SAMSUNG

DISHWASHER

Model Name : DW80H9970US
DW80H9950US
DW80H9940US
DW80H9930US

Model Code : DW80H9970US/AA DW80H9970US/AC
DW80H9950US/AA DW80H9950US/AC
DW80H9940US/AA DW80H9940US/AC
DW80H9930US/AA DW80H9930US/AC

SERVICE Manual

DISHWASHER

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1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIONS FOR SERVICE ENGINEERS

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

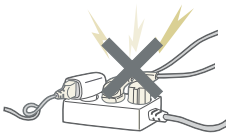
Warning	Hazards or unsafe practices that may result in severe personal injury or death.
Caution	Hazards or unsafe practices that may result in minor personal injury or property damage.

Warning

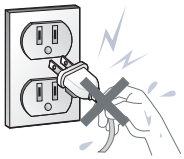
Before Servicing

- (When servicing electrical parts or harnesses) Make sure to disconnect the circuit breaker or power cable before servicing.
  - ➢ Failure to do so may result in a risk of electric shock.

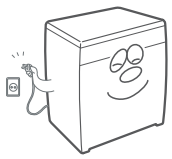
- Do not allow consumers to connect several appliances to a single power outlet at the same time.
  - ➢ There is a risk of fire due to overheating.



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



- When the dishwasher is not being used, make sure to disconnect the circuit breaker or power cable from the power outlet.
  - ➢ Failure 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 dishwasher.
  - ➢ There is a risk of explosion and fire caused from electric sparks.

While Servicing

- Check if the power cable is damaged, flattened, cut or otherwise degraded.
  - ➢ If faulty, replace it immediately.
    Failure 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 arcing and short circuits in advance.

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

- Make sure to disconnect 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 the nut is not fastened correctly, it can cause a water leak.

After Servicing

- Check for any water leakage.
  - ➢ Perform a test using the standard(normal) cycle 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 dishwasher themselves.
  - ➢ This may result in personal injury and shorten the product life.

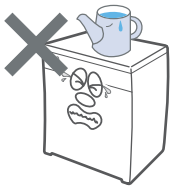
- If it seems that grounding is needed due to water or moisture, make sure to run grounding wires.
  - ➢ Failure to do so may result in electric shock due to electric leakage.

⚠ Caution

Before Servicing

- Do not sprinkle water onto the dishwasher directly when cleaning it.
  - ➢ This may result in electric shock or fire, and may shorten the product life.

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



- Do not install the dishwasher in a location exposed to snow or rain.
  - ➢ This may result in electric shock or fire, and shorten the product life.

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

During Servicing

- When connecting a wiring harness, make sure to seal it completely so no liquid can enter.
  - ➢ Make sure that the connections are securing by slightly pulling on them.

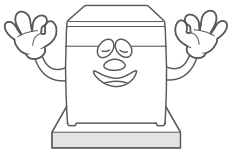
- Check if there is any evidence that liquid has entered electric components or connections.
  - ➢ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.

- If you need to place the dishwasher on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so the back is on the floor.
  - ➢ Do not lay it down on its front or side. This may result in scratches to the surface or damage to the parts.

After Servicing

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

- Check whether the product is level with the floor and secured to the cabinet and under the counter.
  - ➢ Vibrations can shorten the life of the product.



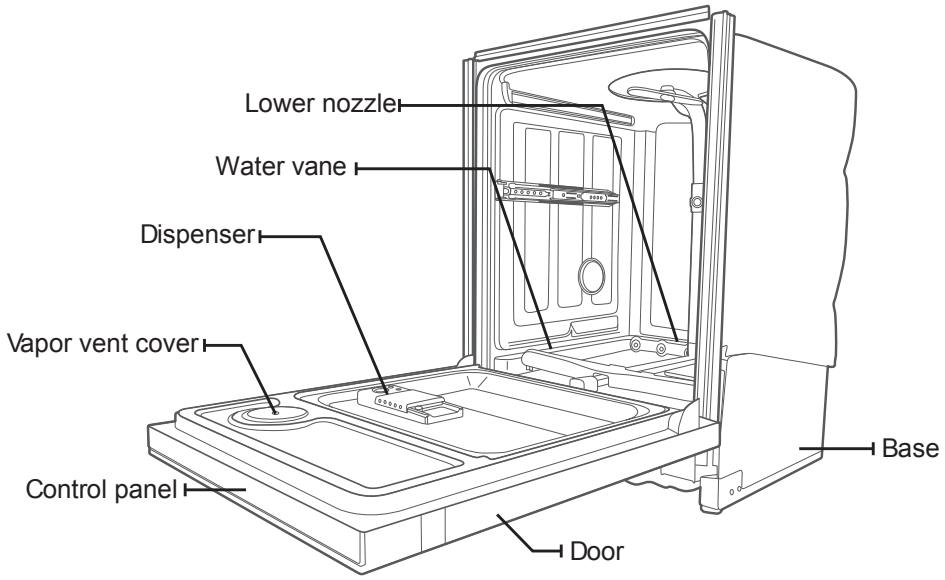
2. FEATURES AND SPECIFICATIONS

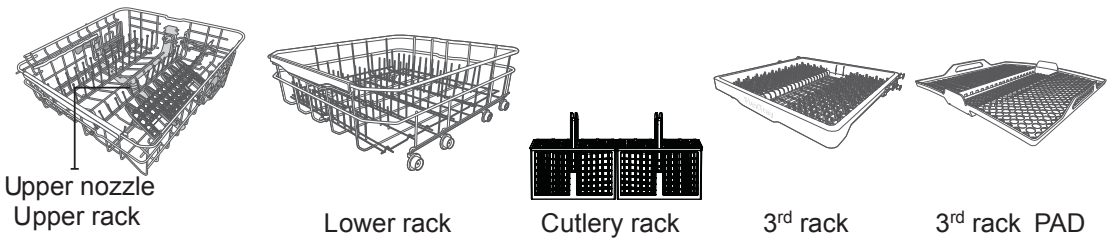
2-1. FEATURES

Features	Description	Remarks
Waterwall linear wash system	**New Waterwall cleaning system gets dishes sparkling everytime** • High pressure, consistent wall of water cleans hard to reach places • No need to pre-rinse • Available on full or half cycle	
Target zone washing	**Targeted wash for hard to clean pots and pans** • Control water pressure, temperature and time • Select right or left target zone	
Half load cycle: upper and lower	**Wash smaller loads without wasting water** • No need to wait until you have a full load • Choose either upper or lower rack • Saves on energy	
Third rack with flex tray	**Removable roll-up silverware tray for easy unloading** • Silverware lays flat for better cleaning • Perfect for oversized or hard to fit items • Easily roll up and remove for easy unloading	
Adjustable racking system	**Flexible design for more space** • Frees up more space on the top rack for tall and oversized items	
Speed boost	**Wash your dishes in less time** • Increased water pressure reduces wash time • Perfect for everyday family dishes	
Digital leakage sensor	**Worry-free dishwashing** • Can sense a leak of only 1 1/2 ounces • Shuts itself off before water can escape and cause floor damage • Protects against water-related damage and provides peace of mind	

2-2. SPECIFICATIONS

Model	DW80H99**US
Wash capacity	15 place settings
Type	Dishwasher
Power	Single-phased alternating current of 60Hz, 15A at 120V
Used water pressure	20 ~ 120 psi (140 ~ 830 kPa)
Wash type	Waterwall Linear Wash & Rotating nozzle spray
Dry type	Air diffusion condensing dry system
Power usage	Main Pump : 96w (Waterwall operating), Heater : 1100w
Standard amount of used water	6.34 ~ 2.85 gallon (24 ~ 10.8 ℓ), Normal Cycle
Size (W×D×H)	23 ⅞" x 25" x 33 ⅞" inch (605 x 636 x 860 mm)



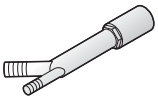
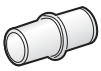
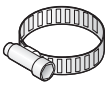


Accessory parts - User/Installation manual, Installation Kit, Drain Hose, Holder Drain Hose, Hose Clamp, Kick Plate, 3rd Rack PAD.

2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

Model	NEW MODEL			MODEL	
	DW80H9950US DW80H9940US	DW80H9970US	DW80H9930US	DW80F800UWS	DW80F600UTS/UTB/UTW
Photo					
Design Specifications					
Panel Control	Silver	Silver	Silver	Silver	Silver/Black /White
Control Type	Touch	Touch	Touch	Touch	Touch
Frame Front	STS			STS	STS/Black/White
Basket Handle	Blue + STS			Gray + STS	Gray
Function Specifications					
Soil Detection Sensors	O	O	O	O	O
Drying method	Air diffusion condensing			Air diffusion condensing	
Basket Height Adjustment	One-touch			One-touch	2-stage
Leakage Sensor	O	O	O	O	O
Programs	6 (Auto, Normal, Heavy, Delicate, Express60” Self Clean)	6 (Auto, Normal, Heavy, Delicate, Express60” Self Clean)	5 (Auto, Normal, Heavy, Delicate, Express60”)	6 (Normal, Heavy, Delicate, Pot & Pans, Quick+, Smart Auto)	4 (Normal, Heavy, Delicate, Smart Auto)
Options	6 (Half Load wash, Targeted zone, Sanitize, Dry+, Delay start, Speed boost)	6 (Half Load wash, Targeted zone, Sanitize, Dry+, Delay start, Speed boost)	5 (Half Load wash, Targeted zone, Sanitize, Dry+, Delay start)	6 (Delay Start, Sanitize, Half Load, Storm Wash, Child Lock, Start & Drain)	4 (Sanitize, Child Lock, Delay Start, Start & Drain)

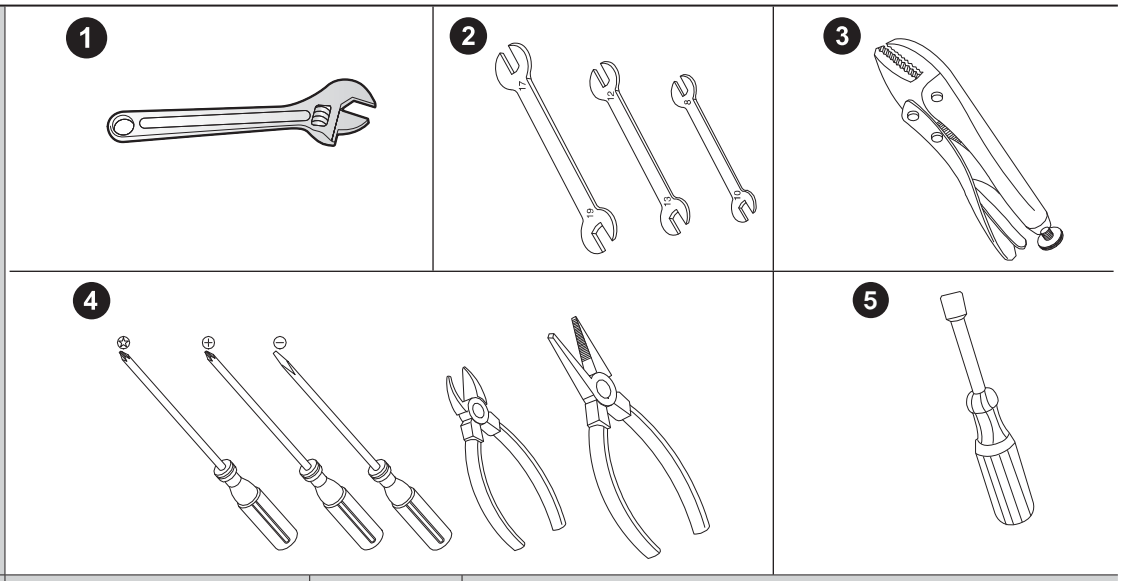
2-4. OPTIONS SPECIFICATIONS

Photo	Item	Code	QTY	Remarks
	ASSY PACKING PARTS	DD98-01019A	1	Provided with the dishwasher
	HOSE DRAIN-OUT	DD67-00116A	1	
	ELBOW	-	1	Sold separately
	WATER SUPPLY LINE (Flexible STS supply line is recommend)	-	1	
	AIR GAP	-	1	
	RUBBER CONNECTOR	-	1	
	HOSE CLAMP	-	1	
	STRAIN RELIEF	-	1	

3. DISASSEMBLY AND REASSEMBLY

3-1. TOOLS FOR REMOVAL AND REASSEMBLY

Tool image



No.	Tool	Type	Remarks
❶	Adjustable Wrench		
❷	Open-end Wrench	1-7/16”	Leg
❸	Vice pliers		
❹	Others (screwdriver, nipper, long nose pliers)		Common tools for servicing Screwdriver - Philips, flat, Torx T20, Small flat
❺	Nut Driver	10mm	Heater bracket Nut

*** Preparation for parts replacement**

1. Take out the residual water inside the product.
   (Drain the water by operating the drain pump)
2. Close the water supply valve.
3. Turn off the power & disconnect power cable.
   You must turn off the circuit breaker connected to the product.
4. Pull out the unit from the sink and lay it on the floor.
   Be careful of the drain hose when pulling out the unit.

⚠ Caution

When pulling out or laying the dishwasher down for service, it may be necessary to lower the height of the adjustable legs to provide the clearance for the removal of the unit, prevent breaking the legs, or damaging the base of the unit.

3-2. PREPARATION FOR PARTS REPLACEMENT

1. Take out the residual water inside the product. (Drain the water by operating the drain pump)
2. Close the water supply valve.
3. Turn off the power. You must turn off the circuit breaker connected to the product.
4. Pull out the unit from the sink and lay it on the floor. Be careful of the drain hose when pulling out the unit.

⚠ Warning
Always turn off the electric power supply & water supply before servicing any electrical component, making ohmmeter checks, or replacing any parts.

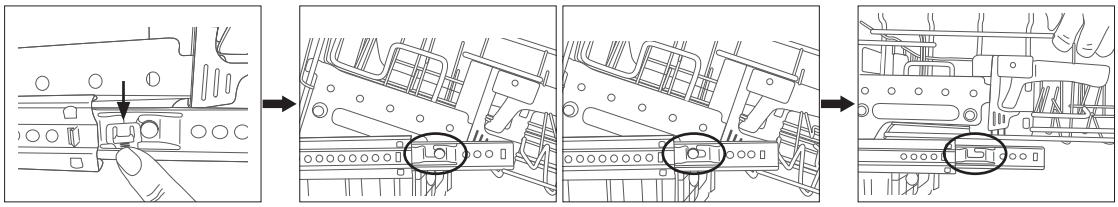
⚠ Caution
Before moving the unit, laying it down for service, or removing any parts for service be sure to drain as much of the water from the unit as possible. Use a protective mat or towel to prevent damage to the floor or having any of the remaining water spill on the floor.

All voltage checks should be made with a voltmeter having a full scale range of 250 volts or higher. After service is completed, be sure all safety grounding circuits are complete, all electrical connections are secure, and all access panels are in place.

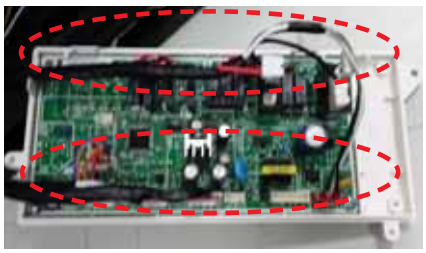
Before servicing, make sure to remove all items from inside of the dishwasher, including the wash racks.

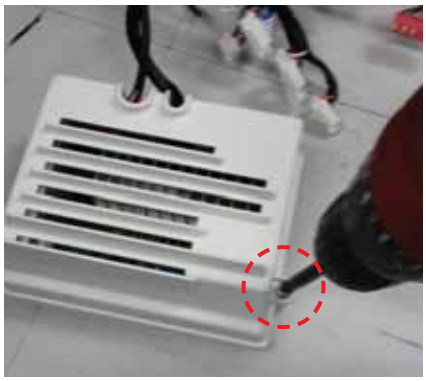
3-3. REMOVING THE UPPER RACK (IF NEEDED)

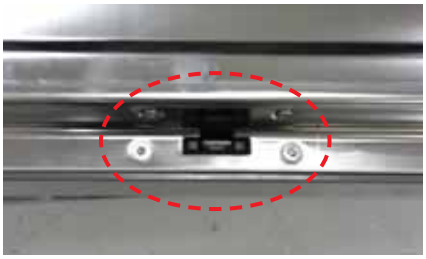
To remove the upper rack from the slide rail, pull the upper rack out from the tub until it is fully extended.
Hold down the holder rails on both sides to release the upper rack. Slide the upper rack out to the end of one holder rail, and then lift it up.
Repeat the steps above with the other holder rail.



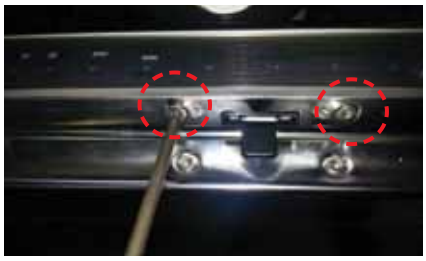
Step 1. **Step 2.** **Step 3.**

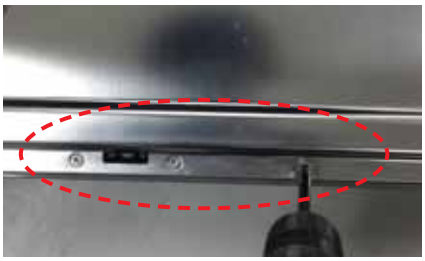
Part	Figure	Description
Main PBA		**Preparation:** • Make sure to disconnect the power. • Disassemble the housing-right. 1. Remove the one(1) screw holding the assy-base.
		2. Push the main PBA board toward left and remove it. 3. Remove the two (2) screws of the PBA case and pull out the main PBA cover carefully.
		4. Remove the seven(7) wire connectors from Main PBA. 5. Remove the two(2) screws on the PBA board .
		6. Pull out the main PBA board carefully. When removing the Main PBA, lift the main PBA board up carefully because it is hanging on the main PBA case by two hooks.

Part	Figure	Description
Inverter PBA		**Preparation:** • Make sure to disconnect the power. • Disassemble the housing-right. • Disassemble the main PBA. 1. Remove the two(2) screws holding the assy-base.
		2. Pull out the Inverter PBA board. 3. Remove the one(1) screw on the Inverter PBA case and pull out the inverter PBA cover carefully. 4. Remove the four(4) wire connectors from the inverter PBA. 5. Remove the two(2) screws on the inverter PBA board .
		6. Pull out the inverter PBA board carefully. When removing the inverter PBA, lift the inverter PBA board up carefully because it is hanging on the inverter PBA case by two hooks.

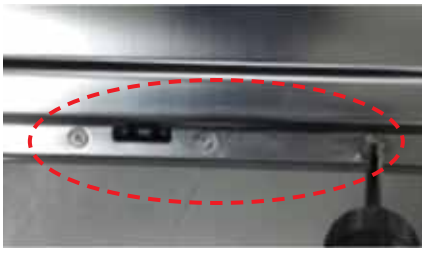
Part	Figure	Description
Door outer (DW80H9950US/ DW80H9940US)		**Preparation:** • Make sure to disconnect the power. • Remove the lower basket in the dishwasher. • Cover the Assy sump with a towel to prevent losing screws. 1. Open the door completely. Remove the 10 screws holding the door outer and control panel in place. (Don't remove the 2 screws holding the control panel.)
	 	✎ Before removing the parts, place a cushioned mat on the floor to prevent the parts from being scratched. After removing screws, make sure to hold the door inner using your hand. This will prevent the door from closing and suddenly harming you. ✎ Do not remove the two (2) screws in the circle. ⚠ **Caution** Do not place the removed screws on the door inner. They may fall into the sump assy.
		2. Pull out the door outer carefully.

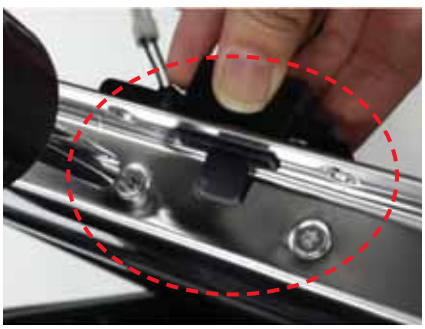
Part	Figure	Description
Door outer (DW80H9970US/ DW80H9930US)		**Preparation:** • Make sure to disconnect the power. • Remove the lower basket in the dishwasher. • Cover the Assy sump with a towel to prevent losing screws. 1. Open the door completely. Remove the 6 screws holding the door outer and control panel in place. (Don't remove the 6 screws holding the control panel.)
		Before removing the parts, place a cushioned mat on the floor to prevent the parts from being scratched. After removing screws, make sure to hold the door inner using your hand. This will prevent the door from closing suddenly and harming you. You should leave the six(6) screws in the circle. ⚠ **Caution** Do not place the removed screws on the door inner. They may fall into the sump assy.
		2. Pull out the door outer carefully.

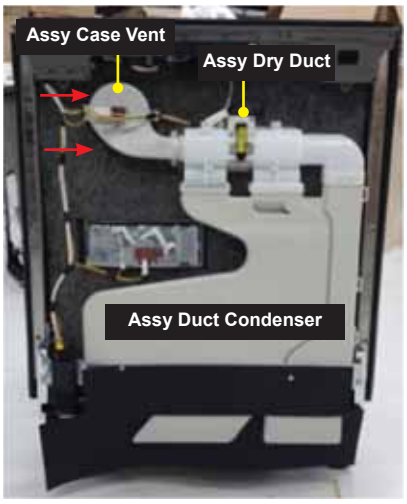
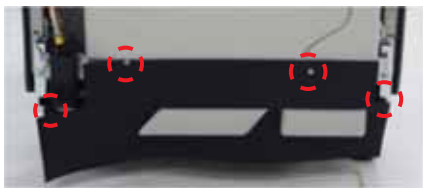
Part	Figure	Description
Panel control (DW80H9950US/ DW80H9940US)		**Preparation:** • Disassemble the door outer. 1. Remove the 2 screws holding the panel control.
		2. Remove the panel control from the door inner.
		3. Remove the seven(7) wire connectors from Panel control
		4. Remove the two(2) screws holding the panel control and remove the led display from the control panel.
		5. Remove the one(1) screw holding the panel control and remove the led display from the control panel.
		6. The assy-module is fixed to the panel control with several tabs. Use a flat tip screwdriver to gently pry the tabs.

Part	Figure	Description
Panel control (DW80H9970US)		**Preparation:** • Disassemble the door outer. 1. Remove the six(6)screws holding the assy-door front.
		2. Remove the assy-door front from the door inner.
		3. Remove the eight(8) wire connectors from Panel control.
		4. Remove the one (1) screw holding the panel control and remove the led display from the panel control.
		5. The assy-module is fixed to the panel control with several tabs. Use a flat tip screwdriver to gently pry the tabs.
	 	6. Remove the two(2)screws holding the assy-door front and pull out the panel control.

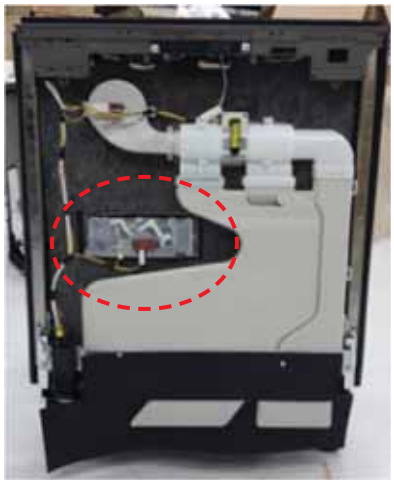
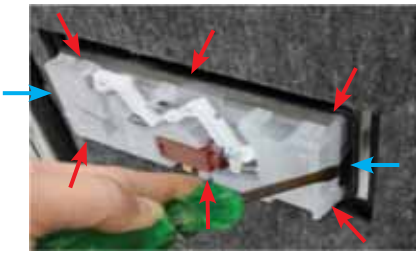
Part	Figure	Description
Panel control (DW80H9970US)		7. Remove the two(2)screws holding the assy-door front. Open the hooks by using a flat tip screwdriver and then pull out the handle door.
		8. Remove the two(2)screws holding the cover handle. Open the hooks by using a flat tip screwdriver then pull out the window display.

Part	Figure	Description
Panel control (DW80H9930US)		**Preparation:** • Disassemble the door outer. 1. Remove the six(6)screws holding the assy-door front.
		2. Remove the assy-door front from the door inner.
		3. Remove the seven(7) wire connectors from Panel control.
	 	4. Remove the one (1) screw holding the panel control and remove the led display from the panel control.
	 	5. The assy-module is fixed to the panel control with several tabs. Use a flat tip screwdriver to gently pry the tabs.
		6. Remove the two(2)screws holding the assy-door front and pull out the panel control.
	  	7. Remove the two(2)screws holding the assy-door front. Open the hooks by using a flat tip screwdriver and then pull out the handle door.

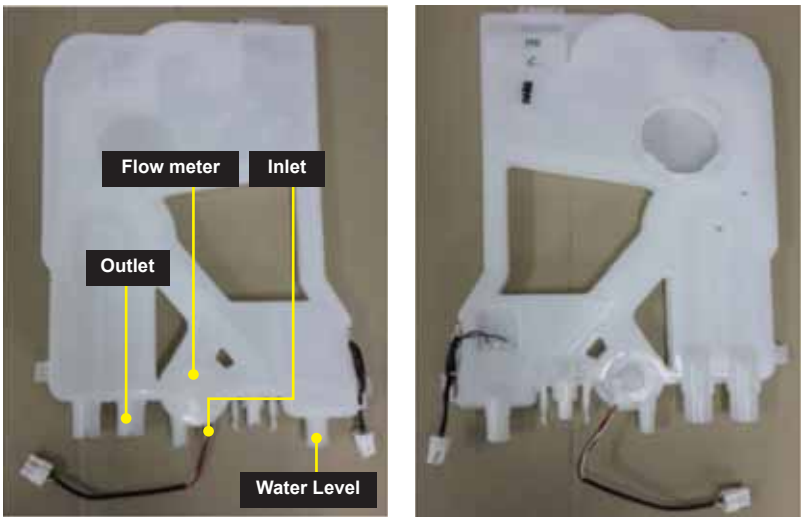
Part	Figure	Description
Panel control (DW80H9930US)		8. Remove the two(2)screws holding the cover handle.
		9. Remove the two(2)screws holding the cover handle. Open the hooks by using a flat tip screwdriver and then pull out the window display.
Switch door		**Preparation:** • Disassemble the door outer. 1. Remove the one(1) wire connector from Panel control.
		2. Remove the two(2) screws holding the door inner.

Part	Figure	Description
Duct Dry system		**Preparation:** • Disassemble the door outer& Assy - panel control. - Refer the “Door outer & Panel control” disassembly section. 1. Remove the two(2) wire connectors from thermal actuator & Dry Fan motor.
		2. Open the door & Remove the three(3) screws holding the bracket cover fan and Assy - Duct Vent.
	 	3. Remove the cover fan by rotating counter clockwise. Use a jig. If you do not have a jig, use a tool such as a needle nose pliers. Remove it carefully so that the part is not damaged.
	 	4. Remove the four (4) screws to release the bracket door inner, rubber skirt and remove Assy - duct dry. Be careful while removing them as the duct condenser is touching the bracket door inner and the cushion duct.

Part	Figure	Description
Duct Dry system		5. Remove the seal fan from the cover fan.

Part	Figure	Description
Dispenser - slide		**Preparation:** • Disassemble the door outer. - Refer to the “door outer” disassembly section to separate the door outer. 1. Remove the two(2) connectors from the dispenser. ⚠ **Caution** Be careful not to break them during disassembly.
		2. The dispenser-slide is fixed to the door inner with several tabs. Use a flat tip screwdriver to gently pry the tabs.
		3. Push it to the inside carefully. Be careful as the tub front is sharp.

Part	Figure	Description
Lever door		1. Remove the two(2) screws holding the trim-up to the assy-tub.
		2. Remove the trim-up from the assy-tub.
		3. Remove the one(1) screw holding the lever door to the assy-tub.
		4. Remove the lever door from the assy – tub.

<table>
<tr><th>Part</th><th>Figure</th><th>Description</th></tr>
<tr><td rowspan="4">Assy Case Brake</td><td colspan="2"> 

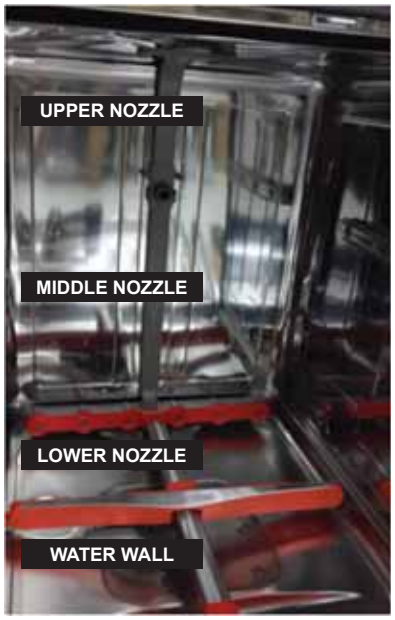
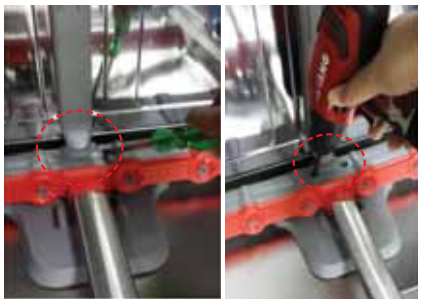
< Assy case brake ></td></tr>
<tr><td>  </td><td>Preparation:
• Make sure to disconnect the power, water supply, and drain hose connections.
• Remove the upper, lower baskets and 3rd rack in the dishwasher.
• Pull out the dishwasher carefully.

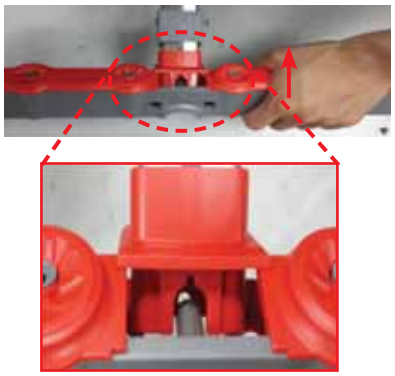
1. Remove the two(2) screws of the Housing Left.

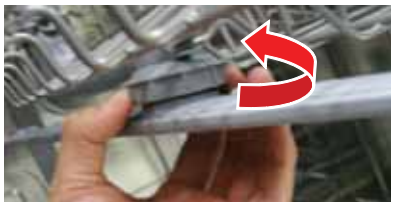
2. Remove the Housing Left.

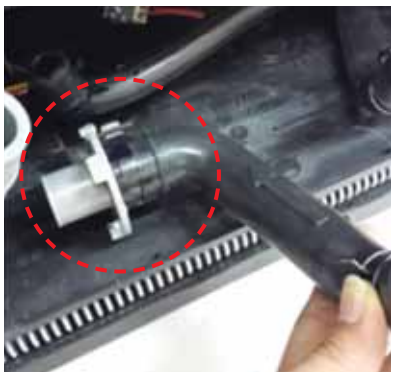
⚠ Caution
Make sure to wear gloves when removing it. Be careful as the steel plate is sharp and may cut you.</td></tr>
<tr><td>  </td><td>3. Remove cover brake by rotating.(counterclockwise) Use a jig. If you do not have a jig, you can use needle nose pliers.
(Be careful when removing the cover as it is easily damaged.)</td></tr>
<tr><td>  </td><td>4. Loosen the four (4) clamps and release the four (4) hoses from the Assy case brake and remove the two(2) wire connectors from Assy case brake.

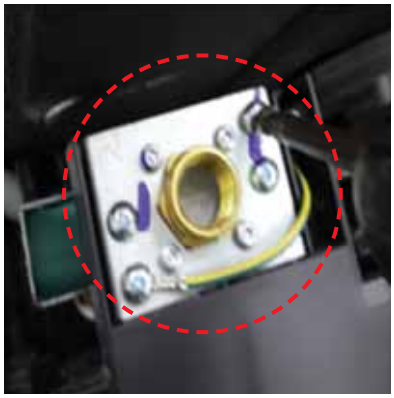
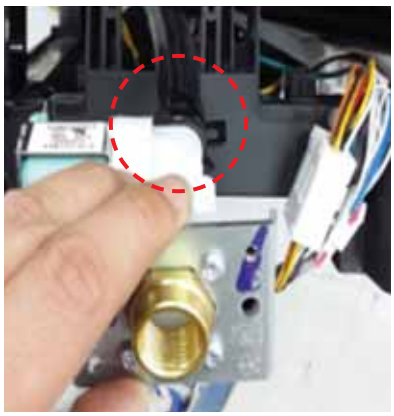
⚠ Caution
Water remaining in the Assy case sensor and Assy case break will come out. Lay a towel on the floor to absorb any water that may come out.</td></tr>
</table>

Part	Figure	Description
Assy - Motion		**Preparation:** • Make sure to disconnect the power, water supply, and drain hose connections and remove the water in each nozzle. • Remove the upper, lower baskets and 3rd rack in the dishwasher. • Pull out the dishwasher carefully.
		1. Remove the assy-vane from the assy-rail. Remove it carefully so that the part is not damaged.
		2. Remove the cap rubber from assy-motion by using a small flat tip screwdriver. 3. Remove the two(2) screws holding the assy-cover nozzle.

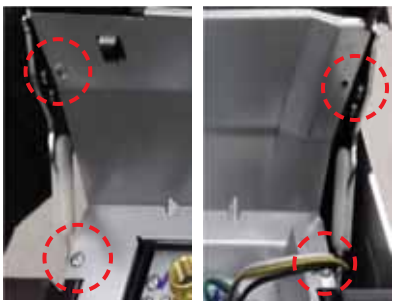
Part	Figure	Description
Assy - Motion	 	4. Remove the assy-motion from the assy-cover nozzle.
		5. Remove the one(1) screws holding the assy-nozzle-lower and remove the assy-rail. ⚠ **Caution** When you remove the assy-rail, pull up the front of cover nozzle first. And then pull up the end of it

Part	Figure	Description
Assy Duct (Nozzle)	 	**Preparation:** • Remove the lower basket in the dishwasher. • Make sure to remove the water in each nozzle. 1. Upper Nozzle : Remove it by rotating the holder. (counterclockwise) 2. Middle Nozzle : Remove it by rotating the holder from upper basket. (counterclockwise)
	 	3. The assy-duct is fixed to the assy-tub with several tabs. Use a flat tip screwdriver to gently pry the tabs.
		4. Remove the assy-duct from the assy-tub and assy-cover nozzle.

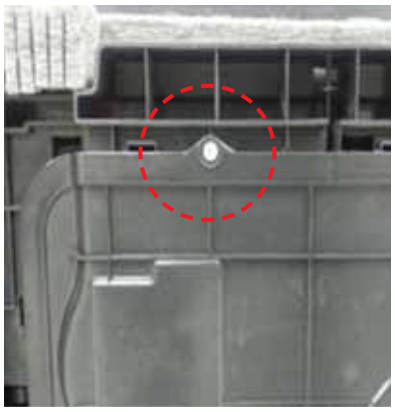
Part	Figure	Description
Drain Hose		**Preparation:** • Disassemble the Assy case brake. - Refer to the Assy case brake disassembly section to separate 1. Loosen the clamp and release the hose from the Assy-case brake.
		2. Loosen the clamp and release the hose holder and pull out the drain hose.
	 	3. You can see the hose holder in the dishwasher backside. Push the one(1) hook of the hose holder to inside and rotate it counter clockwise by using a flat tip screwdriver
		4. Push the hose holder carefully into the base.
		5. Loosen the clamp and release the holder hose.

Part	Figure	Description
Water Valve		**Preparation:** • Disassemble the bracket front lower & frame left. - Refer to the “bracket front lower” disassembly section. 1. Remove the four (4) screws and ground wire screw from the inlet valve.
		2. Lift up the inlet valve and disconnect the inlet valve wire connector.
	 	3. Release the hose clamp and disconnect hose. ⚠ **Caution** When removing the hose clamp, take care to hold it tightly. The clamp is under tension and if released, it can become a projectile. ⚠ **Caution** There will be a residual amount of water in the valve and valve hose. Use a towel to absorb the water when removing the valve.

Part	Figure	Description
Cover base		**Preparation:** • Make sure to disconnect the power, water supply, and drain hose connections. • Remove the upper, lower and 3rd baskets in the dishwasher. • Pull out the dishwasher carefully. 1. Lay the dishwasher down on its back. Release the one(1) screw securing the base and cover base in place.
	 	2. Pull out the cover base and release the leakage sensor connector.
	 	3. Remove the leakage sensor from the shutter by unfastening the one(1) screw.

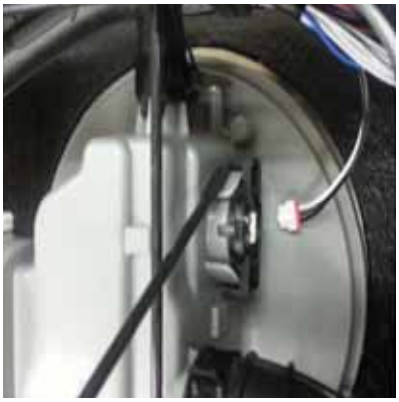
Part	Figure	Description
Frame front		**Preparation:** • Make sure to disconnect the power, and water supply. • Remove the upper & lower baskets in the dishwasher. • Pull out the dishwasher & carefully lay the dishwasher down on its back. • Remove the water supply line(& elbow). ⚠ **Caution** Make sure to turn the water supply off before removing the water supply line.
		1. Remove the (4) screws
		2. Remove 2hooks Use a pair of needle nose pliers or flat screwdriver.
		3. To remove the bracket front lower entirely, grab the top of the bracket front lower (on both sides) and pull the top out. At the same time, push the bottom of the bracket front lower (on both sides) in towards the unit.

Part	Figure	Description
Door Spring		**Preparation:** • Disassemble the housing-left & right.
		1. Remove the spring etc door front the assy-base by using a needle nose pliers. Use a tool such as a needle nose pliers. Remove it carefully so that you are not damaged from the spring etc door.
		2. Remove the bracket spring and holder rope door from the spring door.

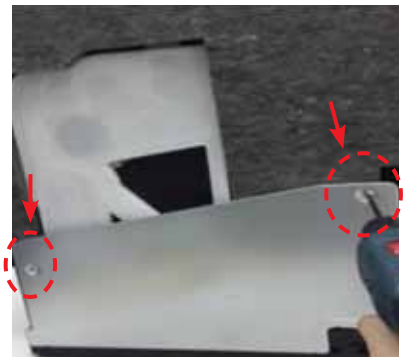
Part	Figure	Description
Assy Cover base		**Preparation:** • Make sure to disconnect the power, and water supply. • Remove the upper & lower baskets in the dishwasher. • Pull out the dishwasher & carefully lay the dishwasher down on its back. • Remove the water supply line(& elbow). ⚠ **Caution** Make sure to turn the water supply off before removing the water supply line.
		1. Remove the (1) screws
	 	2. Remove the leakage sensor from the cover base by unfastening the one(1) screw.

Part	Figure	Description
Rear Leg + Adjust bar	 	**Preparation:** • Make sure to disconnect the power, water supply, and drain hose connections. • Remove the upper & lower baskets in the dishwasher. • Pull out the dishwasher & lay the dishwasher down on its back. • Remove the Assy cover base. 1. Turn the rear leg adjusting screw clockwise until the rear adjusting leg is fully extended.
		2. Remove the screw that is holding the case gear to the unit.
		3. The case gear is made up of a worm gear and helical gear. Pull out the worm gear first.
		4. Grab the adjusting bar and pull it out while pushing the helical gear from the backside. The adjusting leg bar is attached to the base by a hook, which is indicated in the red circle in the image to the left.

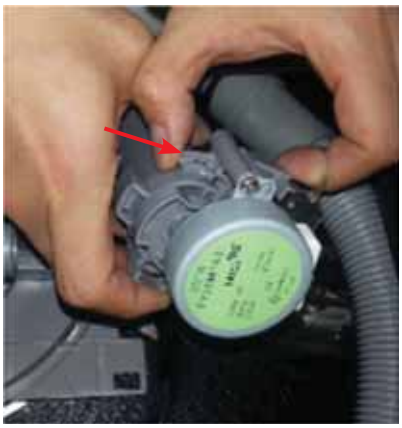
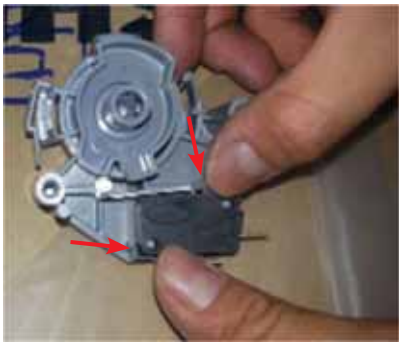
Part	Figure	Description
Thermister		**Preparation:** • Disassemble the frame front. - Refer disassembly frame front. 1. Remove the two(2) screws securing the thermistor.
		2. Disconnect the wire terminal connected to the thermistor.
		3. Pull it out carefully. The thermistor has a seal.

Part	Figure	Description
Turbidity sensor		**Preparation:** • Disassemble the frame front. - Refer disassembly ‘assy cover base’. 1. Disconnect the wire terminal connected to the turbidity sensor.
		2. Gently pry up the tabs on the turbidity sensor and pull it out of the sump assembly.
		⚠ **Caution** Carefully use a flat tip screwdriver to pry the tabs on the sensor as the tabs are fragile and can be damaged easily. Inspect the “O” ring seal around the sensor. If it is damaged in anyway, replace the “O” ring seal.

Part	Figure	Description
Circulation pump		**Preparation:** • Disassemble the ‘cover base’. - Refer to the ‘Cover base’ disassembly section. 1. Disconnect the Circulation pump connector. - (3)wires. Heater wire, ground wire, motor wire.
		2. Release Damper BLDC from base using by using a driver or hand. ⚠ **Caution** Remove all water from the sump assembly before removing the pump. Failure to do so will cause the water to be released onto the floor. Make sure to use a towel to cover the PBA Case & Electric parts to prevent water damage to these parts. 3. Move the inlet Clamp to center of hose inlet(left picture) and release the hose from ass’y sump.
		4. Loosen the outlet clamp(left side in picture) and release the hose from the Assy sump.
		5. Pull out carefully

Part	Figure	Description
Base		**Preparation:** • Disassemble the housing L/R and assy-case brake. - Refer to each disassembly section.
		1. Remove the two(2) screws on the plate base both-sides. (in Red circle) 2. Carefully lay the dishwasher down on its back. 3. Remove the cover assy-cover pcb and assy-cover pcb-inverter and disconnect the wire connectors.
		4. Disconnect the wire connectors from Assy Sump. 5. Pull out the plate base slightly. 6. Remove other parts as needed to remove the base. Ex . Frame front, Cover harness etc.

Part	Figure	Description
Ass'y Guide water		**Preparation:** • Disassemble the 'cover base'. - Refer to the 'Cover base' disassembly section 1. Disconnect the Geared motor wire and Micro switch wire.
	  	⚠ **Caution** Remove all water from the sump assembly before removing the pump. Failure to do so will cause the water to be released onto the floor. Make sure to use a towel to cover the PBA Case & Electric parts to prevent a water damage to these parts. 2. Loosen the C-pump outlet clamp(left side in picture) and release the hose from the Assy sump and then, Loosen the Hose Drain-in clamp and release the hose from sump.
		3. Loosen the Hose Circulation clamp and release the hose from Assy guide water.
		4. Remove the Assy guide water by gently pulling the locking tab(2) on the Assy guide water and sump. Then pull out carefully.

Part	Figure	Description
Motor AC drive & Switch micro		**Preparation:** • Disassemble the 'cover base'. - Refer to the "Cover base" section • Disassemble the Assy guide water. Refer to the 'Assy guide water'. ⚠ **Caution** Remove all water from the sump assembly before removing the pump. Failure to do so will cause the water to be released onto the floor. Make sure to use a towel to cover the PBA Case & Electric parts to prevent a water damage to these parts.
		1. Remove the distributor motor connector.
		2. Remove the Cover distribute by gently prying up the locking tab on the assy. Then rotate the pump clockwise until it releases from the assy sump.
		3. Remove the two (2) screws that hold the distributor motor in place.
		**Preparation:** • Disassemble the 'cover base'. - Refer to the 'Cover base' • Disassemble the Assy guide water. - Refer to the 'Assy guide water' • Disassemble the Motor AC drive. - Refer to the 'Motor AC Drive ⚠ **Caution** Remove the 'micro switch' by gently prying up the locking tab(2) on the cover distribute. Then release from the cover distribute.

Part	Figure	Description
Drain pump(MOTOR BLDC PUMP)		**Preparation:** • Disassemble the ‘cover base’. - Refer to the ‘Cover base’ disassembly section. 1. Disconnect the drain pump connector.
	 	2. Remove the drain pump by gently push the locking tab on the pump. Then rotate the pump clockwise until it releases from the sump. Then pull the pump out.
		⚠ **Caution** Remove all water from the sump assembly before removing the pump. Failure to do so will cause the water to be released onto the floor.

Part	Figure	Description
Sump		**Preparation:** • Disassemble, ‘assy motion’ ‘cover base’ ‘Rear leg + Adjust bar’ ‘Filter micro, Filter fine’. 1. Remove the parts which are connected to the Assy sump. - connectors, drain pump, screws
		2. Remove the four (4) screws on the sump upper side, by using a T20 driver tip.
		3. Pull out Assy sump from Assy tub carefully.
		⚠ **Caution** Remove all water from the sump assembly before removing the pump. Failure to do so will cause the water to be released onto the floor.

3-4. CHECKPOINTS AFTER FINISHING SERVICE

1. **Check the safety device**
   Check the operation of the door lock switch. Make sure that it is locked while the dishwasher is running and that the dishwasher stops running when the door is unlocked.

2. **Use authentic Samsung replacement parts only**
   If any part is not authentic, replace it with an authentic Samsung replacement part.

3. **Handling wires**
   Check if any wires are loose or too tight, if they are connected correctly, if they are well bound with tape, and if they are properly clamped.

4. **The state of screws and nuts**
   Check if the screws and nuts are fastened correctly.
   Check whether they are fastened with the specified torque.

5. **Remove foreign material**
   Check whether any foreign material such as soil, wire scraps and screws are in the dishwasher. (Check whether any foreign material is entering through the sump into the disposer.)

6. **Check for water leakage**
   Check whether there is water leakage from the hose connector, door, case sump (drain motor, circulation motor, heater, thermistor, turbidity sensor, distributor motor), and the water supply/drain hoses.

7. **Check the power cable**
   Check if there is any damage to the power cable or power outlet. Check that the voltages are correct.

8. **Check leveling**
   Check to make sure the dishwasher is level.

9. **Check the installation location**
   Check whether the installation location is flat and stable.

4. TROUBLESHOOTING

4-1. INFORMATION CODE

4-1-1. DW80H99✳✳US

⚠ If the problem occurs, first checking the status of wire connection.

Code	When occur	Symptom	Possible Causes
4E	- When the number of detected water supply pulses is less than 10 within 20 seconds after water is supplied. - When the number of detected water supply pulses is less than 100 within 80 seconds after water is supplied. - When the target water level is not reached within 5 minutes after water is supplied.	- If an error has occurred when the number of detected water supply pulses is less than 10 within 20 seconds after water is supplied, the water supply valve is turned on once and waits. - All driving parts except for the drain part are turned off and draining (20 seconds ON/ 5 seconds OFF) is performed for 3 minutes.	- The water supply pressure is low. - The water supply valve is closed. - The water involved iron or hard water or sealing tape is stuck in water supply valve. - The case brake fails to detect the pulse.
5E (5E1 - 5E5)	- In case the power of the drain pump power exceed 20W in the operation of the Drain pump even if it operates with 3 times.	- The driving part stops.	- Any dirt or other remains are stuck in drain pump and drain hole inside sump. - The drain pump is out of order. - The Main PBA is out of order. - The Inverter PBA is out of order.
PE	- When the location is not detected for 2 minutes after the synchronous motor operation. (In Test Mode, when the location is not detected for 1 minute.) - In the cleaning section, when the location is not detected for 3 minutes.	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	- The synchronous motor is out of order. - The location in the cam is incorrect.
tE	- When the temperature sensor data output is equal to or greater than approximately 4.5V or is equal to or less than approximately 0.2V. - When the water temperature is detected as equal to or less than - 30℃ for 30 seconds in succession during the cleaning the heater operation.	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	- The thermistor is out of order.
HE-1	- The start temperature is saved 30 seconds after heating starts. Thereafter, if the temperature change is equal to or less than 4℃ for 10 minutes, the heater relay is turned off for 1 second and then restarts heating. Then, if the temperature change is equal to or less than 4oC for 10 minutes again, an HE-1 error occurs.	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	- The heater is out of order. - The heater is improperly connected.
HE	- When the temperature is measured as equal to or greater than 80℃ for 3 seconds.	- The driving part stops and the main relay is turned off.	- The heater is out of order. - The thermistor is out of order.

Code	When occur	Symptom	Possible Causes
bE2	- When the button is pressed and held for 30 continuous seconds or longer.	- Normally working at washing mode	- The touch button is out of order. - An object is on the touch button.
bE3	- When IC communications between the Sub PBA and the touch button fails.	- Normally working at washing mode	- The touch button is out of order. - The sub PBA or touch button PBA is not properly connected.
AE	- When communications between the main PBA and the sub PBA fails for 24 seconds. (In Test Mode, communication fails for 6 seconds.)	- Normally working at washing mode	- The main PBA or sub PBA is out of order. - The communications connection for the main PBA or sub PBA is not properly connected.
AE6	- When the response is not received from inverter PBA for 3 seconds, Inverter RELAY OFF for 2 minutes. After repeated 3 times, display the error code	- The driving part stops.	- The main PBA or Inverter PBA is out of order. - The communications connection for the main PBA or Inverter PBA is not properly connected.
LE	- When the water leakage sensor data is equal to or less than 3V for 3 seconds.	- If sensor data over 3V is detected after draining (20 seconds on/5 seconds off) is performed for 3 minutes, the drain pump is turned off. If data over 3V is detected, draining is performed for 3 minutes and then the sensed data is checked again.	- There is a water leak.
OE	- When the overflow sensor data is equal to or less than 3V for 5 seconds.	- If sensor data over 3V is detected after draining (20 seconds on/5 seconds off) is performed for 3 minutes, the drain pump is turned off. If data over 3V is detected, draining is performed for 3 minutes and then the sensed data is checked again.	- The case brake fails to detect the pulse. - The valve water is out of order. - Any dirt or other remains are stuck in sump.
1E	**- Power consumption of Circulation pump detected low water level for 1 continuous seconds while a water supply and wash is performed.** 1) After the completion of the water supply. If a low level is detected, additional water is supplied for a predetermined period of time. If a low level is measured even after additional water is supplied, an 1E error occurs. 2) While a wash is performed. If a low level is detected, additional water is supplied for a predetermined period of time. If a low level is measured even after additional water is supplied twice, an 1E error occurs.	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	- The motor is out of order. - If there are Bubbles in the tub. - If the filter micro is clogged. - If there is excessive pollution in tub.

Code	When occur	Symptom	Possible Causes
3E (3E1 - 3E4)	• **Condition 1**) - When Main receives the Circulation pump error from the inverter, stop the drive the motor and restart again. If Main receive the motor error 11 times, turn off the motor for 5 minutes. At the third rest time, Error occurs. (When an error occurs, Heater is stopped immediately. And Heater ON after operating the circulating motor 10 seconds.) • **Condition 2)** - Washing(Rinsing) area : When Target rpm is 2600rpm or more and Circulation pump speed is 2400rpm or less continuously for three seconds, the operation is stopped. Retry 2 times in 3 seconds. When sensing 3 times, Inverter is turned off and retry in 5 minutes. At the third rest time, Error occurs. (If the condition of Low level water sensing, this error is ignored.)	- 20 seconds ON/ 5 minute OFF. Drain for 3 minute.	- Any dirt or other remains are stuck in circulation pump and pump. - The Circulation pump is out of order. - The Main PBA is out of order. The Inverter PBA is out of order.
4E5	- When the number of detected water supply pulses are 200 at the Non-water supply mode. → Repeats water valve on(1seconds) / off(1seconds) 2 times	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes, and then 200pulse over again detected, repeat Draining.	- The water valve is out of order.
9E1	If blackout or DC Link voltage is high or low voltage conditions, switches to stop mode (abnormal voltage).	- The driving part stops.	- High or Low voltage is supplied.
7E	Case1) When the reset position sensing for 10 seconds, vane motor 1 sec Off and re-operation. Error occurs after retry three times. Case2) When the reset position sensing for 25 seconds. Error occurs after retry three times. Case3) Vane position is the time from initial position to initial position in 21 seconds or less, the error occurs.	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	- Motor gear is out of order. - Sensor vane is out of order. - When the vane is blocked. • The vane is fixed by any tape.  • The vane is blocked something including forks and spoons.

4-2. SERVICE INSPECTION MODE

- Press the 'Auto' + 'Delicate' + 'Power' buttons at the same time for two seconds to enter Service Inspection Mode.
- All LEDs are displayed for the first two seconds and then Software-Ver. will be indicated.
- You can change the mode by pressing the Normal button again. To advance to the next mode, press the normal button.
- If you want to activate a mode while operating the dishwasher, the door must be closed.
- If 'LE' , 'OE', 'tE' error occur, enter Service Inspection Mode after resolving it.
- Service Inspection Mode is described in the following table.

Item	Related Parts	Symptoms	Description
Entering Test Mode			- Press the Auto Key, Delicate Key and Power keys at the same time to enter Test Mode.
Changing the mode	• Display LED		- Press the Auto key to change the mode: All Led Display → Version Display → n1 → n2 → n3 → n4 → n5 → n6 → n7 → n8 → n9 → nA (Repeats)) - If the mode is changed, it automatically starts. However, if the door is open, it does not start automatically and a "dE" error occurs.
Displaying all	• Display LED		- If the product enters Test Mode, all product displays are turned on for 1 second. - If no key is pressed, the version is displayed.
Displaying the program version	• Version		- Default is to Display the Main Version. - Version Key is pressed, the corresponding information is displayed. 1) Normal KEY : Sub Version 2) Heavy Key : Model Option 3) Delicates Key : Inverter SW Version 4) Quick Key : SUB Touch IC SW Version - Dry+ Key while pressing, dry default option can be set.
N1 (nA)	• Drain pump • Inlet Valve • Flow Meter • Water Level Sensor • Turbidity	Water supply Error Turbidity Error	- "nA" is displayed. - Drain 30 seconds. - Water supply 4liters. - If water supply is not complete, occurs 4E error. - Turbidity sensor detect after water supply finished. - Displays the "tu" and voltage data of turbidity alternately. (ex. 3.2V → 32) - If reference voltage can not be reached after sensing the turbidity(10 seconds), occurs E3 error.
n2 (nb)	• Circulation Motor	A nozzle does not inject water.	- Runs the circulation motor (BLDC: 3400 RPM, AC motor: High). - If the normal water level is detected, "nb" is displayed. If the low water level is detected, "n2" is displayed. - The "lower all" runs for 1 minutes → the "Middle up" runs for 1 minutes, change the order of operation.

Item	Related Parts	Symptoms	Description
n3 (nC)	• Circulation Motor	A nozzle does not inject water.	- Runs the circulation motor(BLDC: 2600 RPM, AC motor: Low). - If the normal water level is detected, “nC” is displayed. If the low water level is detected, “n3” is displayed. - The “lower all” runs for 1 minutes → the “Middle up” runs for 1 minutes, change the order of operation..
n4(nd)	• Circulation Motor • Heater • Thermistor • Dispenser	Heater Error	- Circulation motor (BLDC : 3400 RPM, AC motor : LOW) runs. - Heater is On after pump has been running for 10 seconds, when the normal water level is detected. - If the low water level is detected, Heater off - If the heater runs for 3 minutes, the heater is automatically turned off. - If the temperature is equal to or higher than 60℃, the heater is turned off. - When starting, the dispenser runs for 1 minute. - The lower all runs for 3 minutes → The middle up run for 3 minutes
n5	• Distributor Motor	Distributor function Error	- The circulation motor runs (BLDC: 2600 RPM). - RPM display after operation circulation motor. - Each time press the Normal key, it is possible to change the rpm. (1200 ~ 3400rpm) - Each time press the Heavy key, it is possible to change position of distributer. (1:Middle + Upper → 2:Lower Right→ 3:Lower All → 4:Lower Left)
n6	• Distributor Motor	Distributor function Error	- The circulation motor runs (BLDC: 3400 RPM, AC motor: High). - The synchronous motor runs by alternating the location between lower right and lower left at 1 minute intervals.
n7	• Dry Fan Motor • Turbidity	The Dry Fan motor does not work.	- Runs the vent motor and the thermal actuator of the dryer unit. - Turbidity sensor detect turbidity data. - Turbidity data displayed. - If reference voltage can not be reached after sensing, occurs E3 error
n8	• Inlet valve • Overflow Sensor	Over level water Error	- Water is supplied until an overflow is detected. - If an overflow is detected, “oF” is displayed.
n9	• Drain Pump	Drain Error	- Runs the drain pump for 60 seconds (25 seconds on / 2 seconds off). - If drain is not complete(Measuring power consumption drainage), occurs 5E error - When drain is complete, display nP

Item	Related Parts	Symptoms	Description
nA	• Inlet Valve • Circulation Motor • Dry Fan Motor • Drain Pump • Heater • Half Load Motor		1. Lower Key : Lower Led On Dry Fan(Auto LED) → Dry Actuator(Normal LED) → Dispenser Actuator(Heavy LED) → Off 2. Booster left Key : Booster left LED On Drain pump (Auto LED) → Circulation Motor(low) / BLDC motor (Normal LED) → Circulation Motor(low) / BLDC motor (Heavy LED) → Off Circulation Pump Runs Max. 3 seconds to prevent damage c-pump. 3. Booster Right Key : Booster Right LED On Distributer motor(Auto LED) → Valve water (Normal LED) → Heater(Max.operating 2seconds) (Heavy LED) → Vane CW (Delicate LED)→ Vane CCW (Express LED) → Off

Error Type	Error mode	Checking method	Corrective actions
Water supply error	4E 4E-1	1. Check whether the faucet is open.	- Open the faucet.
		2. Check whether the water supply has been cut off.	- After wait until the water supply resumes and turn off the power. After the water supply resumes, turn on the power.
		3. Check whether any foreign material is in the Water Supply Line and the Water Valve filter.	- Remove the foreign material, clean the filter in Water Valve with a brush.
		4. Check the connection for the Water Valve connector.	- Reconnect the Water Valve connector.
		5. Check whether the coil in Water Valve is conductive. (Remove the connector before measuring.) • Normal: Approx. 990Ω ± 10% (890Ω~1089Ω)	- Faulty: Replace the Water Valve. 
		6. Check whether the water supply stops, after water is supplied for 20 seconds.	- Faulty: Replace the Water Valve and Flow Meter.
		7. Check whether the water supply stops after water is supplied for 80seconds or 5 minutes.	- Check the water supply pressure. (> 0.5bar) - Faulty: Replace the Water Valve and Flow Meter.
		8. Check whether the Water Valve is operating normally in the Main PBA. - Check the Water Valve Relay in Main PBA. : Check the voltage between the Black wire (Number 9) of the CN202 and the Black wire of the CN101 connector. · Normal: 110 ~120V (while operating)	- Faulty: Replace the Main PBA assy. - Normal: Replace the Water Valve 
		9. Check the Power Relay.	- See the “Power Relay error”.

Error Type	Error mode	Checking method	Corrective actions
Drain error	5E (5E1 - 5E5)	1. Check whether there is any foreign material in the Drain Hose, Drain Pump, drain hole inside sump.	- Remove the foreign material in the Drain Hose, Drain Pump, drain hole inside sump.
		2. Check the connections for the Drain Pump connector.	- Reconnect the Drain Pump connector.
		3. Check whether the Drain Pump coil is conductive. (Remove the connector before measuring.) : Approx. 88Ω ±7% (81.8~84.2)	- Faulty: Replace the Drain Pump. 
		4. Check the operation of the Inverter PBA	
		4-1. Check the operating AC voltage of the Inverter PBA CN5 connector. · Normal: 110V ~ 120V (while operating)	- Faulty: Replace the Main PBA assy 
		4-2. Check the operating LED(red) of the inverter PBA. · Normal: Fully turn-on (while operating)	- Faulty: Replace the Inverter PBA assy. 
		4-3. Check the operating voltage between #1 and #2 of the Inverter PBA CN8 connector at LA in test mode. · Normal:50V ~ 90V (while operating) · How to do LA in test mode - Push Booster left key+Booster right key+Power key at the same time. - Push the Linear Auto key All Led Display → Version Display → At → nT → L2 : Ft → L3(Lc) → L4(Ld) → L5(Hd) → L6 → L7 → L8 → L9 → LA → Lb→ Version Display → (repeated)	- Faulty: Replace the Inverter PBA assy. - Normal: Check a connection between the Inverter PBA and the Drain Pump.  
Key input error	bE-2 bE-3	Check whether there is condensation on the PBA. - CN103 of Display Control Module connector - CON100 TOUCH Module connector · Normal: No condensation	- Faulty : Remove any condensation and moisture. - Normal : Replace the Control Panel assy. (Display Control Module, Touch Module, Sub Wire)

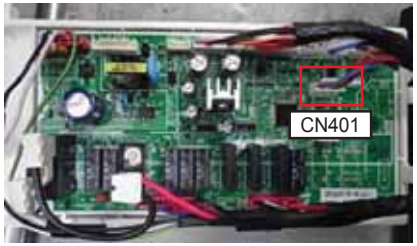
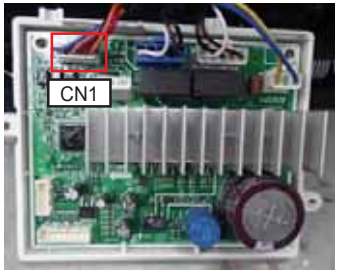
Error Type	Error mode	Checking method	Corrective actions
Circulation Pump error	3E (3E1 -3E4)	1. Check whether there is any foreign material in the Circulation Hose and Circulation Pump.	- Remove the foreign material in the Circulation Hose and Circulation Pump.
		2. Check the connections for the Circulation Pump connector.	- Reconnect the Circulation Pump connector.
		3. Check whether the Circulation Pump coil is conductive. (Remove the connector before measuring.) · Normal : Approx. 5.8Ω ±10%	- Faulty: Replace the Circulation Pump.
		4. Check the operation of the Inverter PBA	
		4-1. Check the operating AC voltage of the Inverter PBA CN5 connector · Normal : 110V ~ 120V (while operating)	- Faulty: Replace the Main PBA assy 
		4-2. Check the operating LED(red) of the inverter PBA · Normal : Fully turn-on (while operating)	- Faulty: Replace the Inverter PBA assy. 
		4-3. Check the operating voltage between #1 and #2 of the Inverter PBA CN6 connector at L3(Lc) in test mode · Normal : 50V ~ 90V (while operating) · How to do L3(Lc) in test mode - Push Booster left key+Booster right key+Power key at the same time - Push the Linear Auto key All Led Display → Version Display → At → nT → L2 : Ft → L3(Lc) → L4(Ld) → L5(Hd) → L6 → L7 → L8 → L9 → LA → Lb→ Version Display → (repeated)	- Faulty: Replace the Inverter PBA assy. - Normal: Check a connection between the Inverter PBA and the Circulation Pump.  

Error Type	Error mode	Checking method	Corrective actions
Heater error	HE-1	1. Check the connections of the Heater connectors.	- Reconnect the Heater connectors.
		2. Check the resistance between both ends of the Heater. : Check the resistance between both ends of the Heater directly, or check the resistance between the red wire of the Heater Relay and the black and yellow wires of the Power Relay, respectively. · Normal : Approx. 12.14 ~ 14.16Ω ·. Check after disconnect circuit breaker or power cable.	- Faulty: Replace the Heater. 
		3. Check the connections of the Heater Relay in Main PBA. : Check the voltage between the Red wire of the Heater Relay on the base and the Black wire of the CN101 connector. · Normal : 110 ~ 120V (while operating)	- Reconnect the Heater Relay connectors. 
		4. Check the driving signals for the Heater Relay. Measure the voltage between pin 1(D12 Anode side) of the Main PBA RY201 relay and pin 2 of the CN402 connector. · When the Heater is off : 10.5 to 13V · When the Heater is operating : < 0.5V	- Faulty: Replace the Main PBA assy.
		5. Check the Power Relay.	- See the “Power Relay error”.
Heater Overheat error	HE	1. Check the operation of the Thermistor.	- See the “tE Error”.
		2. Check the Heater Relay.	- See the “HE-1 Error”.
Leakage error	LE	Check whether there is any trace of water leakage in the shutter. · Normal: No water leakage trace	- Faulty: Check the leakage location. - Replace the faulty part.

Error Type	Error mode	Checking method	Corrective actions
Half load error	PE	1. Check the connections for the Distributor Motor and Micro Switch connectors.	- Reconnect the Distributor Motor and Micro Switch connectors. 
		2. Check whether the coil in Distributor Motor is conductive. : Remove the connectors before measuring. · Normal: Approx. 3.6 ~ 4.0kΩ	- Faulty: Replace the Distributor Motor.
		3. Check the position sensing operations when turning the Micro Switch on and off.(Use n5 Service test mode.) Check the conduction between the brown wire and the Violet wire. · Micro switch On: Short · Micro switch Off: Open - Micro Switch sign alters in ON/OFF state. - It is NG if keep in ON or OFF state for 120 seconds. * Do not supply with water and test.	- Faulty: Replace the Micro Switch for sensing positions. - Normal: Replace the valve distributor and CAM switch. 
		4. Adjust Cam A'ssy and Find the faulty.	- Faulty: Replace Cam A'ssy.
		5. Check whether half load is operating normally. - Check the half load operation · Normal : 110 ~ 120V - Check the operation of Distributor Motor Relay. : Check the operating voltage between the 3pin(Brown) wire of the Main PBA CN201 connector and the 1pin(Black) wire of the Main PBA CN101 connector · Normal : 110 ~ 120V (while operating)	- Faulty: Replace the Main PBA assy. 
		6. Check the Power Relay.	- See the "Power Relay error".

Error Type	Error mode	Checking method	Corrective actions
Motor vane error	7E	1. Check the connections for the Motor vane and Sensor vane connectors.	- Reconnect the Distributor Motor and Micro Switch connectors.
		2. Check whether the coil in Motor vane is conductive. Check the resistance between the Red and Black wire(CCW) Check the resistance between the White and Black wire(CW). : Remove the connectors before measuring. · Normal: Approx. 1.625 ~ 1.796kΩ	- Faulty: Replace the Motor vane. 
		3. Check the position sensing operations when moving the Sensor vane on and off.(Use n5 Service test mode.) Check the conduction between the Brown wire and the Black wire. · Sensor On: 0V · Sensor Off: 5V	- Faulty: Replace the Sensor vane for sensing positions. - Normal: Replace the Motor vane and Sensor vane  
		4. Adjust Motion A'ssy and Find the faulty.	- Faulty: Replace Motion A'ssy.
		5. Check whether Motor vane is operating normally. - Check the Motor vane operation · Normal: 110 ~ 120V - Check the operation of Motor vane Relay. - CCW: Check the operating voltage between the 5pin(Red) wire of the Main PBA CN202 connector and the Black wire of the Main PBA CN101 connector CW: Check the operating voltage between the 5pin(White) wire of the Main PBA CN202 connector and the Black wire of the Main PBA CN101 connector · Normal: 110 ~ 120V (while operating)	- Faulty: Replace the Main PBA assy. 
		6. Check the Power Relay.	- See the "Power Relay error".

<table>
<tr><th>Error Type</th><th>Error mode</th><th>Checking method</th><th>Corrective actions</th></tr>
<tr><td rowspan="4">Overflow error</td><td rowspan="4">OE</td><td>1. Check the connections for the Overflow Sensor connector.</td><td>- Reconnect the Overflow Sensor connector.</td></tr>
<tr><td>2. Check whether the Water Valve operates normally. Use d07 Display mode.</td><td>- See “4E Error”.</td></tr>
<tr><td>3. Check whether water is supplied (even small amounts) in the intervals when the Water Valve is not operating.</td><td>- Remove foreign material from the Water Valve.
- If you cannot remove the foreign material from the Water Valve, replace it.</td></tr>
<tr><td>4. Error occurrence after confirm Method 1,2,3.</td><td>- Assy Case Brake replace.</td></tr>
<tr><td rowspan="2">Thermistor Error</td><td rowspan="2">tE</td><td>1. Check the connections for the Thermistor connector</td><td>- Reconnect the Thermistor connector.</td></tr>
<tr><td>2. Check whether the Thermistor is operating normally.
- Measure the voltage between both ends of the Thermistor.
· Normal: 0.05 to 4.95V
- Measure the resistance between both ends of the Thermistor
: Remove the connector before measuring.
(See the Table right.)
<table><tr><th colspan="2">Thermistor table</th></tr><tr><td>Temp(℃)</td><td>Resistance(kΩ)</td></tr><tr><td>5</td><td>125.814</td></tr><tr><td>10</td><td>98.360</td></tr><tr><td>15</td><td>77.480</td></tr><tr><td>20</td><td>61.477</td></tr><tr><td>25</td><td>49.120</td></tr><tr><td>30</td><td>39.510</td></tr><tr><td>35</td><td>31.985</td></tr><tr><td>40</td><td>26.053</td></tr><tr><td>45</td><td>21.347</td></tr><tr><td>50</td><td>17.590</td></tr><tr><td>55</td><td>14.573</td></tr><tr><td>60</td><td>12.136</td></tr><tr><td>65</td><td>10.157</td></tr><tr><td>70</td><td>8.541</td></tr></table></td><td>- Faulty: Replace the Thermistor.
- Normal: Replace the Main PBA assy
  </td></tr>
</table>

Error Type	Error mode	Checking method	Corrective actions
Main-Sub PBA Communication error	AE	1. Check the connections between MAIN PBA CN402 connector and Display Control Module CN101 connector	- Reconnect the MAIN PBA CN402 connector and SUB PBA CN101 connector
		2. That Error is produced continuously after method 1 confirmation.	- Replace: Sub-Wire
		3. That Error is produced continuously after method 2 confirmation.	- Replace: Sub-PBA
		4. That Error is produced continuously after method 2 confirmation.	- Replace: Main-PBA
Motor BLDC error	1E	1. Check the connections for the Pump BLDC connectors.	- Reconnect the Pump BLDC connectors
		2. Error occurrence after confirm Method 1.	- Faulty: Clean the 3 kinds of filter. (Fine, Coarse, Micro)
		3. Do it to act Test service test mode L2, L3 and motor(water) sound confirmation in L3	- Faulty: Replace motor
		4. Problem occurrence to Method 1,2,3.	- Faulty : Replace Main-PBA.
BLDC Motor Communication error	AE6	1. Check the connections between Main PBA CN401 connector and Inverter PBA CN1 connector	- Reconnect the Main PBA CN401 connector and Inverter PBA CN1 connector  
		2. That Error is produced continuously after method 1 confirmation.	- Replace: Inverter PBA
		3. That Error is produced continuously after method 2 confirmation.	- Replace: Main PBA

Error Type	Error mode	Checking method	Corrective actions
No Power error	None	1. Check the connections for the power plug.	- Reconnect the power plug.
		2. Check the voltage of the power outlet. · Normal : 120V	- Connect to a 120V power source.
		3. Check Power Key on state.	- Try to touch the Power key.
		4. Check the connections for the Sub PBA and Touch PBA connector parts.	- Reconnect the Sub PBA and Touch PBA connectors.
		5. Check the connection of the Main PBA connector CN101	- Reconnect CN101
		6. Check the connections for the Sub PBA and Main PBA connector parts and	- Reconnect the Sub PBA and Main PBA connectors.
		7. Check whether there is condensation on the PBA. - CN103 of Display Control Module connector - CON100 TOUCH Module connector · Normal: No condensation	- Faulty: Remove any condensation and moisture. - Normal: Replace the Control Panel assy.
		8. Check whether the fuse is broken.	- Replace the fuse (15A).
		9. Check the DC voltage of the Main PBA.	- See “Main PBA DC voltage error”.
		10. Check the wires of the Main PBA power part. - Measure the voltage between the pin 1 wire and the pin 3 wire of CN101. · Nomral: AC 120V	- Faulty: Check and replace the wires of the power part.
		11. In case of is No Power after Method 1~10 action	- Replace the Control Panel assy. (Sub, Touch, wire)
		12. In case of is No Power after Method 1~11 action	- Replace the Main PBA.

Error Type	Error mode	Checking method	Corrective actions
Display error	None	1. Check the connections for the Display LED connector part.	- Reconnect the connectors for Display LED.
		2. Check the Display LED.	- Faulty: Replace the Display LED and Sub PBA.
Dry error	None	1. Check the wire connections for the Fan Motor.	- Reconnect the Fan Motor connectors.
		2. Check the resistance of the Fan Motor coil. (Remove the connector before measuring.) · Normal: Approx. 50.4 ~ 61.6 Ω	- Faulty: Replace the Fan Motor assy. 
		3. Check the operation of the Fan Motor Relay : Check the operating voltage between the red wire of the CN201 connector and the Black wire of the CN101 connector. · Normal: 110V ~ 120V (while operating)	- Faulty: Replace the Main PBA assy. 
		4. After Method 1~3, if dry performance is bad.	- Faulty : Replace the Dry duct replace.

Error Type	Error mode	Checking method	Corrective actions
Detergent is not dispensed	None	1. Check whether detergent is inserted into the dispenser.	- Check whether there is detergent in the Dispenser.
		2. Check the connections for the Dispenser connector.	- Reconnect the Dispenser connector.
		3. Check the resistance of the Dispenser.(Remove the connector before measuring.) · Normal: Approx. 0.7 ~ 3kΩ	- Faulty: Replace the Dispenser. 
		4. Check the operation of the Dispenser Relay : Check the operating voltage between the Black wire of the CN201 connector and the Black wire of the CN101 connector. · Normal: 110V ~ 120V (while operating)	- Faulty: Replace the Main PBA assy. 
No washing	None	1. Check the filter	- Faulty: Replace filter.
		2. Check Rotors and ducts and vane	- Faulty: Replace Rotors and ducts.
		3. Check the operation of the half load.	- See “PE Error”.

5. PCB DIAGRAM

5-1. MAIN PCB

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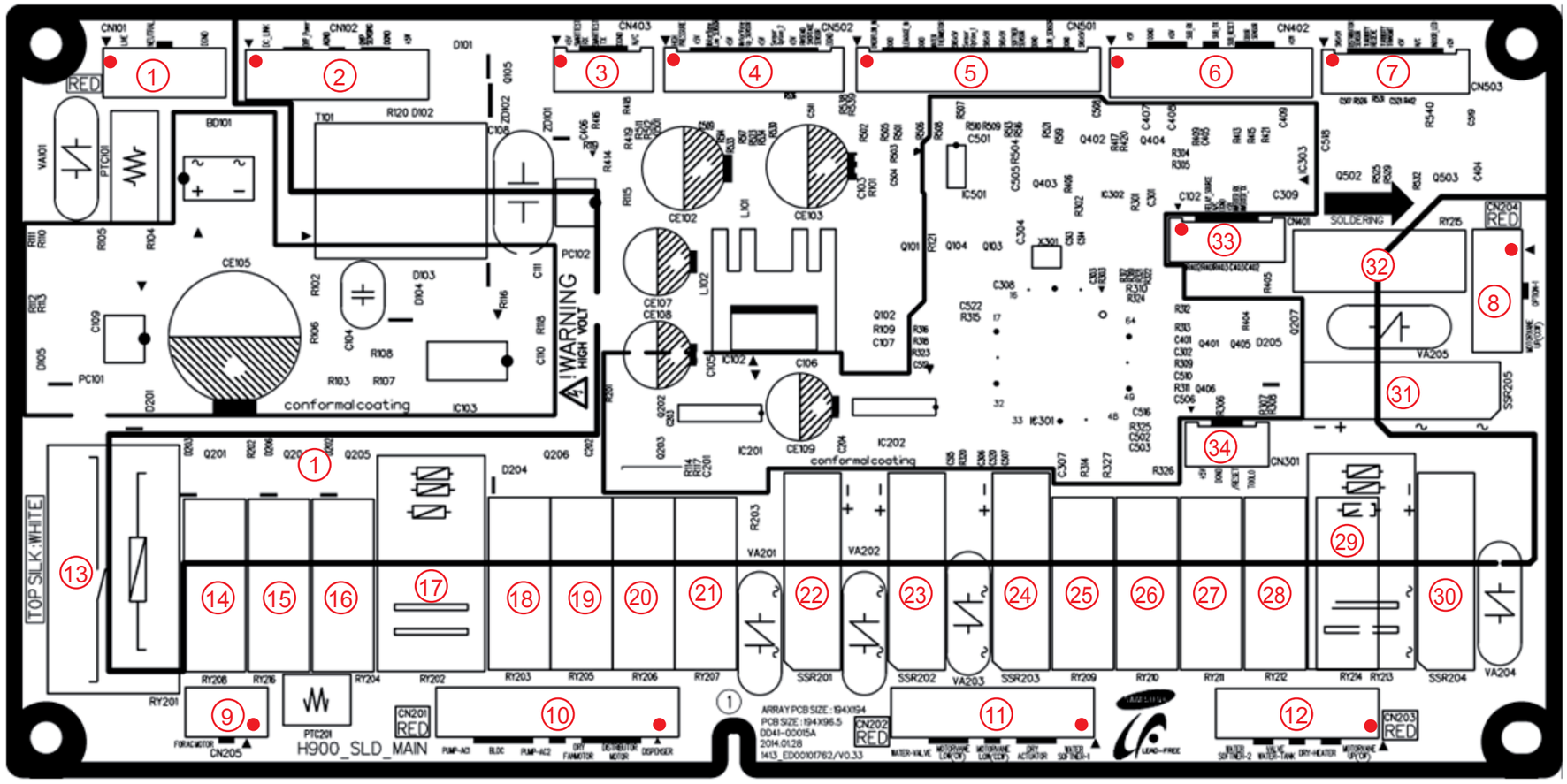

No.	Location	Description
1	CN101	MAIN Power (120V/60Hz)
2	CN102	N.C (O.V.P)
3	CN403	N.C(Smart Test)
4	CN502	Sensing (refer to next page for details)
5	CN501	
6	CN402	SUB PBA connector
7	CN503	Sensing
8	CN204	N.C
9	CN205	N.C
10	CN201	BLDC, DRY Fan, Distributor, Dispenser
11	CN202	WaterValve, MotorVane, Dry Actuator

No.	Location	Description
12	CN203	N.C
13	RY201	Main Relay
14	RY208	N.C
15	RY216	BLDC Relay
16	RY204	Pump BLDC Inrush Relay
17	RY202	Wash Heater
18	RY203	N.C
19	RY205	Dry Fan motor
20	RY206	Distributor Motor
21	RY207	Dispenser Relay
22	SSR201	Water Valve Relay

No.	Location	Description
23	SSR202	Motor Vane Low (CW)
24	SSR203	Motor Vane Low (CCW)
25	RY209	N.C(Dry Actuator)
26	RY210	N.C(WATER-SOFTNER-1)
27	RY211	N.C(WATER-SOFTNER-2)
28	RY212	N.C(VALVE-WATER-TANK)
29	RY214/214	N.C(DRY-HEATER)
30	SSR204	N.C(MOTORVANE-UP(CW))
31	SSR205	N.C(MOTORVANE-UP(CCW))
32	RY215	N.C(OPTION-1)
33	CN401	BLDC Pump Communication
34	CN301	Micom writer connector

5-2. INVERTER PBA

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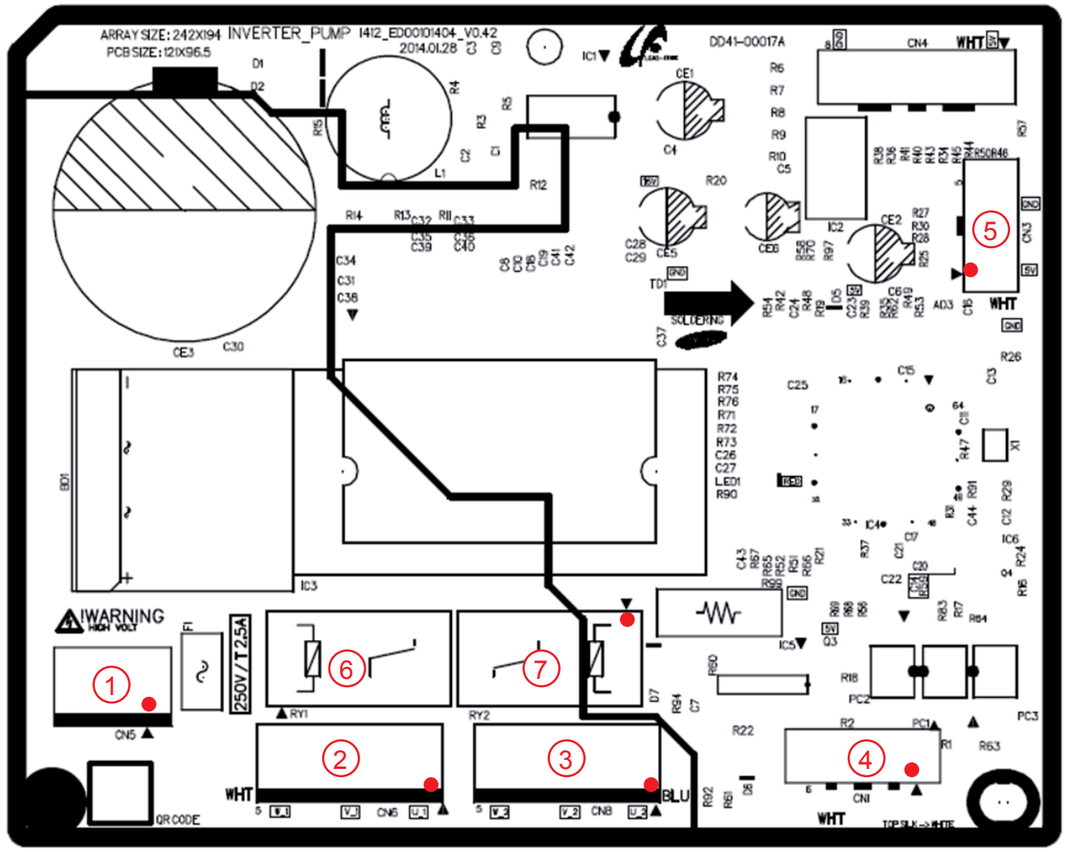

● : Pin #1

No.	Location	Description
1	CN5	INVERTER PBA Power (120V)
2	CN6	Circulation Pump Output
3	CN8	Drain Pump Output
4	CN1	Communication with MAIN
5	CN3	Writing Pin
6	RY1	Pump U-Phase Relay
7	RY2	Pump V-Phase Relay

5-3. NEW PBA - DETAILED SPECIFICATIONS AND DESCRIPTIONS FOR CONNECTORS AND RELAY TERMINALS (MAIN PBA)

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▶ CN403
1) +5V
2) SMARTTEST_RX
3) SMARTTEST_TX
4) DGND
6) NC

▶ CN502
1) HIGH-PRESSURE
2) GND
3) MotorVane_Low_SENSOR
4) GND
5) MotorVane_Up_SENSOR
6) GND
7) Sensor_Option_2
8) GND
9) RINSEAID-SHORTAGE-SENSOR
10) GND

▶ CN501
1) OVERFLOW_IN
2) GND
3) LEAKAGE_IN
4) GND
5) WATER-THERMISTOR
6) SNS+5V
7) Sensor_Option_1
8) SNS+5V
9) SNS+5V
10) SOFTNER_SENSOR
11) GND
12) FLOW_SENSOR
13) GND
14) SNS+5V

▶ CN402
1) +5V
2) GND
3) +12V
4) SUB_RX
5) SUB_TX
6) SUB_RESET
7) DOOR-SENSOR
8) NC
9) +12V

▶ CN503
1) SNS+5V
2) DISTRIBUTOR_SENSOR
3) TURBIDITY-RECIEVE
4) TURBIDITY-TRANSMIT
5) +5V
6) NC
7) NDOOR_LED
8) +12V

▶ CN101
1) LIVE
2) NC
3) NEUTRAL
4) NC
5) GND

▶ CN102
1) DC_LINK
2) NC
3) OVP_POWER
4) AGND
5) NC
6) OVP_SENSING
7) DGND
8) +5V

▶ CN401
1) RELAY_SOURCE_INV
2) NC
3) GND
4) +5V
5) INVERTER_RX
6) INVERTER_TX

▶ CN204
1) NC
2) NC
3) OPTION-1
4) NC
5) MOTORVANE_UP(CCW)

▶ CN301
1) +5V
2) DGND
3) /RESET
4) TOOL0

▶ CN205
1) DRAIN-PUMP(AC)
2) NC
3) DRAIN-PUMP(AC)

▶ CN201
1) DISPENSER
2) NC
3) DISTRIBUTOR MOTOR
4) NC
5) DRY FANMOTOR
6) NC
7) PUMP-AC2
8) NC
9) BLDC
10) NC
11) PUMP-AC1

▶ CN202
1) WATER SOFTENER-1
2) NC
3) DRY ACTUATOR
4) NC
5) MOTORVANE_LOW(CCW)
6) NC
7) MOTORVANE_LOW(CW)
8) NC
9) WATER_VALVE

▶ CN203
1) MOTORVANE_UP(CW)
2) NC
3) DRY HEATER
4) NC
5) VALVE WATER_TANK
6) NC
7) WATER SOFTENER-2

5-4. NEW PBA - DETAILED SPECIFICATIONS AND DESCRIPTIONS FOR CONNECTORS AND RELAY TERMINALS (INVERTER PBA)

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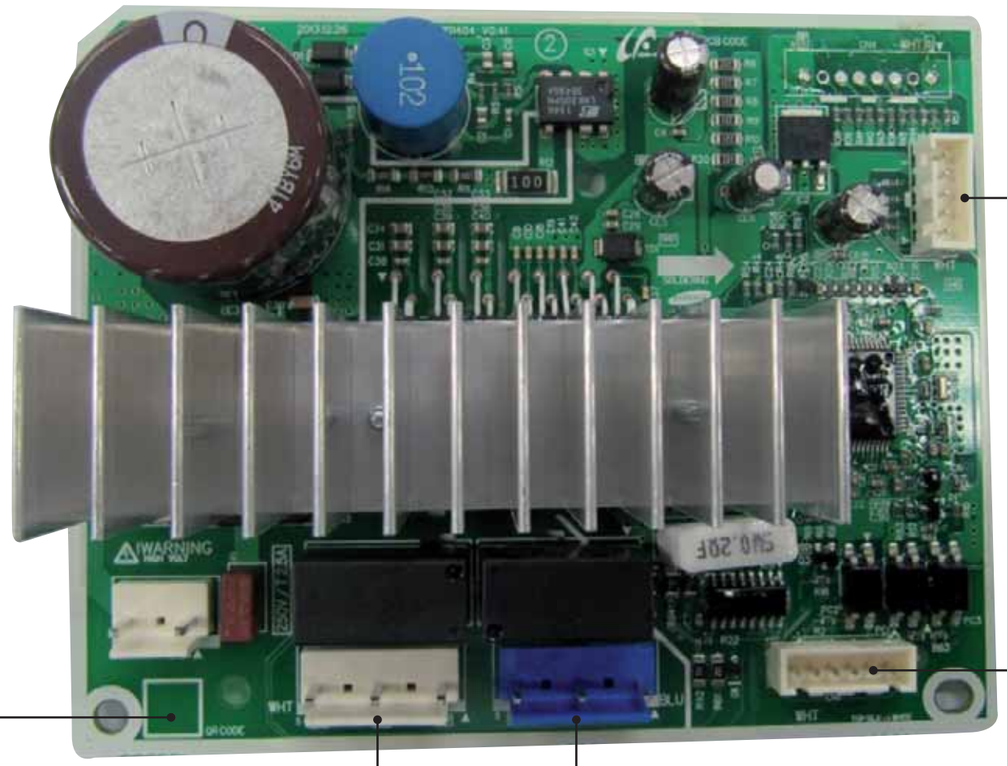

► CN3
1) 5V
2) RX FROM FLASH
3) TX TO FLASH
4) GND
5) FLASH Writing_BOOT

► CN5
1) Live
2) NC
3) Neutral

► CN1
1) Door Signal
2) NC
3) GND
4) 5V_IS
5) TX TO MAIN
6)RX FROM MIAN

► CN6
1) C-Pump_U
2) NC
3) C-Pump_V
4) NC
5) C-Pump_W

► CN8
1) D-Pump_U
2) NC
3) D-Pump_V
4) NC
5) D-Pump_W

6. WIRING DIAGRAM

6-1. WIRING DIAGRAM

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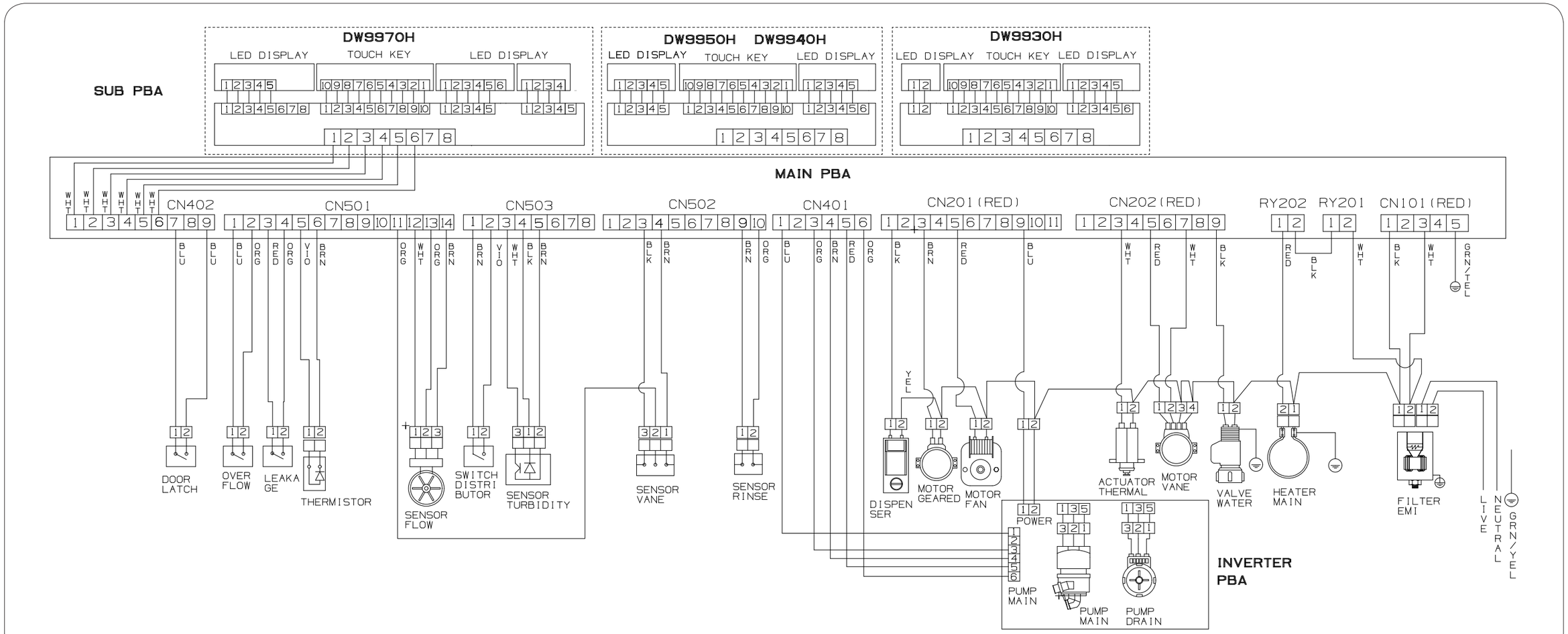
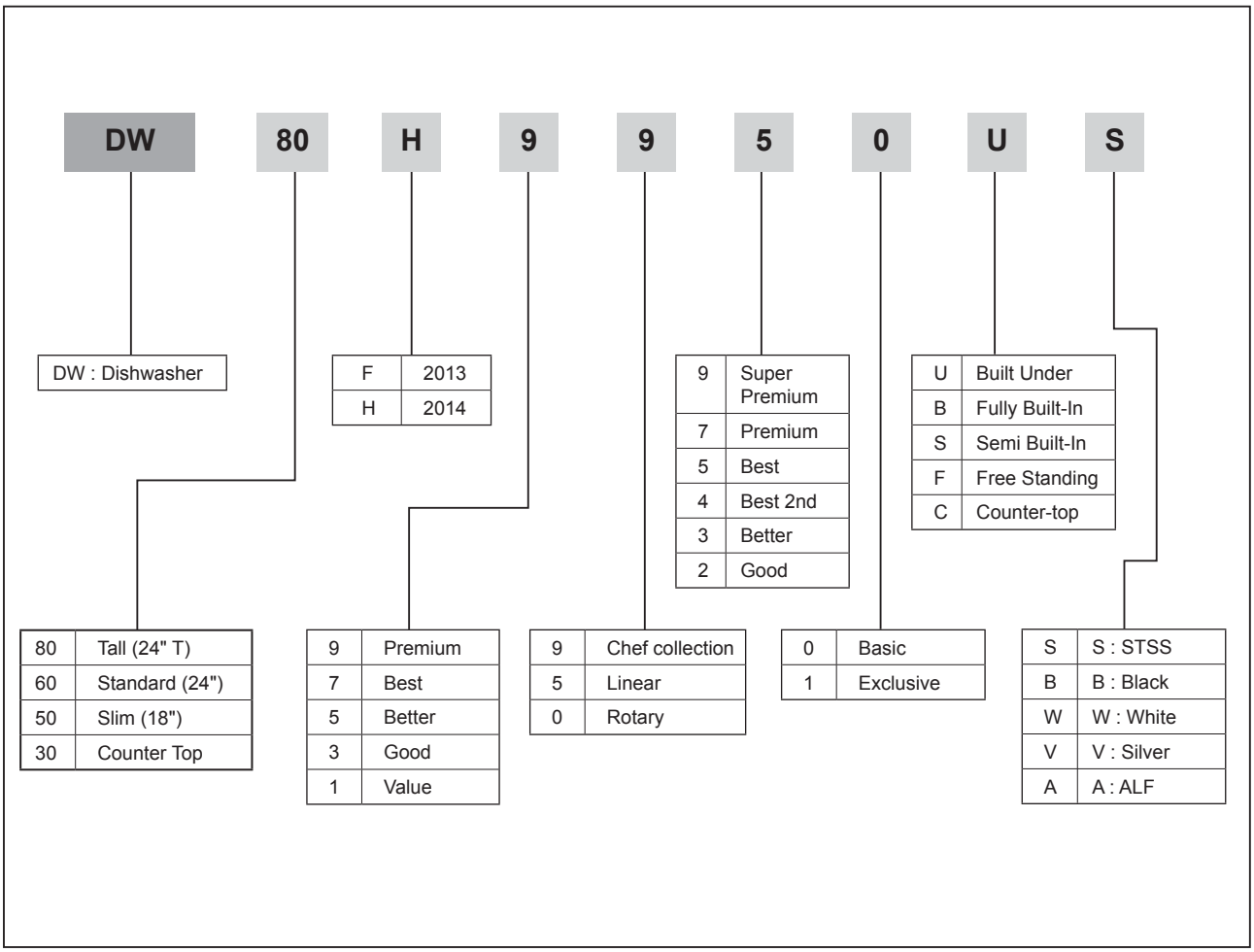


■ Reference Information

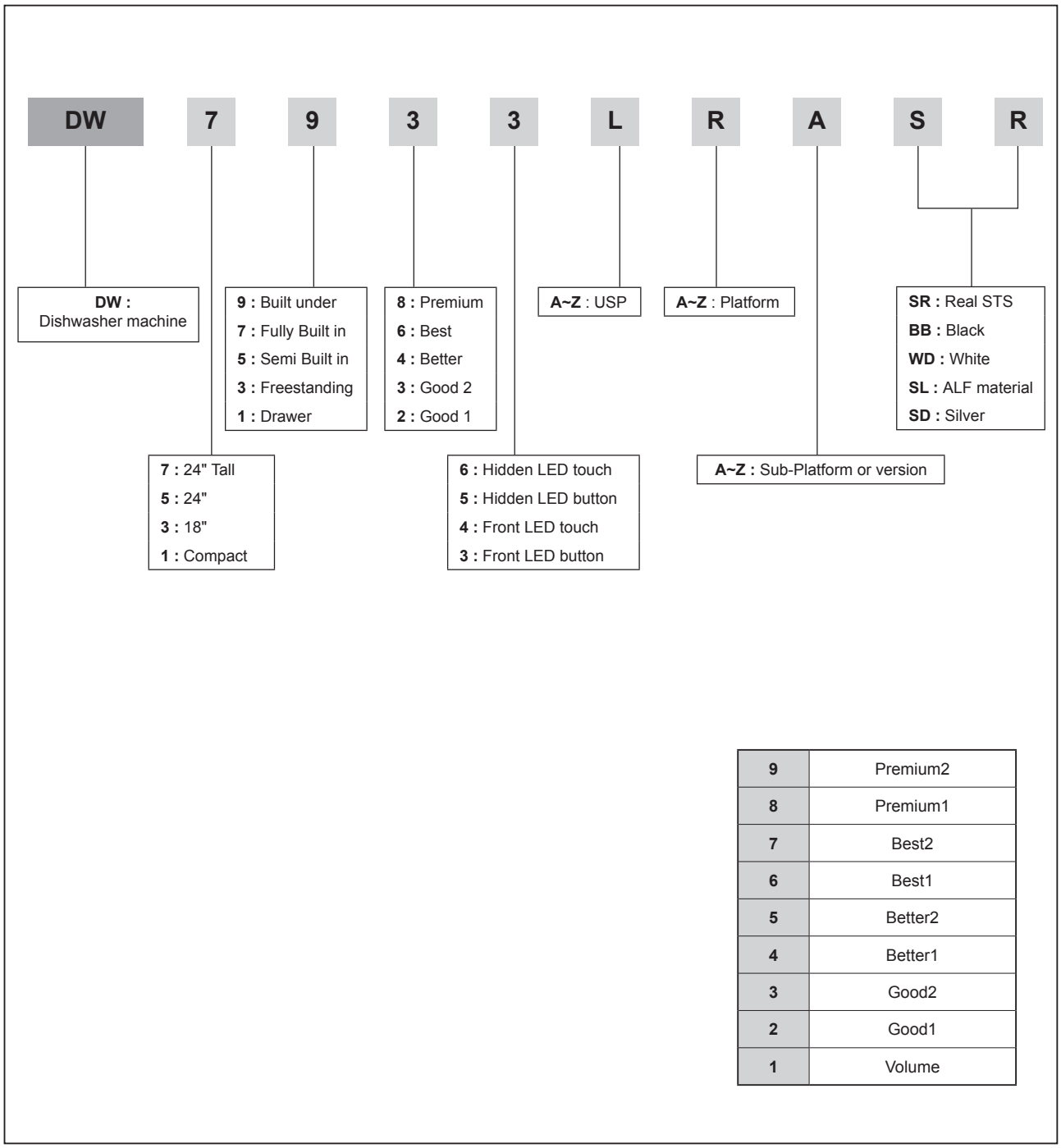
Abbreviated word	Meaning	Abbreviated word	Meaning
GRY	GRAY	BLK	BLACK
ORG	ORANGE	RED	RED
VIO	VIOLET	SKY	SKY BLUE
PNK	PINK	BLU	BLUE
YEL	YELLOW	Y/G	YELLOW / GREEN
BRN	BROWN	NTR	COLORLESS
WHT	WHITE		

7. REFERENCE

7-1. MODEL NUMBER NAMING RULES

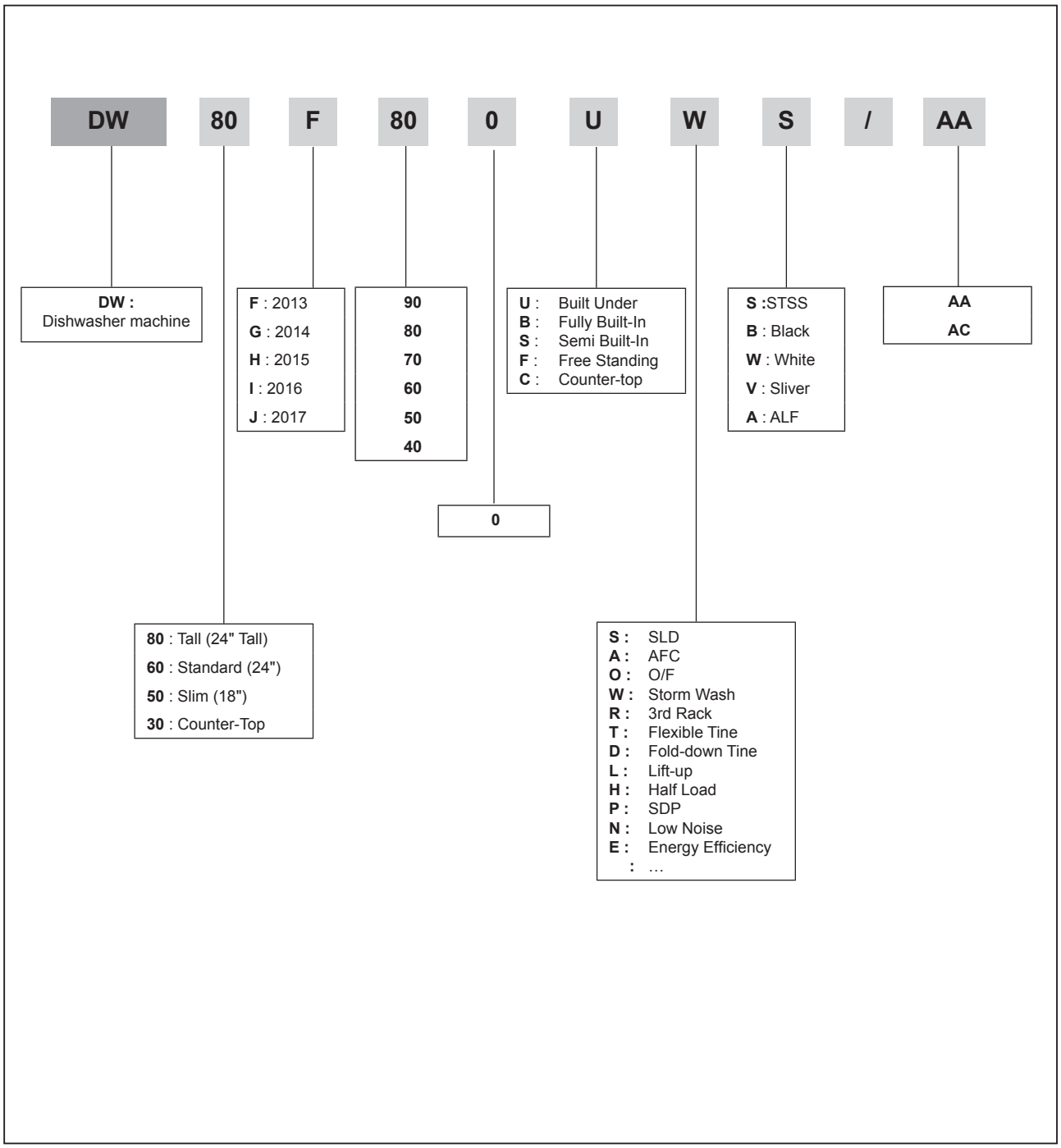


7-2. MODEL NUMBER NAMING RULES



9	Premium2
8	Premium1
7	Best2
6	Best1
5	Better2
4	Better1
3	Good2
2	Good1
1	Volume

7-3. MODEL NUMBER NAMING RULES



7-4. TERMINOLOGY

1. **Circulation Motor**
   A motor that sucks the water remaining on the floor of the dishwasher and injects water using high pressure through the internal water passages to the top, middle and lower nozzles.

2. **Drain Pump**
   The pump that drains the polluted water from the dishwasher generated while the dishwasher is running.

3. **Heater**
   The heater is located on the water passages inside the dishwasher.
   It heats the flowing water to increase wash efficiency.

4. **Vent Fan**
   Drains high temperature moisture out of the dishwasher during the drying cycle (drying the dishes).

5. **Flow Meter**
   Measures the amount of supplied water by counting the pulses of the hall IC located at the next of the Inlet valve.

6. **Distributor**
   Located at the output end of the sump inside the dishwasher. It turns the flow of the water that goes to the bottom part of the dishwasher on or off.

7. **Dispenser**
   The location where the detergent and rinse aids are stored so they can be used by the dishwasher.
   The dispenser automatically supplies detergent and rinse aids to the inside of the dishwasher when they are needed.

8. **Tub Assy**
   An internal case made of stainless steel that makes up the basic framework of the dishwasher.

9. **Sump Assy**
   The place inside the dishwasher where water is collected. The injected water gathers here after circulation.
   The sump Assy is connected to the circulation motor, drain pump, and distributor motor.

10. **Tub Front Assy**
    An internal case made of stainless steel that makes up the internal part of the front door.

11. **Base Assy**
    A plastic part that makes up the basic bottom framework.

12. **Basket Assy**
    The upper and lower racks where dishes can be loaded.

13. **Top/Middle/Lower Nozzles**
    Washes dishes by rotating and injecting the supplied water through the water passages at high pressure.

14. **Case Brake**
    A passage that adjusts the air pressure by connecting the pressure of the inside air which is expanded at high temperature during the wash and rinse cycles and the outside air pressure.

15. **Door Lock Switch**
    Detects whether the door of the dishwasher is open or closed. If the door is open while the dishwasher is running, the cycle is temporary stopped.

16. **Child Lock/Unlock**
    This function is used to prevent a child from operating the dishwasher while it is running.

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