SAMSUNG

# WASHING MACHINE TOP-LOADING TYPE

**Basic Name :** WA7750M

**Basic Code :** WA52M7750AW/A4

**Model Name :** WA50R5400AV (WA7000R)

**Model Code :** WA50R5400A*
WA50R5200A*
WA54R7600A*
WA54R7200A*
WA50T5300A*

# SERVICE *Manual*

## WASHING MACHINE (TOP-LOADING)

## CONTENTS

# CONTENTS

# 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.

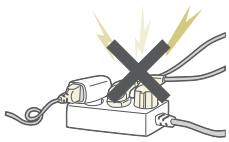
► Two types of safety symbols, Warning and Caution, are used in the safety instructions.

| | |
|---|---|
| ⚠ 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.** |

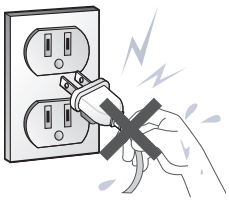
### ⚠ WARNING BEFORE SERVICING

- (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.

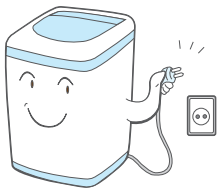
- Do not allow consumers to connect several appliances to a single power outlet at the same time.
  ✔ There is a risk of fire due to overheating.



- 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.

## ⚠ 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.
  - ✔ If plug is faulty replace it, if outlet in consumers home is faulty have consumer call an electrician to replace.

- 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 connected 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 verification that it is inserted into the bracket-heater.
  - ✔ If not inserted into the bracket-heater, it touches the drum and could cause noise and electric leakage.

## ⚠ WARNING AFTER SERVICING

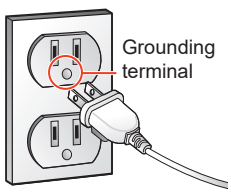
- Check the wiring.
  - ✔ Ensure that no part of the wiring harness makes contact with any rotating part or sharp edges.

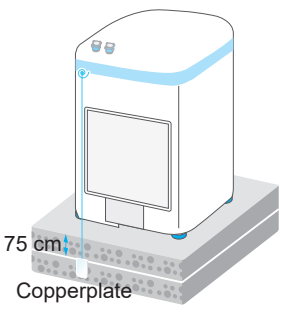
- Check for any water leakage.
  - ✔ Perform a test run for the washing machine to ensure no leakage under the machine , at any hose connection, or at the drain hose.

- 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's life cycle.

- 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.



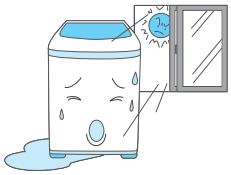



## ⚠ CAUTION BEFORE SERVICING

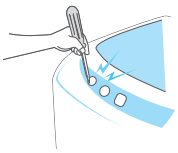
- Do not sprinkle water onto the washing machine directly when cleaning it.
  ✔ This may result in electric shock or fire, and may shorten the product's life cycle.

- 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's life cycle.

- 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's life cycle.



- 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 applied.

- Check if there is any residue that indicates liquid entered the electric parts or harnesses.
  ✔ If any liquid has entered into a part, replace it or ensure no remaining moisture inside the part.

- If you need to place the washing machine on its back or side for servicing purposes, place a support(s) on the floor and lay it down carefully so its back/side is on the floor.
  ✔ Do not lay it down on its front. This may result in cosmetic damage to frame front and/or damage to the tub.

## ⚠ 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.

---

- Ensure washing machine is level by pressing down on corners to check for any movement. If not level, adjust legs and check again until no movement is present. Verification that unit is level will reduce customer dissatisfaction and redo call.
  - ✔ Vibrations can shorten the lifetime of the product.

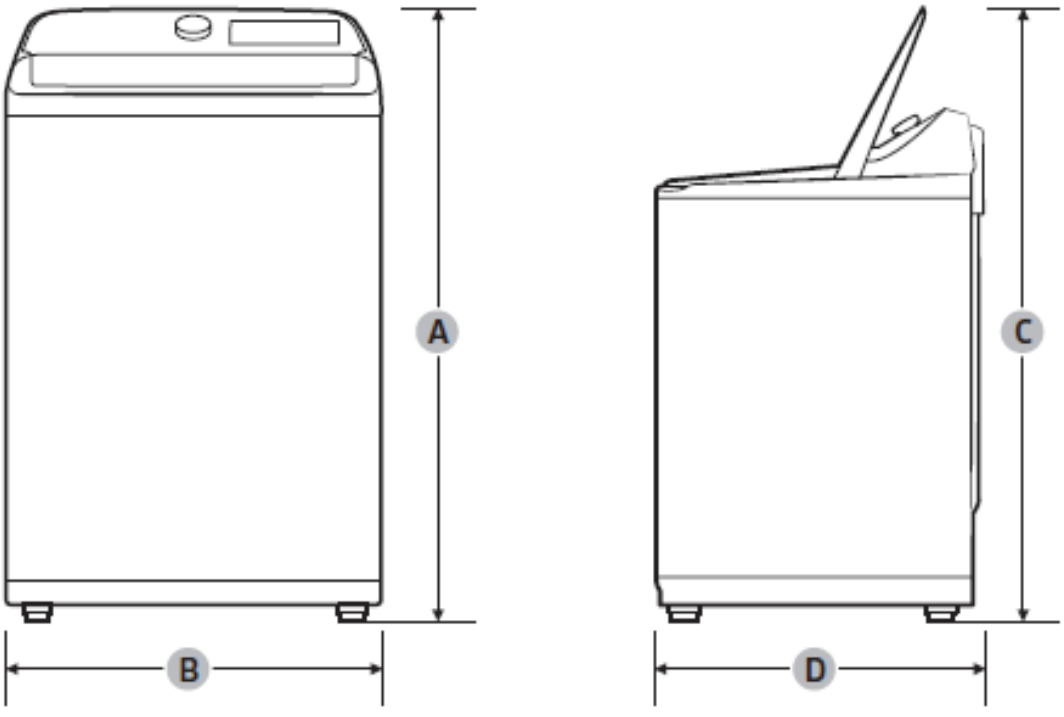
# 2. FEATURES AND SPECIFICATIONS

## 2-1. FEATURES

| Features | Description |
|---|---|
| Large Capacity | • A large 5.4/5.0cu.ft capacity means you can quickly wash more laundry in a single load, saving you time and effort, without the burden of frequent washes. |
| Super Speed | • Cut your laundry time by up to 40% and clean better. Simply select Super Speed to wash a full load in just 36 minutes. A powerful Active WaterJet speeds up the rinsing process. And a larger diameter drum washes clothes thoroughly by moving them around with more force, while a Swirl+ drum pattern extracts water more effectively. |
| EZ Access | • The EZ Access design has a larger diameter drum, but it's not as deep. So you can enjoy effortless loading and unloading, without sacrificing any capacity. |
| Active WaterJet | • Pre-treat your laundry easily and efficiently. A built-in Water Jet lets you pre-wash heavily soiled or stained clothes. |
| Deep Fill | • Add more water to enhance the washing and rinsing performance. It will add extra water at the right time to ensure that everything is soaked. |
| Self Clean | • Keep your washing machine hygienically clean, while being eco-friendly and saving money. Self Clean removes dirt and odor-causing bacteria from the drum. It uses soaking, pulsating and high speed spinning, so you don't need harsh or costly detergent. And it even notifies you when it needs cleaning |
| VRT Plus | • Innovative VRT Plus™ technology reduces noise and vibration during washes. A new frame design also provides great stability to minimize any noisy movement. And vibration sensing technology detects and reduces vibration from the motor. |
| Soft Close Lid | • The Soft Close Lid is designed to close safely, gently and silently. A damper automatically reduces the speed of movement, so the lid slowly and quietly closes. It gives you complete peace of mind, as there are no loud noises and less risk of accidents |
| Smart Care | • Smart Care is an automatic error-monitoring system. It detects and diagnoses problems at an early stage and provides easy troubleshooting solutions using a smartphone App. So it saves you time and potentially expensive repair bills. |
| Accessibility | • The control panel provides audio assistance by playing a different sound for each option. It also has Braille and bumps next to the various control buttons to indicate exactly what they are |

## 2-2. SPECIFICATIONS

| TYPE | | TOP LOADING WASHER | | | | |
|---|---|---|---|---|---|---|
| | | WA54R7600A* | WA54R7200A* | WA50R5400A* | WA50R5200A* | WA50T5300A* |
| DIMENSION (Inches / cm) | A. Height | 44.6” / 1132mm | | | | |
| | B. Width | 27.5”/699mm | | | | |
| | C. Height with Door open | 58.3” / 1480mm | | | | |
| | D. Depth | 29.4” / 747mm | | | | |
| WATER PRESSURE | | 20~116psi (137~800kPa) | | | | |
| WEIGHT | | 61kg (134lb) | 60kg (132lb) | | | |
| CAPACITY | | 5.4cu.ft | | 5.0cu.ft | | |
| POWER CONSUMPTION | WASHING | 120V | | | | |
| | | 700W | | | | |
| | WASHING & HEATING | 120V | - | | | |
| | | 1440W | - | | | |
| SPIN REVOLUTION | | 750rpm | | | | |

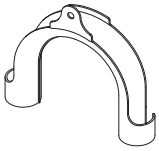
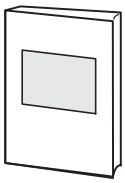
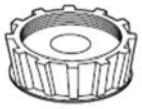


## 2-3. DETAIL FEATURES

| Grade | | WA54R7600A* | WA54R7200A* | WA50R5400A* | WA50T5300A* |
|---|---|---|---|---|---|
| Image | |  |  |  |  |
| Key Features | Capacity (cu.ft/DOE) | 5.4 | 5.4 | 5.0 | 5.0 |
| | Smart Care | Yes | Yes | Yes | Yes |
| | Super Speed | Yes | - | Yes | - |
| | Self Clean | Yes | Yes | Yes | Yes |
| | Active WaterJet | Yes | Yes | Yes | Yes |
| | Swirl+Drum | Yes | Yes | Yes | Yes |
| | Washing Cycles | 12 | 10 | 12 | 12 |
| | Internal Heater | Yes | - | - | - |
| | VRT PLUS | Yes | Yes | Yes | Yes |
| | Pulsator material | STS | PP | PP | PP |
| | Max rpm | 750 | 750 | 750 | 750 |
| | Motor | F-DDM | F-DDM | F-DDM | F-DDM |
| Design | Color | Black White | Black White | Black White | Champagne |
| | Main display | 18:88 | 18:88 | 18:88 | 18:88 |
| | Jog Dial | Chrome | Chrome | Chrome | Chrome |
| | Led color | Ice-blue | Ice-blue | Ice-blue | Ice-blue |
| | Door lid TC | Light Tinted Glass | Light Tinted Glass | Light Tinted Glass | Light Tinted Glass |
| | Top cover | ABS | ABS | ABS | ABS |
| Electrical | Voltage/Frequency | 120V/60Hz | 120V/60Hz | 120V/60Hz | 120V/60Hz |
| Energy | Energy cost | $20 | $14 | $14 | $14 |
| | Electricity use | 165kWh | 120kWh | 120kWh | 120kWh |
| | Energy consumption | $13 | $9 | $9 | $9 |

| Grade | | WA50R5200A* | WA52M7750A* |
|---|---|---|---|
| Image | |  |  |
| Key Features | Capacity (cu.ft/DOE) | 5.0 | 5.2 |
| | Smart Care | Yes | Yes |
| | Super Speed | - | - |
| | Self Clean | Yes | Yes |
| | Active WaterJet | Yes | - |
| | Swirl+Drum | Yes | - |
| | Washing Cycles | 10 | 13 |
| | Internal Heater | - | Yes |
| | VRT PLUS | Yes | - |
| | Pulsator material | PP | STS |
| | Max rpm | 750 | 800 |
| | Motor | F-DDM | DD |
| Design | Color | White | White Inox |
| | Main display | 18:88 | 18:88 |
| | Jog Dial | Chrome | Chrome |
| | Led color | Ice-blue | Ice-blue |
| | Door lid TC | Transparent Glass | Color Curved glass |
| | Top cover | ABS | Steel+Painting |
| Electrical | Voltage/Frequency | 120V/60Hz | 120V/60Hz |
| Energy | Energy cost | $14 | $20 |
| | Electricity use | 120kWh | 165kWh |
| | Energy consumption | $9 | $12 |

## 2-4. OPTIONS SPECIFICATIONS

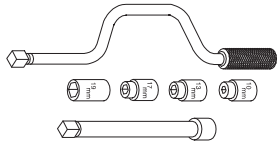
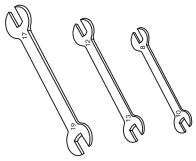
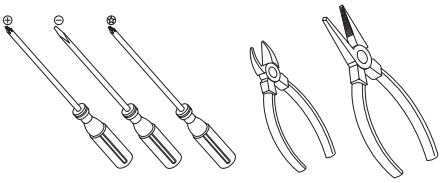
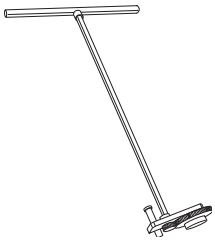
| Item | Item Name | Code No. | Remark |
|---|---|---|---|
|  | HOSE-HANGER | DC61-00224B | Default |
|  | MANUAL-BOOK | DC68-04037A<br>(Model No : WA50R54*)<br>DC68-04037C<br>(Model No : WA50R52*) | Default |
|  | CABLE TIE | 6501-000121 | Default |
|  | ASSY CAP V.W | DC97-18313A | Default |
|  | LEG RING | DC61-03458A | 5.4cu.ft Only |

Note

- Customer can purchase Water supply, drain hoses and assy leg support from a service center.

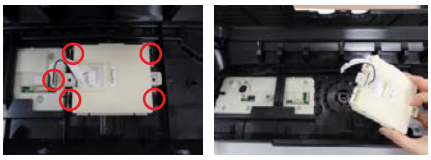
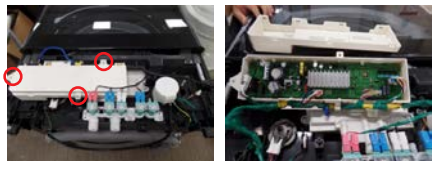
# 3. DISASSEMBLY AND REASSEMBLY

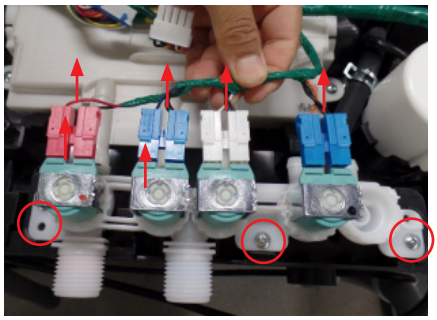
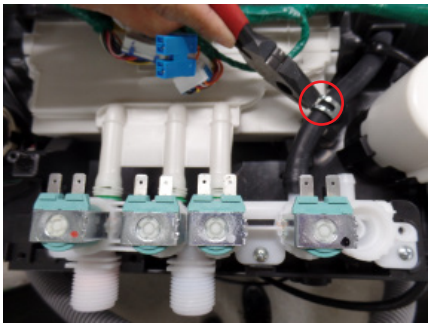
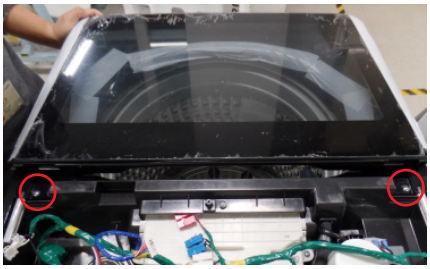
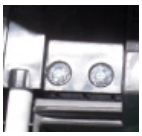
## 3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

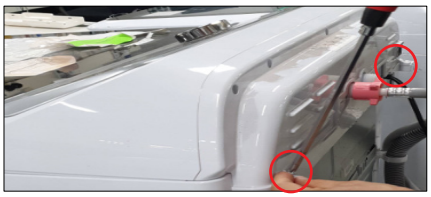
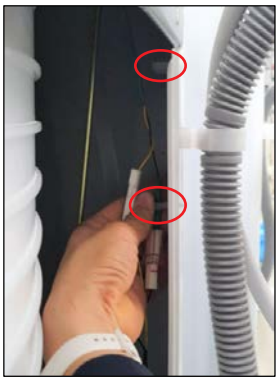
| Tool | | Type | Remarks |
|---|---|---|---|
|  | Box driver | 10mm<br>17mm | Pulsator(1), Assy stator(5), Support saddle(4), Assy clutch(11), Assy rotor(1) |
|  | Double-ended spanner | 10mm<br>17mm | Replaced by box driver |
|  | Vice pliers | | A Tool for protecting empty turning of bolt or abrasion from using box driver<br>For disassembly of Spin drum |
|  | Others<br>(screwdriver, nipper, long nose pliers) | | Common tools for servicing |
|  | JIG for the ASSY SPIN BASKET | | |

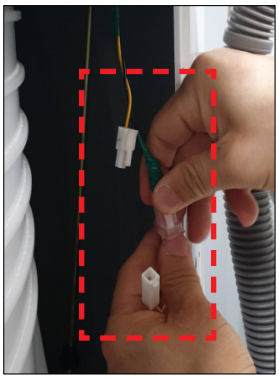
## 3-2. STANDARD DISASSEMBLY DRAWINGS

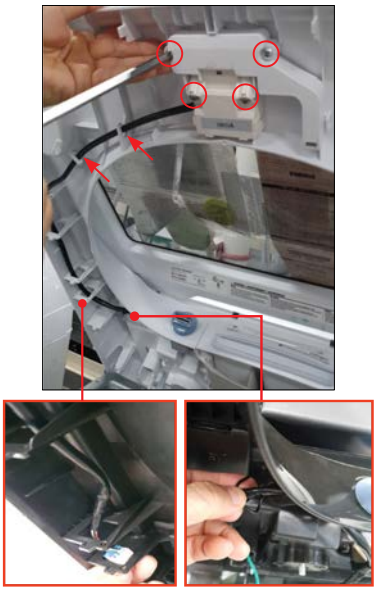
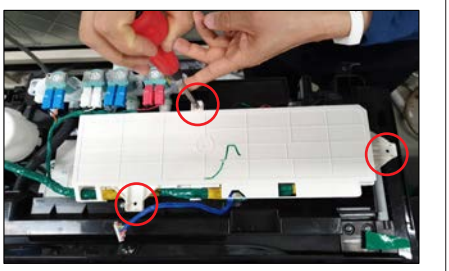
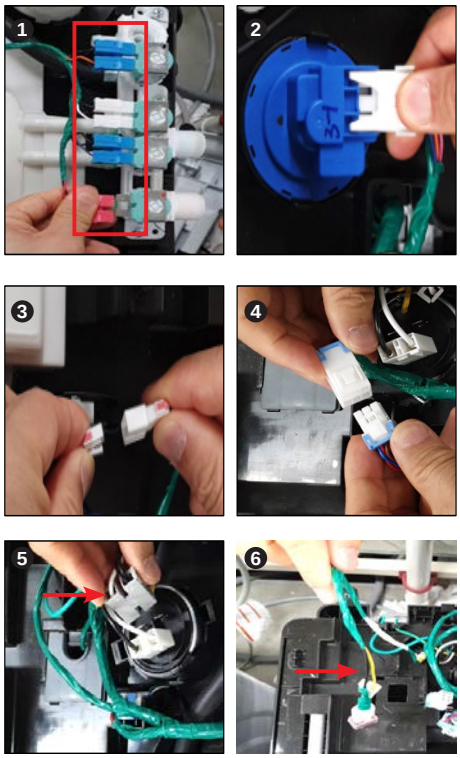
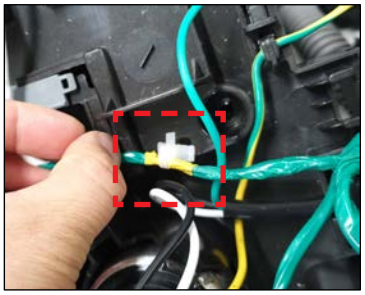
► This is a standard disassembly diagram and may differ from the actual product.
Use this material as a reference when disassembling and reassembling the product.

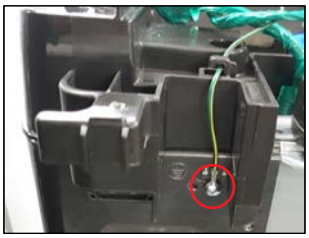
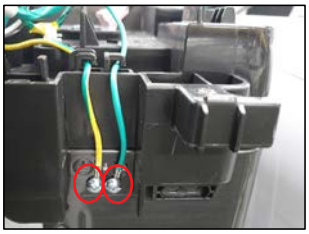
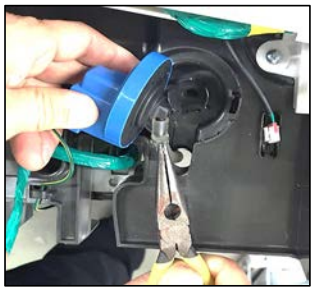
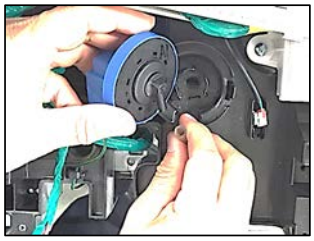
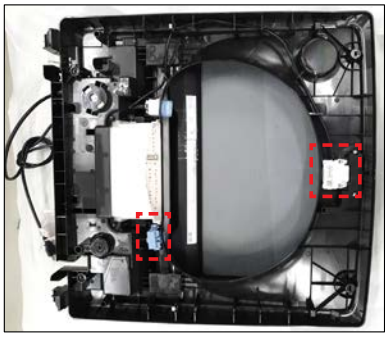
| Part | Figure | Description |
|---|---|---|
| **Sub and Main PCB Assembly** |  | 1. Remove the 5 screws holding the control panel assembly. |
| |  | 2. Separate the assy panel upward with the door slightly open. |
| |  | 3. Separate the hass wire from cover connector and wires connected to the sub PCB. |
| |  | 4. Pull the knob encoder to separate it and then remove the 2 fixing screws. |
| |  | 5. Separate wire connected to the touch module and 4 hooks. |
| |  | 6. Separate hooks and remove 1 screw.<br>When reassembling the PCB, take care that you do not damage the control-panel fixing hook. After replacing the sub PCB, check the key operation. |
| |  | 6. Remove the 3 screws and then separate the cover pcb(m), wires connected to the main PBA.<br>After reassembling the housing, check if the wires are properly connected. When disassembling and reassembling the housing, take care that you do not damage the part. |

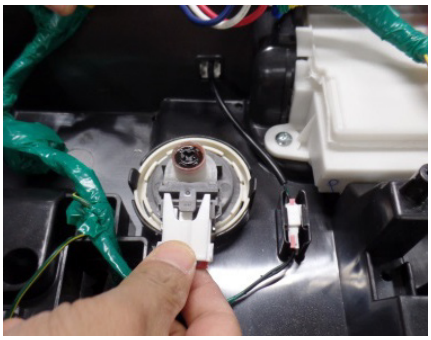
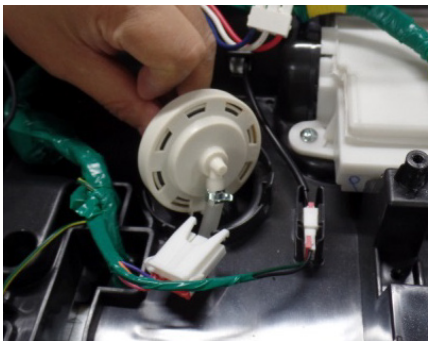
| Part | Figure | Description |
|---|---|---|
| Water Valve |  | 1. After separating the control panel, separate the water valve housing.<br>2. Remove the 3 fixing screws. |
| |  | 3. Remove the wire-harness and release the clamp connecting the hose.<br>When releasing the clamps, take care that you do not tear the hoses. |
| Door Assembly |  <br>  <br>  | 1. After separating the control panel, remove 4 fixing screws holding the door lid T.C. |
| |  | 2. Separate the door. |

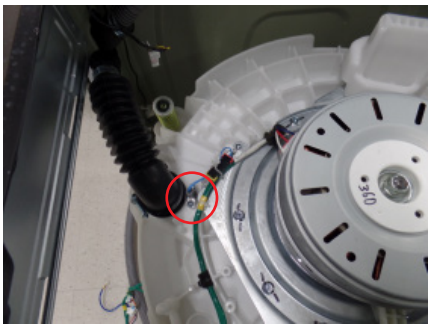
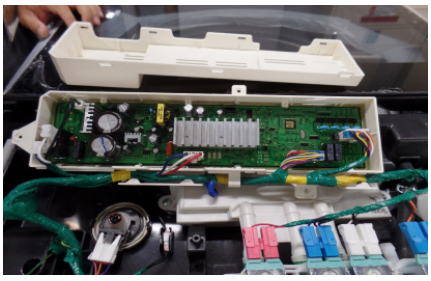
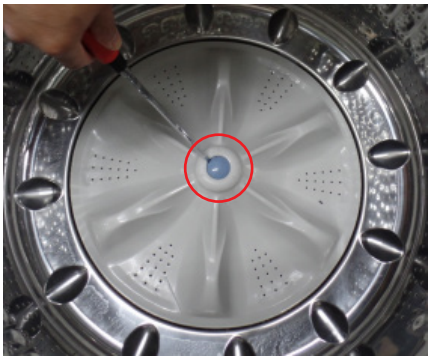
| Part | Figure | Description |
|---|---|---|
| **Top Cover Assembly & Door Switch Common (continued)** |  | 1. Remove the 2 Screws. |
| |  | 2. Separate the control Panel assemble. |
| |  | 3. Remove the 4 Screws. |
| |  | 4. Separate the Back Cover. |
| |  | 5. Separate the Pump Wire from the wire holders (2 Points). |

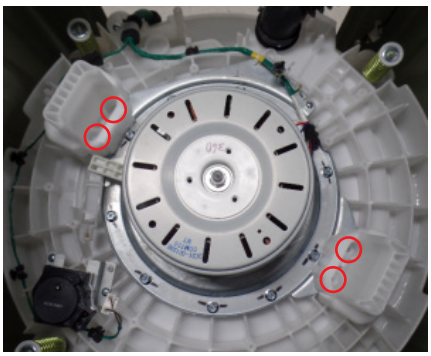
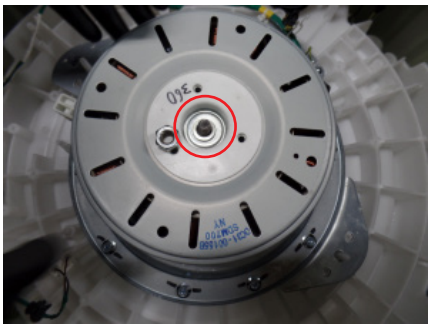
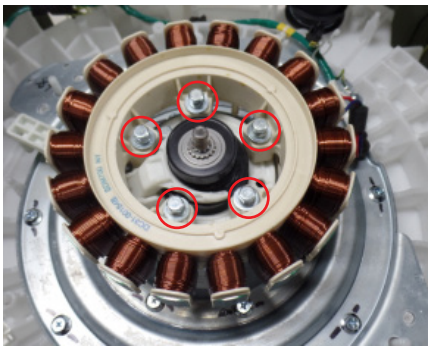
| Part | Figure | Description |
|---|---|---|
| **Top Cover Assembly & Door Switch Common (continued)** |  | 6. Separate the Pump Wire Connector (2Points).<br>   <br>Pump Wire may snap if you separate top cover assembly without step 3~ step 6. |
| |   | 7. Remove the 4 Screws. |
| **Door Switch (continued)** |   | 8. Separate the Door Lock SW Connector. |
| |  | 9. Push Door SW Connector into Hole. |

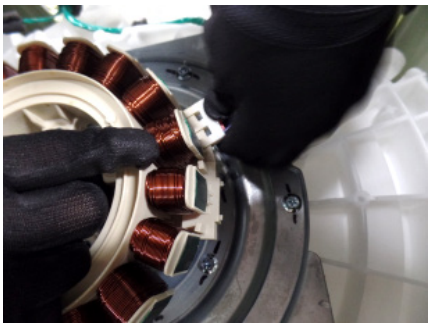
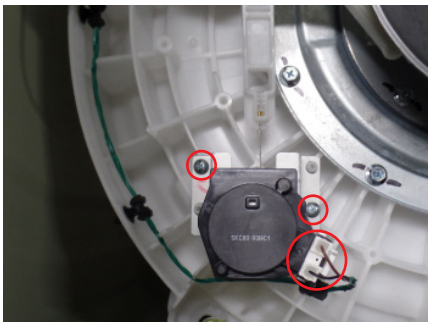
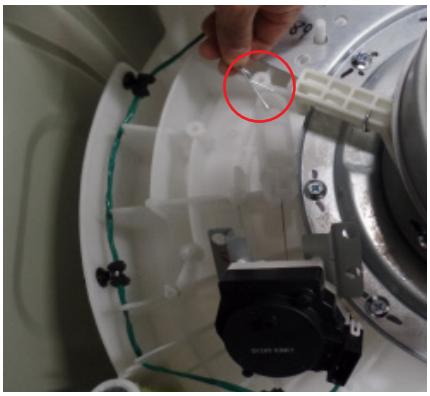
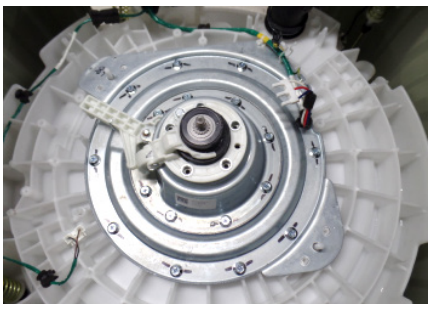
| Part | Figure | Description |
|---|---|---|
| **Door Switch (continued)** |  | 10. Remove 4 screws from Door switch.<br>11. Replace the Door switch. |
| **Top Cover Assembly (continued)** |  | 12. Remove 3 screws from PBA. |
| |  | 13. Separate connector Housing<br>1) Valve Water (4EA)<br>2) Pressure Sensor (1EA)<br>3) Water Jet Key(1EA)<br>4) Door S/W(1EA)<br>5) Noise Filter(1EA)<br>6) Pump Wire out<br>  <br>If the locking tie is holding pump wire broken, replace it with new one. |

| Part | Figure | Description |
|---|---|---|
| **Top Cover Assembly (continued)** |   | 14. Separate 3 screws from the Earth wire. |
| |   | 15. Before separating the hose, release the clip.<br>When releasing the clip, take care that you do not tear the hose. |
| |  | 16. Separate the Top Cover Assembly by lifting.<br>You can check the Door SW/Water jet SW. |

| Part | Figure | Description |
|---|---|---|
| **Sensor Pressure Switch** |  | 1. Disassemble the control panel assembly.<br>2. Separate the pressure switch housing. |
| |  | 3. Before separating the hose, release the clip..<br>When releasing the clip, take care that you do not tear the hose. |
| **Drain-Pump** |   | 1.Separate the back cover. |
| |   | 2. Separate the pump wire. |
| |   | 3. Remove 2 screws and separate 2 clamps. |
| |   | 4. Separate the wire |

| Part | Figure | Description |
|---|---|---|
| **Thermistor** |  | 1. Remove the 2 screws. |
| **Clutch Assembly (continued)** |   | 1. Remove the 2 screws holding the panel control.<br>2. Separate the top cover assembly by lifting and all the wires connected to the housing. |
| |   | 3. After separating cover top assembly, remove the 4 screws fixing the cover tub and separate the hooks. |
| |  | 4. Separate the pulsator cap by inserting the tip of a (-) screwdriver between the pulsator cap and the pulsator.<br>5. Then lifting the screwdriver up. |
| |  | 6. Remove the bolt holding the pulsator with a 10mm wrench. |

| Part | Figure | Description |
|---|---|---|
| **Clutch Assembly (continued)** |  | 7. Remove the shaft with the jig wrench.<br>- Release the nut in a clockwise direction.<br>- Fasten the nut in a counterclockwise direction. |
| |  | 8. Place the main body so that the front frame faces upward and remove the 4 bolts holding the support saddle with a 10mm wrench.<br>When you place the washer on the floor, take care that you do not damage or scratch the product. |
| |  | 9. Remove the bolt holding the DDM motor-rotor housing with a 17mm wrench and then remove the motor housing |
| |  | 10. Remove the 5 bolts holding the DDM motor-stator with a 10mm wrench. |

| Part | Figure | Description |
|---|---|---|
| Clutch Assembly (continued) |  | 11. Separate the housing and then remove the DDM motor. |
| |  | 12. Separate the wire and remove 2 screws holding the drain motor. |
| |  | 13. Remove pin link and then separate link drain. |
| |  | 14. Remove all screws fixing the clutch assembly and then separate the clutch assembly. |

Reassembly procedures are in the reverse order of dissasembly procedures.

# 4. TROUBLESHOOTING

## 4-1. INFORMATION MODES

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

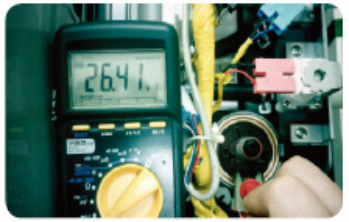
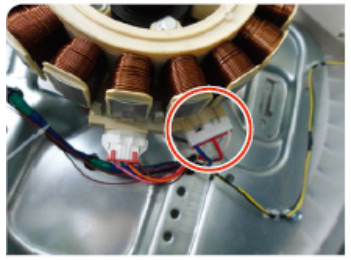
| Check Type | For USA | Causes | Remarks |
|---|---|---|---|
| **Water Level Sensor** | 1C | - The part of the hose where the water level sensor is located is damaged (punctured).<br>- The hose is clogged with foreign material.<br>- The hose is folded.<br>- Too much lubricant has been applied to the insertion part of the air hose.<br>- Hose engagement Check. (disengaged)<br>- Part fault. (Faulty internal soldering)<br>- The water level sensor terminal is disengaged.<br>- Main PBA fault. | |
| **Motor Driving Check** | 3C | - The PBA connector terminal is not connected.<br>- The motor spin net is not engaged.<br>- The motor's internal coil is damaged. (short-circuited or cut)<br>- Foreign material (a screw) has entered the motor.<br>- Motor overloaded due to too much laundry. (Non-sensing)<br>- PBA fault.<br>- The motor driving Check from the PBA is weak. Unstable relay operation, etc.<br>- The IPM terminal of the main PBA is not connected.<br>- The DD motor cover is out of place.<br>- The PCB housing terminal is not connected.<br>- PBA fault.<br>- DD motor fault. | This Check occurs because of restrained revolutions.<br><br>This Check occurs when an interference is generated due to too much laundry, etc. |
| **Water Supply Check** | 4C | - Foreign material is entering the water supply valve.<br>- The water supply valve terminal is not connected. (Wire disconnected)<br>- The warm water and rinse connectors are wrongly connected to each other.<br>- 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.<br>- The water supply hoses are kinked thereby restricting water flow. | |
| | 4C2 | - The cold and warm water supply hoses are wrongly engaged into each other.<br>- The temperature of the water supplied through the dry valve during a dry cycle is sensed as higher than 70 ˚C.<br>- 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** | 5C | - The pump motor impeller is damaged internally.<br>- The wrong voltage is supplied to the parts.<br>- Part fault.<br>- This occurs due to freezing in the winter season.<br>- The drain hose is clogged. (Injection Check, foreign material)<br>- Clogged with foreign material.<br>- The water pump terminal is not connected: rubber band, bills, cotton, hair pins, coins have collected inside the drain pump ASSY. | |
| **Power Check** | 9C1,9C2 | - Check the consumer's power conditions.<br>: 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.<br>: Check the voltages. (An Check occurs when under or over voltage is supplied.)<br>: Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V<br>- Main PBA fault (sometimes) | |

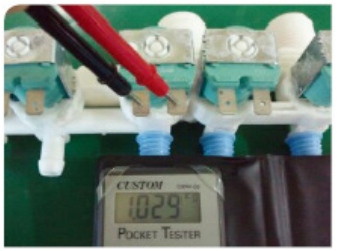
| Check Type | For USA | Causes | Remarks |
|---|---|---|---|
| **Communication Check** | AC | - The signals between the sub and main PBAs are not sensed because of communication Check.<br>- Check the connector connections between the sub and main PBAs carefully.<br>→ Check for incorrect or loose connections, etc.<br>- Remove the sub PBA C/Panel and check for any faulty soldering. | |
| | AC2 | - The diagnosis of the I/O Board communication check. | |
| | AC3 | - The signals between The DR Module and main PBAs are not sensed because of communication Check.<br>- Check The connector connections between The DR Module and main PBAs carefully.<br>→ Check for incorrect or loose connections, etc.<br>- 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 communication Check.<br>- Check The connector connections between The WIFI Module and main PBAs carefully.<br>→ Check for incorrect or loose connections, etc.<br>- 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 communication Check.<br>- Check The connector connections between The LCD Module and main PBAs carefully.<br>→ Check for incorrect or loose connections, etc.<br>- 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 Check.<br>- Check The connector connections between the Inverter PBA and main PBA carefully.<br>→ Check for incorrect or loose connections, etc.<br>- Remove the Inverter PBA and Check for any faulty soldering. | |
| **Switch Check (Main Relay Check)** | BC2 | - The Power button is pressed continually. (for more than 12 seconds).<br>- A switch is jammed or stuck due to be pressed unevenly due to deformation of the control panel or button.<br>- This Check may occur when the screws that hold the sub PBA in place are tightened too much.<br>- A button other than the Power button is continually pressed. (for more than 30 seconds).<br>- Deformation of an internal plastic injection part.<br>- A screw for assembling the sub PBA is tightened too much. | |
| **Door Check** | DC | - A switch contact Check because of a deformation of the door hook.<br>- 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.<br>- The door lock switch terminal is broken.<br>- This occurs intermittently because of an electric wire leakage<br>- Main PCB fault. | |
| | DC2 | - This occurs if the Power switch is turned on/off continually and too much heat is generated (This check is difficult to be reproduced.) | |

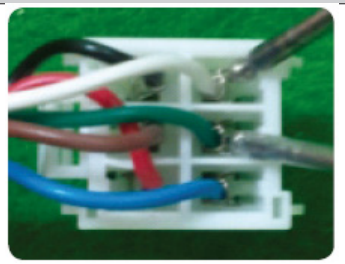
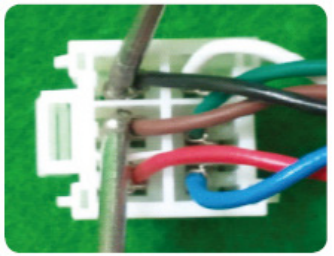
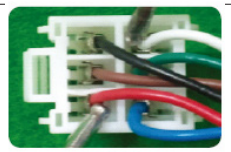
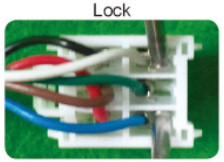
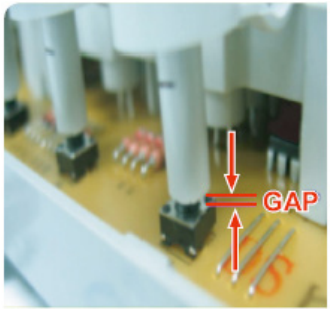
| Check Type | For USA | Causes | Remarks |
|---|---|---|---|
| **Heater Check** | HC<br>HC1<br>HC2 | - The washing heater is short-circuited or has a wire disconnected.<br>- The washing heater in the tub has an Check. (Contact Check, temperature sensor fault)<br>- If the water level sensor operates 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.<br>- 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** | LC<br>LC1 | - Heater engagement fault. (out of place)<br>- The air hose is out of place and water leakage occurs during the spin cycle.<br>- The tub back at the safety bolts fixing part is broken.<br>- Water leakage occurs at the front with foaming because of too much detergent.<br>- Water leakage occurs because the connecting hose to the detergent drawer is connected incorrectly.<br>- The drain pump filter cover is engaged incorrectly.<br>- Water leakage occurs at the drain hose.<br>- The duct condensing holding screws are worn.<br>- The nozzle-diaphragm is engaged in the opposite direction or the rubber packaging is omitted.<br>- Water leakage occurs because the screws that hold the tub back and front in place are fastened incorrectly.<br>- The leakage sensor is faulty. | |
| **Overflow Check** | OC | - Water is supplied continually because the water level detection does not work.<br>- 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.<br>- Water is supplied continually because of freezing or because there is foreign material in the water supply valve.<br>- This Check may occur when the water level sensor is degraded. | This Check occurs because the water level sensor terminal is out of place. |
| **Temperature Sensor Check** | TC1<br>TC2 | - The washing heater sensor in the tub has an Check. (Contact Check or temperature sensor fault)<br>- The connector is connected incorrectly or is disconnected.<br>- 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<br>: When the connector is connected incorrectly or has a wire disconnected or contact Check |
| | TC4 | - IPM temperature is abnormally high. | |
| **Unbalance Check** | UB | - As laundry causes this Check, check the laundry.<br>- 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 Check for preventing non-sensing faults.) | |
| **Mems PBA Wire Could be Disconnected** | 8CA1<br>8CB1 | - Check the Wire Connections if there is External Mems PBA<br><br>Replace If necessary<br>1. Replace the Mems PBA<br>2. Replace the Main PBA | |

| Check Type | For USA | Causes | Remarks |
|---|---|---|---|
| **Set Position may be Faulty** | 8CA2 | - Check the Washer is in horizontal Level.<br><br>Replace If necessary<br>1. Replace the Mems PBA<br>2. Replace the Main PBA | |
| | 8CB2 | | |
| **Mems Sensor Could be Faulty** | 8CA3 | - Replace MEMS PBA if there is External Mems PBA Replace<br>- Main PBA if there is no External Mems PBA | |
| | 8CB3 | | |
| | 8CA4 | | |
| | 8CB4 | | |
| **Clutch Sensing** | PC1 | - Clutch error was determined, after movement of clutch occur red. | |
| **System Check** | SF1 | - Micro Controller Operation Fail. | Replace Assy PCB. |
| | SF2 | | |
| | SF3 | | |

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

| Symptom | Check Code | Countermeasure | Troubleshooting Procedure | Measurement Picture |
|---|---|---|---|---|
| Water Level Sensor | ► 1C | Check if the water level sensor is defective.<br>Check if the water level sensor terminal is properly connected.<br>Check if the water level sensor hose is broken.<br>This may occur when the main PCB is defective. | • Check the water level sensor terminal connections.<br>• Check the part code of the water level sensor, because if an incorrect part is used, an abnormal operation may occur. (Abnormal operation)<br>• If the water level sensor is defective, replace it.<br>• If no problems were found for all of the procedures above, replace the PBA. |  <br>► Check the water level sensor frequency.<br>1. Check it after the water level sensor and the connector are connected.<br>Checking Part : Blue Color Wire orange Color Wire<br>2. Frequency: Approx. 26.4 KHz without water (Min 25.9KHz) |
| Washing Motor Defect | ► 3C | This may occur when the washing motor is defective.<br>Check if the washing Motor Rotor/State is defective or not.<br>This may occur when the main PCB is defective. | • Check the motor connector terminal connections.<br>• Check if the Motor Cover State is damaged.<br>• Check if the coil is broken due to moisture from any alien substance.<br>• If the PBA control circuit is defective, replace the PBA. |  <br>► Check the motor Winding Coil<br>• Plug out the connector and read resistances at any two of the three terminals on Motor<br>: Should be 19.3Ω (at 25oC) |

| Symptom | Check Code | Countermeasure | Troubleshooting Procedure | Measurement Picture |
|---|---|---|---|---|
| Water Supply Check | ► 4C | This may occur when the water supply valve is defective.<br>This may occur when the main PCB is defective.<br>This may occur due to frozen water. | • If the water supply valve is broken, replace the valve.<br>• Check if the water supply is blocked due to an alien substance in the valve or check if the water is supplied to the machine. If a problem is found, take the appropriate countermeasure.<br>• Check if the water supply is blocked due to the water being frozen.<br>• If the PBA Relay malfunctions, replace the PBA.<br>• Make sure that the cold water tap and the hot water tap are properly connected at both the tap and the machine |  <br>  <br>1. Measure the resistance of the water supply valve.<br>- Resistance : 0.9KΩ to 1.1KΩ between the terminals of the Water Supply Valve.<br>2. Check whether there is foreign material in the Water supply valve filter. |
| Drain Check | ► 5C | This may occur when the drain pump is defective.<br>This may occur due to frozen water.<br>Check if there is any alien substance inside the draining pump.<br>This may occur when the main PCB is defective. | • Check if there is any alien substance inside the draining pump motor.<br>• Check the natural drain in the same manner.<br>• Check if there are any incorrect connections or broken wires.<br>• If the machine malfunctions intermittently when the wash tub water temperature is high, replace the pump.<br>• If the motor stops due to the water being frozen in winter, remove the frozen water referring to the relevant repair procedures. |  <br>Check the drain pump resistance.<br>(Resistance : 13.5 ~ 16.5 Ω) |
| Communication Check | ► AC | The signals between the sub and main PBAs are not sensed.<br>Incorrect wire connections between the sub and main PBAs. | • Check the wire connections and terminal contacts between the sub and main PBAs.<br>• Check for disconnected wires.<br>• Check whether the sub PBA is short-circuited because of moisture.<br>• If the main PBA's communication circuit is faulty, replace it. | - |

| Symptom | Check Code | Countermeasure | Troubleshooting Procedure | Measurement Picture |
|---|---|---|---|---|
| Door Check | ▶ DC | This may occur when the door switch is defective.<br>This may occur when the main PCB is defective. | • Check if a dE Check occurs during the boiling course.<br>• As this Check occurs because the door is opened, close the door.<br>• Since 120V power is connected, check if the power cord is disconnected or check the insulation status and repair it if necessary.<br>• If the main PBA door detection circuit is defective, replace it.<br>• Verify door is properly closed and no laundry caught in the door |  <br>1. Check the resistance for Reed SW (Checking Part :White-Green Wire)<br>- Resistance: Approx 0.2Ω between the terminals of Reed SW.<br>  <br>2. Check the resistance for Motor (Checking Part : Black-Brown Wire)<br>- Resistance: 33Ω to 46Ω between the terminals of Motor. |
| | ▶ DC1<br>DC2 | The door lock switch unit is not inserted.<br>The door lock switch unit is damaged.<br>The wire is disconnected.<br>The door lock switch unit is defective.<br>This may occur due to a defect of the main PCB. | • Check whether the door lock switch unit is inserted.<br>• Check whether the door lock switch unit is damaged.<br>• Check the disconnection of the wire.<br>• If the door lock switch unit is defective, replace it.<br>• If the main PCB is defective, replace it. |  <br>Lock<br>  <br>Unlock<br>3. Check the resistance for Lock/ Unlock Contact (Checking Part : Lock White-Red Wire Unlock White-Blue Wire)<br>- Resistance: Resistance: Approx 0.2Ω between the terminals of Contact.<br>Check the Door Lock/Unlock state. |
| Switch Check (Main Relay Check) | ▶ BC2 | The Power button is continually pressed.<br>A button other than the Power button is continually pressed. | • Check whether either the Power switch or a tact switch is continually pressed.<br>• Check whether the service PBA holding screws are fastened too tight. If they are fastened too tight, loosen them a little.<br>• If the main PBA switching IC on/off Check has occurred, replace the main PBA.<br>• The “E2” Check occurs if the main relay connections are incorrect. Check the connections. If there is no Check in the connections, replace the main PBA. |  <br>Check the contact between the control panel buttons and their corresponding tact switch.<br>- There must be a gap between a control panel button and its corresponding micro switch.<br>Otherwise, an Check occurs after approx. 30 seconds has passed. |

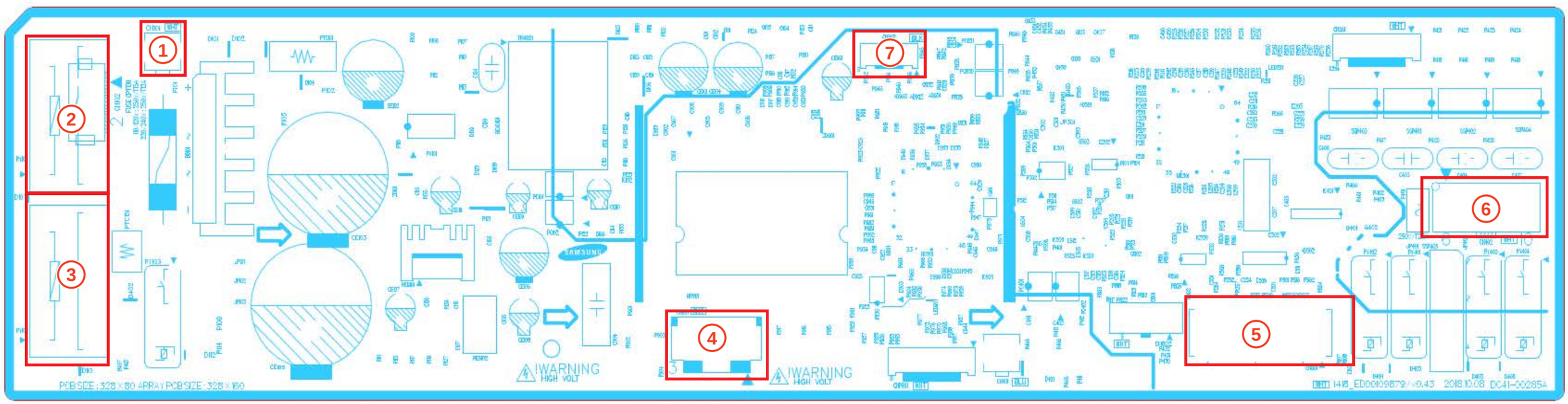
| Symptom | Check Code | Countermeasure | Troubleshooting Procedure | Measurement Picture |
|---|---|---|---|---|
| Water Leakage Check | ► LC<br>► LC1 | This may occur when an alien substance is in the DV Case.<br><br>This may occur due to a defect of the product's internal hose or from the part assembly. | • Since this occurs when an alien substance is in the Draining Bellows, for natural draining, remove the alien substance.<br>• If the drain motor is defective, replace the motor.<br>• Check if the water leaks from the tub connection part. |  <br>Check if there is any alien substance in the Draining Bellows.<br>Check if there is any alien substance such as underwear wire, coins, etc. |
| Unbalance Check | ► UB | This may occur due to the laundry being unevenly distributed. | • Check the laundry type and check if the laundry load is unbalanced.<br>- Make sure to check if there is any laundry present that absorbs a lot of water even if its volume is small and explain the problem comprehensively, if necessary. | - |
| Mems PBA Detected | ► 8C1<br>► 8C2<br>► 8C | Mems PBA check Detected | • Check Detected in the Mems PBA or data Check Detected<br>• Check the Wire Connections.<br>- Replace If necessary<br>1. Check the Wire Connections.<br>2. Replace the Mems PBA<br>3. Main PBA wire connection Check or PBA's Silver Nano Part Malfuction. Replace if necessary. | |
| | ► 8CA1<br>► 8CB1 | Mems PBA Wire Could be Disconnected | • Check the Wire Connections if there is External Mems PBA<br>- Replace If necessary<br>1. Replace the Mems PBA<br>2. Replace the Main PBA | |
| | ► 8CA2<br>► 8CB2 | Set Position may be Faulty | • Check the Washer is in horizontal Level.<br>- Replace If necessary<br>1. Replace the Mems PBA<br>2. Replace the Main PBA | |
| | ► 8CA3<br>► 8CB3<br>► 8CA4<br>► 8CB4 | Mems Sensor Could be Faulty | • Replace MEMS PBA if there is External Mems PBA.<br>• Replace Main PBA if there is no External Mems PBA. | |

| Symptom | Check Code | Countermeasure | Troubleshooting Procedure | Measurement Picture |
|---|---|---|---|---|
| Overflow Check | ► OC | This may occur when the water level sensor is defective.<br><br>This may occur when water is supplied continuously due to freezing or foreign materials in the water supply valve. | • Could be a defective water valve. Check water valve.<br>• The water level sensor is replaced. | - |
| Heater Check | ► HC<br>HC1 | • Disconnection wire<br>• Heater Fault should be fault<br>• Wash-thermistor fault | • Check for connection between wire and heater.<br>• If wash heater is faulty, replace it.<br>- Refer the TYPE 1<br>• If it is not problem in heater, replace wash-thermistor<br>- Refer the TYPE 2 | |
| Temperature Sensor Check | ► TC1<br>TC2<br>TC3<br>TC4 | • Washing temperature sensor fault<br>• Dry temperature sensor fault<br>• Faulty and incorrect connections of the dry condensing sensor<br>• Main PCB fault<br>• Freezing in the winter season<br>• IPM temperature is abnormally high. | • Check the connections for the washing heater temperature sensor connector.<br>• If the washing heater temperature sensor has a functional error, replace it.<br>- A TC1 check occurs.<br>• Check the connections for the dry heater temperature sensor connector.<br>• If the dry heater temperature sensor has a functional check, replace it.<br>- A TC2 check occurs. | |
| Power Check | ► UC<br>(9C1/9C2) | • Power condition fault.<br>• An check occurs when under or over voltage is supplied.<br>• plug receptacle is used<br>• Main PBA fault (sometimes) | • Check the consumer's power conditions.<br>: Make sure to check the operating voltage.<br>• Connect a tester to the internal power terminals during the Boil or Dry operations and observe the washing machine's operation carefully.<br>: Check the voltages. (A check occurs when under or over voltage is supplied.)<br>: Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V<br>• Main PBA fault (sometimes) | |

# 5. PCB DIAGRAM

## 5-1. ASSY PCB MAIN

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




| Location | Ref | Function | Description |
|---|---|---|---|
| 1 | CN101 | PBA Power Supply | Supply 120V of AC power. (AC-LIVE) |
| 2 | RY101 | Washing Heater Relay | The switch for the Washing Heater power. (Heater Model Only) |
| 3 | RY102 | Main Relay | Be Supplied PBA power when the Power button is pressed. (AC-Neutral) |
| 4 | CN901 | Motor Output | MOTOR 3-phase Output. |
| 5 | CN801 | Sensor Connection Port | Supply power to the sensor and provides a communications function. |
| 6 | CN402 | Each Load Connection Port | The port to supply power to each electric device. |
| 7 | CN902 | Inverter Debugging | Debugging Inverter MICOM. |

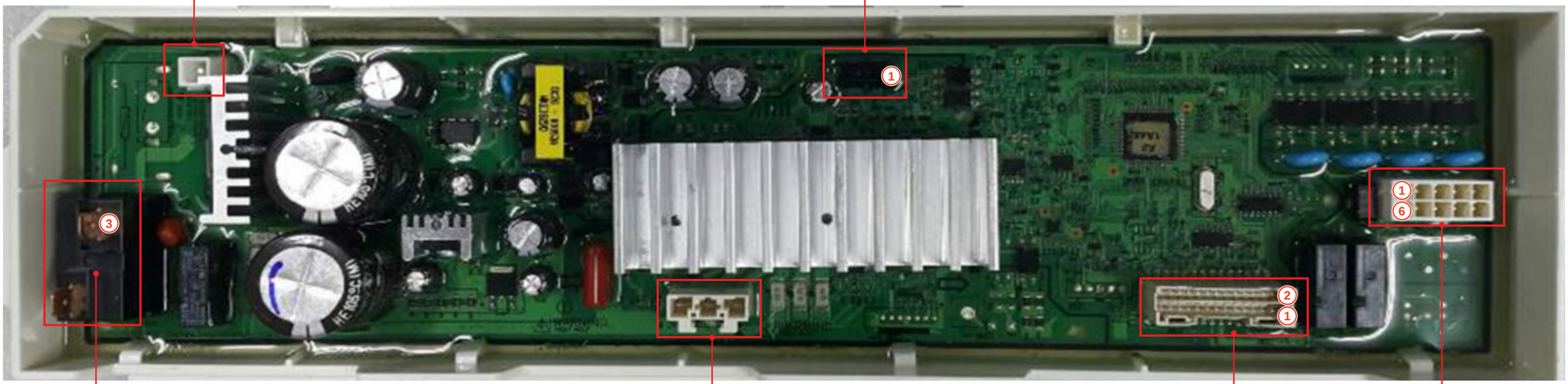
## 5-2. CIRCUIT DIAGRAMS OF MAIN PARTS FOR ASSY PCB MAIN

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

**● Non-heater Model**

► **CN101**
1. AC_LIVE

► **CN902 (For Writing)**
1. 5V
2. RXD_INVERTER
3. TXD_INVERTER
4. GND
5. BOOT_INVERTER




► **RY102**
3. AC_NEUTRAL
4. AC_NEUTRAL-1

► **CN901**
1. MOTOR_W
2. MOTOR_V
3. MOTOR_U

► **CN801**

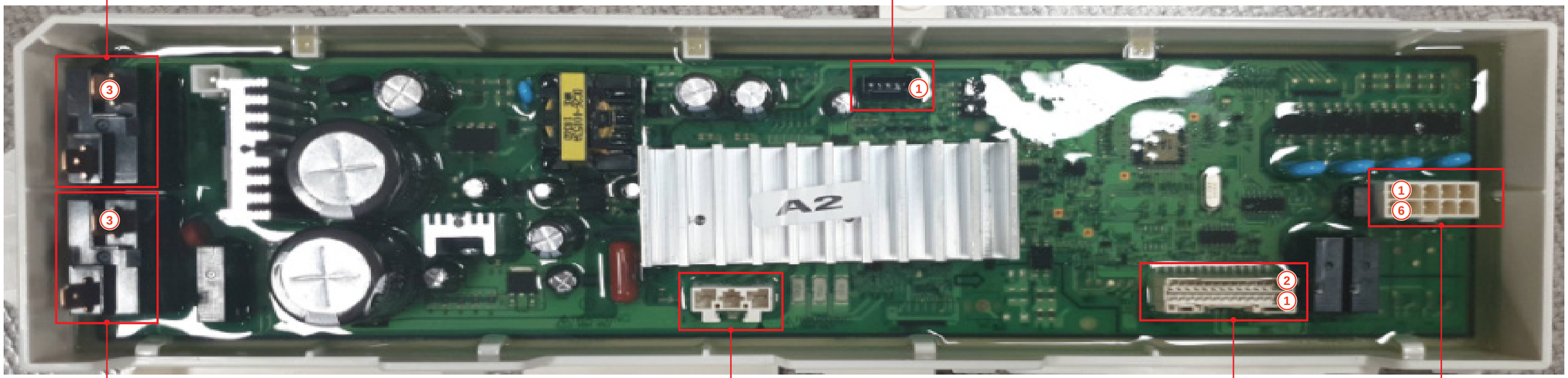
| | |
|---|---|
| 1. 12V | 15. POWER_SW |
| 2. GND | 16. Water Level_IN |
| 3. RX from SUB | 17. Doorlock DC Motor+ |
| 4. NC | 18. GND |
| 5. TX to SUB | 19. Doorlock DC Motor- |
| 6. Water Temp | 20. 5V |
| 7. SUB RESET | 21. Door Lock Signal |
| 8. NC | 22. RXD(For Writing) |
| 9. 5V | 23. 5V |
| 10. ADW_KEY_INPUT | 24. TXD(For Writing) |
| 11. GND | 25. REED |
| 12. GND | 26. GND |
| 13. 12V | 27. Door Unlock Signal |
| 14. Water Level_OUT | 28. BOOT(For Writing) |

► **CN402**
1. AC_L
2. Cold Valve
3. Hot Valve
4. Rinse Valve
5. ADW Cold Valve
6. NC
7. Clutch
8. Drain Pump
9. NC
10. NC

## • Heater Model

► **CN101**
3. AC_LIVE
4. AC_Wash Heater

► **CN902 (For Writing)**
1. 5V
2. RxD _Inverter
3. TxD_Inverter
4. Gnd
5. Boot_Inverter




► **RY102**
3. AC_NEUTRAL
4. AC_NEUTRAL-1

► **CN901**
1. MOTOR_W
2. MOTOR_V
3. MOTOR_U

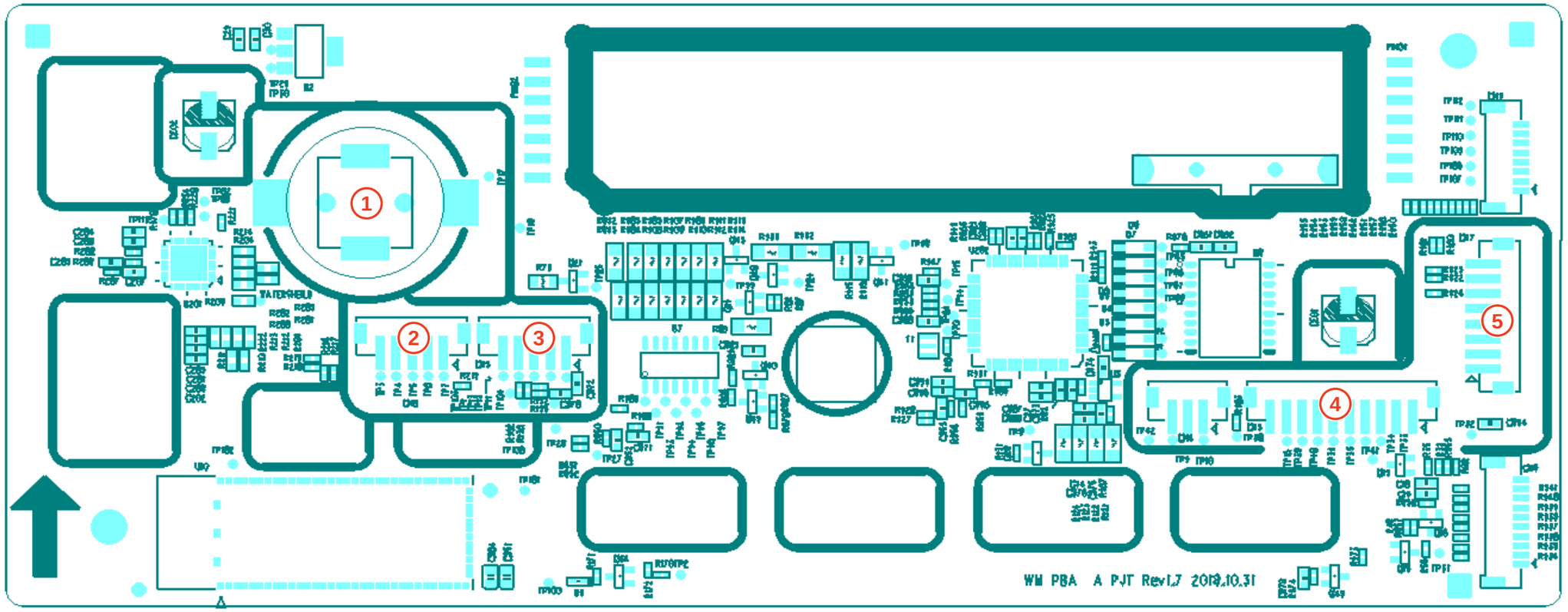
► **CN801**

| | |
|---|---|
| 1. 12V | 15.Power Switch |
| 2. GND | 16. Water Level In |
| 3. Rx From Sub PBA | 17. Door Lock DC Motor (+) |
| 4. NC | 18. Gnd |
| 5. Tx to Sub | 19. Door Lock DC Motor (-) |
| 6. Water Temp | 20. 5V |
| 7. Sub Reset | 21. Door Lock Signal |
| 8. NC | 22. RxD (For Writing, HASS) |
| 9. 5V | 23. 5V |
| 10. ADW Key Input | 24. TxD (For Writing, HASS) |
| 11. Gnd | 25. Reed Switch Signal |
| 12. Gnd | 26. Gnd |
| 13. 12V | 27. Door Unlock Signal |
| 14. Water Level Out | 28. Boot (For Writing, HASS) |

► **CN402**
1. AC_Live
2. Cold Valve
3. Hot Valve
4. Rinse Valve
5. ADW Cold Valve
6. NC
7. Clutch
8. Drain Pump
9. NC
10. NC

## 5-3. ASSY MODULE (TOUCH)

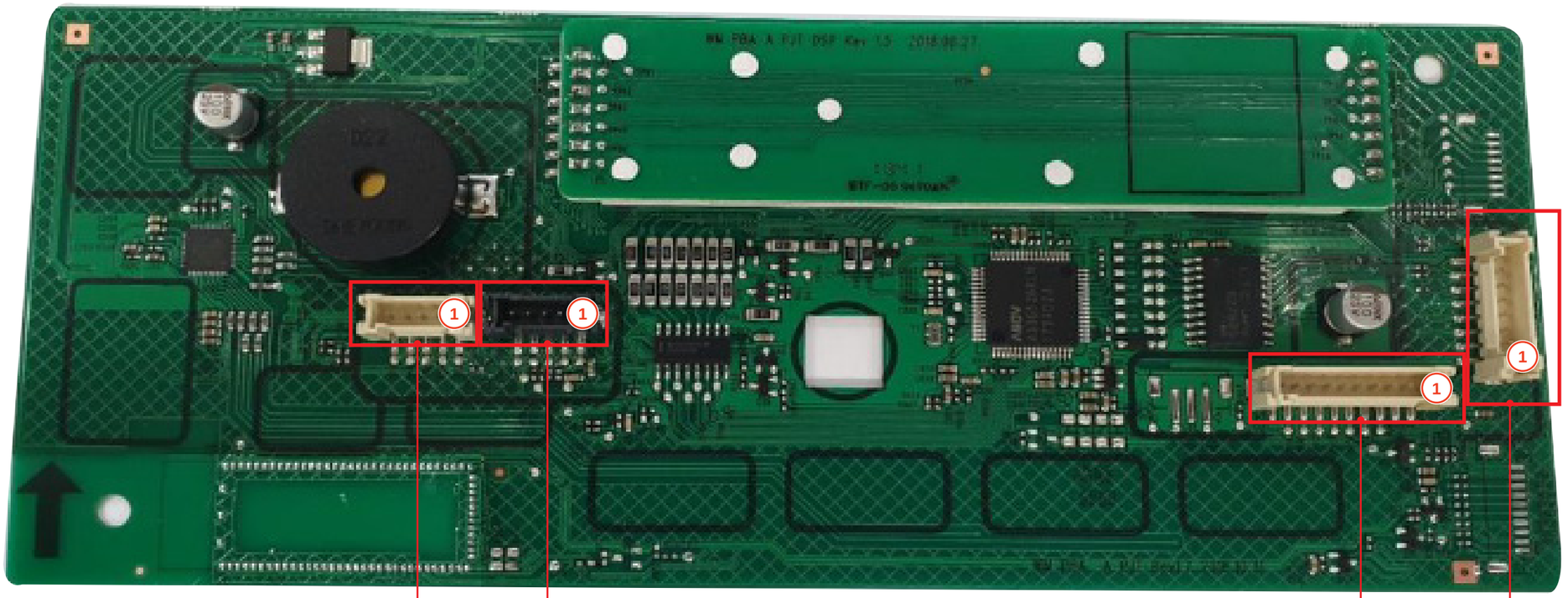
► This Document can not be used without Samsung's authorization.




| Location | Ref | Function | Description |
|---|---|---|---|
| 1 | BUZZER | Buzzer Circuit | Be generated sound when Key is pressed or the encoder is operated |
| 2 | CN6 | Touch Writing | Touch MICOM Writing |
| 3 | CN5 | Writing | Display MICOM Writing |
| 4 | CN3 | Connect Main PBA | Receives power from the Main PBA and provides a communications function |
| 5 | CN7 | JOG Connection | Supplies power to JOG PBA and provides course LED on / off fucntion |

## 5-4. CIRCUIT DIAGRAMS OF MAIN PARTS FOR ASSY PCB MAIN

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




► **CN6 (For Writing)**
1. GND
2. TOUCH_RESET
3. SWD_CLK
4. SWD_IO
5. 5V

► **CN5 (For Writing)**
1. 5V
2. RXD
3. TXD
4. GND
5. BOOT

► **CN3**
1. NC
2. NC
3. TX to Main
4. RX from Main
5. MCU_RESET
6. TOUCH_RESET
7. GND
8. 12V
9. POWER_KEY
10. NC

► **CN7**
1. 12V
2. GND
3. JOG SIGNAL
4. JOG SIGNAL
5. 5V
6. LED SIGNAL
7. LED SIGNAL
8. LED SIGNAL

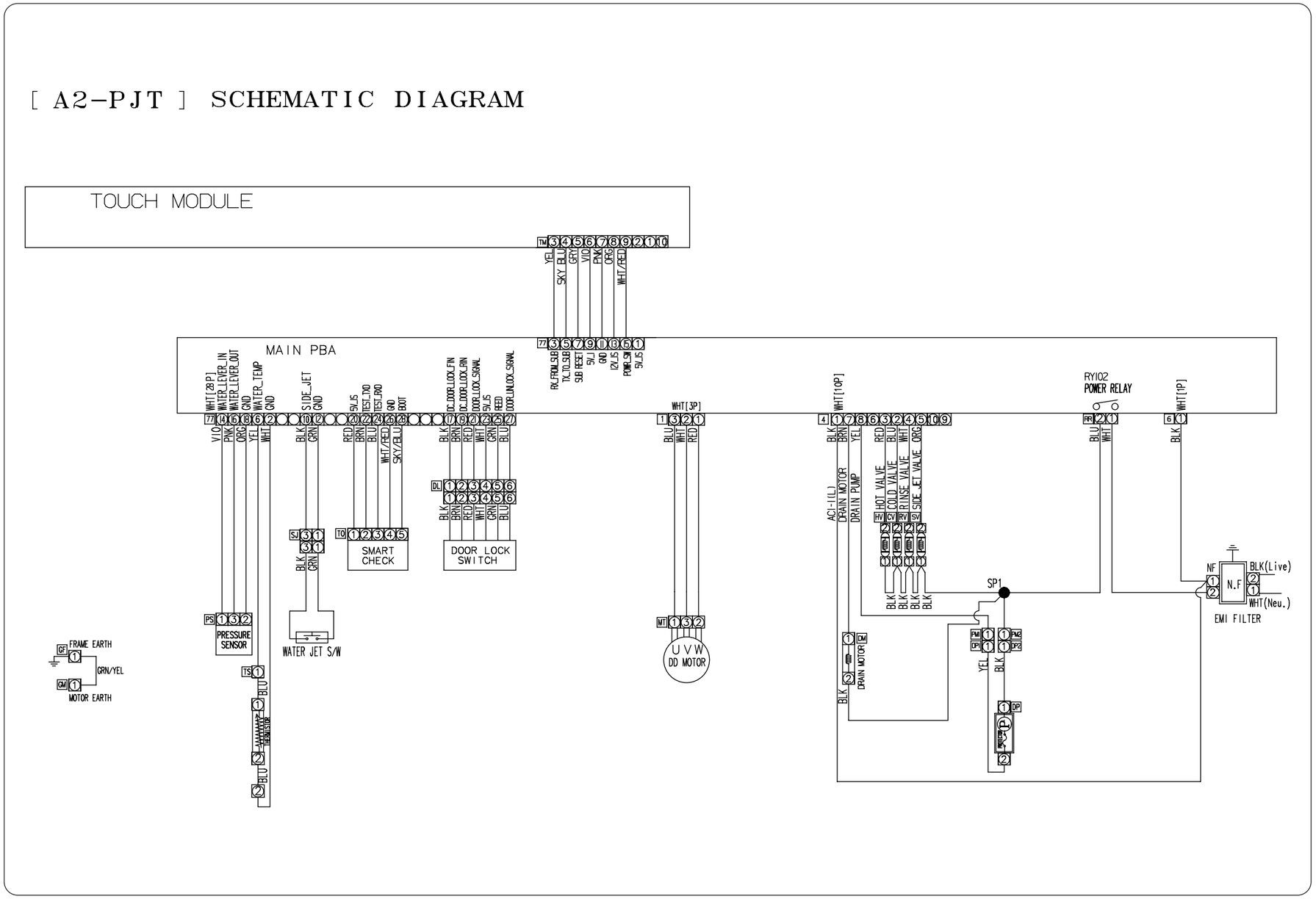
# 6. WIRING DIAGRAM

## 6-1. WIRING DIAGRAM

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

### ■ 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 |



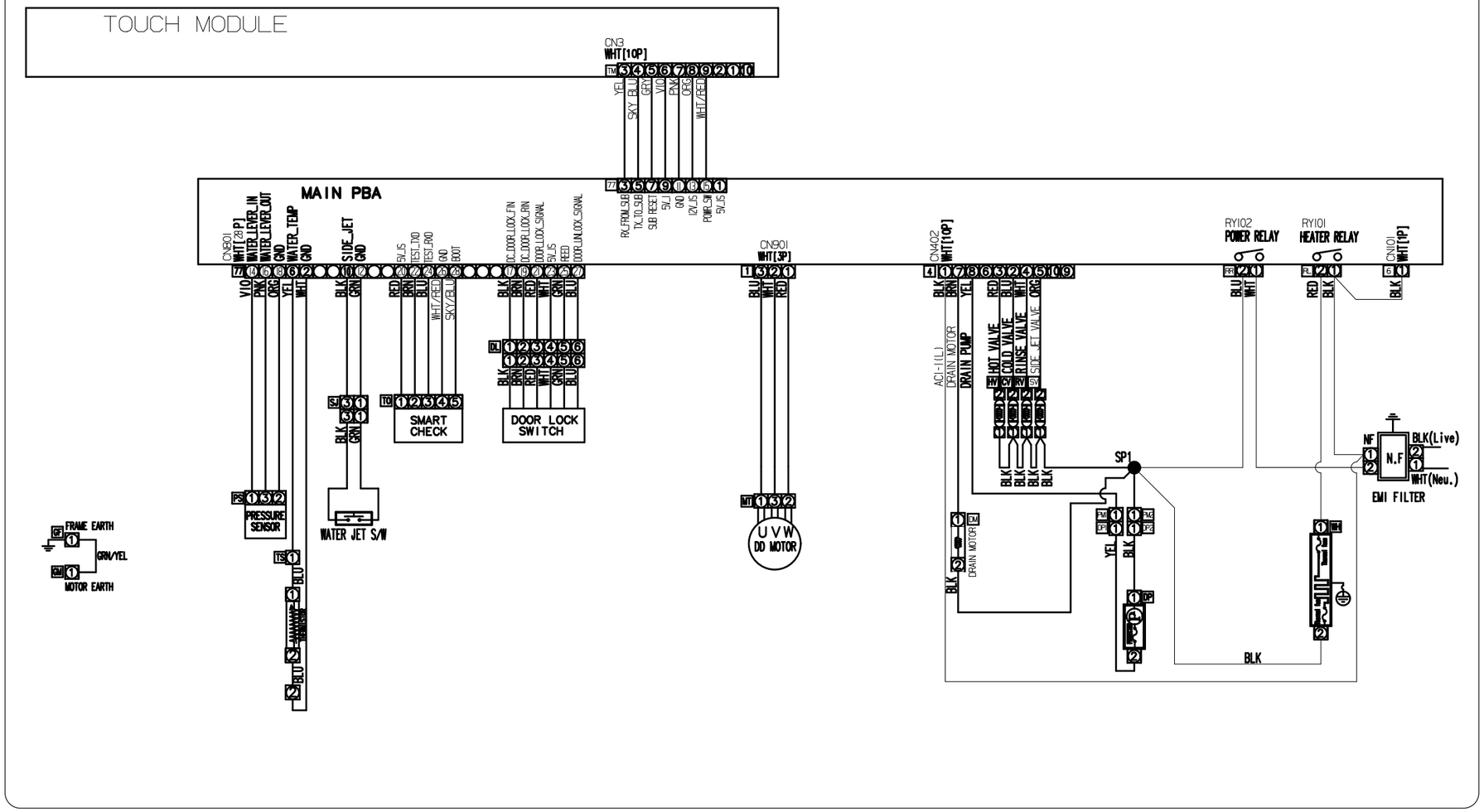
## 6-2. WIRING DIAGRAM (5.4CU.FT HEATER)

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

### ■ 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 |

[ A2-PJT ] SCHEMATIC DIAGRAM



# 7. REFERENCE

## 7-1. MODEL NUMBER NAMING RULES

| ① | | ② | | ③ | ④ | ⑤ | | | ⑥ | ⑦ | ⑧ | ⑨ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Product Type | | Capacity (by Market) | | Intro. Year | Series | Feature Table | | | Intro. Region. or TYPE | Color | | Buyer | |
| | | | | | Grade | F-Code 1 | F-Code 2 | F-Code 3 | | Color Code | | | |
| W | A | 5 | 0 | T | 5 | 3 | 0 | 0 | A | C | / | U | S |

① **Product type (CAN NOT CHANGE) :** Auto Washing machine (SAMSUNG' s Guide Line)

② **Market Claim Capacity :** 5.4/5.0cu.ft

③ **Intro. Year :** R - Intro.Year : 2019
T - Intro.Year : 2020

④ **Series :** Grade Product type 5 : A PJT 5.0cu.ft
Grade Product type 7 : A PJT 5.4cu.ft

⑤ **Feature Table :** 6 : Premium
4 : Best
3 : Best
2 : Better

⑥ **Intro. Region. or TYPE :** A - N.America

⑦ **Color :** V : Black Caviar
W : White
C : Champagne

⑧ **/ :** CBU

⑨ **Buyer :** US : USA

SAMSUNG

This Service Manual is a property of Samsung Electronics Co.,Ltd.
Any unauthorized use of Manual can be punished under applicable International and/or domestic law.

**© 2020 Samsung Electronics Co.,Ltd. All rights reserved.**

**Printed in Korea**