Dishwasher
DW-9900H series training
2015

Basic model	**DW80H9950US**
Model Name	**DW80H9970US** **DW80H9950US** **DW80H9930US** **DW80J9945US** **DW80J7550US** **DW80J7550UW** **DW80J7550UG**
Model Code	**DW80H9970US/AA** **DW80H9950US/AA** **DW80H9930US/AA** **DW80H9970US/AC** **DW80H9950US/AC** **DW80H9930US/AC** **DW80J9945US/AA** **DW80J9945US/AC** **DW80J7550US/AA** **DW80J7550US/AC** **DW80J7550UW/AA** **DW80J7550UW/AC** **DW80J7550UG/AA** **DW80J7550UG/AC**

Project : DW9900H-PJT

9970 *9950* *9930* *7550*

Dishwasher R&D Lab.

SAMSUNG Electronics

SAMSUNG

Contents

Agenda

General Specification

Dishwasher Features

DW80H9970US

DW80H9950US

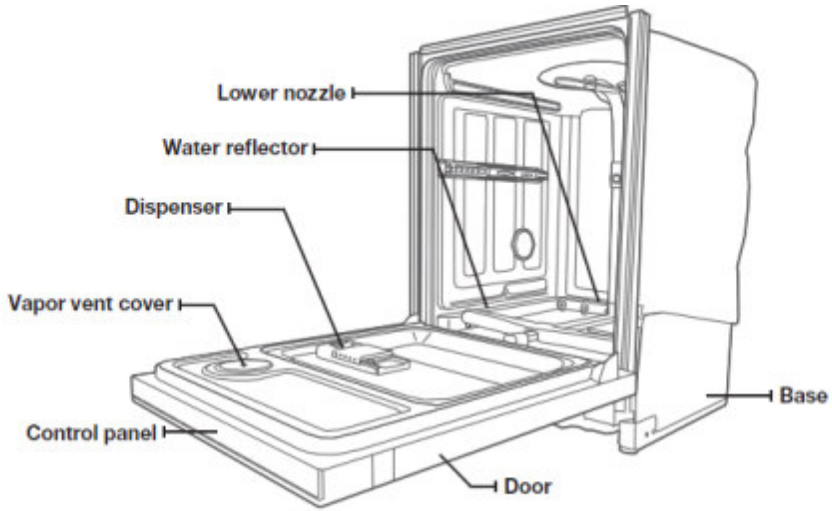
DW80H9930US/DW80J755*

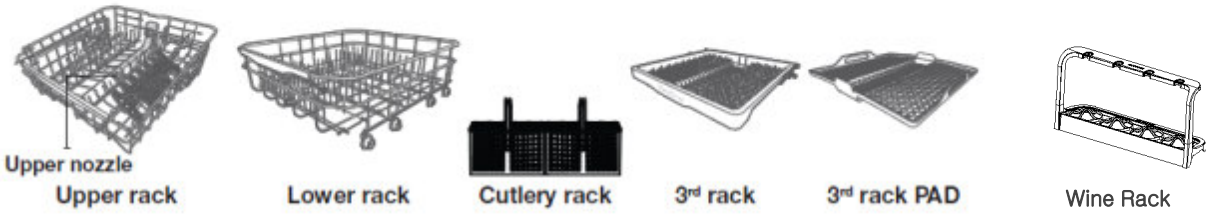
Main Features	▪ Capacity: 15 place settings ▪ Control panel design - Hidden control type + Touch operation. ▪ Dimension (W x D x H) : 23-7/8 x 25 x 33-7/8 inch (605 x 636 x 860 mm)
Sales Point	▪ World First Water Wall™ Washing system ▪ New 3rd rack with Flex Tray ▪ Sleek & Informative Design

Dishwasher Features

Features	Description	Remarks
Water wall linear wash system	New Water wall cleaning system gets dishes sparkling every time • 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	

Dishwasher composition

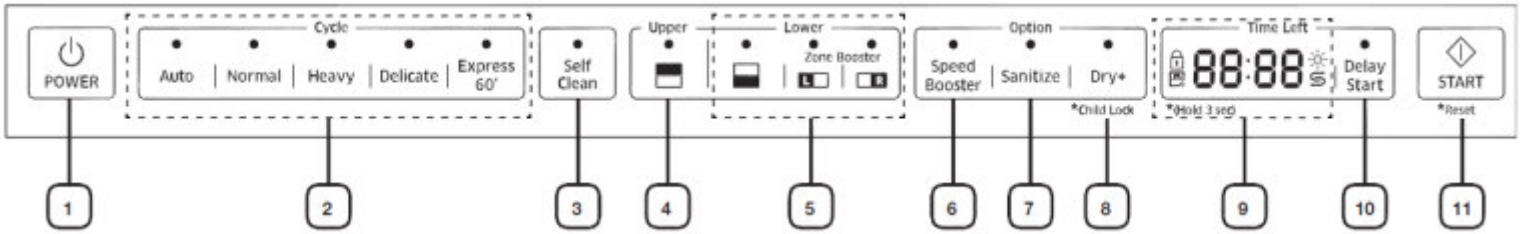




* Accessory parts - User/Installation manual, Installation Kit, Drain Hose, Holder Drain Hose, Hose Clamp, Kick Plate, 3rd Rack PAD.

Control Panel – DW80H99** series

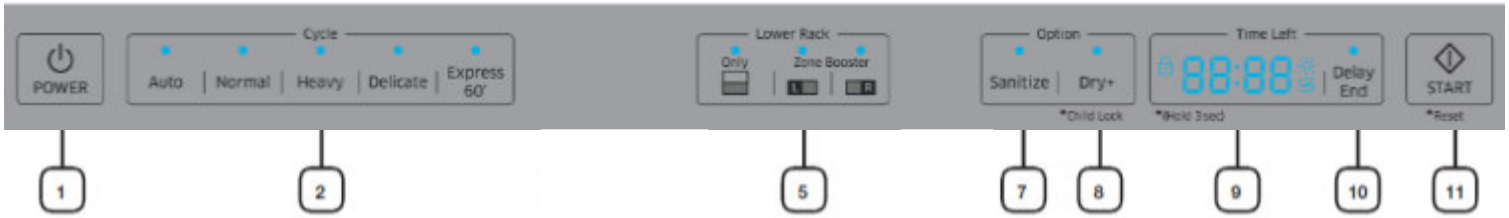
DW80H9970 / DW80H9950 Series



1. Power	When you press the Power button, the light of the most recently finished cycle lights up. When the cycle you selected has finished, all other indicator lights are turned off and the "End" light is illuminated for some minutes. Then, the Power turns off automatically.
2. CYCLE SELECTOR	Select the appropriate wash cycle depending on the soil level of your dishes. After you select a cycle, the Cycle On light for that cycle lights up. Also, Upper and Lower zone light are turned on by default. Note. : When turning on the dishwasher after it has been reset, the last run cycle is selected by default.
3. Self Clean (*on some model)	Select this option to wash the dishwasher TUB without dishware. And, Upper and Lower option are turned off by default
4. Upper (*on some model)	Select this option to wash a small load of dishes. We recommend that you place dishes in the upper rack when you use this feature. If you turns off the lower option, only the upper option will be turned on and the dishwasher will not wash dishes placed in the lower rack. If the upper option is selected, both cycle time and electricity consumption are reduced.
5. Lower	Select this option to wash a small load of dishes. We recommend that you place dishes in the lower rack when you use this feature. If the lower option is selected, both cycle time and electricity consumption are reduced. (*on some model) If you turns off the upper option, only the lower option will be turned on and the dishwasher will not wash dishes placed in the upper rack.
	If you want to wash heavy soiled dishes such as pots and pans, select the Zone Booster option (however, this option consumes slightly more water and energy). Select Zone Booster L option: Applies intensive washing power to the left part of the lower rack. Select Zone Booster R option : Applies intensive washing power to the right part of the lower rack. Select both Zone Booster L & R option : Applies intensive washing power to whole lower rack.
6. Speed Boost (*on some model)	Select this option to reduce the washing time. If you select the this option, both water and electricity consumption are increased.

Functions

DW80H9930 Series / DW80J755 Series / DW80J9945 Series



7. Sanitize	The temperature rises to 162 ˚F (72 ˚C) in the final rinse cycle for high temperature sanitization. If you select the Sanitize option, the "Sanitize" lamp blinks when the water temperature reaches the sanitary temperature (over 155 ˚F (68 ˚C)), and then remains illuminated until the Sanitize option ends. When you open the door or press the Power button, the "Sanitize" lamp turns off. Once the cycle is completed with Dry+ option, the option will be selected automatically in following cycle.
8. Dry+	Use this option when you want to dry more perfectly. The temperature rises to 162 ˚F (72 ˚C) in the final rinse cycle and dry time is increased. If you select the this option, electricity consumption are increased. You cannot select the Delicate cycle if you select the Dry+ option. *Child Lock : This option allows you to lock the buttons on the control panel so children cannot accidently start the dishwasher by pressing the buttons on the panel. To lock and unlock the buttons on the control panel, hold the Child Lock button down for three (3) seconds. - When Power is On : Hold down the "Dry+" button for three (3) seconds. - When Power is Off : Push the Power button first, and then hold down the "Dry+" button for three (3) seconds. - The Child Lock remains active when turning on the dishwasher after a cycle is complete. - However, the Power button can still be used in the Child Lock state.
9. Display	Displays cycle time and remaining hour and minute. Delay Start hours, and Error messages. If an error occurs during an operation, an error message is displayed with a warning sound. Refer to the information codes page.
10. Delay Start	Delay a cycle for up to 24 hours in one-hour increments. To increase the delay start time, press or hold Delay Start button. The hour displayed indicates the time at which the wash will be started.
11. Start	To start the cycle, press the Start button before closing the door. *Reset : To cancel a cycle currently running and drain the dishwasher, hold down Start buttons for three (3) seconds. Once the dishwasher is reset, restart and set it up again.

Product Main Specification

MODEL name	**DW80H9970US / DW80H9950US / DW80H9930US / DW80J755 Series/DW80J9945 Series**
Power supply	**Single-phased alternating current of 60Hz, 15A at 120V**
Water pressure	**140 ~ 830 kPa (20 ~ 120 psi)**
Wash method	**Water Wall washing system + Rotating nozzle spray type**
Dry method	**Air Vent dry system**
Power	**Circulation Motor : BLDC 70~100W Heater : 1100W Drain Pump : 32W Fan Motor : 9W**
Water consumption	**2.85~6.34 gallon (10.8~24L), Normal Cycle**

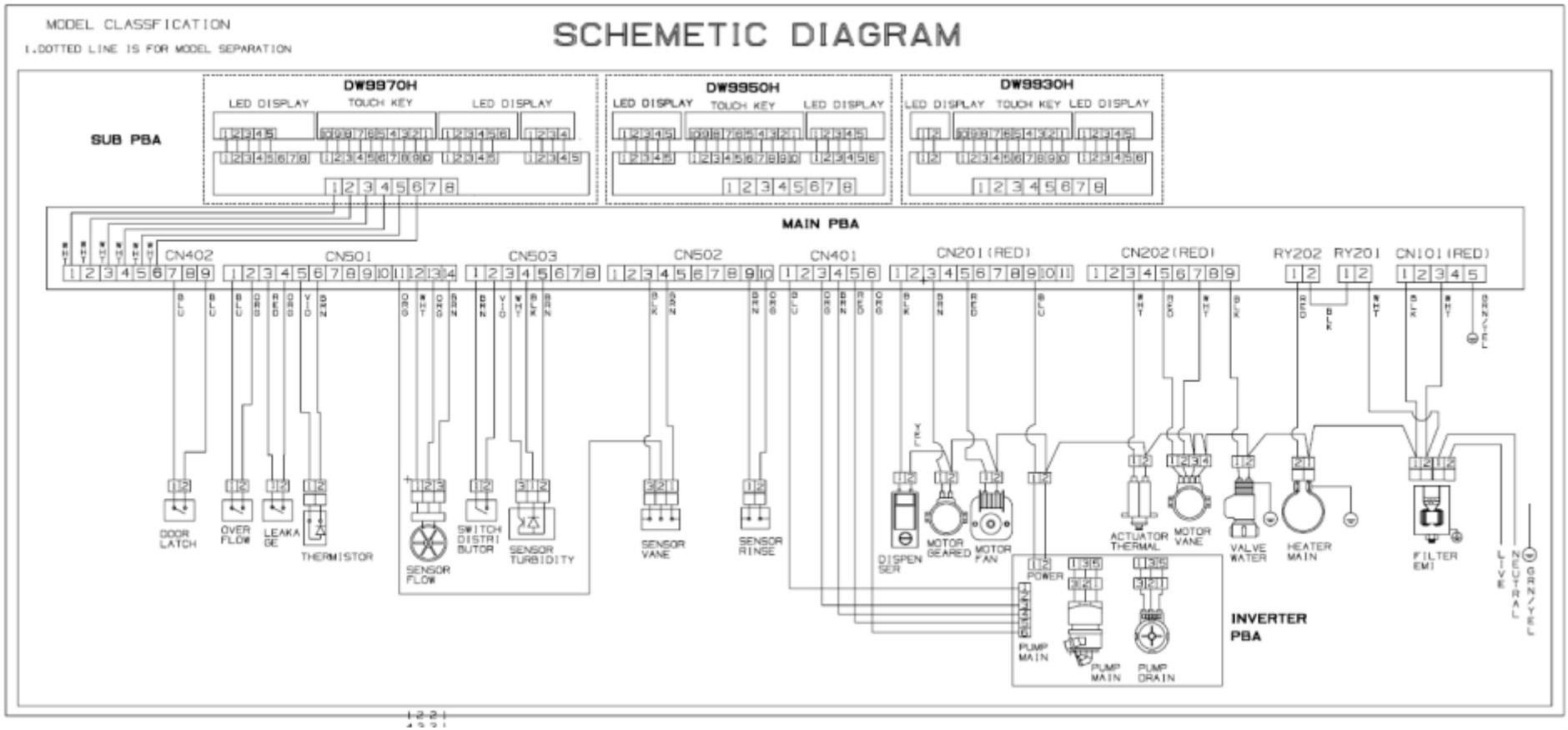
Specification

Model	NEW MODEL					MODEL	
	DW80H9950US	DW80H9970US	DW80H9930US	DW80H9945US	DW80J7550US/ UW/UG	DW80F800UW S	DW80F600UTS/ UTB/UTW
							
	Design Specifications						
Panel Control	Silver	Silver	Silver	Silver	Silver/Black/White	Silver	Silver/Black /White
Control Type	Touch	Touch	Touch	Touch	Touch	Touch	Touch
Wine Rack	X	X	X	O	X	X	X
Frame Front	STS					STS	STS/Black/White
Basket Handle	Blue + STS				Gray	Gray + STS	Gray
	Function Specifications						
Soil Detection Sensors	O	O	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	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")	**5** (Auto, Normal, Heavy, Delicate, Express60")	**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)	**5** (Half Load wash, Targeted zone, Sanitize, Dry+, Delay start)	**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)

Hardware - Wiring Diagram

● *This Document cannot be used without Samsung's authorization.*

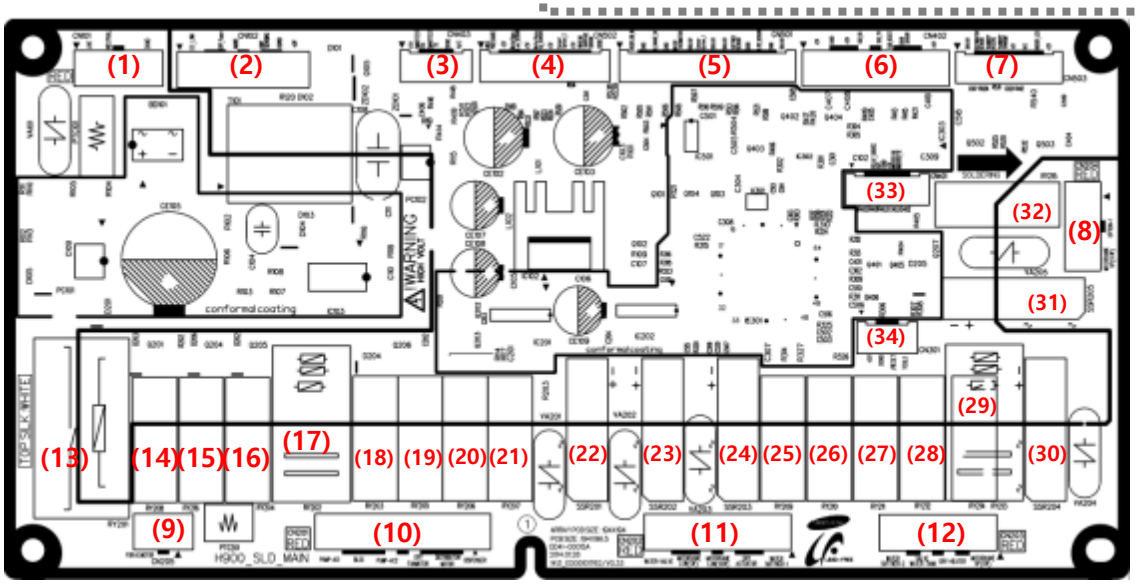
Schemetic diagram



Schematic

MAIN PBA

This Document cannot be used without Samsung's authorization.

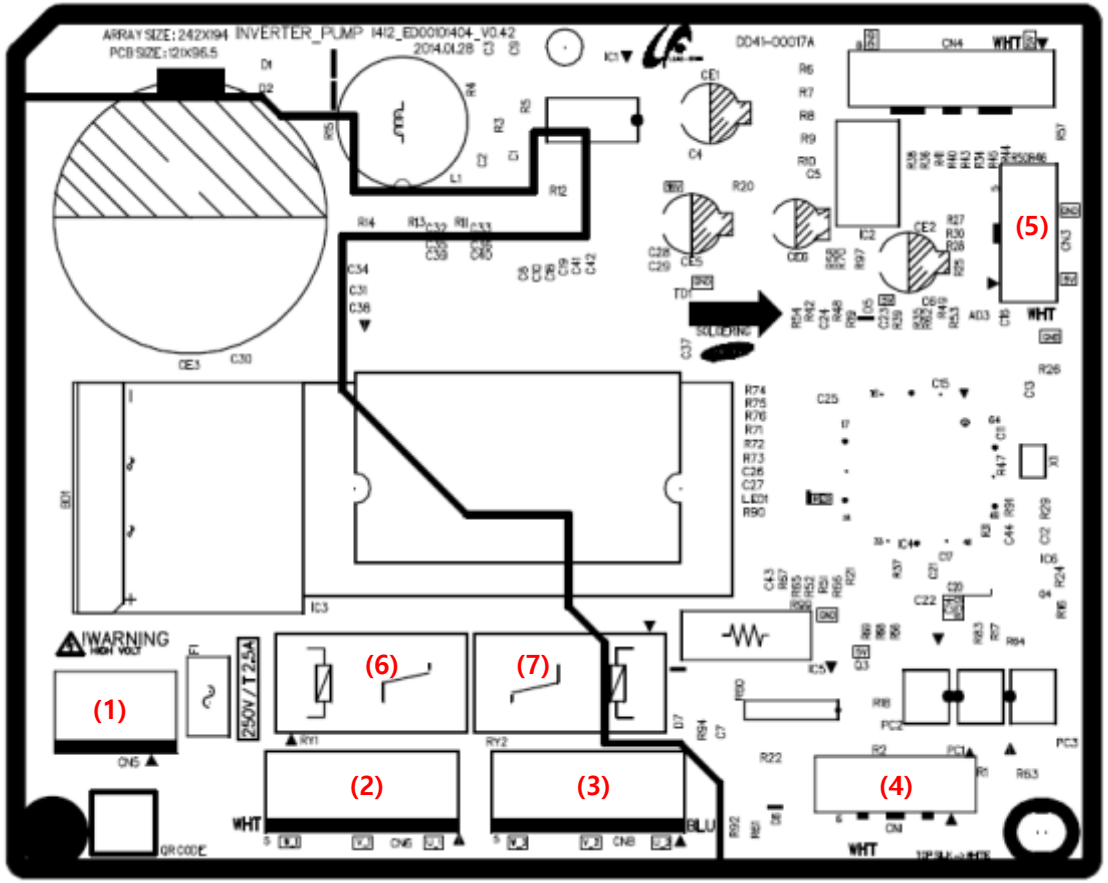


No.	Location	Description
1	CN101	MAIN Power (120V/60Hz)
2	CN102	N.C (O.V.P)
3	CN403	N.C(Smart Test)
4	CN502	Sensing (refer to next page for details)
5	CN501	
6	CN402	SUB PBA connector
7	CN503	Sensing
8	CN204	N.C
9	CN205	N.C
10	CN201	BLDC, DRY Fan, Distributor, Dispenser
11	CN202	WaterValve, MotorVane, Dry Actuator
12	CN203	N.C

No.	Location	Description
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
23	SSR202	Motor Vane Low (CW)
24	SSR203	Motor Vane Low (CCW)

No.	Location	Description
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

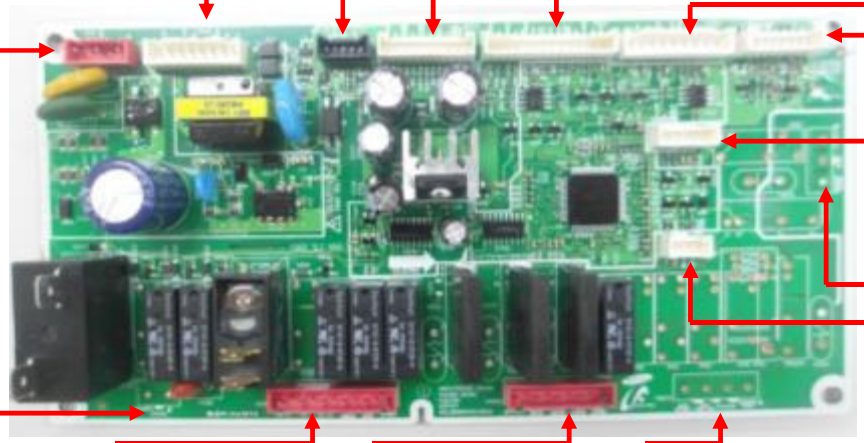
INVERTER PBA



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

Schematic

PCB Diagram



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

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

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

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

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

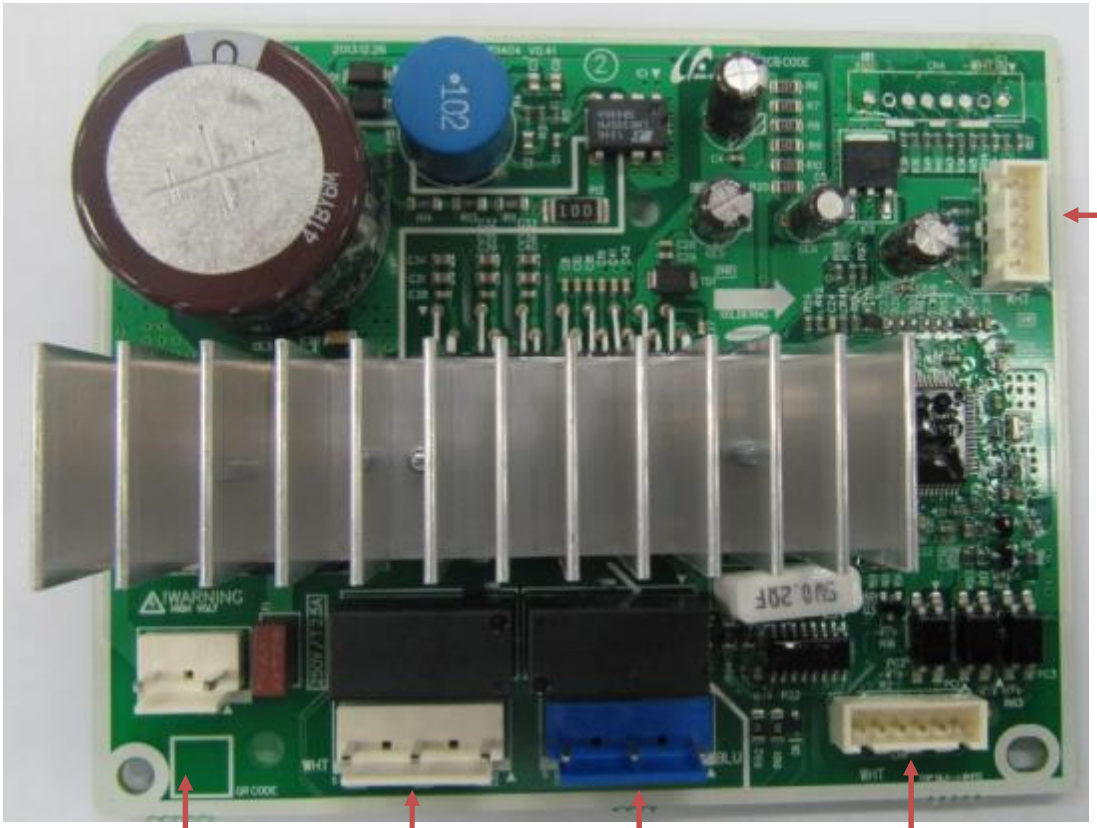
CN205
1) DRAIN-PUMP(AC)
2) NC
3) DRAIN-PUMP(AC)

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

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

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

Schematic



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

CN5
1) Live
2) NC
3) Neutral

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

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

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

⚠ Warning

While Servicing
• **Check if the power cable is damaged, flattened, cut or otherwise degraded.** ➢ If faulty, replace it immediately. Failing to do so may result in electric shock or fire.
• **Completely remove any dust or foreign material from the housing, wiring and connection parts.** ➢ This will prevent a risk of fire due to tracking and shorts in advance.
• **When connecting wires, make sure to connect them using the relevant connectors and check that they are completely connected.** ➢ If tape is used instead of the connectors, it may cause fire due to tracking.
• **Make sure to discharge the PBA power and capacitor 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 holder heater after ensuring that it is inserted into the bracket-heater.** ➢ Ensure the heater is fitted into the bracket - heater correctly.

Safety Instructions

⚠ Warning

After Servicing
• **Check for any water leakage.** ➢ Perform a test run for the dishwasher using the standard(Eco) 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 lifetime. 

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

Safety Instructions

⚠ Caution

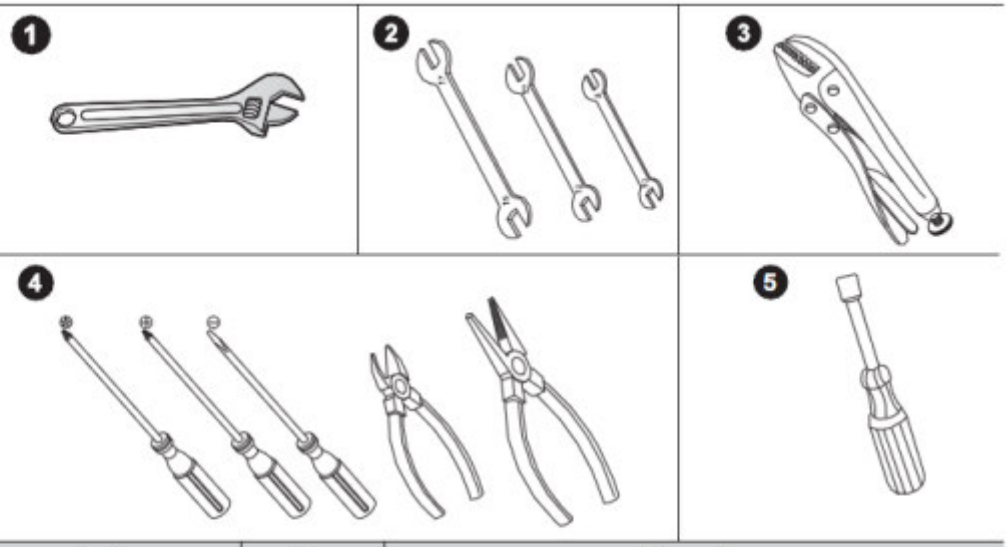
During Servicing
• **When wiring a harness, make sure to seal it completely so no liquid can enter.** ➢ Make sure that they do not break when force is exerted.
•Check if there is any residue that shows that liquid entered the electric parts or harnesses. ➢ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.
•If you need to place the 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.

⚠ Caution

After Servicing
• **Check the assembled status of the parts.** ➢ They must be the same as before servicing.
• **Check the insulation resistance.** ➢ Disconnect the circuit braker or power cable from the power outlet and measure the insulation resistance between the power wires and the grounding wire of the dishwasher. The value must be greater than 10MΩ when measured with a 500V DC Megger.
•Check whether the product is level with the floor. Check if there are any deformations in the sink. Check that the dishwasher is firmly installed to the sink. ➢ Vibrations can shorten the lifetime of the product.

Disassembly and Reassembly

* Tools for disassembly 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
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 braker 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.

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 braker 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.

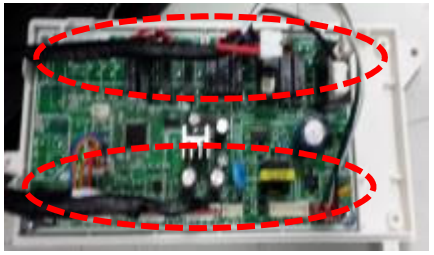
Caution : Before moving the unit, laying it down for service, or removing any parts for service be sure to drain as much of the water from the unit as possible. Use a protective mat or towel to prevent damage to the floor or having any of the remaining water spill on the floor.

Note: 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.

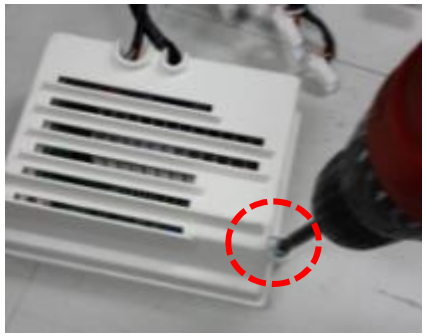
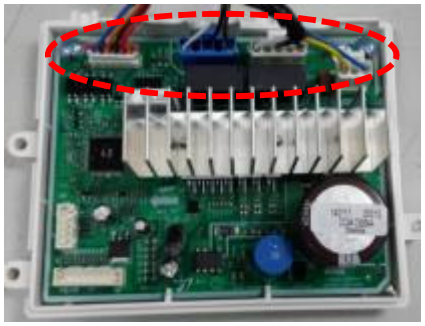
Before servicing, make sure to remove all items from inside of the dishwasher, including the wash racks.

Disassembly

Main PBA

Photo	Description
	**Preparation:** * Disassemble the housing-right. * Make sure to disconnect the power. 1. Remove the one(1) screw holding the Assy-base.
	2. Pull out 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**.** **NOTE** : When removing the Main PBA, lift the main PBA board up carefully because it is hanging on the main PBA case by two hooks.

Inverter PBA

Photo	Description
	**Preparation:** * Disassemble the housing-right. * Disassemble the main PBA. * Make sure to disconnect the power. 1. Remove the one(2) screw holding the Assy-base.
	2. Pull out the Inverter PBA board. 3. Remove the one(1) screws of 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**.** **NOTE** : When removing the inverter PBA, lift the inverter PBA board up carefully because it is hanging on the inverter PBA case by two hooks.

Disassembly

모델 코드 추가

Door outer (DW80H9950US)

Photo	Description
	**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.)
	**NOTE** : 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. It can prevent closing door suddenly and harming you. **NOTE :** You should left 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.

Door outer (DW80H9970&9930,DW80J7550&9945)

Photo	Description
	**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.)
	**NOTE** : 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. It can prevent closing door suddenly and harming you. **NOTE :** You should left 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 down the door outer carefully.

Disassembly

Panel control (DW80H9950US)

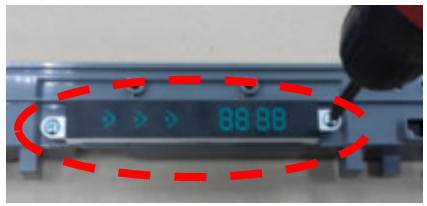
Photo	Description
	Preparation: * Disassemble the door outer.
	1. Remove the 2 screws holding the panel control.
	**2.** Remove the panel control from the door inner.
	3. Remove the seven(7) wire connectors from Panel control.
	4. Remove the two(2) screws holding the panel control. And remove the led display from the control panel.
	5. Remove the one(1) screw holding the panel control. And remove the led display from the control panel.

Photo	Description
	6. The Assy-module is fixed to the panel control with several tabs. Use a flat tip screwdriver to gently pry the tabs.

Disassembly

Panel control (DW80H9970US)

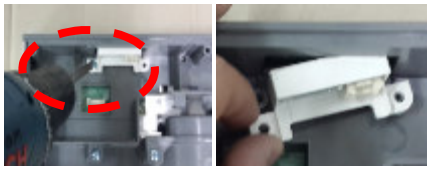
Photo	Description
	**Preparation:** * Disassemble the door outer. 1. Remove the six(6)screws holding the Assy-door front.
	**2.** Remove the Assy-door front from the door inner.
	3. Remove the eight(8) wire connectors from Panel control.
	4. Remove the one (1) screw holding the panel control. And remove 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.

Photo	Description
	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.
	8. 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.

Disassembly

Panel control (DW80H9930US,DW80J7550&9945)

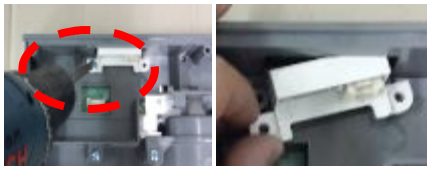
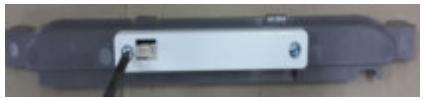
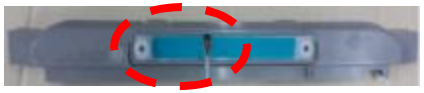
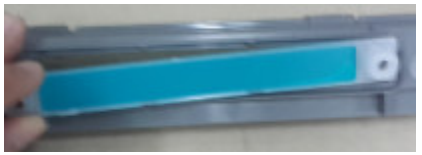
Photo	Description
	**Preparation:** * Disassemble the door outer. 1. Remove the six(6)screws holding the Assy-door front.
	**2.** Remove the Assy-door front from the door inner.
	3. Remove the seven(7) wire connectors from Panel control.
	4. Remove the one (1) screw holding the panel control. And remove 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.

Photo	Description
  	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.
 	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

Photo	Description
	**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.

Duct dry system

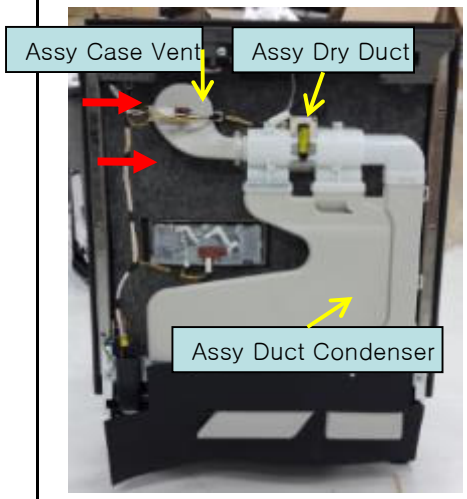
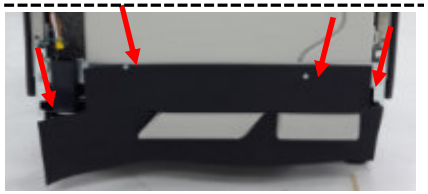
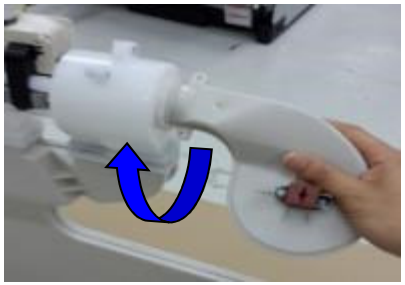
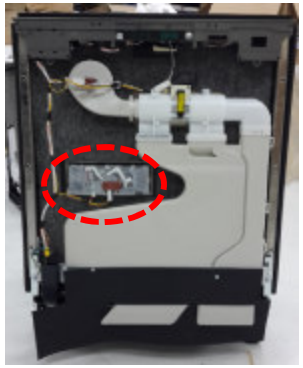
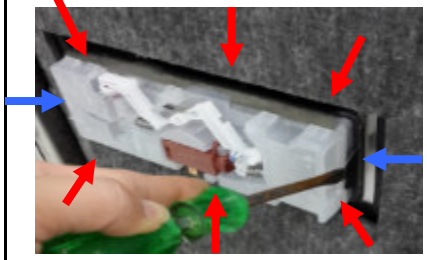
Photo	Description
	**Preparation:** * Disassemble the door outer& Assy - panel control. - Refer the “Door outer & Panel control” disassembly section. 1. Remove the two(2) wire connectors from thermal actuator & Dry Fan motor.
	2. Open the door & Remove the three(3) screws holding the bracket cover fan and Assy duct vent.
	3. Remove the cover fan by rotating counter clockwise. **NOTE** : Use a jig. If you have no 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. **NOTE** : Be careful while removing them as the duct condenser is touching the bracket door inner and the cushion duct.

Photo	Description
	5. Remove the Assy cover fan by rotating it counter clockwise.
	6. Remove the seal fan from the cover fan.

Disassembly

Dispenser - slide

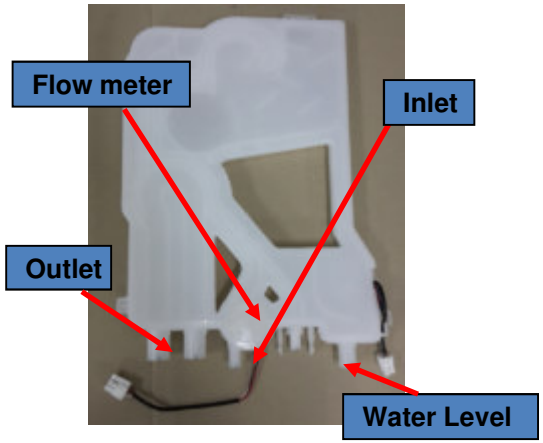
Photo	Description
	**Preparation:** * Disassemble the door outer - Refer the “door outer” disassembly section to separate the door outer.
	1. Remove the two(2) connectors from the dispenser. **Caution** : Be careful not to break them during disassembly.
	2. The dispenser-slide is fixed to the door inner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

Lever door

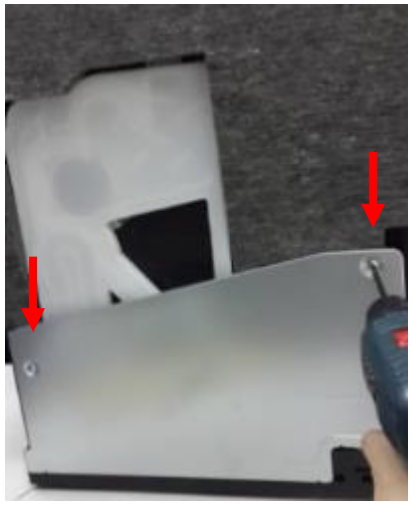
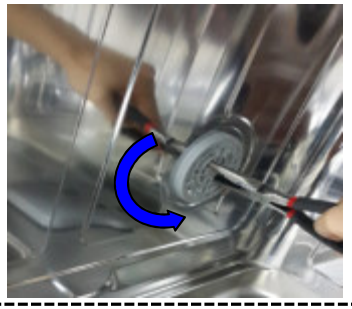
Photo	Description
	1. Remove the two(2) screws holding the Assy - tub.
	2. Remove the trim-up from the Assy-tub.
	3. Remove the one(1) screw holding the Assy - tub.
	4. Remove the lever door from the Assy – tub.

Disassembly

Assy Case Brake



Assy case brake

Photo	Description
	**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.
	3. Remove cover brake by rotating.(counterclockwise) Use a jig. If you do not have a jig, you can use a needle nose pliers. (Be careful when removing the cover as it is easily damage d.)
	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.

Assy - motion

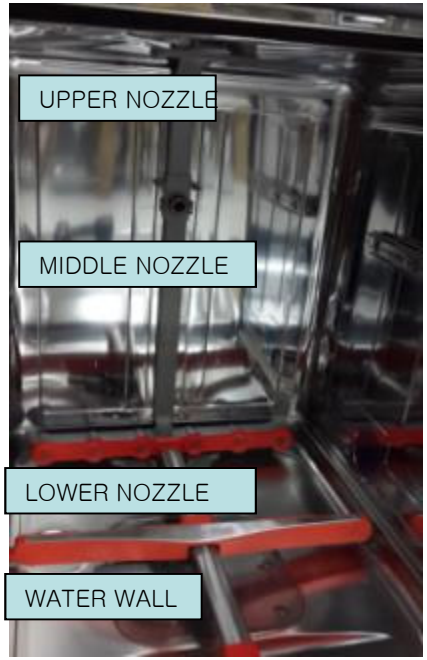
Photo	Description
	Preparation: * Make sure to disconnect the power, water supply, and drain hose connections and remove the water in each nozzle to block the wet. * Remove the upper, lower baskets and 3rd rack in the dishwasher. * Pull out the dishwasher carefully.
	1. Remove the Assy-vane from the Assy-rail. **NOTE** : Remove it carefully so that the part is not damaged.

Photo	Description
 	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.
 	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 , not end of it. And then pull up the end of it

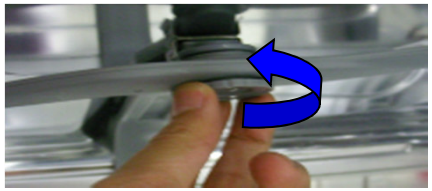
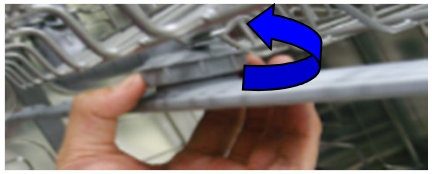
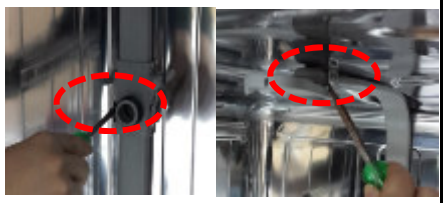
Frame front

Photo	Description
	**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.

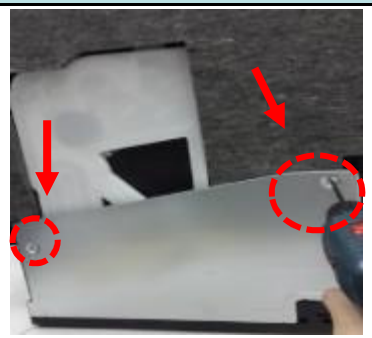
Photo	Description
	3. To remove the bracket front lower entirely, grab the top of the bracket front lower (on both sides) and pull the top out. At the same time, push the bottom of the bracket front lower (on both sides) in towards the unit.

Disassembly

Assy – Duct (Nozzle)

Photo	Description
	**Preparation:** * Remove the lower basket in the dishwasher. * Make sure to remove the water in each nozzle to block the wet.
	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.

Base

Photo	Description
	**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.

Disassembly

Drain Hose

Photo	Description
	**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 .

Photo	Description
	4. Pull out the hose holder carefully into the base.
	5. Loosen the clamp and release the holder hose.

Disassembly

Water Valve

Photo	Description
	**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.

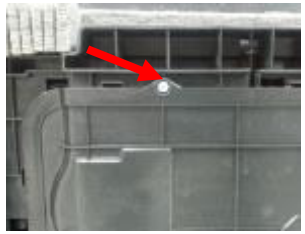
Cover base

Photo	Description
 	**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.

Door Spring

Photo	Description
	**Preparation:** * Disassemble the housing-left & right.
	1. Remove the spring etc door front the Assy-base by using a needle nose pliers. **NOTE** : 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 etc door.

Assy Cover base

Photo	Description
	**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 two(2) screws.

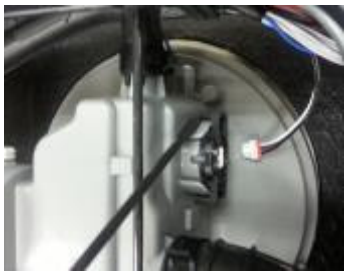
Rear Leg + Adjust bar

Photo	Description
	**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. **Note :** 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.

Thermister

Photo	Description
	**Preparation:** * Disassemble the frame front. - Refer disassembly frame front. 1. Release the two(2) screws of thermistor
	2. Disconnect the wire terminal connected to the thermistor
	3. Pull out it carefully. **NOTE** : The thermistor has a seal .

Turbidity sensor

Photo	Description
	**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. **NOTE** : Inspect the "O" ring seal around the sensor. If it is damaged in anyway, replace the "O" ring seal.
	

Circulation pump

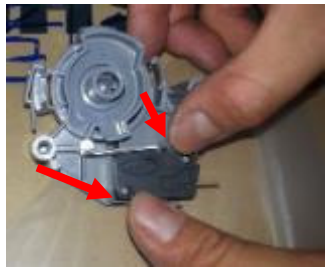
Photo	Description
     ---  --- 	**Preparation:** * Disassemble the 'cover base'. - Refer to the 'Cover base' disassembly section. 1. Disconnect the Circulation pump connector. - (3)wires. Heater wire, ground wire, motor wire. --- 2. Release Damper BLDC from base using by '-' driver or hand. **Caution** : 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 a water. 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

Ass'y guide water

Photo	Description
 ---  ---  ---  	**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. 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 pull the locking tab(2) on the Assy guide water and sump. Then pull out carefully.

Motor AC drive & Switch micro

Photo	Description
 ---  --- 	**Preparation:** * Disassemble the 'cover base'. - Refer to the 'Cover base' * 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. 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.

Photo	Description
	**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 --- - Remove the 'micro switch' by gently prying up the locking tab(2) on the cover distribute. Then releases from the cover distribute..

Drain pump(MOTOR BLDC PUMP)

Photo	Description
 ---  ---  --- 	**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.

Disassembly

Sump

Photo	Description
 ---  ---	**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 sump upper side, using by 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.

Trouble Shooting - Preparation

DW9900H SERIES

→ Software (Version ~7133) ; See **Check Code** (Page 41 ~ 43)

→ Software (Version 7134~) ; See **Check Code** (Page 44 ~ 46)

1. How to check Software version.
   1) Press the **'Zone booster L', 'Zone booster R' and 'Power key'** at the same time to enter test mode.

   2) Press **'Auto key'** then see display.

2. How to 'Check code' recall(S/W Version 7134~)
   1) Press Power (make it power on)
   2) Press **'Normal'** and **'Lower key'** 7sec.

Trouble Shooting 1/3 (S/W ver. ~7133)

Check Code (S/W ver. ~7133)

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 aqua stop is out of order. - The case brake fails to detect the pulse.
5E	- In case the power of the drain pump power exceed 15W in the operation of the Drain pump even if it operates with 3 times.	- The driving part stops.	- A foreign object has entered the drain pump and the pump is stuck. - 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 -3oC 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 80oC 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.
bE2 (No Display during washing cycle)	- 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.

Trouble Shooting 2/3 (S/W ver. ~7133)

Code	When occur	Symptom	Possible Causes
bE3 (No Display during washing cycle)	- 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 (No Display during washing cycle)	- 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.
1E	Case1) HPS detected water level Condition 1) – When the high pressure switch (HPS) does not measure a high level after the completion of the water supply. Condition 2) 2-1) If the high pressure switch measures a low level for 3 continuous seconds while a wash is performed, the HPS is checked again. If a high level is detected, a normal operation is performed. If this is repeated 5 times, an 1E error occurs. 2–2) If the high pressure switch measures a low level for 3 continuous seconds while a wash is performed, the HPS is checked again. 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. Case2) power consumption of Circulation pump detected low water level	- Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	- The motor is out of order. - The HPS is out of order. - If there are Bubbles in the tub - If the filter micro is clogged

Trouble Shooting 3/3 (S/W ver. ~7133)

Code	When occur	Symptom	Possible Causes
3E	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.	- A foreign object has entered the Circulation pump and the pump is stuck. - 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 out of water.
9E1 / 9E2 display, change to pause	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

Trouble Shooting 1/3 (S/W ver. 7134~)

Check Code (S/W ver. 7134~)

Check code Display	Check code Recall	When occur	Symptom	Possible Causes
4C	4C	-When the number of detected water supply pulses is less than 10 within 20 seconds after water is supplied. -- When the target water level is not reached within 60minutes 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 aqua stop is out of order. - The case brake fails to detect the pulse.
No display	5C	- In case the power of the drain pump power exceed 15W in the operation of the Drain pump even if it operates with 3 times.	- Keep going remained cycle.	- A foreign object has entered the drain pump and the pump is stuck. - The drain pump is out of order. -The Main PBA is out of order. - The Inverter PBA is out of order.
5C	5C1~5C5	-drain pump error occurred 11 times, 5minutes pause and retry. when pause condition is occurred 3times.	-The driving parts stops. -Retry until 2nd time, and then 3rd time display check code.	
No display	PC	-When the location is not detected for 2 minutes after the synchronous motor operation. (after 1minute, Synchronous stop. and then after 1sec retry with c-pump also stopped condition)	-Vane move to reset location and keep going remained cycle with heater off condition.	- The synchronous motor is out of order. - The location in the cam is incorrect.
No display	tC	- 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 -3oC for 30 seconds in succession during the cleaning the heater operation.	- Heater off and keep going remained cycle. - No Rinse aid during rinse cycle - if C-pump RPM target 3000, change to 3000rpm.	- The thermistor is out of order.
No display	HC1	- 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 check code occurs.	- Keep going remained cycle with heater off condition.	- The heater is out of order. - The heater is improperly connected.
HC	HC	- When the temperature is measured as equal to or greater than 80oC 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.
No display	bC2	- When the button is pressed and held for 30 continuous seconds or longer.	-Keep going remained cycle	- The touch button is out of order. - An object is on the touch button.

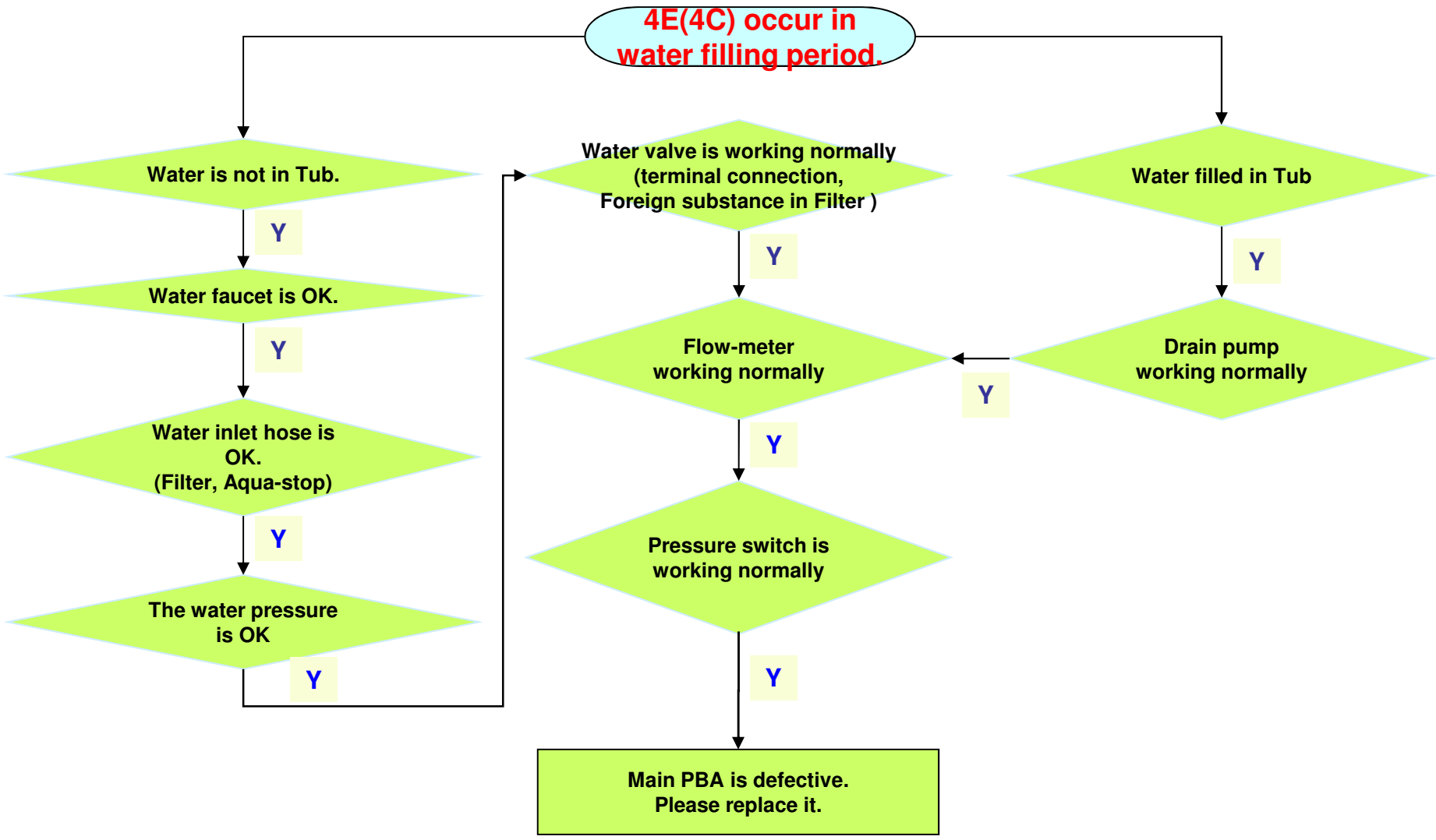
Trouble Shooting 2/3 (S/W ver. 7134~)

Check code display	Check code Recall	When occur	Symptom	Possible Causes
No display	**bC3**	- When IC communications between the Sub PBA and the touch button fails.	-Keep going remained cycle	- The touch button is out of order. - The sub PBA or touch button PBA is not properly connected.
No display	**AC**	- When communications between the main PBA and the sub PBA fails for 24 seconds. (In Test Mode, communication fails for 6 seconds.)	-Keep going remained cycle	- The main PBA or sub PBA is out of order. - The communications connection for the main PBA or sub PBA is not properly connected.
No display, change to pause	**AC6**	- 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	- Inverter Relay 2min off, 3sec on(until find response) - Display change to pause	- The main PBA or Inverter PBA is out of order. - The communications connection for the main PBA or Inverter PBA is not properly connected.
LC	**LC**	- When the water leakage sensor data is equal to or less than 3V for 3 seconds.	- Main relay off - 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.
OC	**OC**	- When the overflow sensor data is equal to or less than 3V for 5 seconds.	-If an error has occurred when set operating, 3times '3min drain' retry, and display "OC" (No operating condition, display "OC" without retry) - During retry 3times, display 'pause'	- The case brake fails to detect the pulse. - The valve water is out of order.

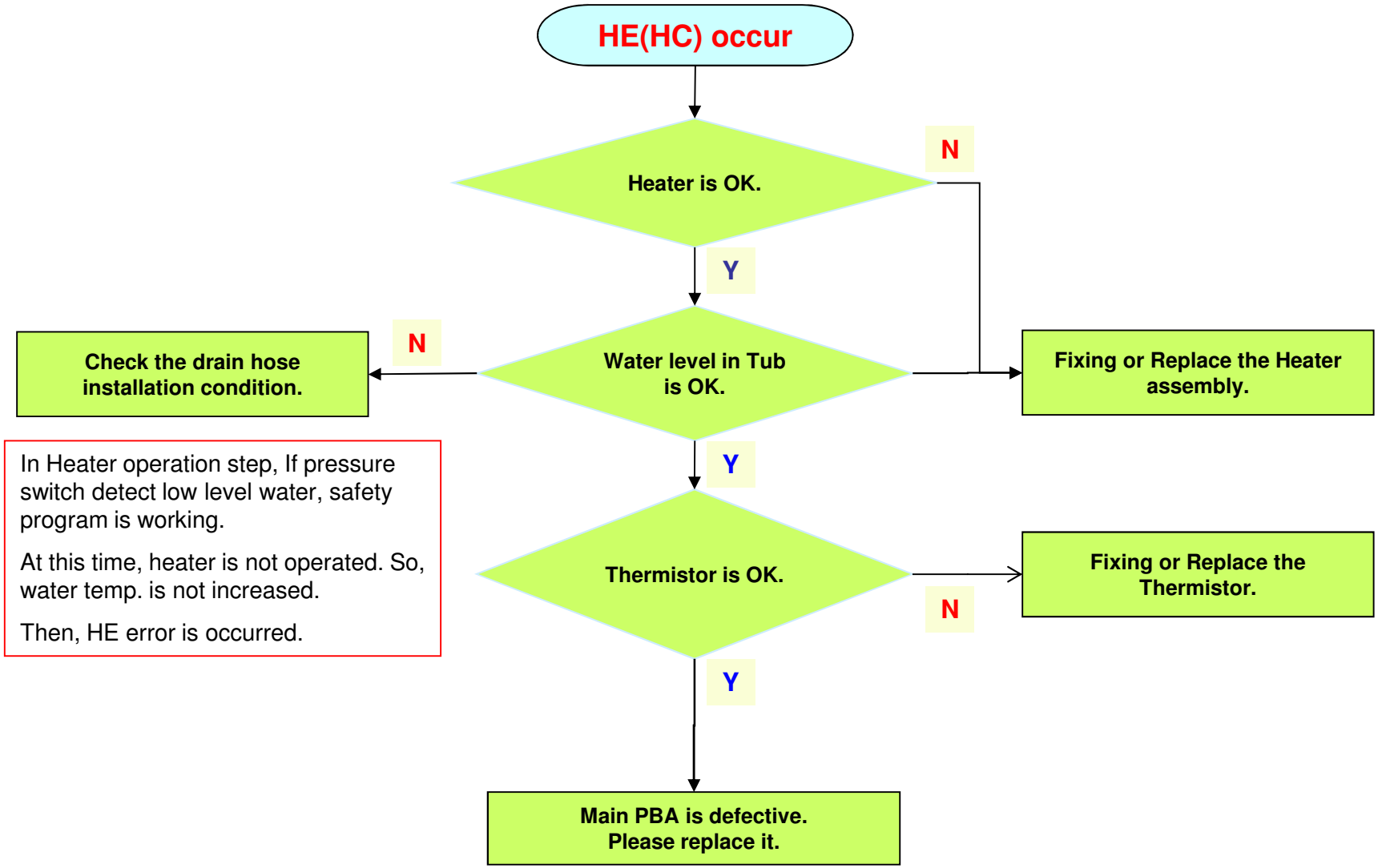
Trouble Shooting 3/3 (S/W ver. 7134~)

Check code Display	Check code Recall	When occur	Symptom	Possible Causes
3C	3C, 3C1~ 3C5	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.)	-The driving part stops. -Retry until 2nd time, and 3rd display check code.	- A foreign object has entered the Circulation pump and the pump is stuck. - The Circulation pump is out of order. - The Main PBA is out of order. - The Inverter PBA is out of order.
No display	4C5	- 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	- Keep going remained cycle	- The water valve out of water.
No display, change to pause	9C1 / 9C2	If blackout or DC Link voltage is high or low voltage conditions, switches to stop mode (abnormal voltage).	- The driving part stops. - Display change to pause	- High or Low voltage is supplied
No display	7C	Case1) When the reset position sensing for 10 seconds, vane motor 1 sec Off and re-operation. Check code occurs after retry three times Case2)) When the reset position sensing for 25 seconds. Check code occurs after retry three times Case3) Vane position is the time from initial position to initial position in 21 seconds or less, the check code occurs.	- Distribute change Middle + top and then keep going remained cycle. -If while Distribute motor driving, detect the Vane error, Stop C-pump and then keep going remained cycle. -During Remained cycle, no operating Vane anymore.	- Motor gear is out of order - Sensor vane is out of order - When the vane is blocked

4E(4C) : When water supply is not working



HE(HC) : When heater is not working



In Heater operation step, If pressure switch detect low level water, safety program is working.

At this time, heater is not operated. So, water temp. is not increased.

Then, HE error is occurred.

Trouble Shooting- SVC Test mode

SVC Test mode

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(dC)” 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 : Inverter PBA SW version 3) Delicates Key : Sub Touch IC SW Version 4) Express60 Key : Model Option -Dry+ Key while pressing, dry default option can be set. (d ON: dry+ default option setting, d OFF : dry+ default option clear)
n1 (nA)	•Drain pump •Inlet Valve •Flow Meter •Water Level Sensor •Turbidity	Water supply check Turbidity check	- “nA“ is displayed. - Drain 30 seconds - Water supply 4liters - If water supply is not complete, occurs 4E(4C) check code - 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(C3) check code
n2 (nb)	•Circulation Motor	A nozzle does not inject water.	- Runs the circulation motor (BLDC: 3400 RPM). - 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.
n3 (nC(nL))	•Circulation Motor	A nozzle does not inject water.	- Runs the circulation motor(BLDC: 2600 RPM). - If the normal water level is detected, “nC(nL)” 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..

Trouble Shooting- SVC Test mode

SVC Test mode

Item	Related Parts	Symptoms	Description
n4(nd)	•Circulation Motor •Heater •Thermistor •Dispenser	Heater check	- Circulation motor (BLDC : 3400 RPM) 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 check	- The circulation motor runs. - RPM display after operation circulation motor. - Each time press the Normal key, it is possible to change the rpm. (1201 ~ 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 check	- The circulation motor runs (BLDC: 3400 RPM). - The synchronous motor runs by alternating the location between lower right and lower left at 1 minute intervals.
n7	•Dry Fan Motor	The Dry Fan motor does not work.	- Runs the vent motor and the thermal actuator of the dryer unit.
n8	•Inlet valve •Overflow Sensor	Over level water check	- Water is supplied until an overflow is detected. - If an overflow is detected, “oF” is displayed.
n9	•Drain Pump	Drain check	- Runs the drain pump for 60 seconds (25 seconds on / 2 seconds off). - If drain is not complete(Measuring power consumption drainage), occurs 5E(5C) check code - When drain is complete, display nP
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) ->Dry heater(Delicate 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

Trouble Shooting-SVC data display mode

SVC Data Display mode

Item	Description	Display
Entering Mode	To enter the mode	When the power is on, press and hold the Auto key and Express key combination for 5 seconds. (To exit, press the key combination again.) (This allows you to enter Data Display Mode and check the current sensor status.)
Changing Mode	To change the mode	The mode is changed whenever the Auto key is pressed. (d0 ->d1->d2->d3->d4->….. (Repeat)) - If 5 minutes have passed in display mode, the unit automatically returns to normal mode.
d00	Version display mode	- Displays the main micom version in turns. 1) While the Start key is held down, the sub micom version is displayed. 2) While the Sanitize key is held down, the model option is displayed. 3) While the Booster Right key is held down, the Inverter micom version is displayed. 4) While the Dry+ key is held down, the touch IC version is displayed.
d01	Cycle Cnt	- Cycle count display ex) 12345 Cycle -> d01-0001-2345 - Increase in 9999, the Cnt becomes 0
d02	Detect low water lever	- Water lever is detected when c-pump is operated only - Hi : Normal or not determined - Low : low water lever
d03	Synchronous motor location	- Synchronous motor location signal check according to the operation of the synchronous motor
d04	Water temperature	- Displays water temperature ex) 24.5℃ -> 254
d05	Flow meter	- Displays Flow meter pulse
d06	Turbidity AD Data	- Displays turbidity AD data
d07	Overflow Sensor Volt	- Displays overflow sensor voltage
d08	Water Leakage Sensor Volt	- Display water leakage sensor voltage
d09	Target RPM	- Displays BLDC target RPM
d10	Current RPM	- Displays BLDC current RPM
d11	Water supply pulse counter used in total.	- Displays total flow meter pulse.

SVC Data Display mode

Item	Description	Display
d12	Reference Turbidity Data	- Displays the reference turbidity data
d13	DC link	- Displays the DC link
d14	Motor Power	- Displays the operating motor power

Trouble Shooting – Cycle chart

Cycle chart

Cycle	Pre-wash1	Pre-wash2	Main wash	Rinse 1	Rinse 2	Rinse 3	Rinse 4	Last Rinse [Sanitize]	Dry (min.)	Water [gal(ℓ)]	Time (min.)
Auto	●		138 ˚F (59 ˚C)	●	○	○	○	136 ˚F (58 ˚C) [162 ˚F (72 ˚C)]	●	6.39 ~ 3.69 (24.2 ~ 14 ℓ)	158 ~ 111
Normal	●	○	143 ~ 118 ˚F (62 ~ 48 ˚C)	●	○	○		136 ˚F (58 ˚C) [162 ˚F (72 ˚C)]	●	6.34 ~ 2.85 (24 ~ 10.8 ℓ)	144 ~102
Heavy	●	●	149 ˚F (65 ˚C)	●	●	●		158 ˚F (70 ˚C) [162 ˚F (72 ˚C)]	●	6.31 (23.9 ℓ)	158
Delicate	●		122 ˚F (50 ˚C)	●	●			149 ˚F (65 ˚C)	●	4.59 (17.4 ℓ)	120
Express 60'	●(ver~7133) - (Ver 7134~)		140 ˚F (60 ˚C)	●				149 ˚F (65 ˚C) [162 ˚F (72 ˚C)]	●	3.69 (14 ℓ)	60

- The numbers in parentheses in the Last Rinse column represent the temperature when you select Sanitize.
- When you select the Auto or Normal cycle, you can eliminate the (flexible) steps depending on the soil level of the dishes.
- The water consumption and wash time varies depending on the steps or options you add, and on the pressure and temperature of the supplied water.
- When the Rinse Aid is empty, wash time and Last Rinse temperature can increase a little.

Trouble Shooting – Error trouble shooting

Check type	Check code	Checking method	Corrective actions
Water supply check	4E(4C) 4E-1(4C-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 60minutes.	- 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”.

Trouble Shooting

Check Type	Check code	Checking method	Corrective actions
Drain error	**5E(5C)**	1. Check whether there is any foreign material in the Drain Hose and Drain Pump.	- Remove the foreign material in the Drain Hose and Drain Pump.
		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.) ▶Normal: 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 (bC-2)** **bE-3 (bC-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)

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Circulation Pump Check	**3E(3C)**	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(LL)) in test mode ▶ Normal:50V ~ 90V (while operating) ▶ How to do L3(Lc(LL)) 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(LL)) → 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.

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Heater Check	**HE-1 (HC-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 brake 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 check code”.
Heater Overheat Check	**HE(HC)**	1. Check the operation of the Thermistor.	- See the “tE(tC)” check code.
		2. Check the Heater Relay.	- See the “HE-1(HC-1) check code”.

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Leakage check	**LE(LC)**	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.
Half load check	**PE (PC)**	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 Assy and Find the faulty.	- Faulty: Replace Cam Assy.
		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”.

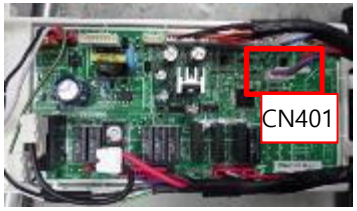
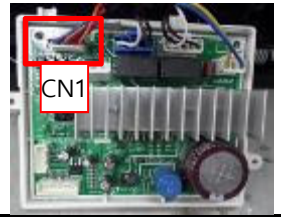
Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Motor vane check	7E (7C)	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 Assy and Find the faulty.	- Faulty: Replace Motion Assy.
		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”.

Trouble Shooting

<table>
<tr><th>Check type</th><th>Check code</th><th>Checking method</th><th>Corrective actions</th></tr>
<tr><td rowspan="4">Overflow check</td><td rowspan="4">oE
(oC)</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(4C) 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 check</td><td rowspan="2">tE
(tC)</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><th>Temp(℃)</th><th>Resistance(kΩ)</th></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>

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Main-Sub PBA Communication check	AE(AC)	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 check	1E(1C)	1. Check the connections for the Pump BLDC connectors.	- Reconnect the Pump BLDC connectors
		2. Error occurrence after confirm Method 1.	- Faulty: Replace high pressure sensor(HPS)
		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 check	AE6(AC6)	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

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
No Power check	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. ▶ Normal: 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.
Display check	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.

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Dry check	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.

Trouble Shooting

Check type	Check code	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”.
		4. Check the operation of the Dispenser	- See “Dispenser is not dispensed”.

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
The cycle does not start.	**None**	1. Check the connections for the Door Sensing Switch : Check the white wire and the switch connected to the white wire. ▶ Normal: 10.5 to 13V (when the door is open) ▶ Normal: < 1V (when the door is closed)	- Reconnect the Door Sensing Switch Connector
		2. Check the connection for the Door Sensing Switch.	- Reconnect the Door Sensing Switch Connector
		3. Check the operation of the Door Sensing Switch. (Remove the connector before measuring.) : Check the blue wire and the switch connected to the blue wire. ▶ Normal: SHORT(when the door is open) ▶ Normal: OPEN (when the door is closed)	- Faulty : Replace the Door Sensing Switch. - Normal : Replace the Main PBA Assy.
		4. Check the operation of the Power Relay.	- See “Power Relay Error.
Main PBA DC voltage error	**None**	Check the DC voltage of the Main PBA. - Measure the voltage between pin 1 of the main PBA CN402 connector and pin 2 of the CN402 connector. ▶ Normal: 4.5V to 5.5V - Measure the voltage between pin 2 of the main PBA CN402 connector and pin 3 of the CN402 connector. ▶ Normal: 10.5V to 13.0V	- Faulty: Replace the Main PBA Assy.

Trouble Shooting

Check type	Check code	Checking method	Corrective actions
Power Relay error	None	1. Check the connections for the Power Relay connector: : Start the cycle by pressing the Power key. when measure the operating voltage between the wires of the Power Relay and pin 1 wires of the CN101 Caution Check the pin of the wires of the Power Relay and the Heater Relay. ▶ Normal: 110V ~ 120V	- Reconnect the Power Relay.
		2. Check the door switch. : Check the white wire and the switch connected to the white wire. ▶ When the door is open: The Door Switch is OFF. ▶ When the door is closed: The Door Switch is ON. □The Power Relay and the Heater Relay use a 12V line. If the switch is out of order, the Power Relay and the Heater Relay will not operate.	- Faulty: Replace the Door Switch.
		3. Check the driving signals for the power relay : Measure the voltage between pin 7 and pin 2 of the CN402 connector on the main PBA. ▶ When the door is open or before the cycle starts. . Normal: 1 V ▶ After the cycle has started by closing the door and pressing the Power key. □. Normal : 10.5 to 13 V	- Faulty: Replace the main PBA Assy.
		4. Check the operation of the Power Relay : Start the cycle by pressing the Power Key. Measure the operation voltage between the terminal of the Power Relay (pin 3) and pin 1 of CN101 Caution Check pin the Power Relay and pin 1 of CN101 ▶ Normal: 110V ~ 120V	- Faulty: Replace the main PBA Assy.

Trouble Shooting

Category	PROBLEM	POSSIBLE CAUSE	SOLUTION
Will not start	**Power is On, but Will not start.**	The door is not closed completely.	Check that the door is latched and closed completely.
		No cycle is selected.	Select a proper cycle.
		The water supply does not work.	Check that the water supply valve is open.
		Control panel is locked.	Unlock the child lock, (See user manual.)
Not Dry	**Does not dry dishes well.**	There is no rinse aid in the dispenser.	Check the dispenser and add the rinse aid. Use the liquid type rinse aid for automatic dishwasher.
		Too many dishes have been loaded.	Proper loading of items can affect drying. Load your dishes as recommended. (See page 16.)
		Are the plastics wet?	Plastic dishes often need towel drying.
		Water is dropt to lower basket from the upside.	After the cycle finishes, empty the lower rack first and then the upper rack. This will prevent water from dripping from the upper rack onto the dishes in the lower rack.
		Glasses and cups with concave bottoms hold water. This water may spill onto other items when unloading.	After finishing the cycle, empty the lower rack first and then the upper rack, this will avoid water dripping from the upper rack onto the dishes in the lower rack.
Odor	**Has a bad odor.**	There is water left over when the last cycle is not completed.	Insert detergent without loading dishes, and run the Eco cycle to clean the dishwasher.
		Drain Hose is obstructed.	Contact a qualified service technician to remove any obstruction from the drain hose.
		The dishwasher is not used daily or Soiled dishes left in unit too long.	With the dishwasher empty and no detergent, place a glass with 1 or 2 cups(8~16 ounces) of white vinegar upright into the lower rack, and then run a Normal cycle.

Trouble Shooting

Category	PROBLEM	POSSIBLE CAUSE	SOLUTION
Not Clean	**There are food particles remaining on dishes. (Not cleaning properly.)**	An inappropriate cycle has been selected.	Did you choose the cycle that describes the most difficult soil in your dishwasher? If you have some items with heavier soils, use a heavier cycle. Select a cycle according to the number and soil level of the dishes, as directed in this manual.
		The dishes are improperly loaded. Too many dishes have been loaded.	Rearrange the dishes so they do not **interfere with the nozzle rotation and the detergent dispenser's cover operation**. Load only an appropriate number of dishes. Load your dishes as recommended. (See user manual.)
		Low water pressure.	The water pressure should be between 0.04 ~ 1.0 Mpa.
		The water is too hard.	Use a commercial dishwasher cleaner. Use a high-quality and fresh detergent with rinse aid.
		Dishwasher detergent was not used.	Use a automatic dishwasher detergent. Recommend the powder or gel type dishwasher detergent.
		The amount of detergent was inappropriate.	Use the appropriate amount of automatic dishwasher detergent.
		Detergent remains in the dispenser.	Check the position of dishware such as cookie sheets, cutting boards, or large containers, etc. that maybe blocking the detergent dispenser from opening properly. Rearrange the dishes so they do not **interfere with the detergent dispenser opening**.
		There is no rinse aid.	Check the dispenser and add the rinse aid. Use the liquid type rinse aid.
		A nozzle is clogged.	Is the pump or spray nozzle clogged by labels from bottles and cans? Or Check the spray nozzle clogged by little food lump. Clean the nozzle as recommended by user manual.

Trouble Shooting

Category	PROBLEM	POSSIBLE CAUSE	SOLUTION
Not Clean	**Spots and filming on glasses and flatware**	Did you use the correct amount of effective detergent?	Use recommended dishwasher detergents only. Refer to the “Detergent Dispenser” section. Detergent must be fresh to be effective. Store detergent in a cool, dry area. Heavy soil and/or hard water generally require extra detergent.
		NOTE: To remove spots and film from dishes, try a white vinegar rinse. This procedure is intended for occasional use only. Vinegar is an acid, and using it too often could damage your dishwasher. 1. Wash and rinse dishes. Do not use sanitize option. Remove all silverware or metal items. 2. Put 2 cups [500 ml] white vinegar in a glass or dishwasher-safe measuring cup on the bottom rack. 3. Run the dishwasher through a complete washing cycle. Do not use detergent. Vinegar will mix with the wash water.	
		Extremely hard water Old or damp powder detergent Too little detergent	The harder your water, the more detergent a load needs.
			To prevent the common hard-water problem of spotting and to help dishes dry better, we recommend that you add a rinse aid.
			If you see white residue inside your dishwasher, you can occasionally try to dissolve it with distilled white vinegar(or Lemi juice & White vinegar mixture). Instead of using detergent, place a container with 2 cups of vinegar(or 1 cup of Lime juice & 1 cup of white vinegar) in the bottom rack and run a Eco cycle.
			Make sure detergent is fresh.

Trouble Shooting

Category	PROBLEM	POSSIBLE CAUSE	SOLUTION
Not Clean	**Leaves glasses with a dim polish. (Cloudiness on glassware.)**	The water supplied is soft and too much detergent was used.	. Underload the dishwasher and use a rinse aid to minimize this. . This is called etching and is permanent. To prevent this from happening, use less detergent if you have soft water. Wash glassware in the shortest cycle that will get them clean.
		Silica film or etching (silica film is a milky, rainbow-colored deposit; etching is a cloudy film)	Sometimes there is a water/chemical reaction with certain types of glassware. This is usually caused by some combination of soft or softened water, alkaline washing solutions, insufficient rinsing, and overloading the dishwasher. It might not be possible to prevent the problem, except by hand washing. To slow this process use a minimum amount of detergent but not less than 1 tb (15 g) per load. Use a liquid rinse aid and underload the dishwasher to allow thorough rinsing. Silica film and etching are permanent and cannot be removed.
		Water temperature entering the dishwasher exceeds 150°F	This could be etching. Lower the water heater temperature.
	Black or gray marks on dishes	Aluminum dishes were included in the wash load.	Disposable aluminum items can break down in the dishwasher and cause marking. Hand wash these items. Remove aluminum markings by using a mild abrasive cleaner.

Trouble Shooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Will not start.	The door is not closed completely.	Check that the door is latched and closed completely.
	No cycle is selected.	Select a proper cycle.
	The power cable is not connected.	Connect the power cable properly.
	The water supply does not work.	Check that the water supply valve is open.
	Control panel is locked.	Unlock the child lock.
	A circuit braker is open.	Reset the circuit braker.
There are food particles remaining on dishes. (Not cleaning properly.)	You selected an inappropriate cycle.	Select a cycle according to the number and soil level of the dishes, as directed in user manual.
	The water temperature is low.	Connect the water supply line to a hot water supply. For best performance, the temperature of the supplied water should be 120 ˚F (49 ˚C).
	Low water pressure.	The water pressure should be between 20 and 120 psi (140 ~ 830kPa).
	The water is too hard.	Use a commercial dishwasher cleaner. Use a high-quality and fresh detergent with rinse aid.
	Dishwasher detergent was not used.	Use automatic dishwasher detergent. We recommend a powder or gel type dishwasher detergent.
	The amount of detergent was inappropriate.	Use the appropriate amount of automatic dishwasher detergent.
	Detergent remains in the dispenser.	Make sure large items such as cookie sheets, cutting boards, or containers, etc. are not blocking the detergent dispenser and preventing it from opening properly. Rearrange the dishes so they do not interfere with detergent dispenser operation.
	There is no rinse aid.	Check the dispenser and add the rinse aid. Use the liquid type rinse aid.
	A nozzle is clogged.	Clean the nozzle.
	The dishes are improperly loaded. Too many dishes have been loaded.	Rearrange the dishes so they do not interfere with the nozzle rotation and the detergent dispenser operation. Load only an appropriate number of dishes. Load your dishes as recommended.

Trouble Shooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
It's taking too long with an operation or cycle.	Cold water is being supplied.	Check that the water supply line is connected to a hot water supply. (Additional time is required to heat cold water.)
Leaves glasses with a dim polish.	The water supplied is soft and too much detergent was used.	Underload the dishwasher and use a rinse aid to minimize this.
	Aluminum dishes were included in the wash load.	Remove the marks on the dishes using a low sensitivity cleaner.
Leaves a yellow or brown film on the inside of the dishwasher.	This is caused by coffee and tea soils.	Remove the soils using a spot cleaner.
Does not dry dishes well.	There is no rinse aid in the dispenser.	Check the dispenser and add the rinse aid. Use the liquid type rinse aid.
	The temperature of the water is low when the dishwasher is running.	Connect the water supply line to a hot water supply. Use rinse aid with the Sanitize option.
	Too many dishes have been loaded.	Proper loading of items can affect drying. Load your dishes as recommended.
	Glasses and cups with concave bottoms hold water. This water may spill onto other items when unloading.	After finishing the cycle, empty the lower rack first and then the upper rack, this will avoid water dripping from the upper rack onto the dishes in the lower rack.
Has a bad odor.	There is water left over when the last cycle is not completed.	Insert detergent without loading dishes, and run the Normal cycle to clean the dishwasher.
	Drain Hose is obstructed.	Contact a qualified service technician to remove any obstruction from the drain hose.
	The dishwasher is not used daily or Soiled dishes left in unit too long.	With the dishwasher empty and no detergent, place a glass with 8 ounces of vinegar upright into the lower rack, and then run a Normal cycle.

Trouble Shooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Is too noisy.	Sound is generated when the dispenser cover is open and the drain pump is operating in an early stage.	This is normal operation.
	The dishwasher is not level.	Ensure the dishwasher is level.
	Foreign material(Screw, Plastic piece) is in pump chamber.	Contact a qualified service technician to remove foreign material from the pump chamber.
	There is a ‘chopping’ sound because a nozzle is bumping against the dishes.	Rearrange the dishes.
Does not have a smoothly rotating nozzle.	The nozzle hole is clogged with food particles.	Clean the nozzle hole.
	The nozzle is blocked by a dish or pot and cannot rotate.	After placing the dishes into the racks, rotate the nozzles by hand to check whether any of the dishes will interfere with them.
Water won't pump out of the dishwasher.	Drain is clogged.	Contact a qualified service technician to remove any obstruction from the drain hose and check the drain pump operation.
Has a bent upper rack after loading dishes.	The dishes are not loaded properly.	Load your dishes as recommended.

Checkpoints after service request

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 it is unlocked when the dishwasher stops.

2. Use authenticated parts only

If any part is not authenticated, replace it with an authenticated 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 power capacity is appropriate.

8. Check leveling

Check whether the dishwasher is level.

9. Check the installation location

Check whether the installation location is flat and stable.

Model Number Naming Rules

DW	80	H	9	9	5	0	U	S

DW : Dishwasher

80	Tall (24" T)
60	Standard (24")
50	Slim (18")
30	Counter Top

F : 2013
H : 2014

9	Premium	9	Chef collection
7	Best	5	Linear
5	Better	0	Rotary
3	Good		
1	Value		

9	Super Premium	0	Basic
7	Premium	1	Exclusive
5	Best		
3	Better		
2	Good		

U	Built Under	S : STSS
B	Fully Built-In	B : Black
S	Semi Built-In	W : White
F	Free Standing	V : Silver
C	Counter-top	A : ALF
		G : Black caviar

Thanks