WASHING MACHINE
DRUM TYPE

Basic Model : **WW90J6413CW/UA**
(WW6000J PROJECT)

Model Name : **WW22K6800A***

Model Code : **WW22K6800AW/A2**
(WW6800K PROJECT)

SERVICE Manual

WASHING MACHINE (DRUM)

CONTENTS

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1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIONS FOR SERVICE ENGINEERS

► Make sure to observe the following instructions to operate the product correctly and safely and prevent possible accidents and hazards while servicing.

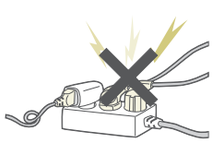
► Two types of safety symbols, Warning and Caution, are used in the safety instructions.

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.**

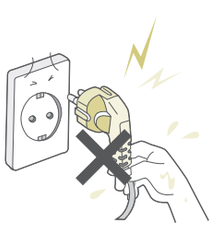
WARNING BEFORE SERVICING

- (When servicing electrical parts or wiring harness) Make sure to cut off 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 cut off 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.

⚠ WARNING WHILE SERVICING

- Check if the power plug and outlet are damaged, flattened, cut or otherwise degraded.
  - √ If faulty, replace it immediately.
    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 due to tracking and shorts in advance.

- When connecting wires, make sure to connect them using the relevant connectors and check that they are completely connected.
  - √ If tape is used instead of the connectors, it may cause fire due to tracking.

- 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 and causes noise and electric leakage.

⚠ WARNING AFTER SERVICING

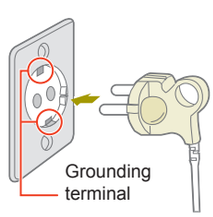
- Check the wiring.
  - √ Ensure that no wire touches a rotating part or a sharpened part of the electrical harness.

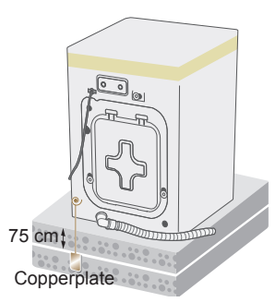
- Check for any water leakage.
  - √ Perform a test run for the washing machine using the standard course and check whether there is any water leakage through the floor section or the pipes.

- 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 lifetime.

- If it seems that grounding is needed due to water or moisture, make sure to run grounding wires.
  (Check the grounding of the power outlet, and additionally ground it to a metallic water pipe.)
  - √ Failing to do so may result in electric shock due to electric leakage.

  [Running a grounding wire]
  - Twist a grounding wire (copper wire) two or three times around the tap
  - If you connect the grounding wire to a copperplate, bury it 75 cm under the earth in a place with a lot of moisture.
    - ⚠ Do not connect the grounding wire to a gas pipe, plastic water pipe or telephone wire. There is a risk of electric shock or explosion.





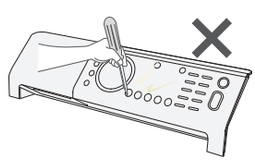
⚠ CAUTION BEFORE SERVICING

- Do not sprinkle water onto the washing machine directly when cleaning it.
  √ This may result in electric shock or fire, and 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 they do not break when force is exerted.

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

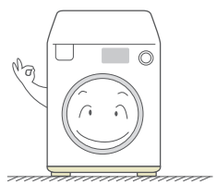
- If you need to place the washing machine on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so its side is on the floor.
  √ Do not lay it down on its front. This may result in the inside tub damaging parts.

⚠ CAUTION AFTER SERVICING

- Check the assembled status of the parts.
  - √ They must be the same as before servicing.

- 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 when measured with a 500V DC Megger.

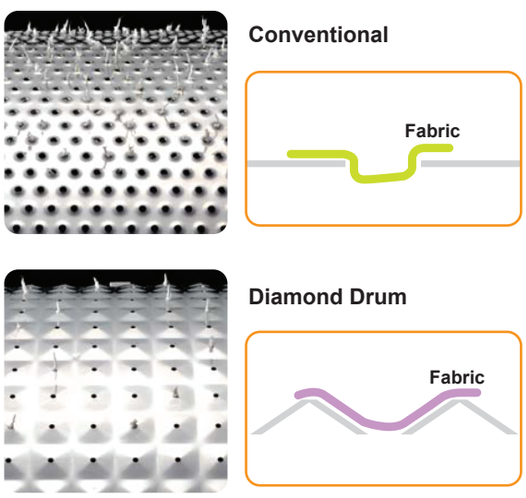
- Check whether the washing machine is level in relationship with the floor. Check whether it is installed firmly on the floor.
  - √ Vibrations can shorten the lifetime of the product.



2. FEATURES AND SPECIFICATIONS

2-1. FEATURES

■ COMMON FEATURES

Features	Description
Big Door	• This is the maximum capacity to be implemented at the standard 55 cm depth. - The benefits for customers have been greatly increased due to the efficient use of limited space. - Usability has been improved due to the easier loading and removing of the laundry. • The size of the loading entry has increased: 300 mm → 308 mm (Wide) - A lot more washing can be conveniently added and removed. 
Diamond Drum	• The washing performance has increased but potential damage to the washing has been minimized. (The size of the holes on the diamond drum has been reduced for minimizing damage to the washing.) - The embossed wall of the drum serves as a washboard, dramatically increasing the washing performance compared with existing drum washing machines, which use the power of the difference in elevation only. - The size of holes has been reduced drastically, maintaining the optimal wash performance (Washing Cost 1.0) while saving on water and electricity required for washing. - The structure of the holes on the diamond drum has been changed minimizing potential damage to the washing since it is difficult for strands to enter the holes. 

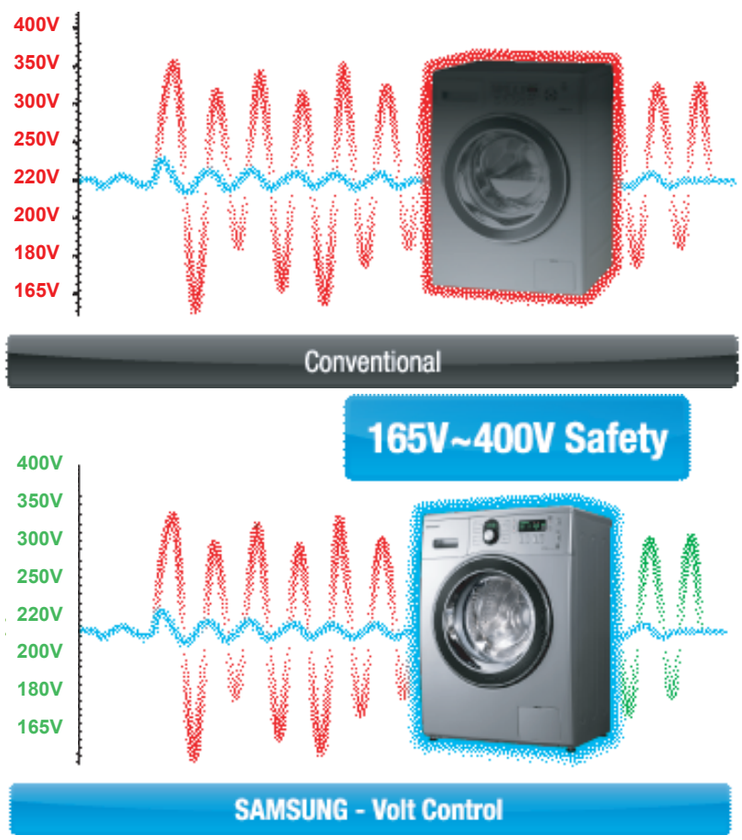
■ OPTIONAL FEATURES

► The features below depend on the model.

Features	Description
Super Speed	• Super speed reduces the washing time using SpeedSpray™ that removes detergent residue thoroughly with powerful water sprays during rinsing. *Super speed available on Normal, Heavy Duty and Deep Steam cycle. 
Steam	• Deeply clean with Steam With Deep Steam cycle using the steam function, you can always keep your clothes hygienic and pristine. 

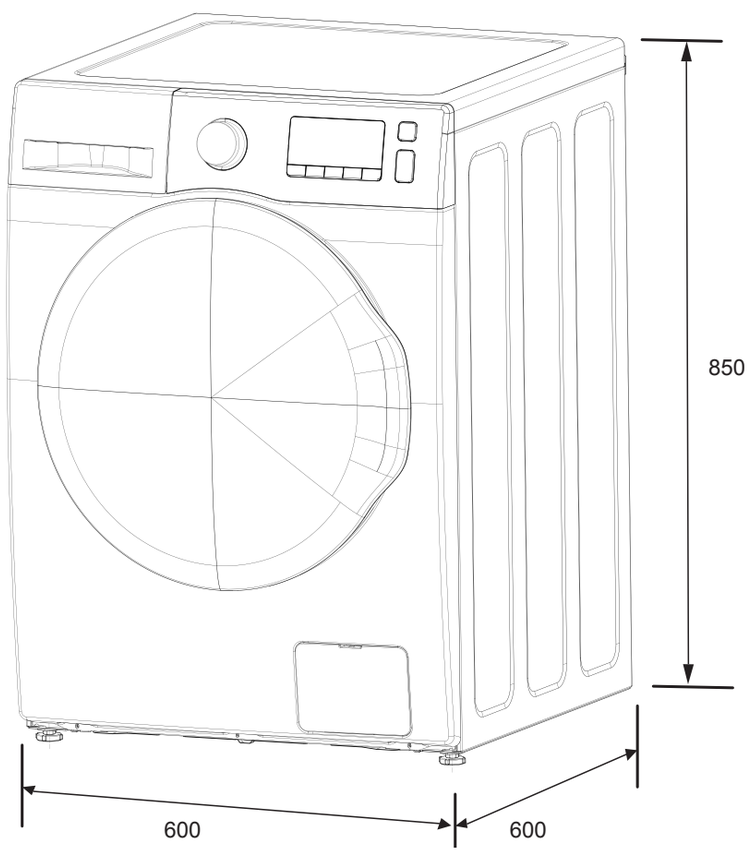
■ OPTIONAL FEATURES

► The features below depend on the model.

Features	Description
Wool	• Fabric Care - Minimize shrinking - Gently and carefully cleans - delicate fabrics that are usually washed by hand.  
Volt Control	• The solution for more Durable and Reliable Washing Machine - Although you may not see the direct problems of power surges that run through your electronic devices, a real danger in sudden surges of voltage does exist and this definitely affects your washing machine. This is especially true for machines that require a lot of energy. Samsung's Volt Control guarantees that your washing machine works safely even with voltage deviations of ±25%. • What does the "Volt Control" mean? - This is technology that allows to safe a washing machine from high shock and even lower voltage. There is an additional protective measure in a washing machine for your precious clothes. It constantly controls washing cycle in a fluctuated situation and re-start automatically when the standard voltage flows back again. 

2-2. SPECIFICATIONS

Model		WW22K6800A*
Wash Type		FRONT LOADING TYPE
Dimension		W600mm x D600mm x H850mm
Water Pressure		50 kPa ~ 800 kPa
Water Volume		63 L
Weight		73 kg
Wash & Spin Capacity		2.2 CU.FT
Power Consumption		900 W
Spin Revolution	rpm	1400

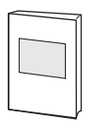
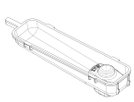


2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

(★) : Functions may be different depending on the model.

Project		WW6800K	WW6000J
Model Name		WW22K6800A*	WW90J641***
Image			
Capacity		2.2 CU.FT	9.0 kg
Main Spec	Water Volume	63 L	63 L
	rpm	1400	1400
	Motor	DIM	DIM
	Control Sys	Fuzzy logic	Fuzzy logic
	Weight Detection	3 Stages	3 Stages
	Heater Capacity	900 W	2000 W
	Water Supply	Cold & Hot	Cold Only
	Drainage	Pump	Pump
	Power-outage Compensation	Yes	Yes
	Zero Standby Power	Yes (0.5W or Less)	Yes (0.5W or Less)
USP	Voltage Protector	Yes (★)	Yes (★)
	Air Refresh	No (★)	No (★)
	Water Safety	No	No
	Ceramic Heater	No	Yes (★)
	Diamond Drum	Yes	Yes
	Loading Entry Size	Wide (308 mm)	Wide (308 mm)
Design	Big Door	Yes (499 mm)	Yes (491 mm)
	Center Jog Dial	Yes	Yes
	Display	G.LED	G.LED
Dimension (W X D X H mm)		600 x 600 x 850	600 x 600 x 850

2-4. OPTIONS SPECIFICATIONS

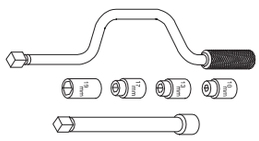
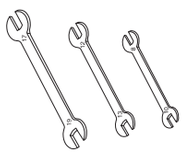
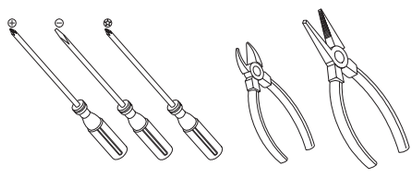
Item		Code	QTY	Remarks
	FASTENER-BOLT	DC60-00104A	1	Default
	ASSY HOSE WATER	DC97-16921A	★	For specific models only
	MANUAL-BOOK	DC68-03643A DC68-03645A	1	Default
	CAP-FIXER	DC67-00307A	4	Default
	CAP-FIXER	DC67-00208B	1	Default
	HOSE-HANGER	DC62-10278A	1	Default
	GUIDE LIQUID	DC61-03510A	1	Default
	ASSY DRAWER BLEACH	DC97-19243A	1	Default

Note

- (★) is supplied for specific models only among those without water supply hoses.
- You can purchase additional water supply and drain hoses from a service center.
- For built-in models, the spanner, water supply and drain hoses are not supplied. Both the water supply and drain hoses are supplied during the installation.

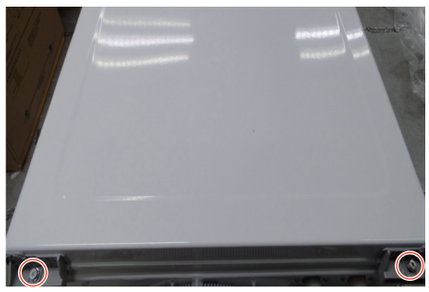
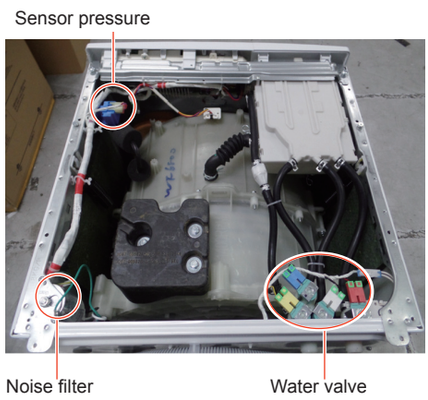
3. DISASSEMBLY AND REASSEMBLY

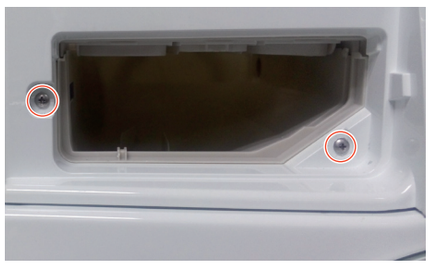
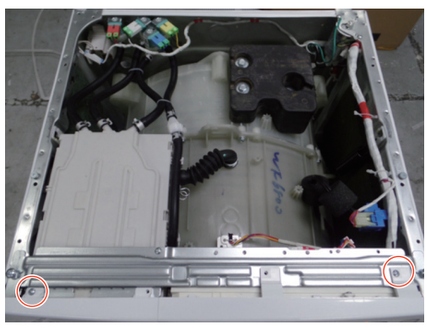
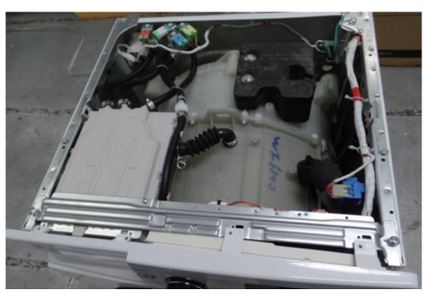
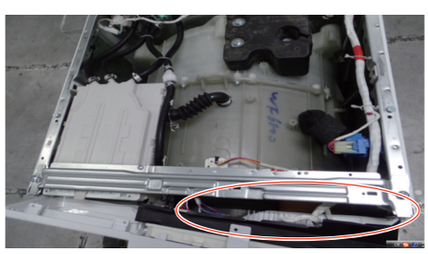
3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

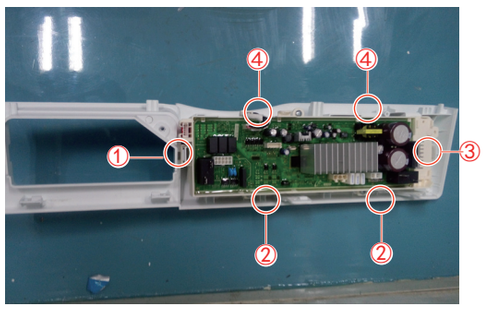
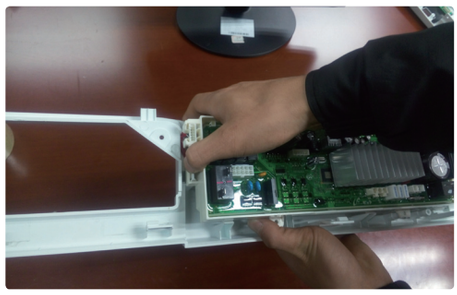
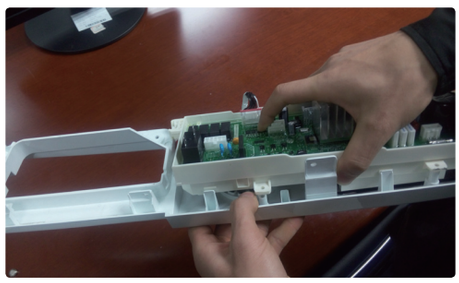
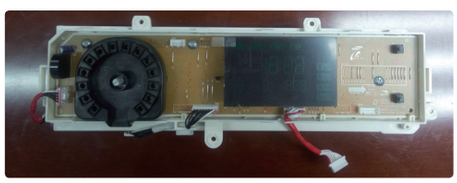
Tool		Type	Remarks
	Box driver	10mm 13mm 19mm	Heater(1),Tub(12), Fixer screw(5), Motor(2), Balance(9) Shock Absorber (2 holes each in left/right), Damper(2), Damper(friction 2) Pulley(1)
	Double-ended spanner	10mm 13mm 19mm	Replaced by box driver
	Vice pliers		A Tool for protecting empty turning of bolt or abrasion from using box driver For disassembly of Spin drum
	Others (screwdriver, nipper, long nose pliers)		Common tools for servicing

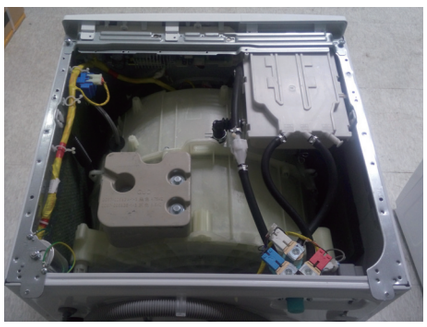
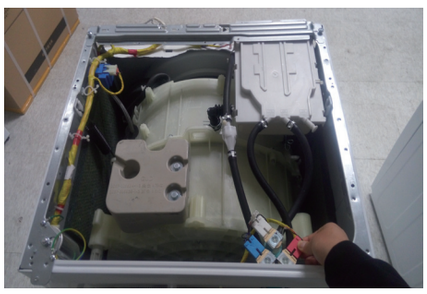
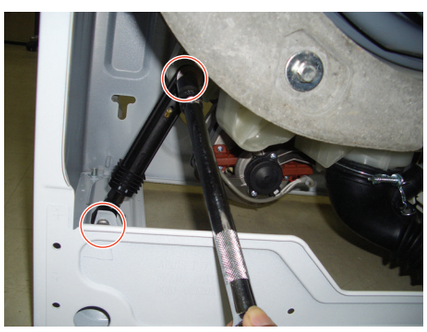
3-2. STANDARD DISASSEMBLY DRAWINGS

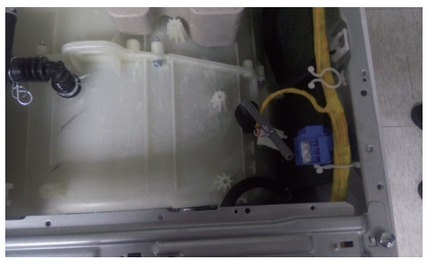
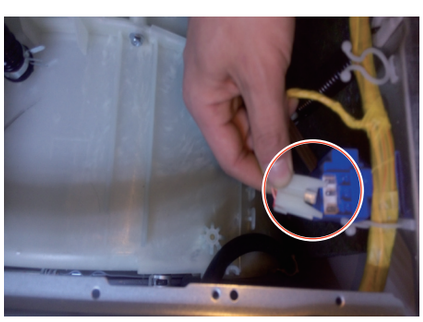
► This is a standard disassembly diagram and may differ from the actual product.
Use this material as a reference when disassembling and reassembling the product.

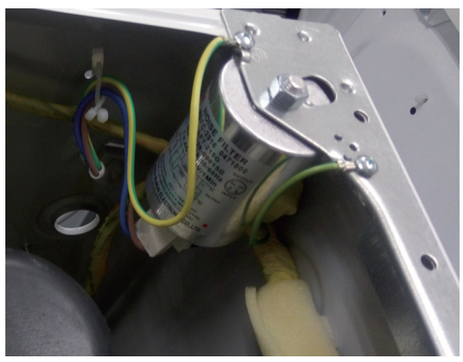
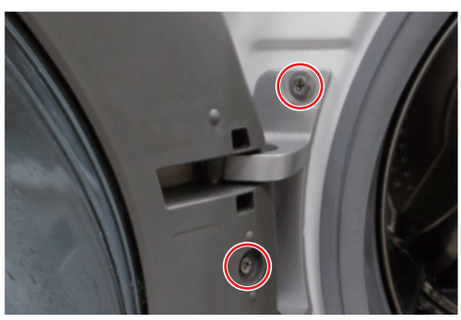
No.	Part	Description	Figure
01	ASSY COVER TOP	1. Remove the two screws holding the Top Cover at the back of the unit.	
		2. Remove the top-cover by lifting it up after pulling it back about 15mm.	
		3. Then, the Water (Pressure) Sensor, Noise Filter and Water Valve can be replaced.	

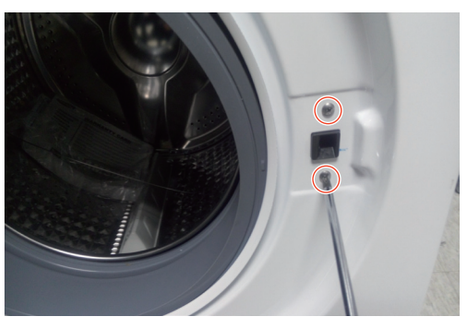
No.	Part	Description	Figure
02	ASSY PANEL CONTROL	1. Remove the 2 screws hoding the front operating panel.	
		2. Remove the two screws at the top of the ASSY-PANEL CONTROL.	
		3. Hold the ASSY-PANEL CONTROL while pulling it upwards and release the hook to remove it.	
		4. Disconnect the terminals connected to the PCB by hand.	
		5. Hold the ASSY-PANEL CONTROL while pulling it upwards and release the hook to remove it.	

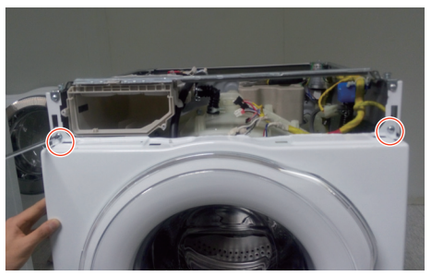
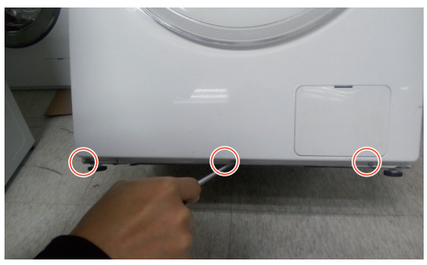
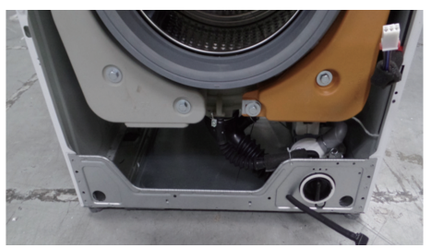
NO.	Part name	Description	Figure
03	SUB-PCB	1.There are six clasps to fix pcb, such as the right picture shows.	
		2.Press the clasp ①, release the clasp ①, and then press clasp ②,release the clasp ②, after that press clasp ③ and release the clasp ③ from upwards .	
		3.Finally, take the PCB out from claps ④.	
		4. Repair or replacement.	

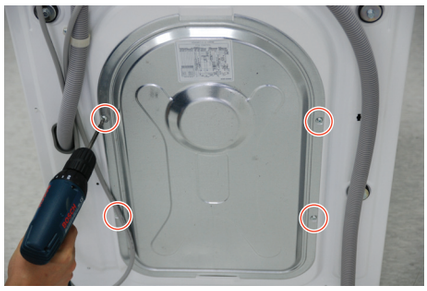
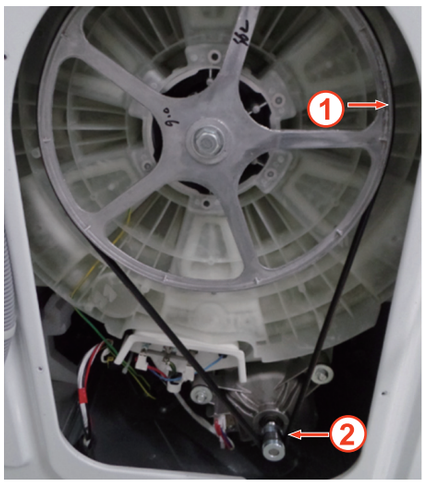
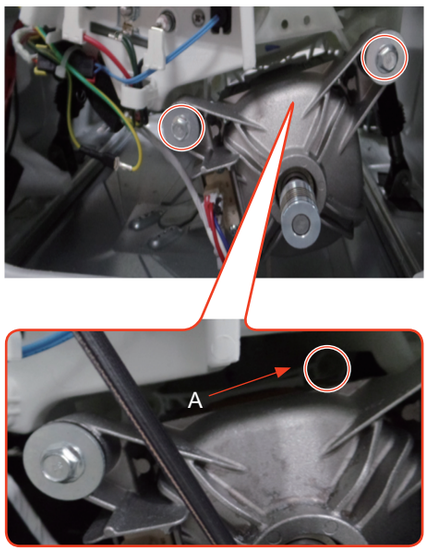
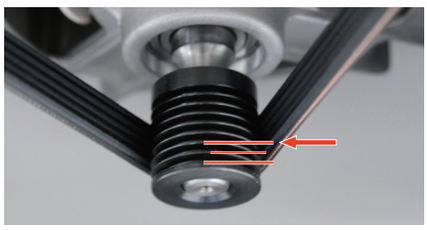
No.	Part	Description	Figuer
04	WATER SUPPLY VALVE	1. Remove the top-cover.	
		2. Separate the water supply valve wire.	
		3. Remove the 2 screws holding the water supply valve.	
05	DAMPER	1. Remove the 2 screws shown in the figure.	

No.	Part	Description	Figure
06	SENSOR PRESSURE	1. Connect the Water-Hose to the main body of the Pressure-Switch.	
		2. Fix the Hose-Clamper.	
		3. Place the Pressure-Switch into the Bracket Hole holding the main body of the Pressure-Switch.	
		4. To separate the Pressure-Switch, pull the Pressure-Switch forwards while pushing the marked part with your finger.	

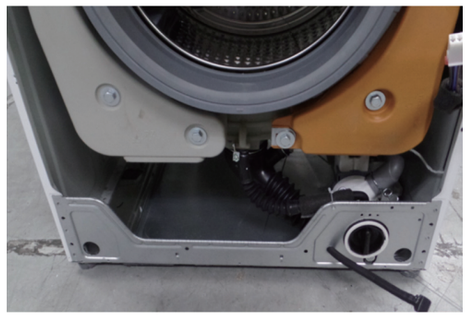
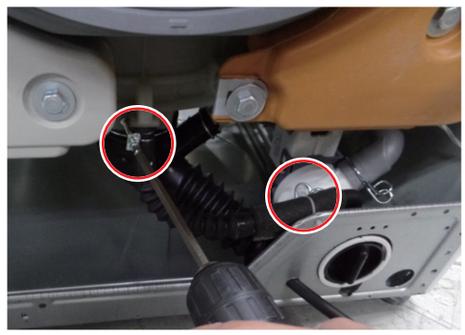
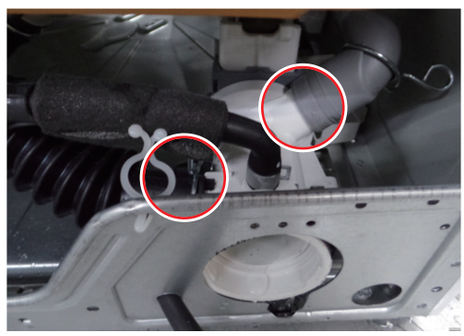
NO.	Part name	Description	Figure
07	NOISE FILTER	1. Seperate top cover. 2. Seperate filter net wire. 3. Remove the nut. 4. Replace filter net.	
08	DOOR HINGE	1. Open the door,removing the two screws holding the door hinge and seperate the door	
		2. Remove the 3 screws holding the Holder Glass, separate the Holder Glass and replace the hinge.	

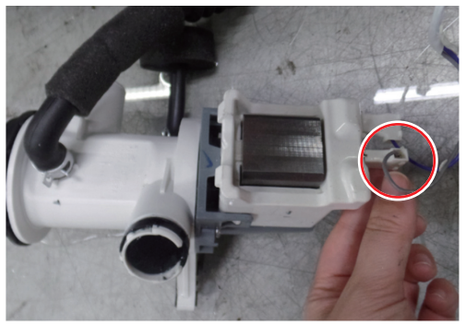
NO.	Part name	Description	Figure
09	DOOR-LOCK S/W	1. Open the Door. 2. Remove the Wire Diaphragm and remove it from The Front Frame. For easier disassembly, remove the spring from the lower part of the Diaphragm with a (-) screwdriver. Since the Diaphragm can be damaged when removing it, remove it slowly in one direction. 3. Remove the ASSY-CLAMP DIAPHRAGM as photograph.	 
		4. Remove the two crews.	
		5. Remove the screw holding the Door-Lock S/W. Remove the Door-Lock S/W. Remove the connection wire. Remove the connector after releasing it by pressing the catch.	

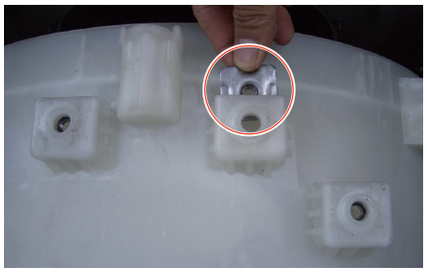
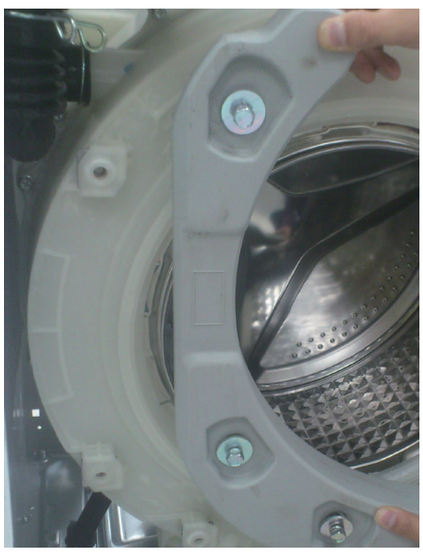
No.	Part	Description	Figure
10	FRAME FRONT	1. Remove the two screws holding the FRAME-FRONT.	
		2. Remove the three screws holding the bottom of the FRAME-FRONT.	
		3. Disconnect the terminal for the DOOR-LOCK switch.	
		4. The DOOR-DIAPHRAGM, HEATER, PUMP, SHOCK-DAMPER and DOOR LOCK switch.	

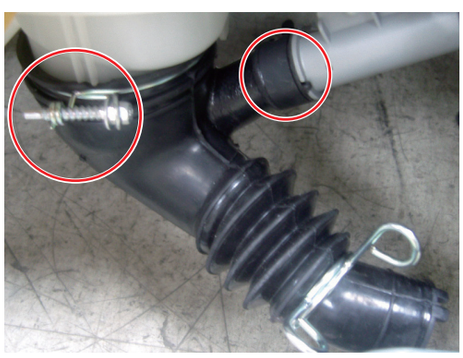
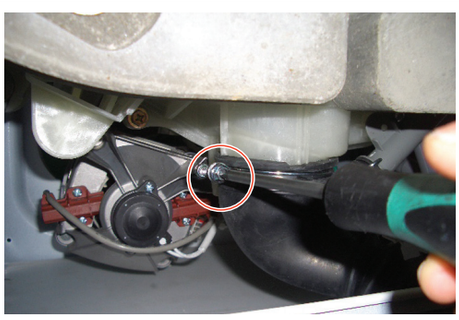
No.	Part	Description	Figure
11	COVER-BACK	1. Remove the 4 screws holding the Back-Cover at the back of the washing machine.	
12	BELT	1. Separate the belt and then assembly it. 2. Check if the belt position is at the center of the Pulley. ✎ Assembling the belt Place the belt around the Pulley (①) and then over the Motor-Pulley (②).	
13	MOTOR	1. Separate the Wire Housing from the motor. 2. Remove the two bolts holding the motor at the back of the washing machine. The 2 screws designated 'A' which are inside must be also removed. 3. Separate the motor.	
		✎ When installing the Belt around the Motor Pulley, the bottom of the belt must be located on the second floor of the Motor Pulley.	

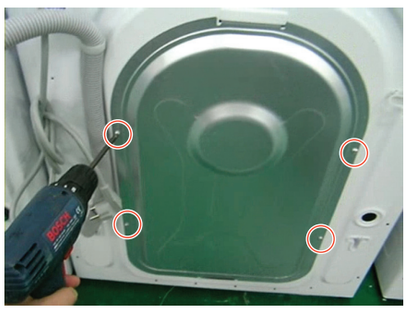
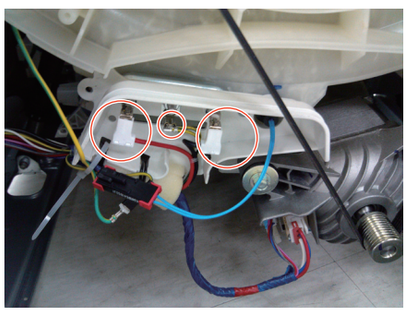
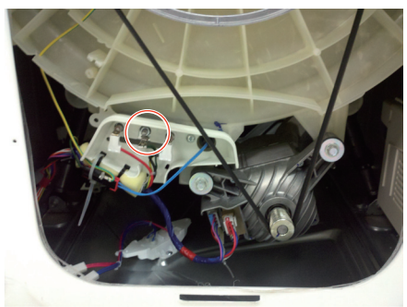
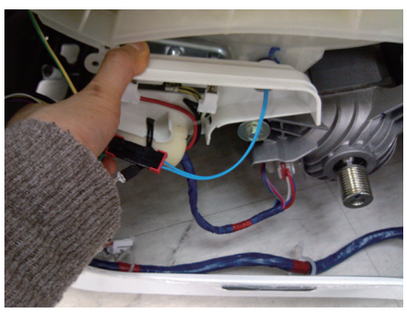
No.	Part name	Description	Figure
14	BUBBLE PUMP AND DRAIN PUMP	1. Press the upper part of the Filter Cover and push it downwards to release the catch.Then seperate frame front	
		2. Remove the remaining water through the drainage hose. Place a bowl under the drainage hose, or the remaining water may fl ow out.	
		3. Separate the Drain Filter by turning it counter-clockwise Since the remaining water may flow out, place a bowl underneath it when separating the filter.	
		4. Remove the 2 screws holding the Drain Pump.	

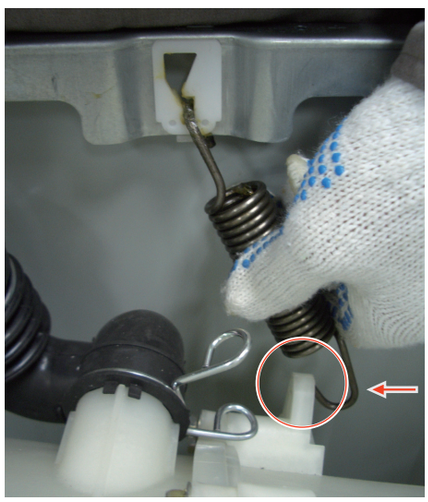
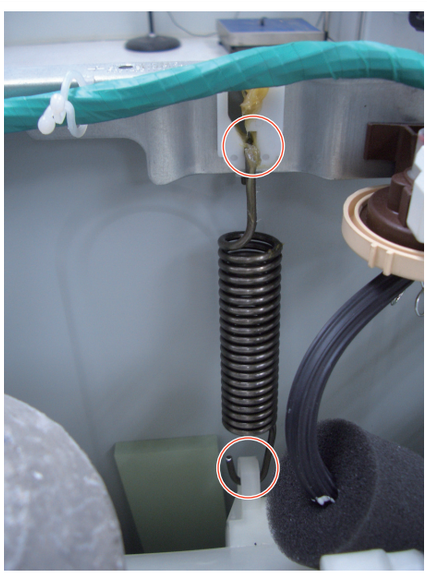
No.	Part name	Description	Figure
14	BUBBLE PUMP AND DRAIN PUMP	6. Seperate the frame front, and then seperate weight balance (Front).	
		7. Release all band ring to removal hose except for hose dain. Push the pump inwards slightly and remove it	
		8. Release the clamper hose which con-nected pump and hose drain,then seperate it.	
		9. seperate cover pump.	

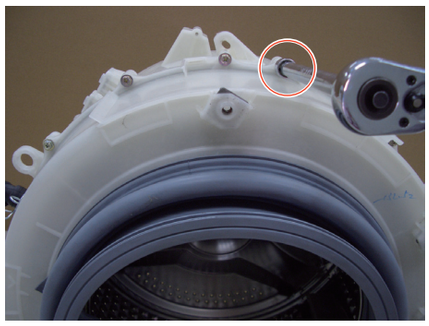
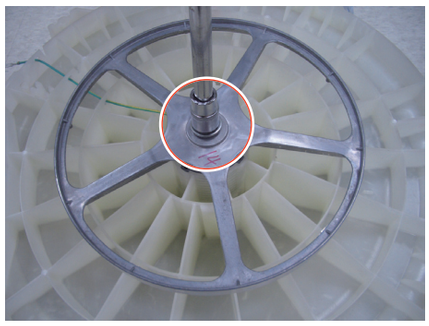
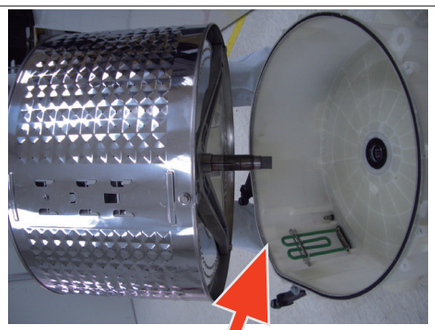
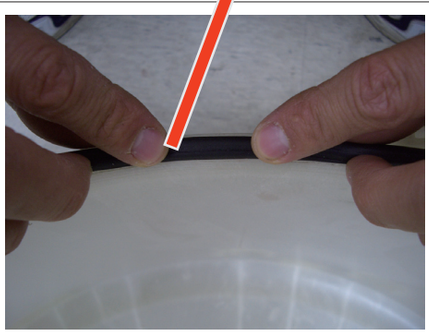
No.	Part name	Description	Figure
14	BUBBLE PUMP AND DRAIN PUMP	10. Disconnect the terminal of wires.	
		11. Remove 3 screws as photograph, then seperate pump drain and replace it.	
		※Check Points for Troubleshooting 1. Separate the Drain Filter and check if any alien substances are inside the pump (e.g. coins, buttons .., etc.) → Remove these if found. 2. Check if the wire driving the pump is has come loose → Take the relevant countermeasure if necessary. 3. When water leaks, check the assembly status of the Clamp Hose, and Cap Drain → Take the relevant countermeasure if necessary. Turn the filter counterclockwise to remove the remaining water.	

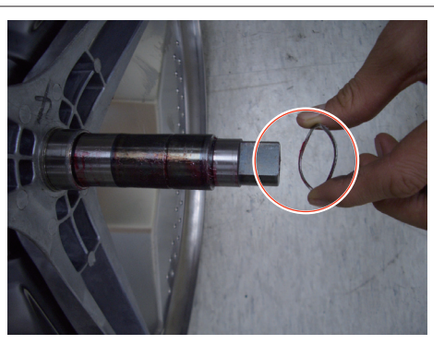
No.	Part name	Description	Figure
15	WEIGHT-BALANCE	1. Remove the three screws.	
		2. Separate the WEIGHT-BALANCE(U).	
		3. Remove the three screws.	
		4. Separate the WEIGHT-BALANCE(F). ✎ For disassembly, please make sure assembled the BRACKET-NUT into the TUB first. ✎ Make sure the hole and hole respond to each other correctly. ✎ There is no ringt and left direction for WEIGHT-BALANCE(F).	

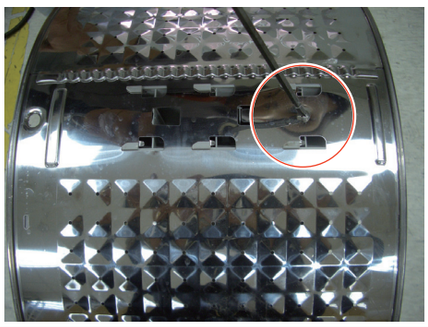
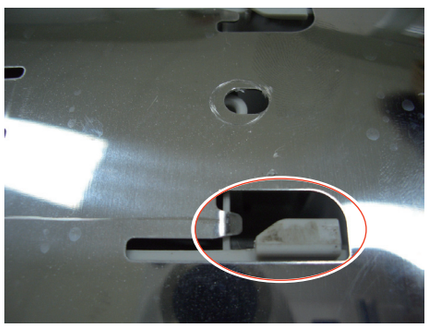
No.	Part name	Description	Figure
16	BUBBLE HOSE AIR JOINT	1. First,seperate frame front,weight balance(right) and case pump, Then release clampers, seperate hose air joint from tub and pump.	
17	HOSE-FILTER TUB	1. Disassembling and Reassembling the Hose-Joint Clamper	
18	HOSE-FILTER TUB	Disassembling and Reassembling the Hose-Joint Clamper ⚠ Caution Take care when disassembling or reassembling the product, as the direction the screws turn used for this product differs from the standard direction for screws. 1. To disassemble it, turn the screw clockwise. 2. To reassemble it, turn the screw counterclockwise.	

No.	Part	Description	Figure
19	HEATER	1. Separate the Back Cover.	
		2. Separate the Connection Housing (3).	
		3. Remove the nut holding the heater and separate the Heater.	
		4. Remove the Heater from the Tub. ⚠ Caution Make sure to insert the Heater into the correct position of the bracket inside the Tub when reassembling it. Otherwise, there is a danger of a fire.	
		Make sure to push it inwards until the packing part comes into the Tub completely when reassembling it so that the packing part is completely stuck to the Tub.  Fasten the holding nut with a force of 5Kgf/ cm2. If the nut is not fastened properly, there is a danger of water leaking.	

No.	Part name	Description	Figure
20	SPRING-HINGER	1. Insert the vertical hook of SPRINGHANGER into the GUIDE-SPRING on the ASSY-FRAME.	
		2. Drag the SPRING-HANGER to insert the elliptical hook into the hole that's at the side of the ASSY-TUB as the left picture show.	
		3. Make sure the SPRING-HANGER's two hooks are assembled right.	

No.	Part	Description	Figure
21	ASSY-TUB	1. Remove the 14 screws holding the tub .	
		2. Separate the ASSY-BOLT on the BACK-TUB. 3. Separate the PULLEY.	
		4. Separate the ASSY DRUM.	
22	PACKING-TUB	1. Assemble packing-tub's one side of "凹" to TUB-BACK use two hands.	

No.	Part	Description	Figure
23	OIL-SEAL	1. Assemble the OIL-SEAL in the TUB-BACK.	
		2. Press the OIL-SEAL gently and turn it back and forth.	
24	ASSY-DRUM	1. Remove the WASHER-WAVE from the SHAFT.	
		2. Remove the three screws holding the ASSY FLANGE SHAFT.	

No.	Part	Description	Figure
25	ASSY-DRUM	1. Remove the one screw holding the DRUM-LIFTER.	
		2. Release the HOOK.	
		3. Assemble the HOOK, DRUM-BACK, Holding it with screw.	

4. TROUBLESHOOTING

4-1. CHECK MODES

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

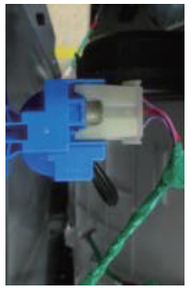
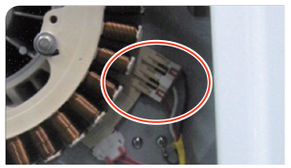
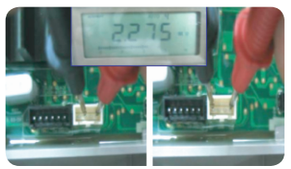
Check Type	Check Mode	Causes	Remarks
Water Level Sensor	1E	- The part of the hose where the water level sensor is located is damaged (punctured). - The hose is clogged with foreign material. - The hose is folded. - Too much lubricant has been applied to the insertion part of the air hose. - Hose engagement check. (disengaged) - Part fault. (Faulty internal soldering) - The water level sensor terminal is disengaged. - Main PBA fault.	
Motor Driving Check and Hall Sensor Check	3E	- 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 check 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 check occurs because of restrained revolutions. This check occurs when an interference is generated due to too much laundry, etc.
Water Supply Check	4E	- Foreign material is entering the water supply valve. - The water supply valve terminal is not connected. (Wire disconnected) - 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 transparent hose is folded or torn.	
	4E2	- The cold and warm water supply hoses are wrongly engaged into each other. - The temperature of the water supplied through the dry valve during a dry cycle is sensed as higher than 70 ˚C. - The water temperature is sensed as higher than 50 ˚C in the Wool or Lingerie courses.	The water supplied for 1 minute drying the drying cycle is 0.3 ~ 0.4 L.
Drain Check	5E	- 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 check, foreign material) - Clogged with foreign material. - The water pump terminal is not connected: rubber band, bills, cotton, hair pins, coins have collected inside the drain pump ASSY.	

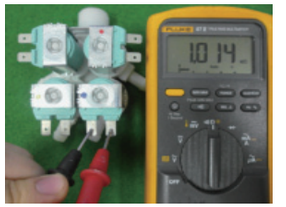
Check Type	Check Mode	Causes	Remarks
Power Check	9E1,9E2	- Check the consumer's power conditions. : Make sure to check the operating voltage. Connect a tester to the internal power terminals during the Boil or Dry operations and observe the washing machine's operation carefully. : Check the voltages. (A check occurs when under or over voltage is supplied.) : Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V - Main PBA fault (sometimes)	
Communication Check	AE	- The signals between the sub and main PBAs are not sensed because of commuication check. - 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.	
	AE2	- The diagnosis of the I/O Board communication check.	
	AE3	- The signals between The DR Module and main PBAs are not sensed because of commuication check. - 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.	
	AE4	- The signals between The WIFI Module and main PBAs are not sensed because of commuication check. - 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.	
	AE5	- The signals between The LCD Module and main PBAs are not sensed because of commuication check. - 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.	
	AE6	- The signals between the Inverter PBA and main PBA are not sensed because of communication check. - 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 Check (Main Relay Check)	BE2	- The Power button is pressed continually. (for more than 12 seconds). - A switch is jammed or stuck due to be pressed unevenly due to deformation of the control panel or button. - This check 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.	

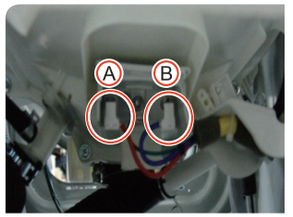
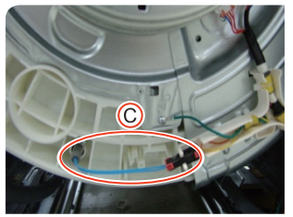
Check Type	Check Mode	Causes	Remarks
Door Check	DE	- A switch contact check because of a deformation of the door hook. - When the door is pulled by force.	When the door is not opened after the door open operation.
		- This occurs in the Boil wash because the door is pushed due to a pressure difference from internal temperature changes.	When the door is not locked after the door close operation.
	DE1	- 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.	
	DE2	- This occurs if the Power switch is turned on/off continually and too much heat is generated (This check is difficult to be reproduced.)	
Heater Check	HE HE1 HE2	- The washing heater is short-circuited or has a wire disconnected. - The washing heater in the tub has a check. (Contact check, 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. - The drying heater is short-circuited or has a wire disconnected	If the heater has no check, this occurs because of a PBA relay malfunction.
Water Leakage Check	LE LE1	- 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 Check	OE	- Water is supplied continually because the water level detection does not work. - Because the drain hose is clogged and there is an injection check (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 check may occur when the water level sensor is degraded.	This check occurs because the water level sensor terminal is out of place.

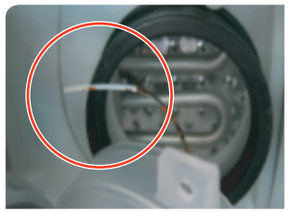
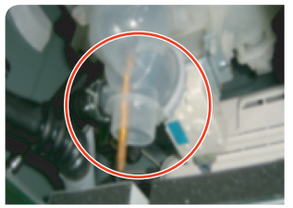
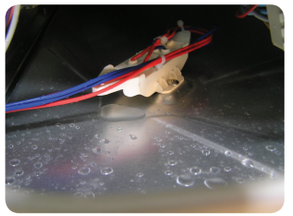
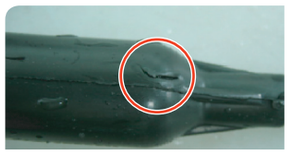
Check Type	Check Mode	Causes	Remarks
Temperature Sensor Check	TE1 TE2	- The washing heater sensor in the tub has a check. (Contact check or temperature sensor fault) - The connector is connected incorrectly or is disconnected. - If the water level sensor operates without water because the water is frozen 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. - The drying heater sensor in the tub has a check. (Contact check or temperature sensor fault)	Heater sensor fault : When the connector is connected incorrectly or has a wire disconnected or contact check
	TE4	- IPM temperature is abnormally high.	
Unbalance Check	UB	- As laundry causes this check, 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 a check for preventing non-sensing faults.)	
Mems PBA Check Detected	8E1 8E2 8E	- Check detected in the Mems PBA or data check detected. Check the wire connections. Replace if necessary. 1. Check the wire connections. 2. Replace the Mems PBA.	
System Check	SF1 SF2 SF3	- Micro Controller Operation Fail.	Replace Assy PCB.

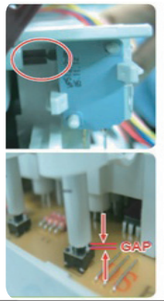
► These are common troubleshooting procedures for each drum-type washer check mode. For detailed information, refer to the general repair scripts.

Check Type	Check Mode	Causes	Corrective Actions	Description of Photo
Water Level Sensor	1C	• Water level sensor fault • Incorrect connections of the water level sensor terminal • The hose part for the water level sensor is folded. • Main PCB fault	• Check the water level sensor terminal connections and contacts. • A check occurs if an incorrect water level sensor is used. Make sure to check the material code. (Abnormal operation) • If the water level sensor is faulty, replace it. • If the check persists despite taking the action above, replace the PBA.	 Check the water level sensor frequency. - Check it after the water level sensor and the connector are connected. Checking Part : Pink Color Wire Orange Color Wire. - Frequency : Approx. 25.5 KHz with no load
Washing Motor Check and Hall Sensor Check	3C	• Washing motor fault • Washing motor hall sensor fault • Incorrect connections of the washing motor/hall sensor connector • Washing motor rotor and stator fault • Main PCB fault	• Check the motor connector terminal connections and contacts. • 3E is displayed because overloading occurs due to too much laundry. • If the hall sensor terminal is faulty, replace the hall sensor. • Check whether the stator of the motor cover is damaged. • Check for coil disconnections due to foreign material. • If the PBA control circuit is faulty, replace the PBA.	 ► Check the motor Winding Coil Plug out the connector and read resistances at any two of the three terminals on Motor : Should be 6.0 Ω (at 25°C)  ► Check the motor Hall Sensor Check the resistance on the main PCB motor (Between pins 1 and 3, and 1 and 4 of the four (4) pins) - Resistance : Approx. 2 to 4 MΩ - Check the voltage when the power is on.

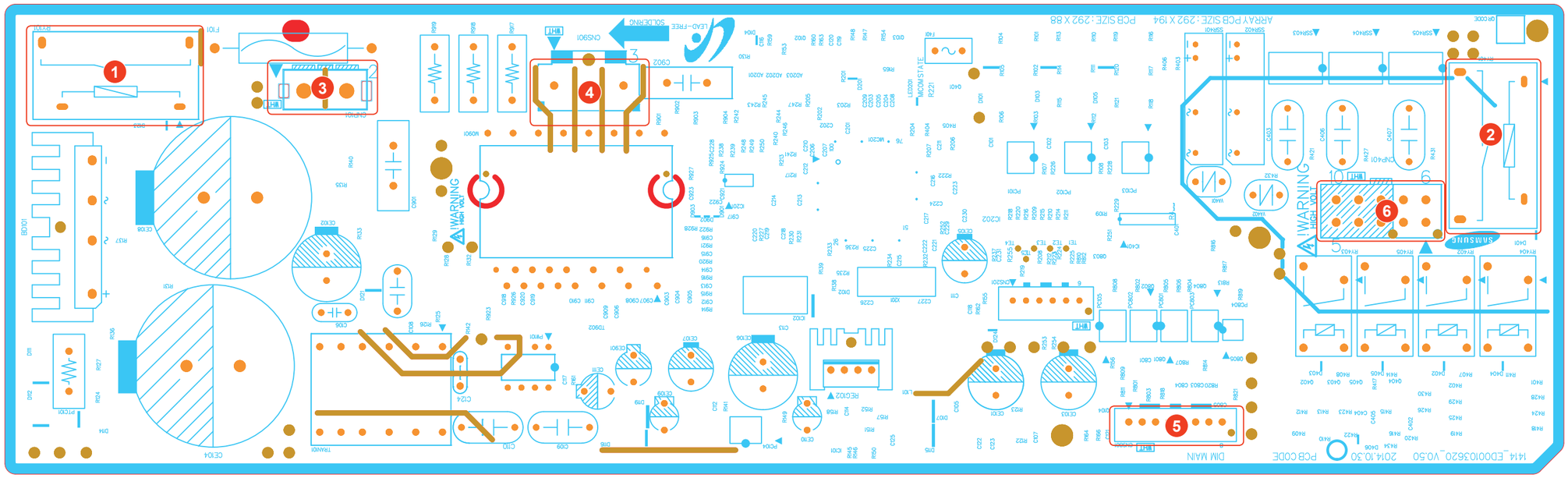
Check Type	Check Mode	Causes	Corrective Actions	Description of Photo
Water Supply Check	4C	• Water supply value fault • Main PCB fault • Freezing in the winter season	• If the water supply valve has a wire disconnected, replace it. • Check whether the water supply valve is clogged with foreign material and whether water is supplied continually. • Check whether no water is supplied because of freezing in the winter season. • If the PBA relay operates abnormally, replace the PBA.	  1. Check the resistance for the water supply valve. - Resistance: 0.9~1.1kΩ between the terminals of the water supply valve. 2. Check whether there is foreign material in the water supply valve filter. 3. If the water supply valve filter is clogged, clean filter.
Drain Check	5C	• Freezing in the winter season • Foreign materials in the drain pump • Poor physical connection • Drain pump fault • Main PCB fault	• If the drain pump revolutions are restrained due to freezing in the winter season, check the method to remove the freezing and remove as directed. • Check whether the revolutions of the drain pump motor are restrained by foreign material, and remove as directed. • Check the wire connectors on Main PCB and Drain Pump ASSY. The connector or wire may have poor physical connection. • Check the drain pump resistance.	 Check the drain pump resistance. - Drain : Resistance : 13.5Ω ~ 16.5Ω - Bubble : Resistance : 18.75Ω ~ 22.75Ω
Communication Check	AC	• The signals between the sub and main PBAs are not sensed. • Incorrect wire connections between the sub and main PBAs.	• Check the wire connections and terminal contacts between the sub and main PBAs. • Check for disconnected wires. • Check whether the sub PBA is short-circuited because of moisture. • If the main PBA's communication circuit is faulty, replace it.	-

Check Type	Check Mode	Causes	Corrective Actions	Description of Photo
Door Check	DC DC1 DC2	• Door switch fault • Main PCB fault	• If a DC error occurs, check whether it occurs during the Boil cycle. - If it is detected that the door is open, close the door. • The 220V is directly connected to the door. Check and repair the power wire connections and insulation state. • Check the door switch. Replace if faulty. • Check the main PBA door sensing circuit. Replace if faulty. • Check the drain Pump wire connection.	 ► TYPE 2 The resistance of Nos. 3 and 5 of the DOOR LOCK SWITCH must be approximately 1000Ω±50%.  ► TYPE 2 The resistance of No. 2 and 3 of the DOOR LOCK SWITCH must be approximately 155~200Ω (In state of pushing slider)
Heater Check	HC,HC1	• Disconnection wire • Heater falut • Wash-thermistor fault	• Check for connection between wire and heater. • If wash heater is faulty, replace it. - Refer the TYPE 1 • If it is not problem in heater, replace wash-thermistor - Refer the TYPE 2	 [FRONT] ► TYPE 1 Check the resistance between A and B. It should be 16.05±0.65Ω.  [BACK] ► TYPE 2 If TYPE 1 is OK, Change a wash-thermistor at back of Tub.

Check Type	Check Mode	Causes	Corrective Actions	Description of Photo
Water Leakage Check	LC LC1	• Check for any leakage. • Foreign material in the DV case • Fault of a hose or incorrect part engagement in the product	• Check for any leakage on the base, Hose, Valve and Tub connections and take any required action. • During natural draining, this check occurs because the drain bellows are clogged with foreign material. Remove the foreign material. • Check the drain motor operation. Replace if it does not operate normally.	  ► DRAIN PUMP TYPE (Automatic Drainage) Check whether there is any foreign material in the bellows. Check for any foreign material, such as underwear wires or coins.
				 ► PUMP TYPE Check for any leakage on the base, Hose, Valve and Tub connections.
Overflow Check	OC	• Water level sensor fault • Freezing in the winter season	• If the water level sensor has a functional check, replace it. • Check the hose. This check occurs if it is torn or has a hole. • This check occurs if water is frozen in the winter season. Use hair dryer to defrost hose. Consider relocating the unit to warmer location.	 Check the hose connected to the water level sensor. Check whether the hose is folded, cut, or damaged.
Temperature Sensor Check	TC1 TC2 TC3 TC4	• Washing temperature sensor fault • Dry temperature sensor fault • Faulty and incorrect connections of the dry condensing sensor • Main PCB fault • Freezing in the winter season • IPM temperature is abnormally high.	• Check the connections for the washing heater temperature sensor connector. • If the washing heater temperature sensor has a functional error, replace it. - A TC1 check occurs. • Check the connections for the dry heater temperature sensor connector. • If the dry heater temperature sensor has a functional check, replace it. - A TC2 check occurs.	-

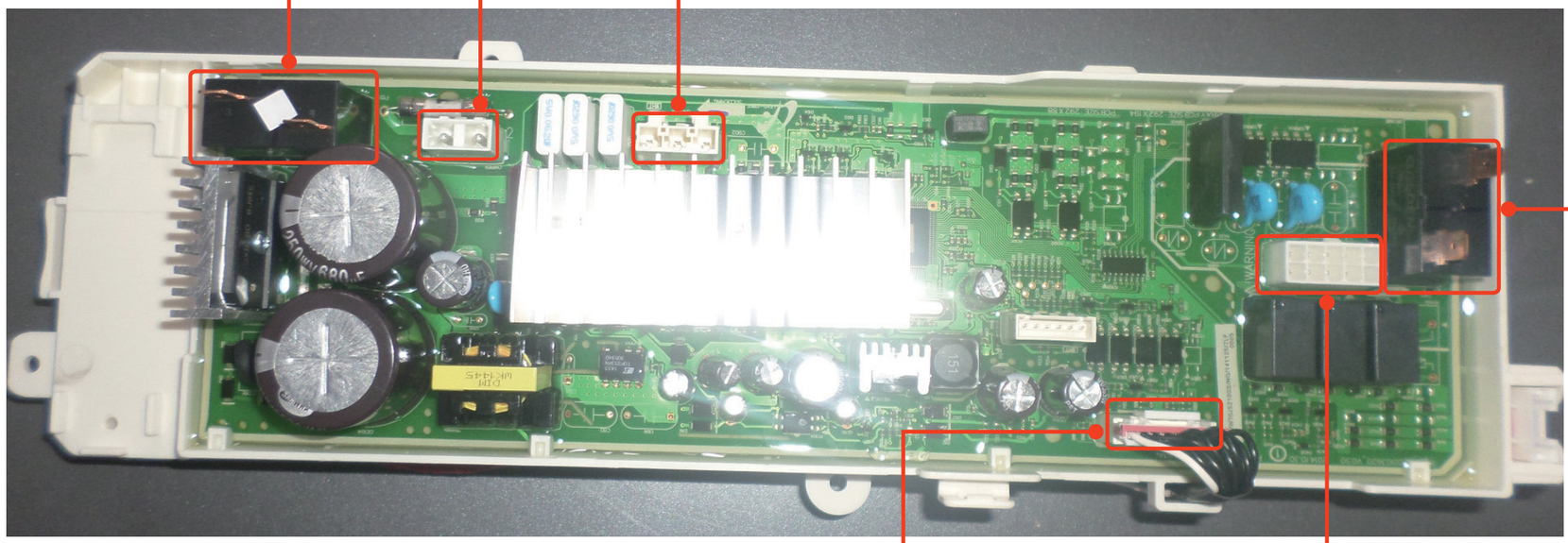
Check Type	Check Mode	Causes	Corrective Actions	Description of Photo	
Switch Check (Main Relay)	BC2	• The Power button is continually pressed. • A button other than the Power button is continually pressed. • Main PCB relay fault	• Check whether either the Power switch or a tact switch is continually pressed. • Check whether the service PBA holding screws are fastened too much. If they are fastened too much, loosen them a little. • If the main PBA switching IC on/off check has occurred, replace the main PBA.		Check the contact between the control panel buttons and their corresponding tact switch. - There must be a gap between a control panel button and its corresponding micro switch. ♣Otherwise, an error occurs after approx. 30 seconds has passed.
Power Check	UC (9C1/9C2)	• Power condition fault. • An check occurs when under or over voltage is supplied. • plug receptacle is used • Main PBA fault (sometimes)	• Check the consumer's power conditions. : Make sure to check the operating voltage. • Connect a tester to the internal power terminals during the Boil or Dry operations and observe the washing machine's operation carefully. : Check the voltages. (A check occurs when under or over voltage is supplied.) : Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V • Main PBA fault (sometimes)	-	
Unbalance Check	UB	• Motor hall sensor fault • Caused by the laundry contents	• Check the type of laundry. Check whether they may cause an unbalanced situat ion. - Educate the consumer in this case is to press pause reposition the load or remove a few items. Press start to continue and complete the wash cycle.	-	

5-1. MAIN PCB (DIM)



Location	Part No.	Function	Description
1	RY101	Main Relay/ Power Supply Terminal	Receive 220 ACV to operate the PBA
2	RY401	Heater Realy	For driving the heater power
3	CNP101	Power Supply Terminal	Receive 220 ACV to operate the PBA
4	CNS901	Motor Power Supply Terminal	For Driving the Motor
5	CNS801	Water Level and Thermal Sensor Connection Terminal	Detect the water supply / Communicate with the Sub PBA
6	CNP401	Valve and pump driver	Driver water valve and pump motor

5-2. CIRCUIT DIAGRAMS OF MAIN PARTS FOR MAIN PCB (DIM)



► RY101
1. POWER N (AC1)
2. AC_COMMON

► CNP101
1. POWER L1 (AC1)
2. AC_COMMON

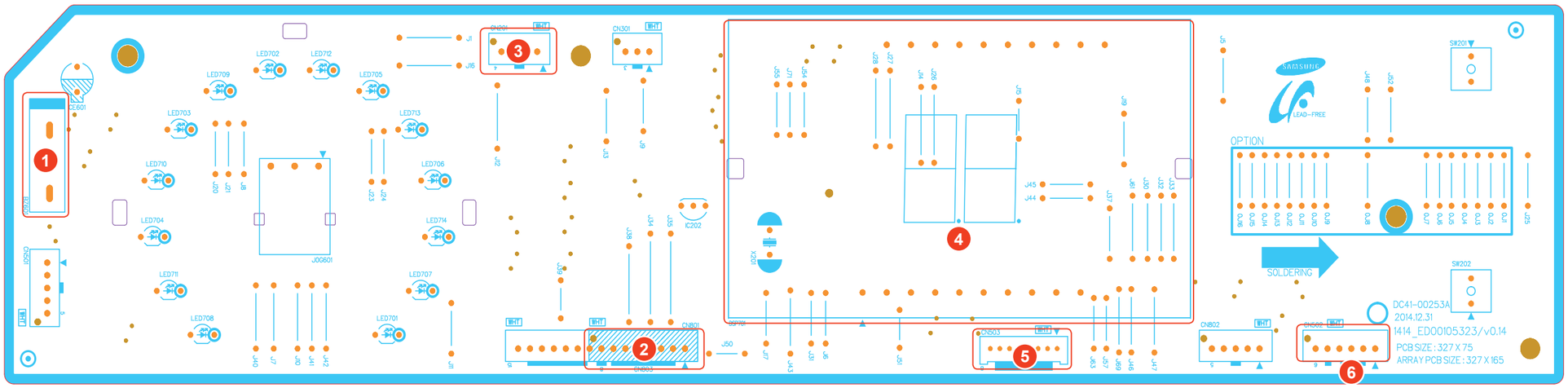
► CNS901
1. MOTOR U
2. MOTOR V
3. MOTOR W

► RY401
1. WASH HEATER
2. AC_COMMON

► CNS801	
1. TXD TO SUB	5. GND
2. RXD FROM SUB	6. 12V
3. RESET TO SUB	7. WATER LEVEL FROM MAIN
4. 5V	8. STANDBY POWER FROM SUB

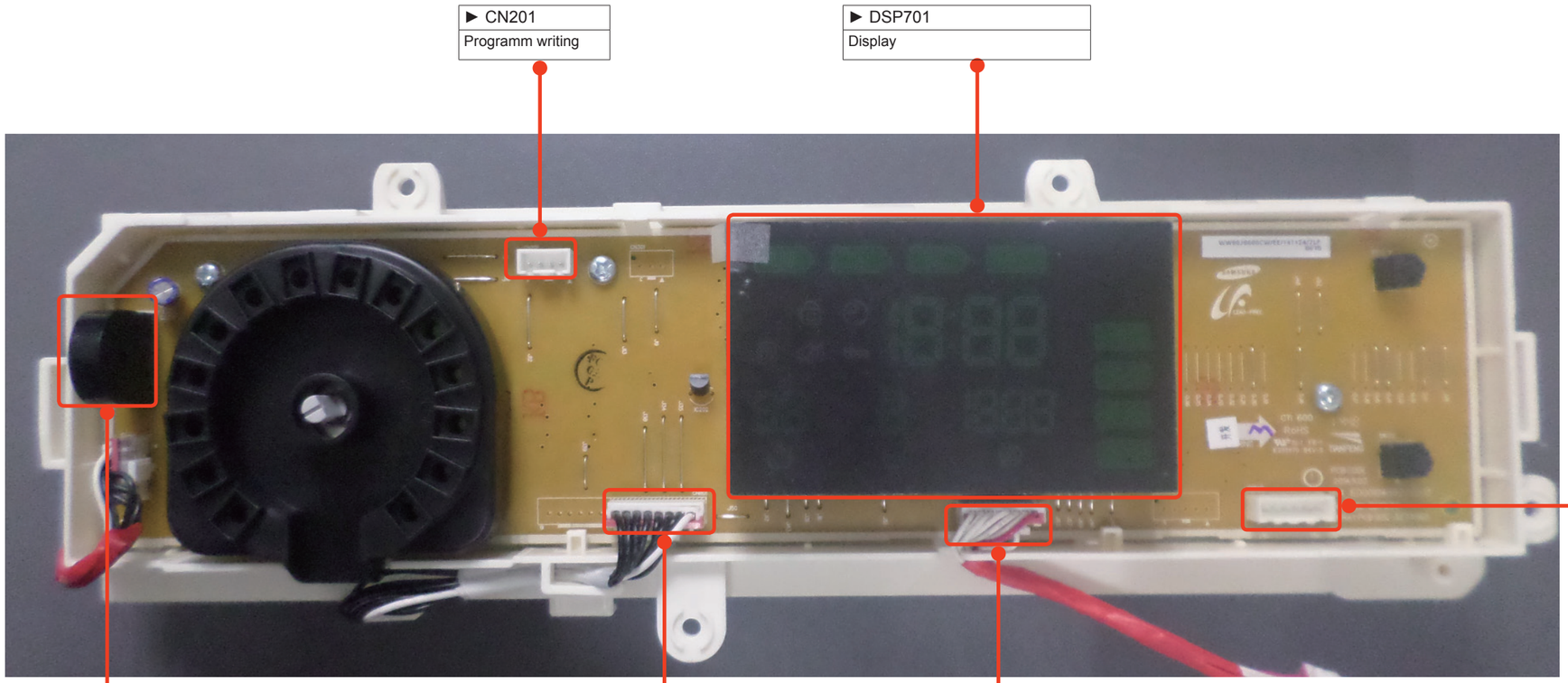
► CNP401	
1. NC	6. NC
2. OPTION_SSR	7. DOOR_UNLOCK
3. DRAIN_PUMP	8. HOT_VAL
4. CIRCULATION_PUMP	9. COLD_VAL
5. DOOR_LOCK	10. PRE_VAL

5-3. SUB PCB



Location	Part No.	Function	Description
1	BZ601	Buzzer Circuit	Generates sound when the menu key and encoder-key are operated or when the menu is closed.
2	CN803	Main and Sub PCB Connection Port	Main and sub PBA communication.
3	CN201	Program Writing	Attach the connector for writing the program when an upgrade or change of the program is required.
4	DSP701	Display	Displays the remaining time for the selected cycle,Displays the menu and progress status.
5	CN503	Touch connector	connect to touch sensor
6	CN502	MEMS connector	connect to MEMS

5-4. DETAILED DESCRIPTIONS OF CONTACT TERMINALS FOR SUB PCB

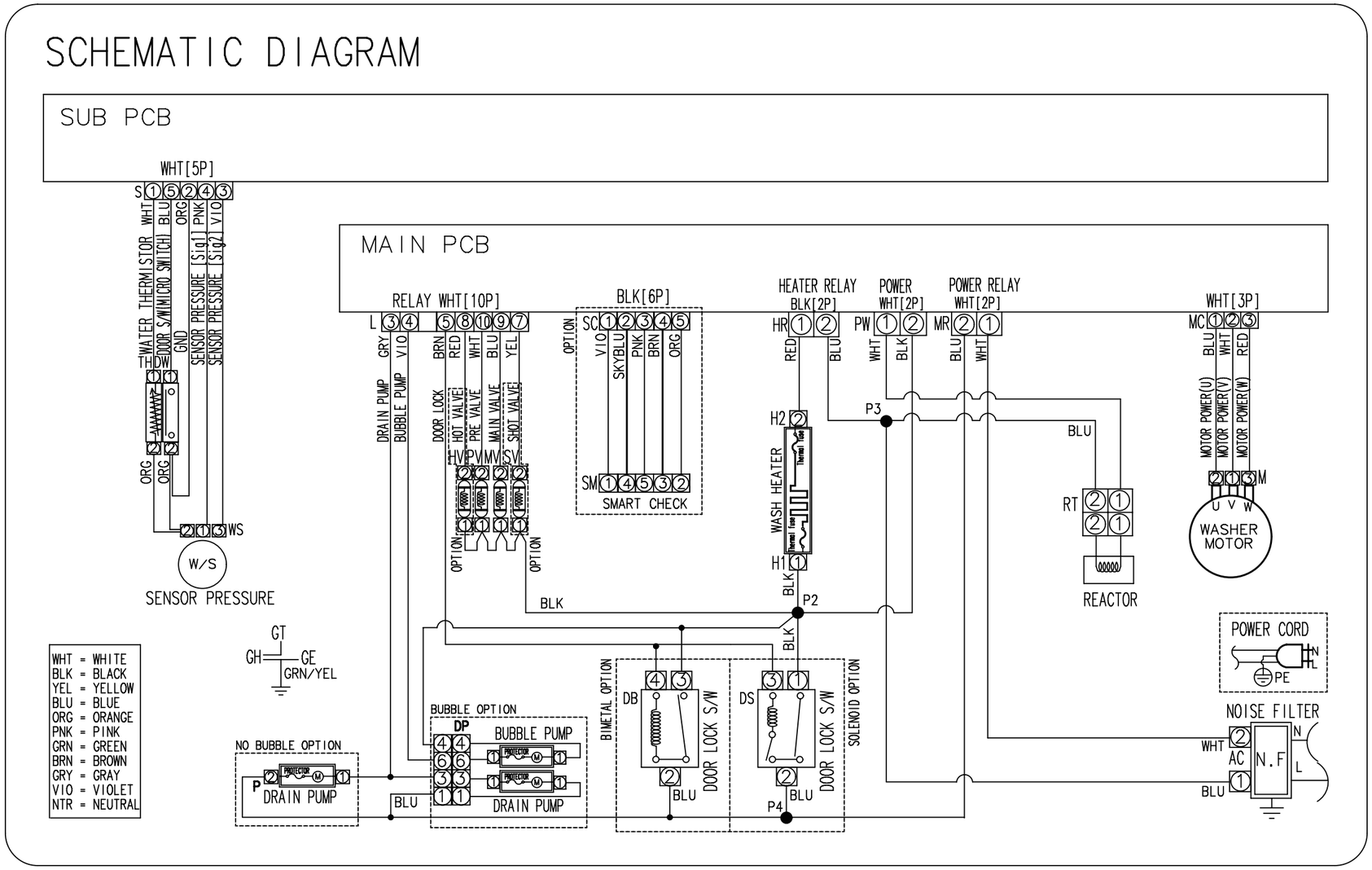


6. WIRING DIAGRAM

6-1. WIRING DIAGRAM (DIM)

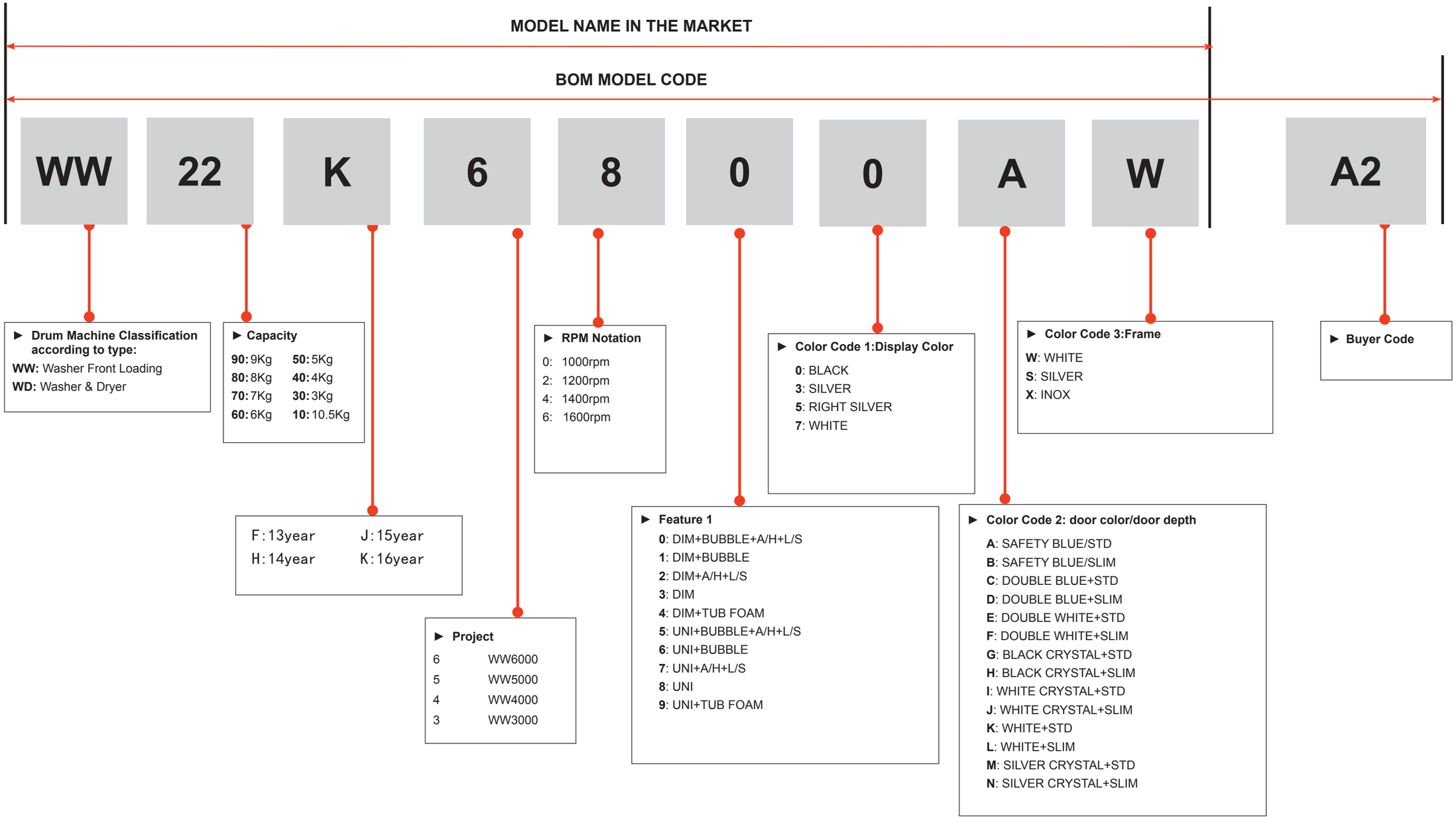
■ REFERENCE INFORMATION

BLK	BLACK
BLU	BLUE
GRN	GREEN
GRY	GRAY
NTR	NATURAL
ORG	ORANGE
PNK	PINK
RED	RED
SKYBLU	SKYBLUE
VIO	VIOLET
WHT	WHITE
YEL	YELLOW



7. REFERENCE

7-1. WW6800K PROJECT NAME



May. 21th 2015