SAMSUNG

WASHING MACHINE
DRUM TYPE

Basic Model : **WF45H6100AP/A2**
(WF6000H PROJECT)

Model Name : **WF45K6500AV / WF45K6500AW**
WF45K6200AZ / WF45K6200AW
(WF6500K)
WF45N6300AV
(WF6300N)

Model Code : **WF45K6500AV/A2**
WF45K6500AW/A2
WF45K6200AZ/A2
WF45K6200AW/A2
(WF6500K)
WF45N6300AV/A5
(WF6300N)

SERVICE Manual

WASHING MACHINE (DRUM)

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2. Features and Specifications
3. Disassembly and Reassembly
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Refer to the service manual in the GSPN (see the rear cover) for the more information.

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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.**

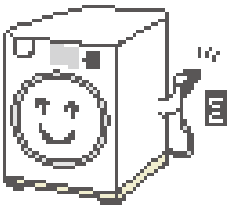
WARNING BEFORE SERVICING

- (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.

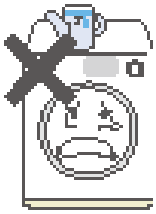


- Do not place or use gasoline, thinners, alcohol, or other flammable or explosive substances near the washing machine.
  √ There is a risk of explosion and fire caused from electric sparks.

⚠ CAUTION BEFORE SERVICING

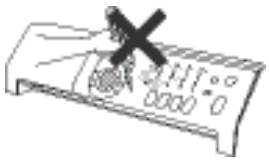
- Do not sprinkle water onto the washing machine directly when cleaning it.
  √ This may result in electric shock or fire, and may shorten the product lifetime.

- 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 parts damaging.

⚠ 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 electrical hazard.

- When connecting wires, make sure to connect them using the relevant connectors and check that they are completely properly.
  √ 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.

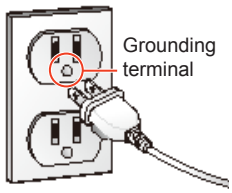
⚠ WARNING AFTER SERVICING

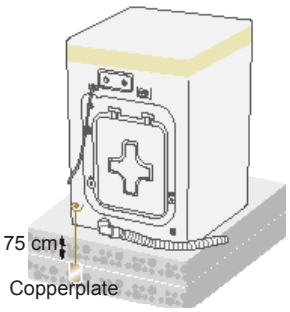
- Check the wiring.
  √ Ensure that no wire touches a rotating part or a sharpened part of the electrical harness.

- Check for any water leakage.
  √ Perform a test run for the washing machine 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.



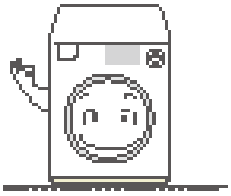


⚠ CAUTION AFTER SERVICING

- Check the assembled status of the parts.
  √ Now is a good time to inspect your work. Review all connections and wiring, including mounting 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 when measured with a 500V DC Megger.

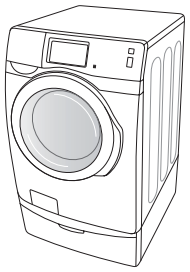
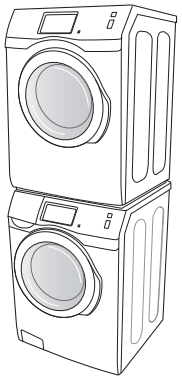
- Check whether the washing machine is level the floor with respect to the original position of the washing machine prior to service.
  By doing this now will reduce for the need of customer dissatisfaction and redo call.
  √ Vibrations can shorten the lifetime of the product.



2. FEATURES AND SPECIFICATIONS

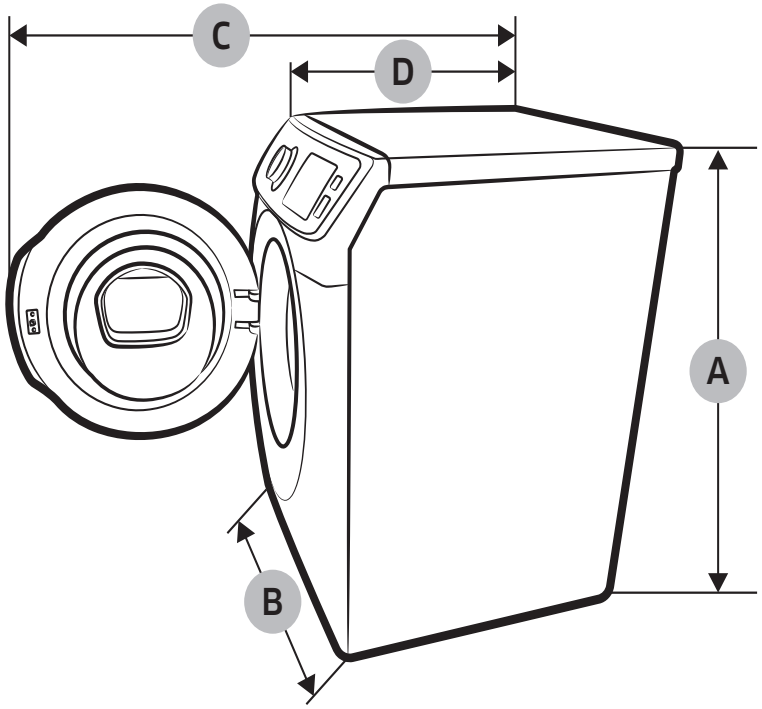
2-1. FEATURES

Features	Description
The Largest Capacity	• Samsung's extra-large capacity laundry machine can wash a full set of your Bedding PLUS, a kingsize comforter, or up to 31 bath towels in a single load. Since you don't have to do as many loads, you save time, money, water and energy.
Smart Control	• Samsung's innovative Smart Control technology enables you to control your washer through personal technologies such as smart phones. You don't have to be on standby until the cycle ends. Smart Control allows you to monitor the washing process and let you know when the cycle is complete.
Smart Care	• Samsung's Smart Care, an automatic error-monitoring system, detects and diagnoses problems at an early stage and provides a quick and easy solution through LCD navigation. With the innovative Smart Control technology, you can also be alerted when the problem occurs via your smart phones.
PowerFoam™	• Samsung's effective PowerForm delivers improved cleanliness with advanced fabric care. • PowerFoam allows detergent to disperse evenly and penetrate fabrics faster and deeper.
SpeedSpray	• Samsung's new SpeedSpray technology saves you up to 25%* more time when doing laundry by shortening wash times while still keeping all segments of the washing process and getting your clothes clean. * Based on 8 pounds loads, Normal cycle, on previous and existing 4.3 cu.ft. Samsung front loading washers released until 2011 without SpeedSpray.
VRTplus™ (Vibration Reduction Technology)	• This Samsung washer minimizies noise and vibration with dual 3D vibration sensors and smart control technology, ensuring quiet operation.
Deep Steam	• The Deep Steam feature boosts cleaning performance and loosens grime and dirt, thus providing superior cleaning results.
Self Clean+ (Tub Cleaning cycle)	• Clean your drum with one button! This Pure Cycle is specially designed to remove detergent residue and dirt buildup in the tub, diaphragm, and on the door glass without the need for special chemical detergents.
Stylish Design	• The stylish design of this washer blends well with your environment.
Premium & Ergonomic Design	• A premium design provides an ergonomic and sophisticated look to complement any modern interior. Its natural curves incorporate an elegant chrome line and a Big Door for easier access. It also incorporates a swirl drum pattern and a control panel with a clear ice blue LED display.
DD Motor	• The power to handle anything! Our direct-drive inverter motor delivers power right to the washer tub from a variable speed, reversible motor. A beltless direct-drive motor generates a higher spin speed of 1,300 rpm for more effective, quiet operation. The washer also has fewer moving parts, meaning fewer repairs.

Features	Description
Pedestal with Storage Drawers (Model No : WE357*)	• An optional 15” pedestal is available to raise the washer for easier loading and unloading. It also offers a built-in storage drawer that can hold a 100 oz. bottle of detergent. 
Stacking (Model No : SK-7A/XAA)	• Samsung washers and dryers can be stacked to maximize usable space. An optional stacking kit is available for purchase from your Samsung retailer. 

2-2. SPECIFICATIONS

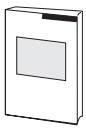
Model		WF45K6500A* WF45K6200A* WF45N6300A*	
Wash type		FRONT LOADING WASHER	
Dimension (Inches / mm)	A: High-Overall	38.7”(984mm)	
	B: Width	27”(686mm)	
	C: Depth with door open 90º	53.1”(1,350mm)	
	D: Depth	34’’(864mm)	
Water pressure		20 ~ 116psi(137~800kpa)	
Weight		WF45K6500A*: 103kg (227lb) WF45K6200A*: 102kg (225lb)	
Heater Rating		900 W	
Power consumption	Washing	120 V	200 W
	Washing and Heating	120 V	1,150 W
	Spin	120 V	550 W
	Drain	120 V	80/30 W
Spin revolution	rpm	1,300 rpm	



2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

Project		WF6500K		WF6300N	WF6000HA BEST
Model Name		WF45K6500AV WF45K6500AW	WF45K6200AZ WF45K6200AW	WF45N6300AV	WF45H6300AP
Image					
Capacity (cu.ft. IEC)		4.5 cu.ft	4.5 cu.ft	4.5 cu.ft	4.5 cu.ft
Main Spec	Motor type	DD Motor	DD Motor	DD Motor	DD Motor
	MAX RPM	1300	1300	1300	1300
	VRT	Yes (VRT+)	Yes (VRT+)	Yes (VRT+)	Yes (VRT+)
	Heater (900W)	Yes	Yes	Yes	Yes
	Diamond Drum	Yes	Yes	Yes	swirl
	Washing Cycle #	12	12	12	13
	Delay Wash	24 hrs	24 hrs	24 hrs	24 hrs
	Tilted Drum	5°	5°	5°	5°
	Sound pressure	MAX 61.0 dBA↓	MAX 61.0 dBA↓	MAX 61.0 dBA↓	MAX 61.0 dBA↓
Target Performance	MEF	3.4↑	3.4↑	3.4↑	3.4↑
	WCF	2.75↓	2.75↓	2.75↓	2.75↓
	kWh/year	95 kWh/year↓	95 kWh/year↓	95 kWh/year↓	95 kWh/year↓
Design	Control Display	G LED	G LED	G LED	G LED
	Frame Color	Black Grey	Blue Saphire	Black Caviar	Stratus Grey
	Dimension (W*D*H)	27”x34”x38.7”	27”x34”x38.7”	27”x34”x38.7”	27”x34”x38.7”

2-4. OPTIONS SPECIFICATIONS

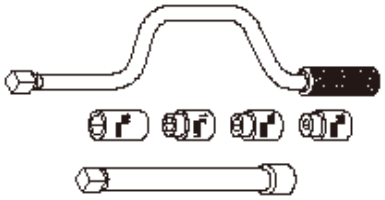
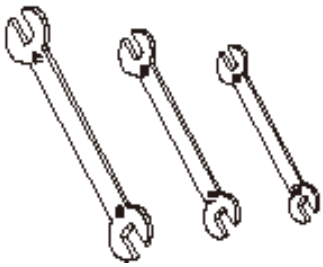
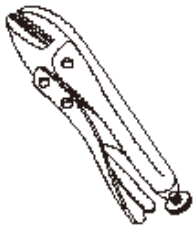
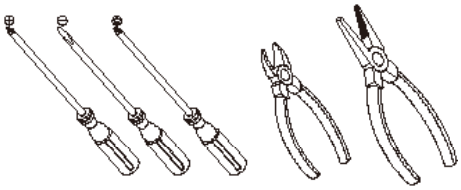
Item		Code	QTY	Remarks
	MANUAL USER	USER : DC68-03665A TECH : DC68-03672A	1	Default
	CAP-FIXER	DC67-00307A	6	Default
	HOSE-HANGER	DC62-10278A	1	Default

Note

- Customer can purchase additional water supply and drain hoses from a service center.
- The spanner(wrench), water supply and drain hoses are not supplied. Both the water supply and drain hoses are supplied during the installation.

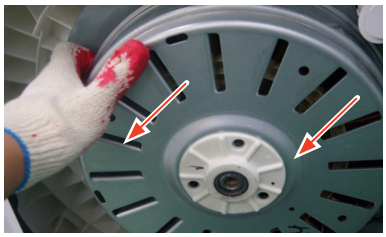
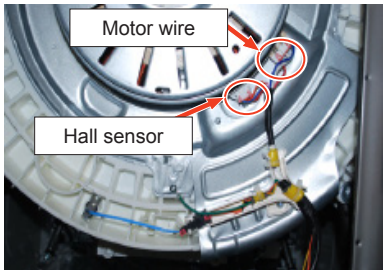
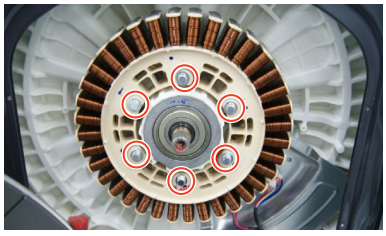
3. DISASSEMBLY AND REASSEMBLY

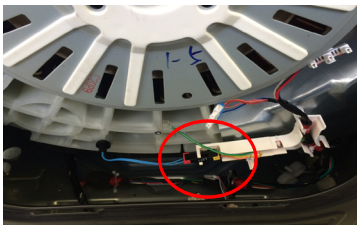
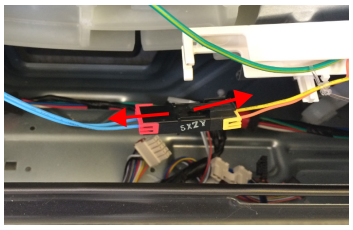
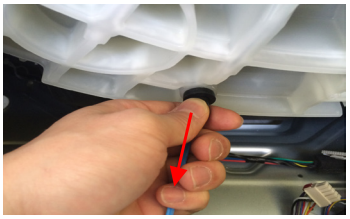
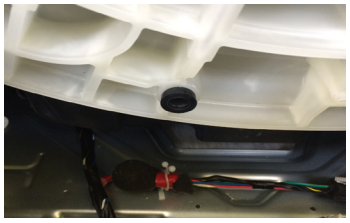
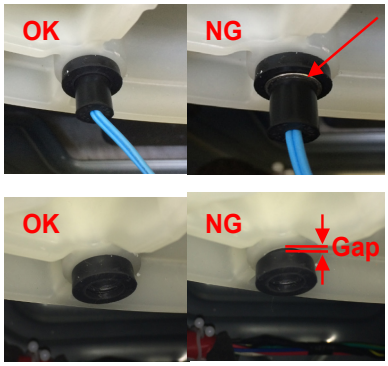
3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

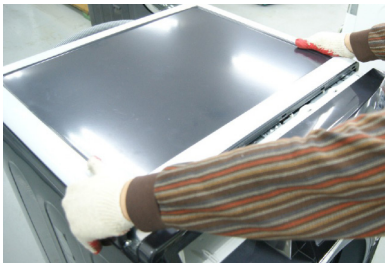
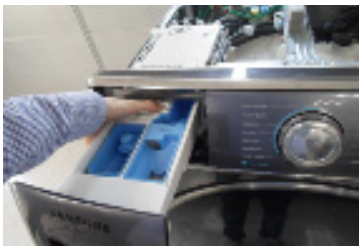
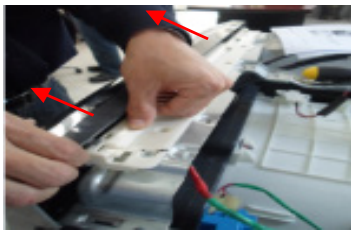
Tool		Type	Remarks
	Socket Wrench with 6” Extension	10mm 13mm 19mm	Heater (1) Motor (1), Balance (5), 2 holes of each left and right of the shock absorber 1 Pulley hole
	Open End wrench	10mm 13mm 19mm	Replaceable for the box driver. Since the bolt runs idle when the box driver is used, use the box driver 17mm.
	Vice pliers		Tool to protect the idle and abrasion of the bolt for the box driver.
	Others (Driver, Nipper, Long nose)		General tools for the after service.

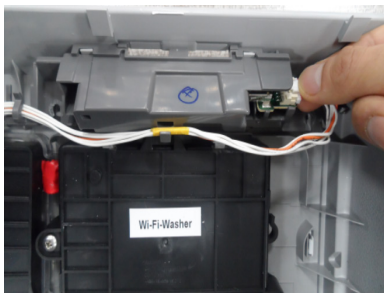
3-2. STANDARD DISASSEMBLY DRAWINGS

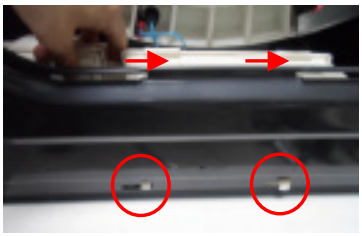
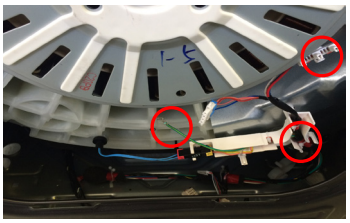
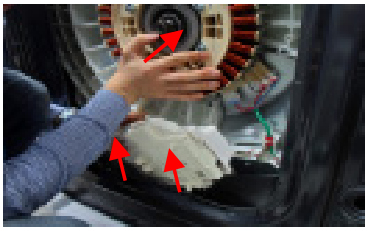
► This is a standard disassembly diagram and may differ from the actual product.
Use this material as a reference when disassembling and reassembling the product.

Part	Figure	Description
Disassembling and Repairing the Rear Motor		1. Remove the 2 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 M19 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 a problem with the motor.
		3. Remove the M19 nut and washer and then separate the Rotor. Since removing the rotor requires a lot of strength due to the magnetic force of the Rotor and it may come off suddenly, your hand or arm may be injured by the edge of the Stator or Frame. Therefore take precaution when separating it. You can separate the connector by pressing
		4. Separate the Motor Wire and Hall Sensor while pressing the navel of the Housing. Take precaution when you do this because the Hall Sensor part is easily shocked.
		5. Separate the 6 M10 screws. → Separate the Assy Bracket Motor → Separate the Stator. When removing the last of the 6 screws, hold the Stator as it may fall when the screws are removed.
	* **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. 3. Check if the Hall Sensor 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 Assy Thermistor, push to the end. If assembling like NG picture, water leakage possibility is high. 2. When assembling and disassembling Assy Thermistor , rubber Packing should be checked. If the gap existed between rubber packing and tub-back, water leakage possibility is high.

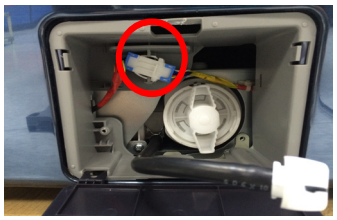
Part	Figure	Description
Separating the Cover_Top and Panel-Control (Check Sub-PCB)		1. Remove the 2 hexagon screws, which are at the back, fixing the COVER-TOP.
		2. Disassemble the COVER-TOP by sliding it backwards.
		3. Press the Separate button to separate the ASSY DRAWER.
		4. Pull the PANEL-CONTROL towards and then lift it upwards to separate.
		5. Carefully disconnect the two wiring connectors by hand.
		6. Disassemble the ASSY KNOB-ENKODER by pulling it upwards.
		7. Remove the all screws holding the PCB and release the hooks on both sides to remove the PCB for repair / replacement.

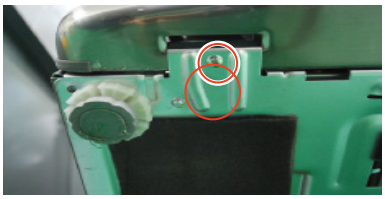
Part	Figure	Description
Separating the Panel-control and Housing Dongle		1. Separate Dongle from gender
		2. Separate Cover Dongle from Panel. (Push left direction and pull out right side.)
		3. Carefully disconnect wiring connector. (Dongle – gender)
		4. Remove the screws holding the Housing Dongle and separate from Panel Control.

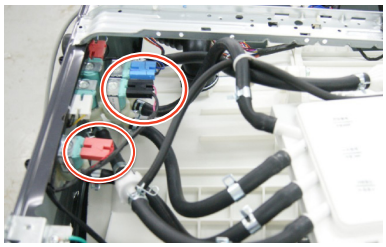
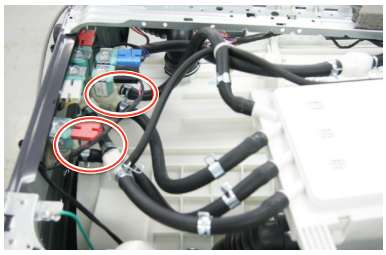
Part	Figure	Description
Separating the Main PCB		1. Remove the 2 screws holding the ASSY PCB-MAIN at the back of the washing machine.
		2. Separate the 2 Hooks by pushing it rightwards.
		3. Remove the 2 screw and 2 Connectors for separating Guide Wire-T
		4. Push the TUB upside to separate ASSY PCB-MAIN. and separate the ASSY PCB-MAIN lifting it up.
		5. Separate the 4 Hooks.
		6. Disconnect All Connectors on main PBA. Lift up Main PBA, Change SVC Part. After SVC, Certainly check the all Hooks on COVER-PCB(M) Otherwise COVER-PCB(M) will be disassembled during washing machine running.

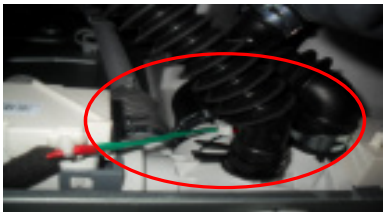
Part	Figure	Description
Add Door Disassemble		1. Open the Add Door, and Remove inlays.
		2. Remove 4 Screws.
		3. Use (-) driver, separate the cover door.
		4. Remove 2 screws, and then separate the latch.

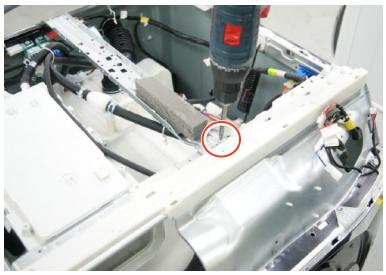
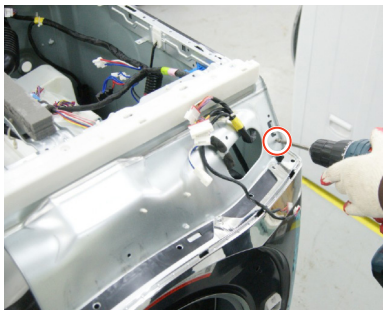
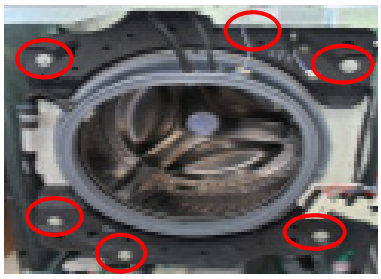
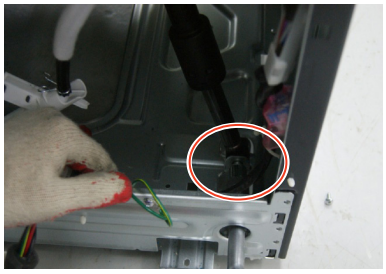
Part	Figure	Description
Add Door Disassemble		5. Remove 5 screws and separate the support hinge.
		6. Remove 1 screw, and separate Add Door and Damper.

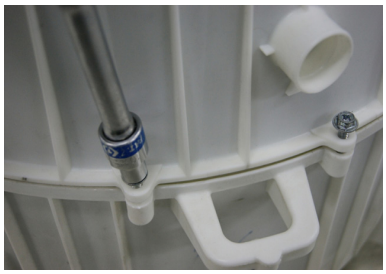
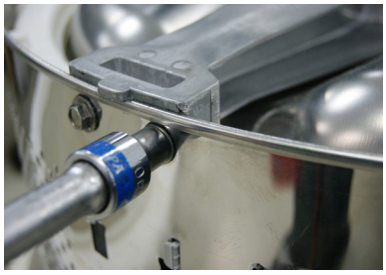
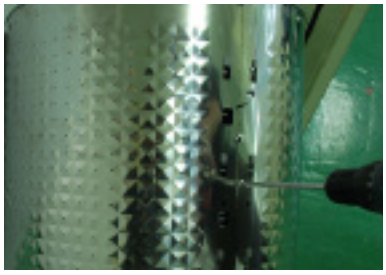
Part	Figure	Description
Disassembling and Reassembling the Door Part		1. Remove the 2 hexagonal screw holding the hinge door.
		2. Putting and pressing hard a flat-head screwdriver or into the furrow between COVER-FILTER and FRAME-FRONT and then pull it towards to open the COVER-FILTER.
		3. Remove the screw holding the cover filter.
		5. Separate the Connector of assy wire harness.

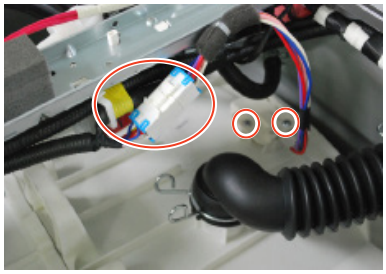
Part	Figure	Description
Disassembling the Front Cover/Frame Front (Check the Door Lock S/W)		1. Pull the DIAPHRAGM upside, and finish disassembling along the circle.
		2. Remove the 2 screws to separate the DOOR LOCK S/W.
		3. Remove the 5 screws at the top of FRAME-FRONT.
		4. Push the lever and pull it towards to open the COVER-FILTER.
		5. Separate the remaining WATER REMOVAL HOSE (BLUE) from the hook.
		6. Remove the 2 screw down under Frame Front.
		7. Press the UPPER-PLATE slightly with the screwdriver to separate the FRAME-FRONT.

Part	Figure	Description
Disassembling and Repairing the Water Supply Valve		1. Remove the Top Assy-Plate. 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 the SENSOR-PRESSURE. 2. Adjust the plastic clip(of pressure sensor) between two nose of plier, then grip and pull the plastic clip with caution. (Use the long nose plier to push the hook).
		3. Remove the hose from the SENSOR-PRESSURE.
Disassembling the inside Detergent Box		• Hold the Clamp of the Detergent Box and disassemble the Hose-Drawer-Tub.

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 fixing GUIDE-WIRE, 6 screws fixing FRAME-PLATE(U).
		2. Remove the 6 bolts fixing WEIGHT BALANCER and then pull it towards with caution.
		3. Remove the 4 bolts fixing DAMPER to take ASSY TUB out. 4. Remove all wire and hose connected the ASSY-TUB.
		5. Open the cap of SPRING-HANGER to take ASSY-TUB out.
		6. Lift the ASSY-TUB with two people carefully with holding SPRING-HANGER.

Part	Figure	Description
Disassembling the Tub		7. Remove the M10 bolt 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 M10 bolts from the upper ASSY DRUM, disassemble the ASSY FLANGE SHAFT.
		2. Remove 12 screws from the outer sides and then remove the two upper and lower BALL BALANCERS.
		3. Remove 3 screws from the outer sides and then remove the 3 DRUM-LIFTERS.
	- In order to disassemble the drum lifter in the assembly condition, pierce a hole with the drill. - Remove a screw from the outer sides and then remove the DRUM-LIFTERS. - Block a hole with a silicon after replacing the drum lifter.	

<table>
<tr><th>Part</th><th>Figure</th><th>Description</th></tr>
<tr><td rowspan="3">Separating the Heater at the Bottom Front</td><td rowspan="2">  </td><td>1. Disassemble the Front-Frame.</td></tr>
<tr><td>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. Release the nut holding the Heater with an M10 tool and then separate the Heater.
Do not completely release the nut.
Pull the Heater forward after releasing the nut. If the Heater is damaged, it may cause a problem. Therefore unfasten the nut using spanner or wrench manually without using pincers or tweezers.
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.</td></tr>
<tr><td colspan="2">* 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).</td></tr>
<tr><td>Disassembling The MEMS Sesnor</td><td>  </td><td>1. Remove the 2 screws From MEMS Sensor.
2. Separate the wire Connecter.</td></tr>
</table>

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.**

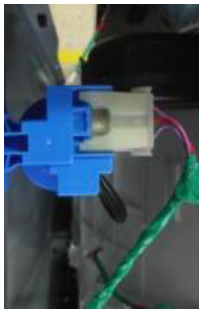
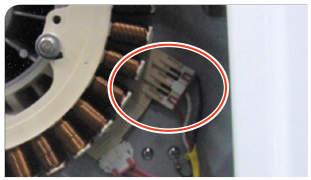
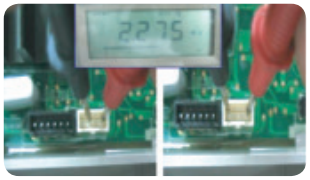
Error Type	For USA	Causes	Remarks
Water Level Sensor	1C	- The part of the hose where the water level sensor is located is damaged (punctured). - The hose is clogged with foreign material. - The hose is folded. - Too much lubricant has been applied to the insertion part of the air hose. - Hose engagement 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. (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.	
	4C2	- The cold and warm water supply hoses are wrongly engaged into each other. - 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) - 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.	
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 Boil operations and observe the washing machine's operation carefully. : Check the voltages. (An error 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)	

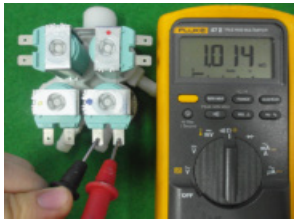
Error Type	For USA	Causes	Remarks
Communication Error	AC	- The signals between the sub and main PBAs are not sensed because of commuication error. - Check the connector connections between the sub and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove the sub PBA C/Panel and 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.	
	DC3	- Check the Add Door. - Power off and power the machine on after 2-3 minutes, and then try again.	
	DDC	- The Add Door is open. - Close the Add Door and press START/PAUSE to resume operation.	

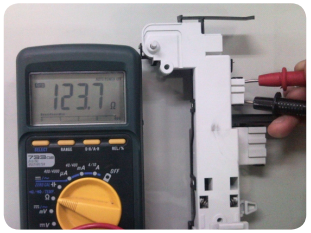
Error Type	For USA	Causes	Remarks
Heater Error	HC,HC1	- The washing heater is short-circuited or has a wire disconnected. - The washing heater in the tub has an error. (Contact error, temperature sensor fault) - If the water level sensor operates without water because water is frozen or for any other 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.
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 PBA Error Detected	8C1 8C2 8C	- Error detected in the Mems PBA or data error detected. Check the wire connections. Replace if necessary. 1. Check the wire connections. 2. Replace the Mems PBA.	

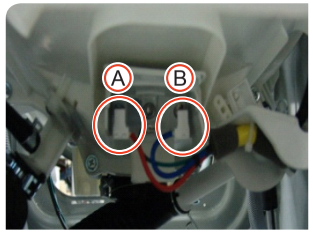
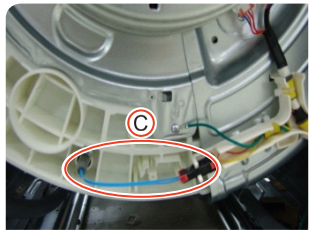
Error Type	For USA	Causes	Remarks
System Error	SF	- Micro Controller Operation Fail.	Replace Assy PCB.
Add Door	DDC	- A switch contact error because of a deformation of the add door switch. - When the add door is pulled by force. - This occurs in the Boil wash because the add door is pushed due to a pressure difference from internal temperature changes. - S/W contact fault because of LID TC “L” transformation.	• Add door open/close switch fault. • Main PCB fault.
	DC3	- The Add Door lock switch terminal is connected incorrectly. - The Add Door lock switch terminal is broken. - This occurs intermittently because of an electric wire leakage. - Main PCB fault.	• Add door lock switch fault. • Main PCB fault.

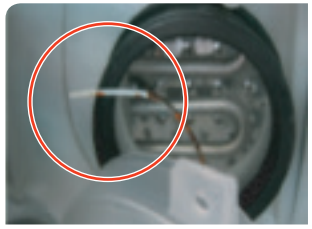
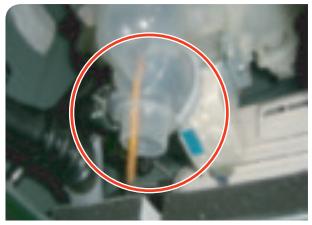
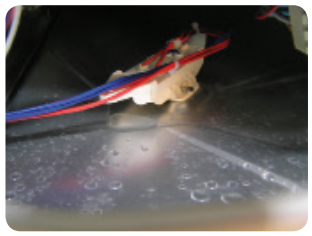
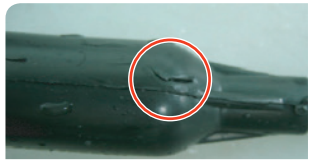
► These are common troubleshooting procedures for each drum-type washer error mode. For detailed information, refer to the general repair scripts.

Error Type	Error 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. • An error 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 error 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 Error and Hall Sensor Error	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.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Supply Error	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 Error	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 Error	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.	-

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Door Error	DC DC1	• Door switch fault • Main PCB fault	• If a dS error occurs, check whether it occurs during the Boil cycle. - If it is detected that the door is open, close the door. • The 120V 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.	 ► TYPE 1 Check the door switch Resistance. The resistance of 1 and 3 Pin Must be approximately 175Ω.
DOOR	DDC DC3	• Add door switch fault • Main PCB fault • Bending connector	• DDC means add door is opened Close the add door. • Check add door switch, Barrier, Lock module's movement is operate normally. check Open detection switch and Barrier 's Lock pillars coming down while pressing in operation normally. • Main PBA door detection circuit is fault or connector combination. • Replace or repair if faulty.	 Check resistance values normally displayed when you press the door switch button.  Check door lock motor resistance. (1-2 pin 46.57±15Ω) Lock stroke check normal detection on protrusion status. (3-4/3-5 pin check resistance value displayed normally).

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Heater Error	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.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Leakage Error	LC	• 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 error 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 Error	OC	• Water level sensor fault • Freezing in the winter season	• If the water level sensor has a functional error, replace it. • Check the hose. This error occurs if it is torn or has a hole. • This error 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.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Temperature Sensor Error	TC1	• 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	• Check the connections for the washing heater temperature sensor connector. • If the washing heater temperature sensor has a functional error, replace it. - A tE error occurs. • Check the connections for the dry heater temperature sensor connector. • If the dry heater temperature sensor has a functional error, replace it. • Check the connections for the duct condensing temperature sensor connector. • If the duct condensing temperature sensor has a functional error, replace it.	-
Unbalance Error	UV	• 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.	-
Assy Door	DDC	• Add door open/close switch fault. • Main PCB fault.	Check the Add Door. The Add Door is opened. Close the Add Door and press Start button. If the Add Door in not opened, need to check assembly of wire harness and PBA.	
	DC3	• Add door lock switch fault. • Main PCB fault.	Check the Add Door Lock. The Add Door is not locked. If Add Door Lock could not operate, change the Add Door Lock. If the Add Door Lock operates well, need to check assembly of wire harness and PBA.	

5. PCB DIAGRAM

5-1. MAIN PCB

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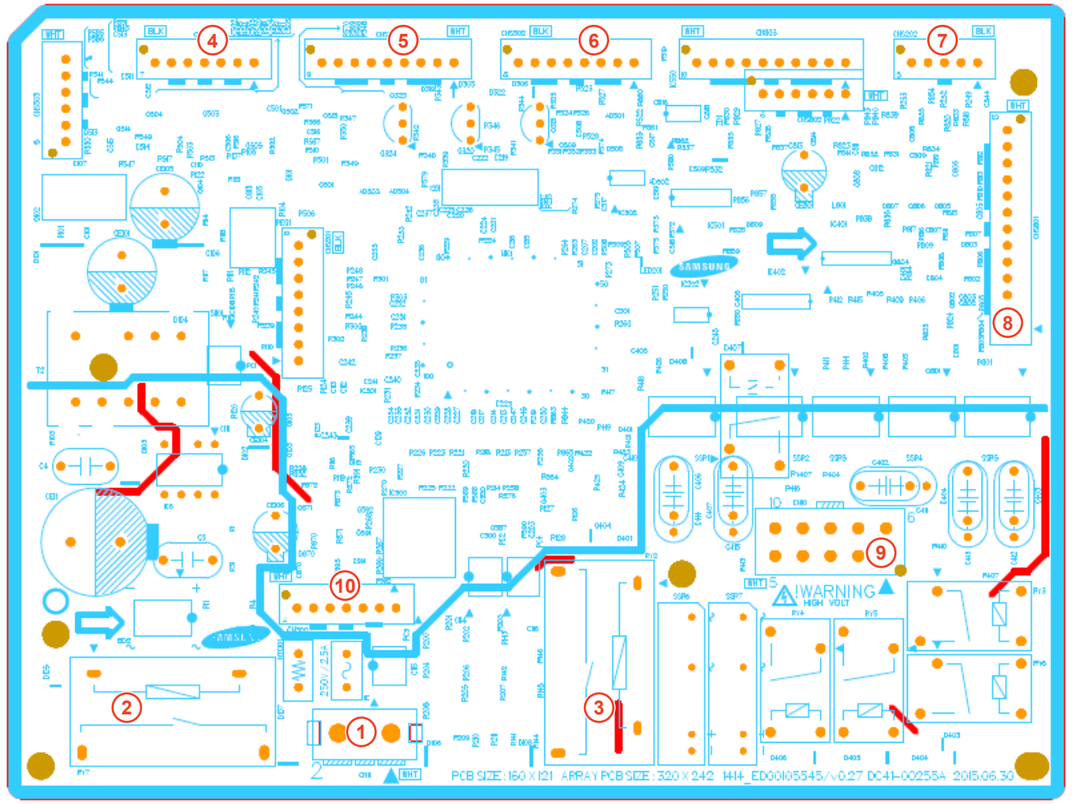


Location	Part No.	Function	Description
1	CN11	PBA Power Supply	Supply 120V of AC power.
2	RY7	Main Relay	Be Supplied PBA power when the Power button is pressed.
3	RY2	Washing Heater Relay	The switch for the Washing Heater power.
4	CNS501	MEMS Connection Port	Supply power to the MEMS PBA and provides a communications function.
5	CNS303	Smart dispenser Connection Port	Supply power to the dispenser PBA and provides a communications function.

Location	Part No.	Function	Description
6	CNS502	Sensor Connection Port	Supply power to the sensor and provides a communications function.
7	CNS202	Flash Writing Connection Port	Provides writing Flash memory.
8	CNS801	SUB PBA Connection Port	Supply power to the SUB PBA and provides a communications function.
9	CN10	Each Load Connection Port	The port to supply power for each electric device.
10	CN300	ADD window Connection Port	ADD window lock/unlock control and sensing.

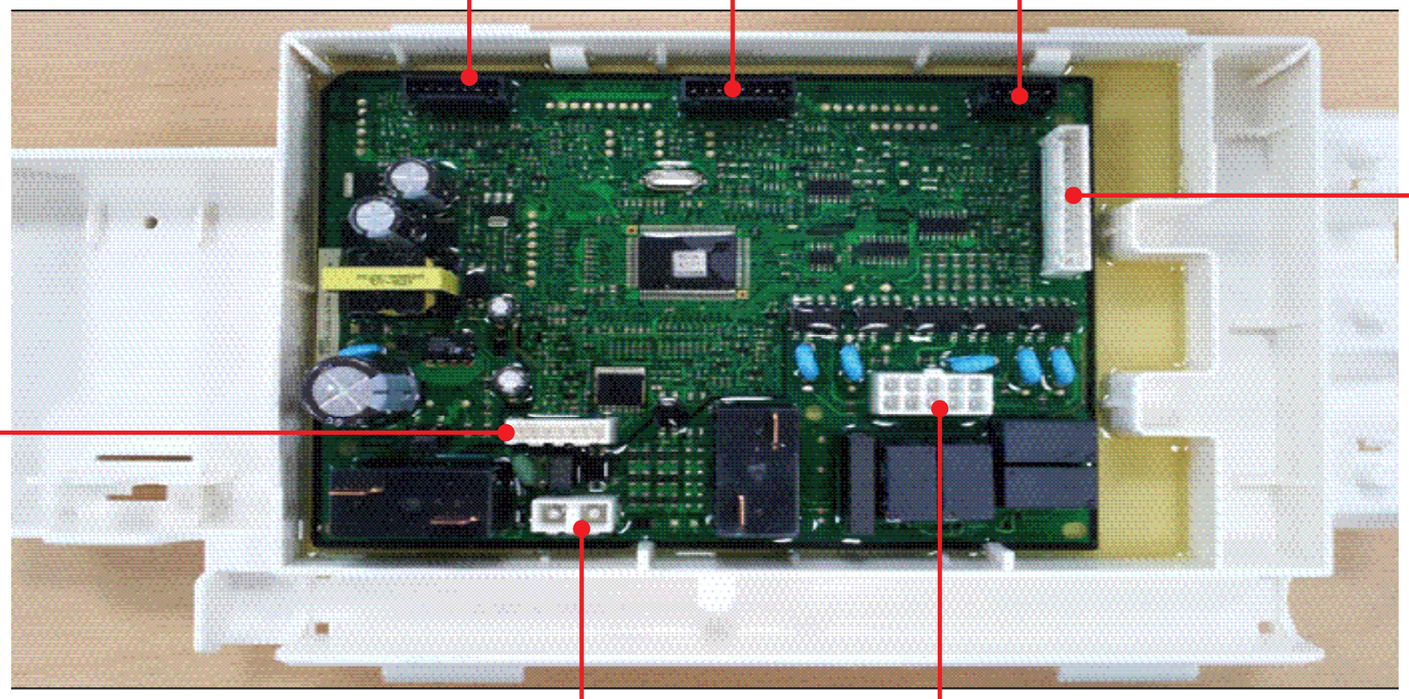
5-2. CIRCUIT DIAGRAMS OF MAIN PARTS FOR MAIN PCB

► This Document can not be used without Samsung's authorization.

► **CNS501**
1. 3.3V
2. CS1
3. CS2
4. SDO
5. SPI
6. SPC
7. GND

► **CNS502**
1. Ground
2. Door SW signal
3. Leakage signal
4. DRY_AIR_TEMP signal
5. DRY_CON_TEMP signal
6. Water TEMP signal
7. Water Level OUT
8. Water Level IN

► **CNS202**
1. 5V
2. RX_FROM_TEST
3. TX_TO_TEST
4. Ground
5. BOOT



► **CNS801**
1. SUB Communications signal
2. SUB Communications signal
3. SUB Reset signal
4. 5V
5. Ground
6. 12V
7. Empty pin
8. Power SW signal
9. SUB_Water Level signal
10. 5V
11. Inverter Communications signal
12. Inverter Communications signal
13. Ground

► **CN300**
1. Lock/unlock contro
2. Lock/unlock contro
3. GND
4. Lock/unlock sensing
5. Lock/unlock sensing
6. Open/close sensing
7. 12V on off

► **CN11**
1. Door Lock/Unlock
2. L line

► **CN10**

1. Drain pump	6. Cold_valve
2. Circulation pump	7. Hot_Valve
3. Door_unlock	8. Pre_Valve
4. Door_lock	9. Dry_Valve
5. Thermo_Actuator	10. Water_Shot

PIN Location				
10	9	8	7	6
5	4	3	2	1

5-3 INVERTER PCB

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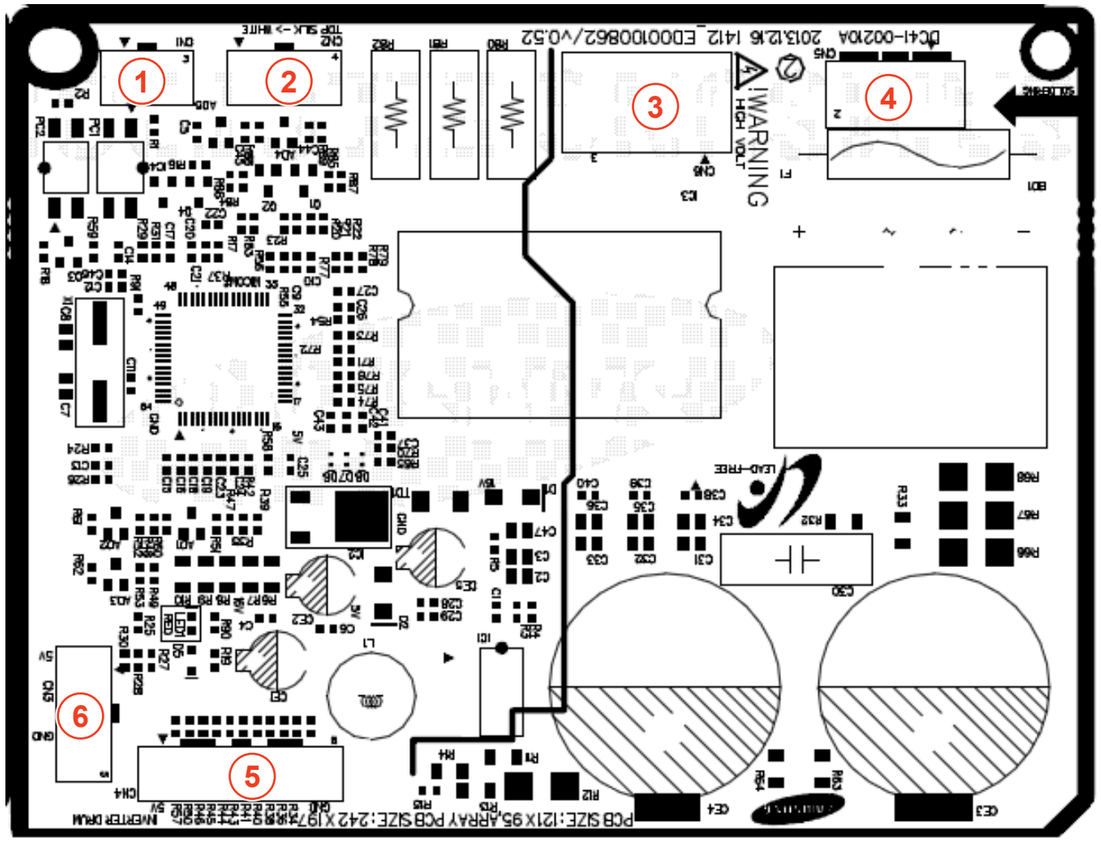

Location	Part No.	Function	Description
1	CN1	Communication	Communication with MAIN
2	CN2	Hall Sensor	Sensing Hall signal
3	CN6	Motor Output	MOTOR 3-Phase Output
4	CN5	AC Power Source	Supply AC Power
5	CN4	JTAG Connector	Debugging connector (Deleted in massproduction)
6	CN3	Flash Writing Port	Writing Flash memory

5.4. CIRCUIT DIAGRAMS OF MAIN PARTS FOR INVERTER PCB

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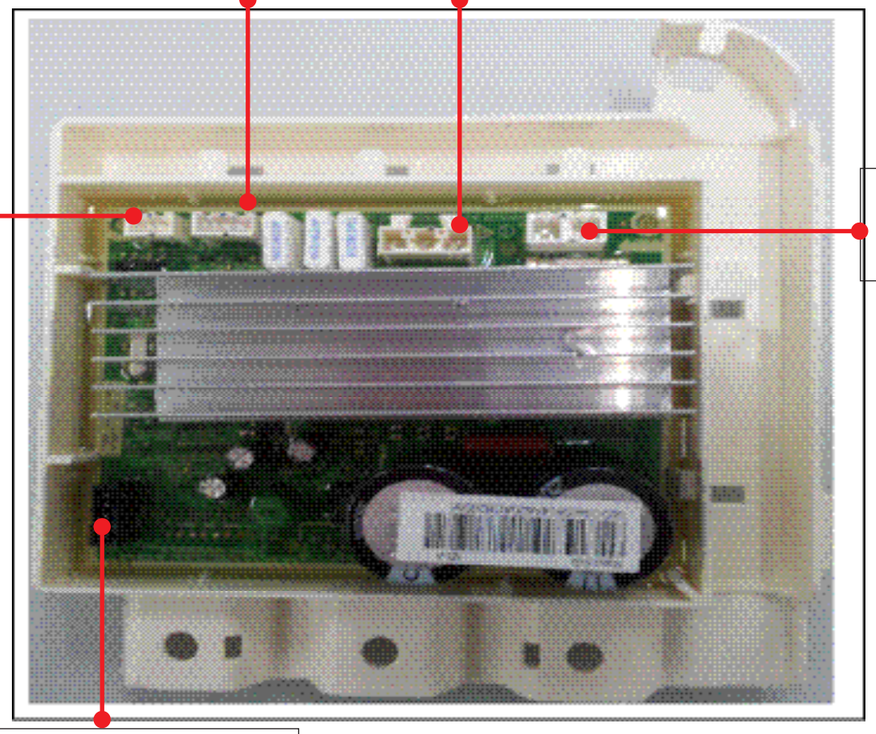
► **CN1**
1. MAIN Communications signal
2. MAIN Communications signal
3. Ground

► **CN2**
1. 5V
2. HALL A sensor signal
3. HALL B sensor signal
4. Ground

► **CN6**
1. Motor signal (U)
2. Motor signal (V)
3. Motor signal (W)



► **CN5**
1. L line
2. N line

► **CN4**
1. 5V
2. Reset signal
3. nTRST signal
4. TDI signal
5. TDO signal
6. TCK signal
7. TMs signal
8. Ground

5-5. SUB PCB

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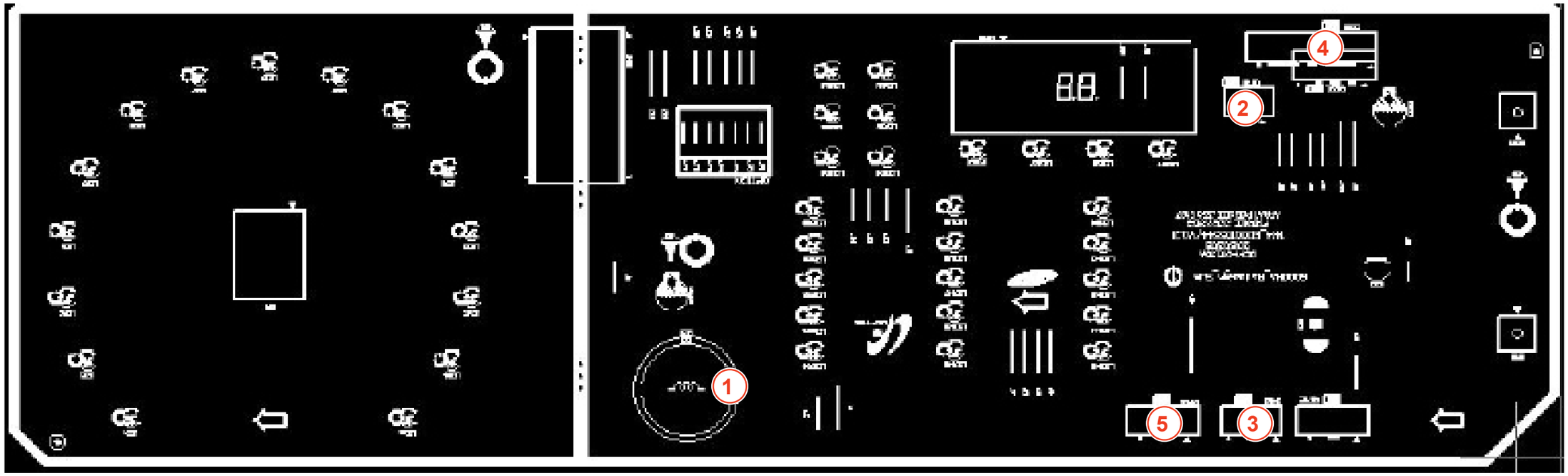

Location	Part No.	Function	Description
1	BZ1	Buzzer	Be generated sound when the menu key is pressed or the encoder is operated, the menu is closed.
2	CN701	Drum Light	Turn on when door is opened.
3	CN401	FLASH WRITING	WRITING PROGRAMME TO SUB.
4	CN201	PBA Communication Port	PBA Communication Port between MAIN and SUB.
5	CN402	TOUCH PBA COMMUNICATION	SUPPLY POWER TO TOUCH PBA AND COMMUNICATION TO SUB PBA

5-6. CIRCUIT DIAGRAMS OF MAIN PARTS FOR SUB PCB

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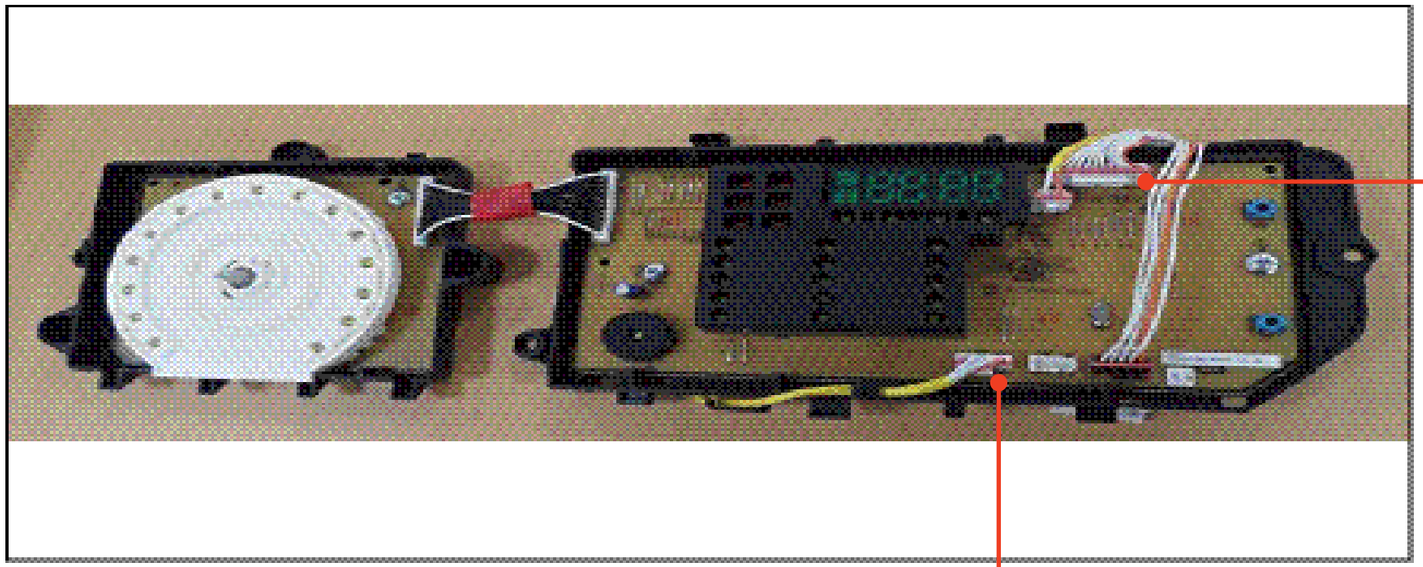

► **CN201**
1. Communications Port(Rx)
2. Communications Port(Tx)
3. Reset Signal input
4. 5V
5. GROUND
6. 12V
7. Empty Pin
8. Power_SW
9. Water level Signal
10. Empty Pin

► **CN402**
1. 12V
2. GROUND
3. SDA1
4. SCL1
5. Empty Pin

6. WIRING DIAGRAM

6-1. WIRING DIAGRAM

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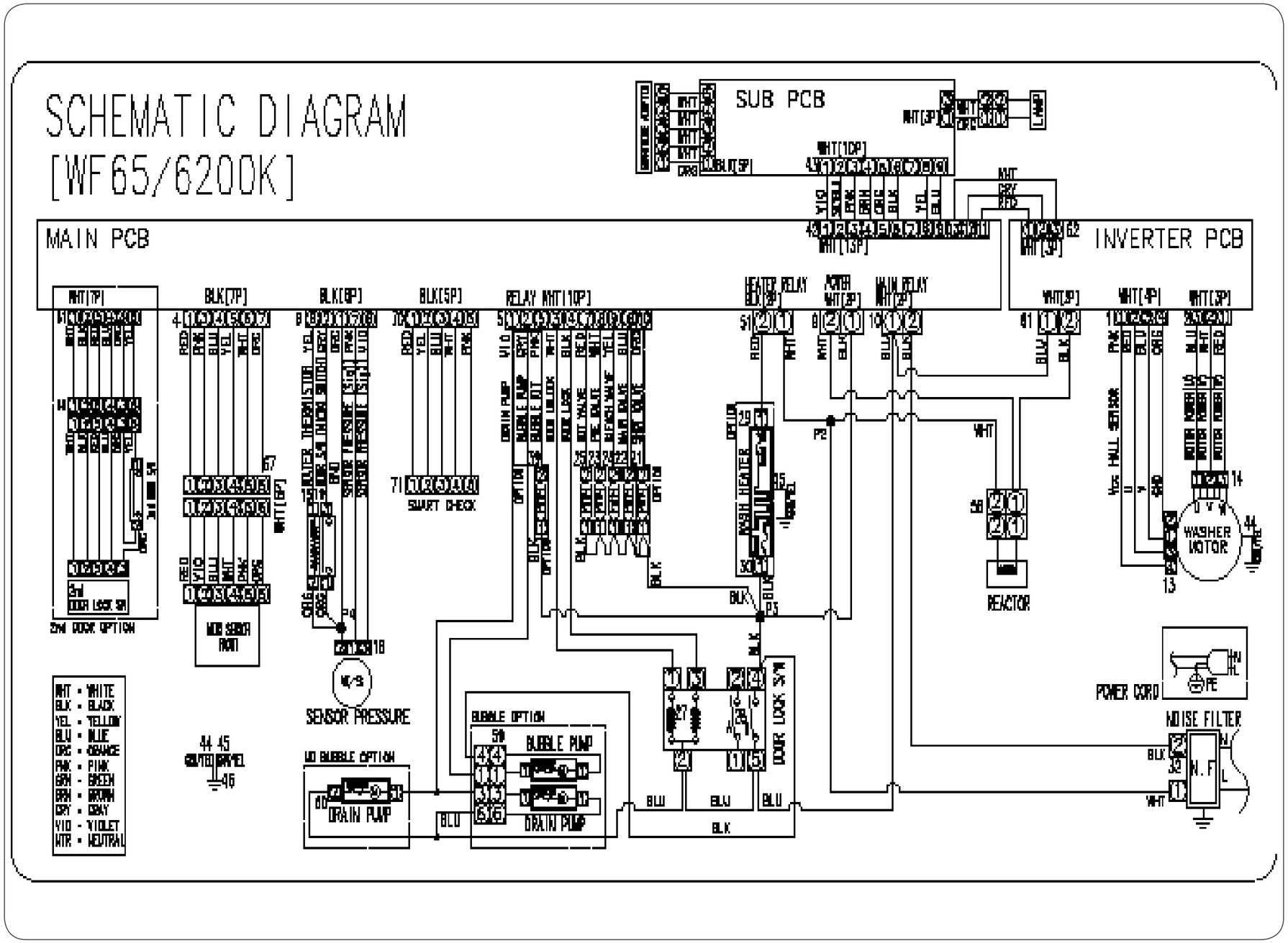
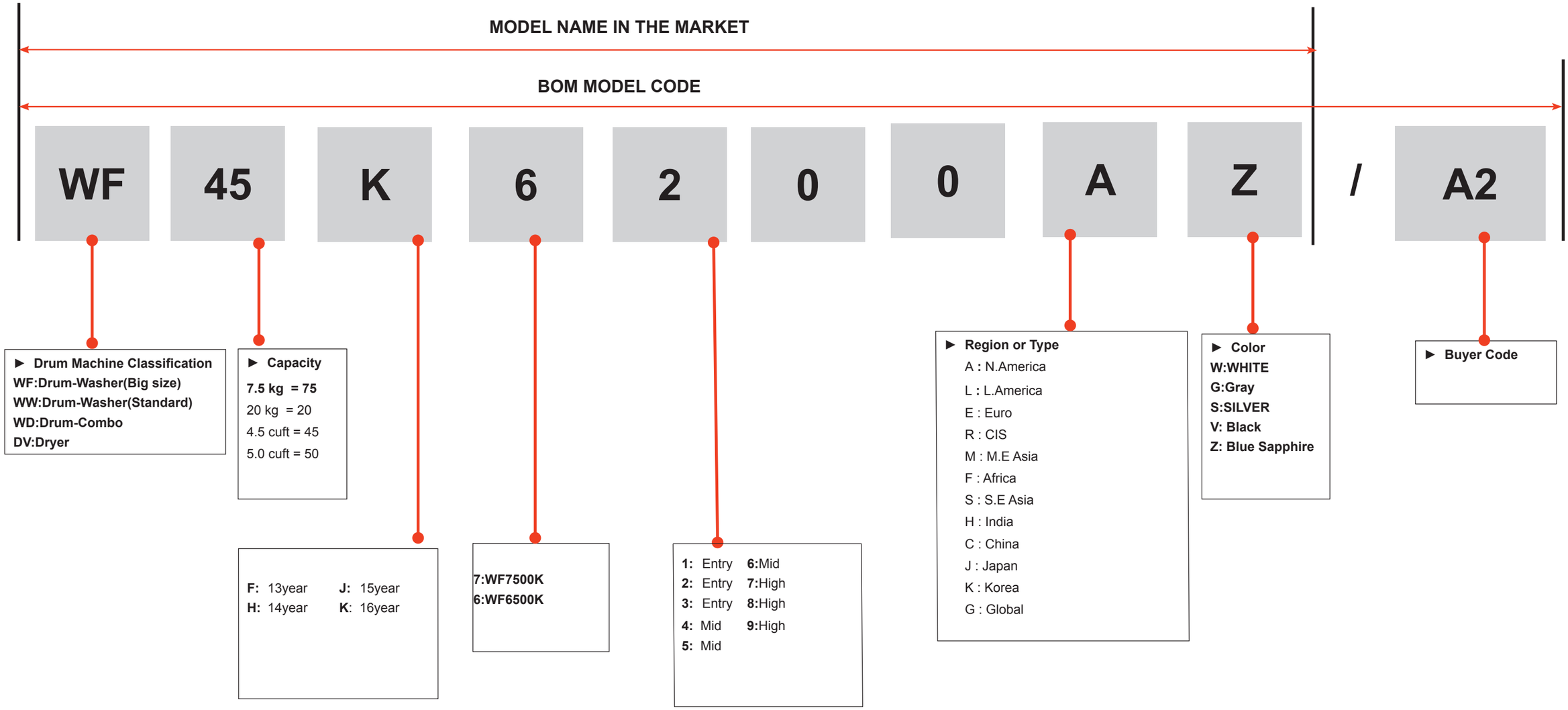
■ REFERENCE INFORMATION

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


MODEL NAME IN THE MARKET
BOM MODEL CODE
WF
45
K
6
2
0
0
A
Z
/
A2
► Drum Machine Classification
WF:Drum-Washer(Big size)
WW:Drum-Washer(Standard)
WD:Drum-Combo
DV:Dryer
► Capacity
7.5 kg = 75
20 kg = 20
4.5 cuft = 45
5.0 cuft = 50
F: 13year J: 15year
H: 14year K: 16year
7:WF7500K
6:WF6500K
1: Entry 6:Mid
2: Entry 7:High
3: Entry 8:High
4: Mid 9:High
5: Mid
► Region or Type
A : N.America
L : L.America
E : Euro
R : CIS
M : M.E Asia
F : Africa
S : S.E Asia
H : India
C : China
J : Japan
K : Korea
G : Global
► Color
W:WHITE
G:Gray
S:SILVER
V: Black
Z: Blue Sapphire
► Buyer Code

SAMSUNG