R) WF45T6200A* (WF6200T)	WF45B6300A* (WF6300B)
Model Code :	WF45R6100A*/US WF45R6300A*/US (WF6000R) WF45T6200A*/US (WF6200T)	WF45B6300A*/US (WF6300B)

SERVICE Manual

WASHING MACHINE (DRUM)



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1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIONS FOR SERVICE ENGINEERS

- ▶ Be sure to observe the following instructions to operate the product correctly and safely to prevent possible accidents and hazards while servicing.
- ▶ Two types of safety symbols, Warning and Caution, are used in the safety instructions.



WARNING

Hazards or unsafe practices that may result in severe personal injury or death.



CAUTION

Hazards or unsafe practices that may result in minor personal injury or property damage.

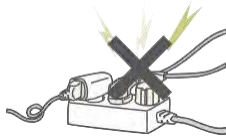


WARNING

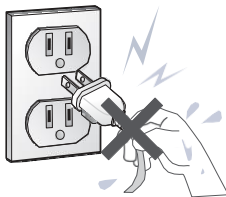
BEFORE SERVICING

- (When servicing electrical parts or harnesses) Make sure to disconnect the power plug before servicing.
 - √ Failing to do so may result in a risk of electric shock.

- Do not allow consumers to connect several appliances to a single power outlet at the same time.
 - √ There is a risk of fire due to overheating.



- When removing the power cord, make sure to hold the power plug when pulling the plug from the outlet.
 - √ Failing to do so may damage the plug and result in fire or electric shock.



- When the washing machine is not being used, make sure to disconnect the power plug from the power outlet.
 - √ Failing to do so may result in electric shock or fire due to lightning.



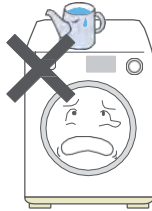
- Do not place or use gasoline, thinners, alcohol, or other flammable or explosive substances near the washing machine.
 - √ There is a risk of explosion and fire caused from electric sparks.

⚠ CAUTION BEFORE SERVICING

- Do not sprinkle water onto the washing machine directly when cleaning it.
 - ✓ This may result in electric shock or fire, and damage components.
may shorten the product lifetime



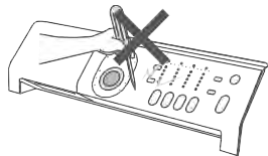
- Do not place any containers with water on the washing machine.
 - ✓ If the water is spilled, it may result in electric shock or fire. This will also shorten the product lifetime.



- Do not install the washing machine in a location exposed to snow or rain.
 - ✓ This may result in electric shock or fire, and shorten the product lifetime.



- Do not press a control button using a sharp tool or object.
 - ✓ This may result in electric shock or damage to the product.



⚠ CAUTION WHILE SERVICING

- When wiring a harness, make sure to seal it completely so no liquid can enter.
 - ✓ Make sure that make sure that connections are secure and will not break when force is applied.

- Check if there is any residue that shows that liquid entered into electric parts or harnesses.
 - ✓ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.

- If you need to place the washing machine on its back or on its side, place a blanket on the floor and lay it down carefully on the blanket.
 - ✓ Do not lay it down on its front. This may result in cosmetic damages and may also damage parts inside the tub.

⚠ WARNING WHILE SERVICING

- Check if the power plug and outlet are damaged. If the plug is damaged, replace it. If the outlet is damaged , have the customer call a licensed electrician to repair it.
 - ✓ Failing to do so may result in electric shock or fire.
- Completely remove any dust or foreign material from the housing, wiring and connection parts.
 - ✓ This will prevent a risk of fire and electrical hazard.
- When connecting wires, make sure to connect them using the relevant connectors and check that they are connected properly.
 - ✓ Use of tape instead of connectors may cause fire.
- Make sure to discharge the PBA power terminals before starting the service.
 - ✓ Failing to do so may result in a high voltage electric shock.
- When replacing the heater, make sure to fasten the nut after ensuring that it is inserted into the bracket-heater.
 - ✓ If not inserted into the bracket-heater, it touches the drum it may cause noise and electric leakage

⚠ WARNING AFTER SERVICING

- Check the wiring.
 - ✓ Make sure that wires and wire harness do not make contact with moving parts or sharp edges.
- Check for any water leakage.
 - ✓ Run a test cycle and confirm that there is no water leaking from underneath and/or from hoses.
- Do not allow consumers to repair or service any part of the washing machine themselves.
 - ✓ This may result in personal injury and shorten the product life.



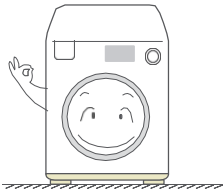
 CAUTION

AFTER SERVICING

- Check the assembled status of the parts.
 - √ Now is a good time to inspect your work. Review all connections and wiring, including mounting of hardware.

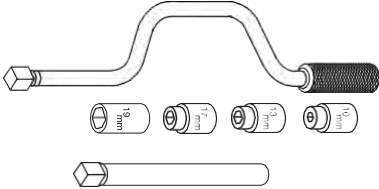
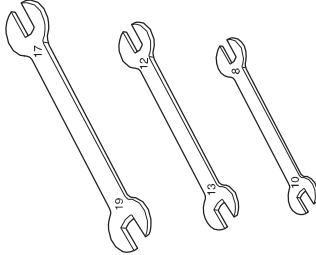
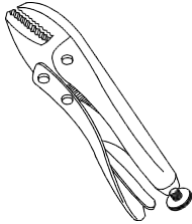
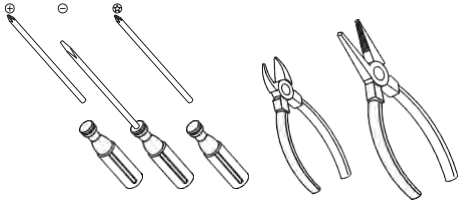
- Check the insulation resistance.
 - √ Disconnect the power cord from the power outlet and measure the insulation resistance between the power plug and the grounding wire of the washing machine. The value must be greater than 10MΩ.

- Make sure that the washing machine is leveled. Press down on each corner of the washer and make sure that there is no movement. If movement is present adjust the leg height.
By doing this now will reduce for the need of customer dissatisfaction and redo call.
 - √ Vibrations can shorten the lifetime of the product and damage components.



3. DISASSEMBLY AND REASSEMBLY

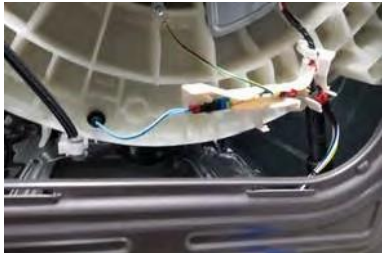
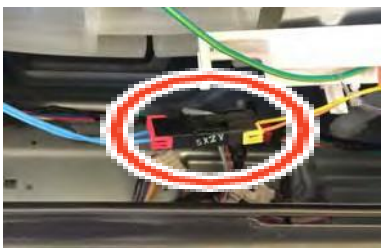
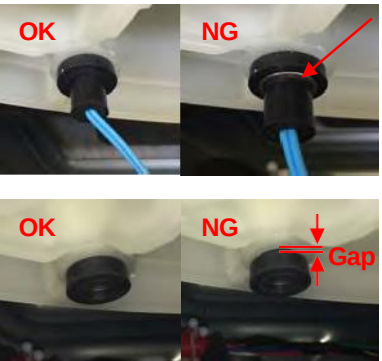
3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

Tool	Type	Remarks
	Socket Wrench with 6" Extension	10mm 13mm 19mm Heater (1) Motor (1), Balance (5), 2 holes of each left and right of the shock absorber 1 Pulley hole
	Open End wrench	10mm 13mm 19mm Replaceable for the box driver. Since the bolt runs idle when the box driver is used, use the box driver 17mm.
	Vice pliers	A tool to use to remove bolts that may become stripped/ damaged from using socket wrench.
	Others (Driver, Nipper, Long nose)	Common tools for service.

3-2. STANDARD DISASSEMBLY DRAWINGS

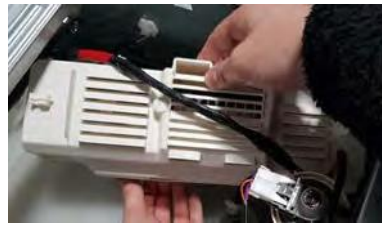
► This is a standard disassembly diagram and may differ from the actual product.
Use this material as a reference when disassembling and reassembling the product.

Part	Figure	Description
Disassembling and Repairing the Rear Motor		1. Remove the 4 screws holding the Back-Cover at the back of the washing machine and separate the Back-Cover pushing it downwards. (Assemble it by lifting it upwards)
		2. After separating the Back-Cover, remove the 19mm nut holding the Motor. To remove it, turn it counter-clockwise. As the Motor also rotates if the nut is turned slowly, torque it quickly and firmly in a single action. Do not remove the nut by inserting a screwdriver into the Motor, as this may result in damaging the motor.
		3. Remove the 19mm nut and washer and then separate the Rotor. Removing the rotor requires a lot of force due to the magnetic force of the rotor. Be careful of your hands and arms because the rotor may come off suddenly and you may injure them. You can separate the connector by pressing.
		4. Separate the Motor Wire while pressing the navel of the Housing.
		5. Separate the 3 or 6 M10 screws.* → Separate the As sy Bracket Motor → Separate the Stator. When removing the last of the 3 or 6 screws, hold the Stator as it may fall when the screws are removed. *The number of bolts may vary based on the stator model utilized
	* Check Points for Troubleshooting 1. Check if there is any alien substance between the Rotor and the Stator. 2. Check if the motor power (Blue, White, Red) wire is connected ☑ The order of the motor wires is Blue, White, and Red from the right. Check if the resistance between Blue-White, White-Red, and Red-Blue is equal to 15Ω.	

Part	Figure	Description
Disassembling and Repairing the Thermistor		1. Separate the Assy Thermistor and Guide Wire-T while pulling the Assy Thermistor.
		2. Separate the Assy Thermistor and Assy Wire Harness while pressing the navel of the Housing.
		3. Pull the Assy Thermistor from Tub Back. When disassembling Assy Thermistor, leave the rubber packing.
	⚠ CAUTION 	1. When assembling the thermistor, push it all the way in. Otherwise, a leak may occur. If assembling like NG picture, water leakage possibility is high. 2. Make sure that there is no gap between rubber packing and the tub-back. If the gap exists between rubber packing and tub-back, water leakage possibility is high.

Part	Figure	Description
Separating the Top Cover and Control Panel (Check Sub-PCB)		1. Remove the 2 hexagon screws, which are at the back, attaching the top cover.
		2. Disassemble the Top Cover by sliding it backwards.
		3. Press the release button to remove the Assy Drawer.
		4. Remove the 3 screws in Draw Housing, and disassemble Draw Housing by sliding it backwards. (Should be Assembly Housing Drawer)
		5. After remove 4 screws in PANEL-CONTROL, Pull the Control Panel towards you and then lift it upwards to separate.
		6. Carefully disconnect the wire connectors by hand.

Part	Figure	Description
Separating the Top Cover and Control Panel (Check Sub-PCB)		7. Disassemble the ASSY KNOB-ENCODER by pulling it upwards. Knob-PCB can be separated from PANEL-CONTROL.
		8. Disassemble the Cover Panel by hand. The Sub-PCB is located in the Panel Cover.

Part	Figure	Description
Separating the Main PCB		1. Remove the 2 screws holding the ASSY PCB-MAIN at the back of the washing machine.
		2. Remove 4 wires and pressure hose from the PBA Cover.
		3. Separate the 3 Hooks by pushing PBA to the right.
		4. Separate the Hooks of Cover PBA.
		5. Disconnect All Connectors on main PBA.

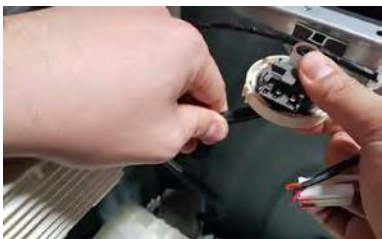
Part	Figure	Description
Disassembling Assy Door		1. Remove the 2 hexagonal screws holding the hinge door.
		2. Disassemble Assy Door by lifting it upwards.

Part	Figure	Description
Disassembling the Frame Front (Check the Door Lock S/W)		1. Remove the 2 hexagon screws,in the back of the unit, that are attaching the Top Cover.
		2. Disassemble the Top Cover by sliding it backwards.
		3. Press the release button to separate the ASSY DRAWER.
		4. Remove the 3 screws in Assy Housing Drawer, and disassemble Assy Housing Drawer by sliding it backwards.
		5. After removing 4 screws in the Control Panel, pull the Control Panel towards you and then lift it upwards to separate.
		6. Open Filter Cover and disassemble Drain Hose from hook.

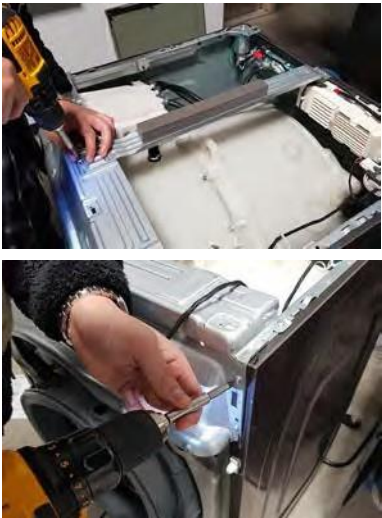
Part	Figure	Description
Disassembling the Frame Front (Check the Door Lock S/W)		7. Place the flat-tip driver between the diaphragm and the wire clamp at 5 o'clock.
		8. Use a flat-tip driver to get the wire out.
		9. Remove wire clamp and pull diaphragm out by grabbing 12 o'clock as picture.
		10. Remove the 3 screws of Door Lock SW.
		11. Remove the 3 screws below of Frame Front.

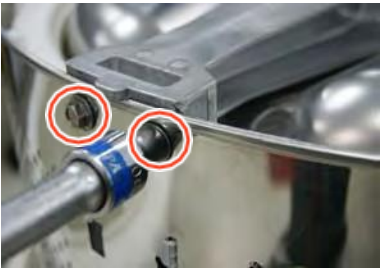
Part	Figure	Description
Disassembling the Frame Front (Check the Door Lock S/W)		12. Remove the 4 screws on the Frame Front.
		13. Press down on the tabs of the upper-plate with a screwdriver to separate the FRAME-FRONT.

Part	Figure	Description
Assembling Diaphragm to Frame Front (This is added to be assembled exactly)		1. Assemble Diaphragm to frame front.
		2. Before assembling Wire Clamp, check position of cutout(11 o'clock). Each cutout should be above redline, move the diaphragm to upside.
		3. Bundle of wire clamp has to be at 5 o'clock and assemble the wire clamp from 12 o'clock.

Part	Figure	Description
Disassembling and Repairing the Water Supply Valve		1. Remove the Assy Cover Top. 2. Disconnect the water supply valve wire connector.
		3. Remove the 4 screws holding the water supply valve.
		4. Remove the hose connected to the valves. (Use the plier to remove the hose.)
Disassembling and Repairing the Water Level Sensor		1. Separate the wire connected Pressure Sensor. 2. Firmly squeeze the front of the wire connector and pull to remove the connector.
		3. Remove the hose from the SENSOR-PRESSURE.
Disassembling the inside Detergent Box		• Hold the Hose and Nozzle and disassemble from Diaphragm.

Part	Figure	Description
Disassembling the Pump Motor Part		1. Remove the 2 screws holding the ASSY PUMP DRAIN.
		2. Separate the Clamp of the hose connected to the PUMP and then pull the DRAIN-HOSE. 3. Separate the Clamp of the hose connected to the PUMP and then pull the HOSE-AIR. 4. Separate the Clamp of the hose connected to the PUMP and then pull the HOSE-DRAIN.
		5. Separate the wire connected to the PUMP.
Removing the Remaining Water		• If the washing machine works, drain the water in the wash tub by selecting the Spin course. If the washing machine does not work, remove the laundry from the wash tub and scoop the remaining water out of the tub using a cup.

Part	Figure	Description
Disassembling the Tub		1. Remove the 2 screws attaching the cross braise and 6 screws attaching the frame plate.
		2. Remove the 6 bolts attaching WEIGHT BALANCER and then pull it towards you with caution.
		3. Remove the 4 bolts attaching the Dampers to the Tub Assy. 4. Remove all wires and hoses connected to the Tub Assy.
		5. Remove the spring hanger cap to remove the Tub Assy.
		6. Two people are needed to lift the Tub Assy. Carefully lift the tub using the Spring Hangers.

Part	Figure	Description
Disassembling the Tub		7. Remove the 10mm bolts from the middle of the TUB and separate the TUB-FRONT and TUB-BACK.
Disassembling the DRUM		1. Separate the ASSY DRUM from TUB, remove 6 10mm bolts from the upper ASSY DRUM, disassemble the ASSY FLANGE SHAFT.
		2. Remove 3 screws on the outside of the drum and then remove the 3 DRUM-LIFTERS.

Part	Figure	Description
Separating the Heater at the Bottom Front		1. Disassemble the Front-Frame. 2. Separate the connection wire. - Separate the Thermostat fixed at the bottom of the Tub. (Take precaution as there may be water remaining.)  Make sure to separate the Thermostat first and then separate the Heater. If you fail to observe this order, it may result in a shock and be damaged. 3. Loosen the 10mm nut using a socket wrench and then separate the Heater.  Do not completely remove the nut. Pull the Heater forward after releasing the nut. Be careful not to damage the heater.  When you re-assembly the heater, make sure to install the Heater exactly onto the Bracket inside the Tub. If it is not properly installed, it may cause a fire. In addition, completely insert the packing part into the Tub when assembling it so that the packing part is completely attached onto the Tub.
		* Check Points for Troubleshooting 1. Check if the resistance of the Heater is equal to 27.1Ω (for the 1900W product), or 26.2Ω (for the 2000W product). 2. Check if the resistance of the Thermistor is equal to 12kΩ (at room temperature).

 Reassembly is in the reverse order of the removal.

4. TROUBLESHOOTING

4-1. ERROR MODES

► This is a washer integrated error mode. For detailed information, refer to the general repair scripts.

Error Type	For USA	Causes	Remarks
Water Level Sensor	1C	- The part of the hose where the water level sensor is located is damaged (punctured). - The hose is clogged with foreign material. - The hose is folded. - Too much lubricant has been applied to the insertion part of the air hose. - Hose engagement error. (disengaged) - Part fault. (Faulty internal soldering) - The water level sensor terminal is disengaged. - Main PBA fault.	
Motor Driving Error and Hall Sensor Error	3C	- The PBA connector terminal is not connected. - The motor spin net is not engaged. - The motor's internal coil is damaged. (short-circuited or cut) - The hall sensor terminal is not connected. - Foreign material (a screw) has entered the motor. - Motor overloaded due to too much laundry. (Non-sensing) - The motor hall sensor terminal is not connected. - PBA fault. - The motor driving error from the PBA is weak. Unstable relay operation, etc. - This occurs due to erroneous operating signals from the motor hall sensor. - The IPM terminal of the main PBA is not connected. - The DD motor cover is out of place. - The PCB housing terminal is not connected. - PBA fault. - DD motor fault.	This error occurs because of restrained revolutions. This error occurs when an interference is generated due to too much laundry, etc.
Water Supply Error	4C	- Foreign material is entering the water supply valve. - The water supply valve terminal is not connected. - Kinked hoses can also cause a 4C error code - The warm water and rinse connectors are wrongly connected to each other. - This occurs if the PCB terminal from the drain hose to the detergent drawer is not connected. Check whether the Pressure hose is folded or torn.	
	4C2	- The cold and hot water supply hoses are not connected correctly. - The water temperature is sensed as higher than 50 °C in the Wool or Lingerie courses.	
Drain Error	5C	- The pump motor impeller is damaged internally. - The wrong voltage is supplied to the parts. - Part fault. - This occurs due to freezing in the winter season. - The drain hose is clogged. (Injection error, foreign material) - The Drain Pump is logged with foreign material: Rubber bands, coins, cotton, hair pins, etc. have collected inside the drain pump ASSY. - The water pump terminal is not connected.	
Power Error	9C1,9C2	- Check the consumer's power conditions. : Make sure to check the operating voltage. Connect a tester to the internal power terminals during the Sanitize Cycle and observe the washing machine's operation carefully. : Check the voltages. (An error occurs when under or over voltage is supplied.) : When the connecting wire is 1m, a momentary low voltage may drop up to 10V. - Main PBA fault (sometimes)	

Error Type	For USA	Causes	Remarks
Communication Error	AC	- The signals between the sub and main PBAs are not sensed because of commuication error. - Check the connector connections between the sub and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove the sub PBA C/Panel and check for any faulty soldering.	
	AC3	- The signals between The DR Module and main PBAs are not sensed because of commuication error. - Check The connector connections between The DR Module and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove The DR Module and Check for any faulty soldering.	
	AC4	- The signals between The WIFI Module and main PBAs are not sensed because of commuication error. - Check The connector connections between The WIFI Module and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove the WIFI Module and Check for any faulty soldering.	
	AC5	- The signals between The LCD Module and main PBAs are not sensed because of commuication error. - Check The connector connections between The LCD Module and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove The LCD Module and Check for any faulty soldering.	
	AC6	- The signals between the Inverter PBA and main PBA are not sensed because of communication error. - Check The connector connections between the Inverter PBA and main PBA carefully. → Check for incorrect or loose connections, etc. - Remove the Inverter PBA and Check for any faulty soldering.	
Switch Error (Main Relay Error)	BC2	- A switch is jammed or stuck due to be pressed unevenly due to deformation of the control panel or button. - This error may occur when the screws that hold the sub PBA in place are tightened too much. - A button other than the Power button is continually pressed. (for more than 30 seconds). - Deformation of an internal plastic injection part. - A screw for assembling the sub PBA is tightened too much.	
Door Error	DC	- A switch contact error because of a deformation of the door hook. - When the door is pulled by force.	When the door is not opened after the door open operation.
		- This occurs in the Boil wash because the door is pushed due to a pressure difference from internal temperature changes.	When the door is not locked after the door close operation.
	DC1	- The door lock switch terminal is connected incorrectly. - The door lock switch terminal is broken. - This occurs intermittently because of an electric wire leakage - Main PCB fault.	
Heater Error	HC,HC1	- The washing heater is short-circuited or has a wire disconnected. - The washing heater in the tub has an error. (Contact error, temperature sensor fault) - If the water level sensor operates without water because water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150 °C, the washing machine turns the input power off.	If the heater has no error, this occurs because of a PBA relay malfunction.

Error Type	For USA	Causes	Remarks
Water Leakage Error	LC	- Heater engagement fault. (out of place) - The air hose is out of place and water leakage occurs during the spin cycle. - The tub back at the safety bolts fixing part is broken. - Water leakage occurs at the front with foaming because of too much detergent. - Water leakage occurs because the connecting hose to the detergent drawer is connected incorrectly. - The drain pump filter cover is engaged incorrectly. - Water leakage occurs at the drain hose. - The duct condensing holding screws are worn. - The nozzle-diaphragm is engaged in the opposite direction or the rubber packaging is omitted. - Water leakage occurs because the screws that hold the tub back and front in place are fastened incorrectly. - The leakage sensor is faulty.	
Overflow Error	OC	- Water is supplied continually because the water level detection does not work. - Because the drain hose is clogged and there is an injection error (at a narrow section), the water level detection does not work and water is supplied continually. - Water is supplied continually because of freezing or because there is foreign material in the water supply valve. - This error may occur when the water level sensor is degraded.	This error occurs because the water level sensor terminal is out of place.
Temperature Sensor Error	TC1	- The washing heater sensor in the tub has an error. (Contact error or temperature sensor fault) - The connector is connected incorrectly or is disconnected. - If the water level sensor operates without water because the water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150 °C, the washing machine turns the input power off.	Heater sensor fault : When the connector is connected incorrectly or has a wire disconnected or contact error
Unbalance Error	UB	- As laundry causes this error, check the laundry. - Find the reason for the unbalance and solve it as directed in the user manual.	
Foaming Detected	SUD	- This occurs when too much foaming is detected. It is also displayed while foaming is removed. When the removal is finished, the normal cycle proceeds. “Sud” or “SUdS” is displayed when too much foaming is detected and “End” is displayed when the removal of the foaming is finished. (This is one of the normal operations. It is an error for preventing non-sensing faults.)	
Mems Error Detected	8C1	1. Check Unit for excessive vibration. 2. Replace Main PCB	
	8C2		
	8C		
System Error	SF	- Micro Controller Operation Fail.	Replace Assy PCB.