SAMSUNG

WASHING MACHINE
DRUM TYPE

Basic Model : **WD702U4BKGD/SC**
(BAIKAL COMBO)

Model Name : **WD106UHSA****
WD856UHSA**
WD906P4SA**
WD806P4SA**
(SEINE COMBO)

Model Code : **WD106UHSAWQFAZ**
WD856UHSAWQFAZ
WD906P4SAWQ/EG
WD806P4SAWQ/EG
WD806P4SAWQ/EN
(SEINE COMBO)

SERVICE Manual

WASHING MACHINE (DRUM)

CONTENTS

Refer to the service manual in the GSPN (see the rear cover) for the more information.

CONTENTS

1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIONS FOR SERVICE ENGINEERS

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

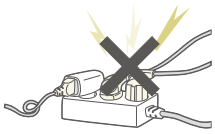
► Two types of safety symbols, Warning and Caution, are used in the safety instructions.

WARNING	**Hazards or unsafe practices that may result in severe personal injury or death.**
CAUTION	**Hazards or unsafe practices that may result in minor personal injury or property damage.**

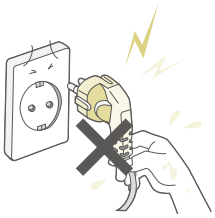
WARNING BEFORE SERVICING

- (When servicing electrical parts or harnesses) Make sure to disconnect the power plug before servicing.
  √ Failing to do so may result in a risk of electric shock.

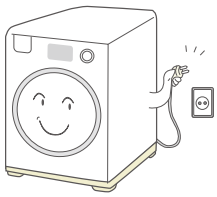
- Do not allow consumers to connect several appliances to a single power outlet at the same time.
  √ There is a risk of fire due to overheating.



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



- When the washing machine is not being used, make sure to disconnect the power plug from the power outlet.
  √ Failing to do so may result in electric shock or fire due to lightning.



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

⚠ WARNING WHILE SERVICING

- Check if the power plug and outlet are damaged, flattened, cut or otherwise degraded.
  √ If faulty, replace it immediately.
  Failing to do so may result in electric shock or fire.

- Completely remove any dust or foreign material from the housing, wiring and connection parts.
  √ This will prevent a risk of fire due to tracking and shorts in advance.

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

- Make sure to discharge the PBA power terminals before starting the service.
  √ Failing to do so may result in a high voltage electric shock.

- When replacing the heater, make sure to fasten the nut after ensuring that it is inserted into the bracket-heater.
  √ If not inserted into the bracket-heater, it touches the drum and causes noise and electric leakage.

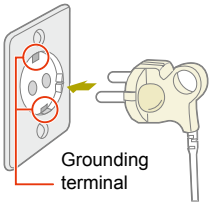
⚠ WARNING AFTER SERVICING

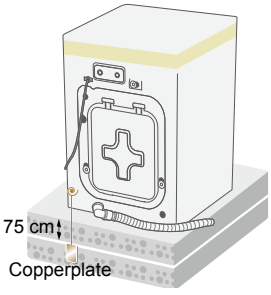
- Check the wiring.
  √ Ensure that no wire touches a rotating part or a sharpened part of the electrical harness.

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

- Do not allow consumers to repair or service any part of the washing machine themselves.
  √ This may result in personal injury and shorten the product lifetime.

- If it seems that grounding is needed due to water or moisture, make sure to run grounding wires.
  (Check the grounding of the power outlet, and additionally ground it to a metallic water pipe.)
  √ Failing to do so may result in electric shock due to electric leakage.
  [Running a grounding wire]
  - Twist a grounding wire (copper wire) two or three times around the tap
  - If you connect the grounding wire to a copperplate, bury it 75 cm under the earth in a place with a lot of moisture.
    ⚠ Do not connect the grounding wire to a gas pipe, plastic water pipe or telephone wire. There is a risk of electric shock or explosion.



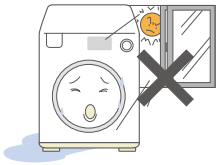


⚠ CAUTION BEFORE SERVICING

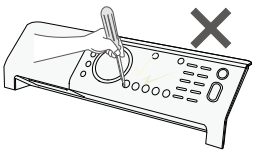
- Do not sprinkle water onto the washing machine directly when cleaning it.
  - √ This may result in electric shock or fire, and may shorten the product lifetime.

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

- Do not install the washing machine in a location exposed to snow or rain.
  - √ This may result in electric shock or fire, and shorten the product lifetime.



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



⚠ CAUTION WHILE SERVICING

- When wiring a harness, make sure to seal it completely so no liquid can enter.
  - √ Make sure that they do not break when force is exerted.

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

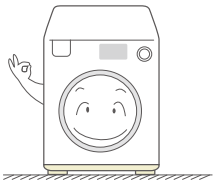
- If you need to place the washing machine on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so its side is on the floor.
  - √ Do not lay it down on its front. This may result in the inside tub damaging parts.

⚠ CAUTION AFTER SERVICING

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

- Check the insulation resistance.
  - √ Disconnect the power cord from the power outlet and measure the insulation resistance between the power plug and the grounding wire of the washing machine. The value must be greater than 10MΩ when measured with a 500V DC Megger.

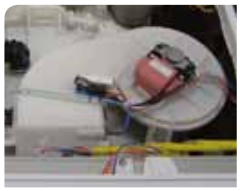
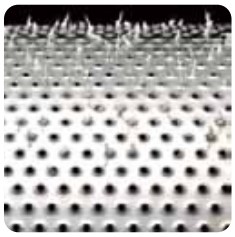
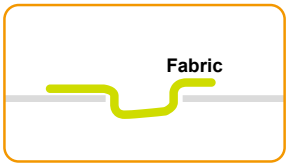
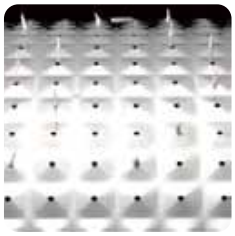
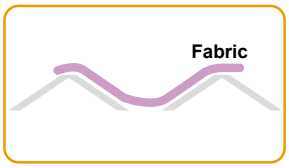
- Check whether the washing machine is level in relationship with the floor. Check whether it is installed firmly on the floor.
  - √ Vibrations can shorten the lifetime of the product.



2. FEATURES AND SPECIFICATIONS

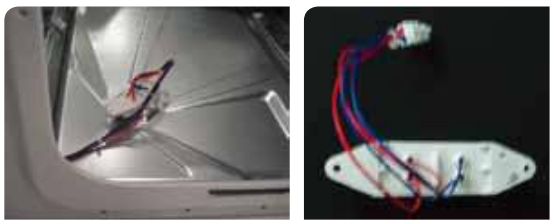
2-1. FEATURES

■ COMMON FEATURES

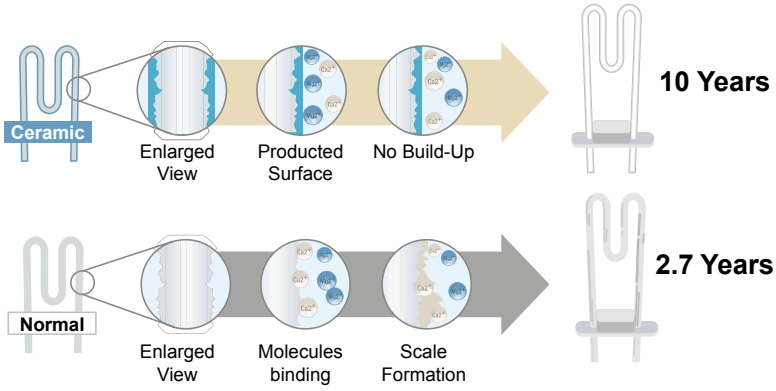
Features	Description
Drying	• Enjoy convenient non stop washing and drying managing. - 4 different special drying programs can be selected to perform the whole wash cycle including the drying cycle using one button. - Cupboard(standard program), Low temp drying, Iron,Time Drying (30min ~ 270mins). - Those drying programs also can be operated independently of washing programs.  
Diamond Drum	• The washing performance has increased but potential damage to the washing has been minimized. (The size of the holes on the diamond drum has been reduced for minimizing damage to the washing.) - The embossed wall of the drum serves as a washboard, dramatically increasing the washing performance compared with existing drum washing machines, which use the power of the difference in elevation only. - The size of holes has been reduced drastically, maintaining the optimal wash performance (Washing Cost 1.0) while saving on water and electricity required for washing. - The structure of the holes on the diamond drum has been changed minimizing potential damage to the washing since it is difficult for strands to enter the holes.  **Conventional**   **Diamond Drum** 

■ OPTIONAL FEATURES

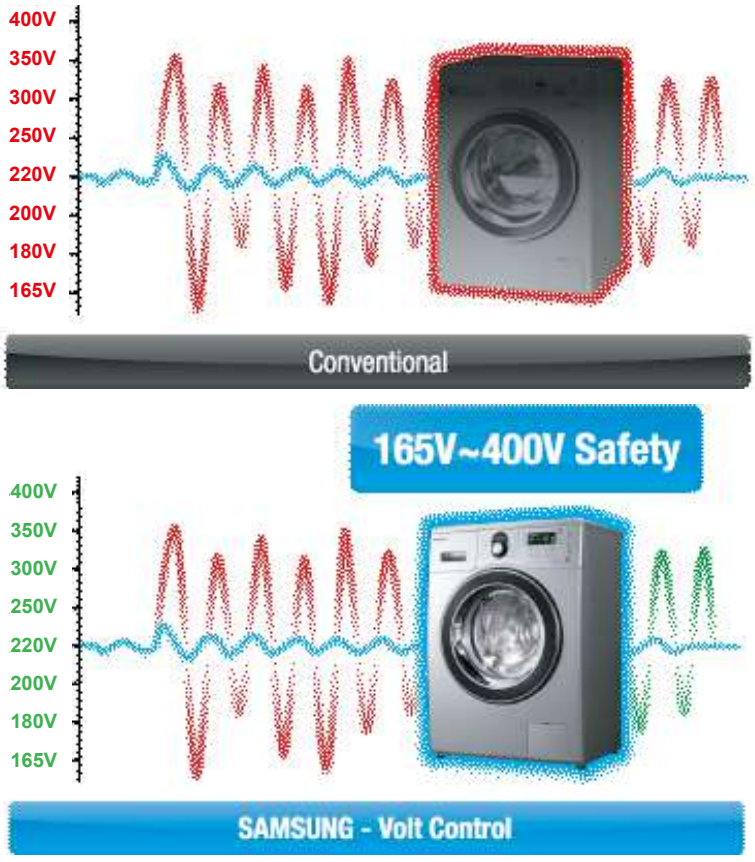
► The features below depend on the model.

Features	Description
Air Refresh System	• Sterilization/Deodorization/Removal of Ticks without Water Washing (Air Washing Using Air and Heating) - Destroying bacteria and ticks without the use of water - Removing the sweat and dirt odors - Maintaining the shape and color of the washing without dry-cleaning • Washing with air. - Removing odors by heating, keeping the washing as new. - Washing with air conveniently, compared with dry-cleaning. The goal of deodorization is 60 percent. (40-minute cycle) • Washing one or two shirts in 30 minutes - If a piece of clothes is not completely dry when it is humid, the machine can dry it within 30 minutes • Preventing bio-film caused by humidity from occurring - You do not need to worry about the humidity inside the drum. - The drum is dried regularly, preventing bio-film. 
Water Safety System	• The Water Safety System has invented for perfect leakage protection. The double safety valve connects directly to the water faucet. In the event of a leakage, the built-in sensor immediately detects the leak within a few short seconds, automatically turning off both the water supply and the washing machine. - Inlet hose It attached to the water supply hose and automatically cuts off water flow when hose damaged. It also displays a warning indicator.  - Leakage Sensor A water leakage sensor attached at the bottom of the washing machine to cutoff the power automatically if a leakage occurs, to prevent danger of a fire. 

► The features below depend on the model.

Features	Description
Silver Wash System	• Samsung's unique technology generates silver ions that remove bacteria and fungi, and create an invisible shield that protects your clothes from unwanted odors until your next wash. Using an ancient and proven purification technique so simple, yet so advanced it removes microbes even in cold water. • Effect of Silver Wash System - Keeps Stored Clothes Fresh The Ag+ Silver (Nano) Technology anti-bacterial effect keeps fabric free from odor-causing micro-organisms for up to one month, without the use of strong chemical cleaners. There's no need to worry about musty-smelling clothes even if they remain unused for a long period. - Makes Shapeless Garments a Thing of the Past High temperatures and harsh bleaches can damage and discolor your clothes. The Ag+ Silver (Nano) Technology helps your clothes last longer, without stretching, shrinking, pilling or fading.   
Ceramic Heater	• The ceramic heater in Samsung washing machine prevents metals in hard water from being attach to the heater, which may cause a reduction in heater efficiency. It saves energy, time and costs. - Energy Savings Over time, conventional heaters increase their power consumption an average of 5.8 percent, while ceramic heaters only become 1.8 percent less efficient. - Time Savings After three years, conventional heaters take 7.5 percent longer to heat up, whereas ceramic only lose 2.5 percent longer to heat up, whereas ceramic only lose 2.5 percent of their ability to heat up.
	

► The features below depend on the model.

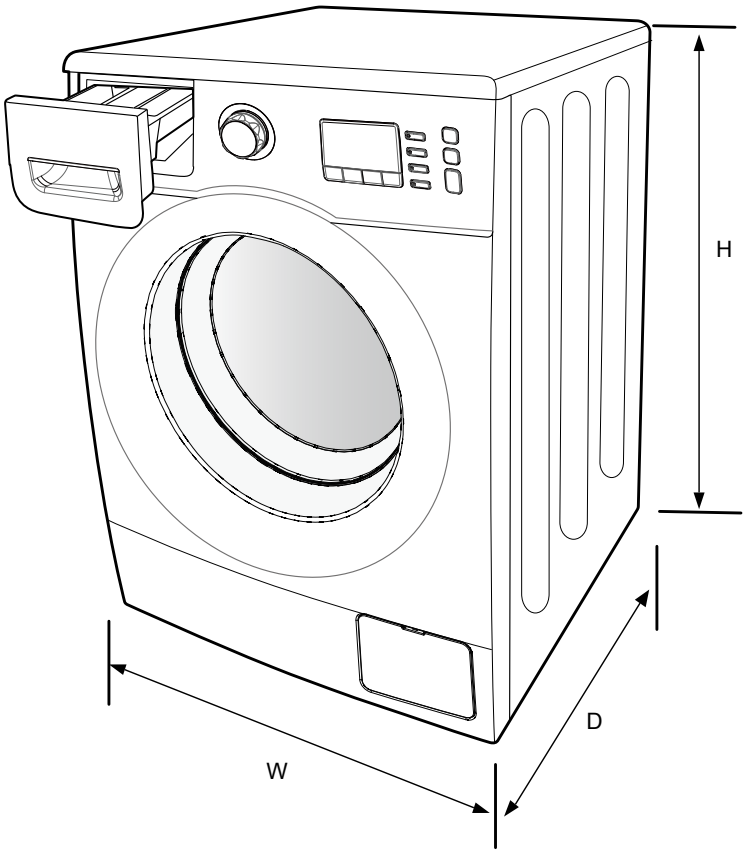
Features	Description
Wool Mark	• The machine has been tested and passed the required Woolmark Company specification for machine washable wool products. - Minimize shrinking - Gently and carefully cleans - delicate fabrics that are usually washed by hand.  
Volt Control	• The solution for more Durable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

► The features below depend on the model.

Features	Description
Bubble Wash	● Bubble Cushion - Eco Bubble technology activates the detergent much earlier and faster in the wash cycle by use of a Bubble Generator, rapidly mixing a small amount of water with air and detergent (works with powder, tabs or liquid detergents). This creates a foam cushion in the drum ahead of introducing the main water intake. ● Super energy saving - the detergent infused bubbles penetrate the fabrics much faster and efficiently than for a conventional wash system, delivering a cleaner wash performance especially for colder temperature cycles. The lower the water temperature of the cycle, the greater the impact of using Eco Bubble versus conventional systems, this allowing more use of colder wash cycles and helping to save energy beyond the A+++ energy rating of this appliance. ● No detergent remainning - the detergent disslove completely in a very short time while wash begin by bubble wash technology,so don't afraid of detergent remainnin.   

2-2. SPECIFICATIONS

Model		WD806P4SA**	
Wash Type		FRONT LOADING TYPE	
Dimension		W 600 mm X D 600 mm X H 850 mm	
Water Pressure		50 kPa ~ 800 kPa	
Water Volume		88 ℓ	
Weight		70 kg	
Wash & Spin Capacity		8.0 kg	
Dry Capacity		5.0 kg	
Model		WD806P4SA**	
Power Consumption	WASHING	220 V	100 W
		240 V	100 W
	WASHING and HEATING	220 V	2000 W
		240 V	2400 W
	DRYING	230 V	1600 W
Spin Revolution	Max Rpm	1400 rpm	



2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

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

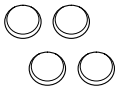
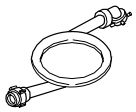
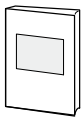
Project		SENIE		BAIKAL
Grade		SENIE COMBO		BAIKAL COMBO
Model Name		WD906P4SA**	WD106UHSA**	WD0702U4BKGD/SC
Image				
Capacity		9.0 kg	10.1 kg	7.0 kg
Dry Capacity		6.0 kg		3.5 kg
Main Spec	Water Volume	99 ℓ	65 ℓ	73 ℓ
	Max Rpm	1400		1400
	Motor	DD MOTOR		DD MOTOR
	Control Sys	General		General
	Weight Detection	3 Stages		3 Stages
	Heater Capacity	2000 W / 220 V	2200 W / 220 V	2000 W / 230 V
	Water Supply	Cold	Cold & Hot	Cold Only
	Drainage	Pump		Pump
	Power-outage Compensation	Yes		Yes
	Zero Standby Power	Yes (1W or Less)		Yes (1W or Less)
USP	Voltage Protector	Yes		Yes
	Air Refresh	Yes		Yes
	Silver Wash	No		No
	Water Safety	Yes (★)		Yes (★)
	Ceramic Heater	Yes (★)		Yes (★)
	Diamond Drum	Yes		Yes
	Loading Entry Size	Wide (330 mm)		Wide (330 mm)
Design	Big Door	Yes (480 mm)		Yes (460 mm)
	Center Jog Dial	Yes		Yes
	Display	G.LED		G.LED
Dimension (W X D X H mm^3)		600 X 650 X 850		600 X 610 X 845

2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

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

Project		SENIE		BAIKAL
Grade		SENIE COMBO		BAIKAL COMBO
Model Name		WD806P4SA**	WD856UHSA**	WD0702U4BKGD/SC
Image				
Capacity		8.0 kg	8.5 kg	7.0 kg
Dry Capacity		5.0 kg	4.0 kg	3.5 kg
Main Spec	Water Volume	88 ℓ	55 ℓ	73 ℓ
	Max Rpm	1400		1400
	Motor	DD MOTOR		DD MOTOR
	Control Sys	General		General
	Weight Detection	3 Stages		3 Stages
	Heater Capacity	2000 W / 220 V	2200 W / 220 V	2000 W / 230 V
	Water Supply	Cold	Cold & Hot	Cold Only
	Drainage	Pump		Pump
	Power-outage Compensation	Yes		Yes
	Zero Standby Power	Yes (1W or Less)		Yes (1W or Less)
USP	Voltage Protector	Yes		Yes
	Air Refresh	Yes		Yes
	Silver Wash	No		No
	Water Safety	Yes (★)		Yes (★)
	Ceramic Heater	Yes (★)		Yes (★)
	Diamond Drum	Yes		Yes
	Loading Entry Size	Wide (330 mm)		Wide (330 mm)
Design	Big Door	Yes (480 mm)		Yes (460 mm)
	Center Jog Dial	Yes		Yes
	Display	G.LED		G.LED
Dimension (W X D X H mm^3)		600 X 600 X 850	600 X 650 X 850	600 X 610 X 845

2-4. OPTIONS SPECIFICATIONS

Item		Code	QTY	Remarks
	FASTENER-BOLT	DC60-00104A	1	Default
	CAP-FIXER	DC67-00307A	4	For specific models only
	CAP-FIXER	DC67-00208B	1	For specific models only
	HOSE WATER	DC62-00079A	1	Default
	MANUAL USERS	DC68-03223Q	1	Default

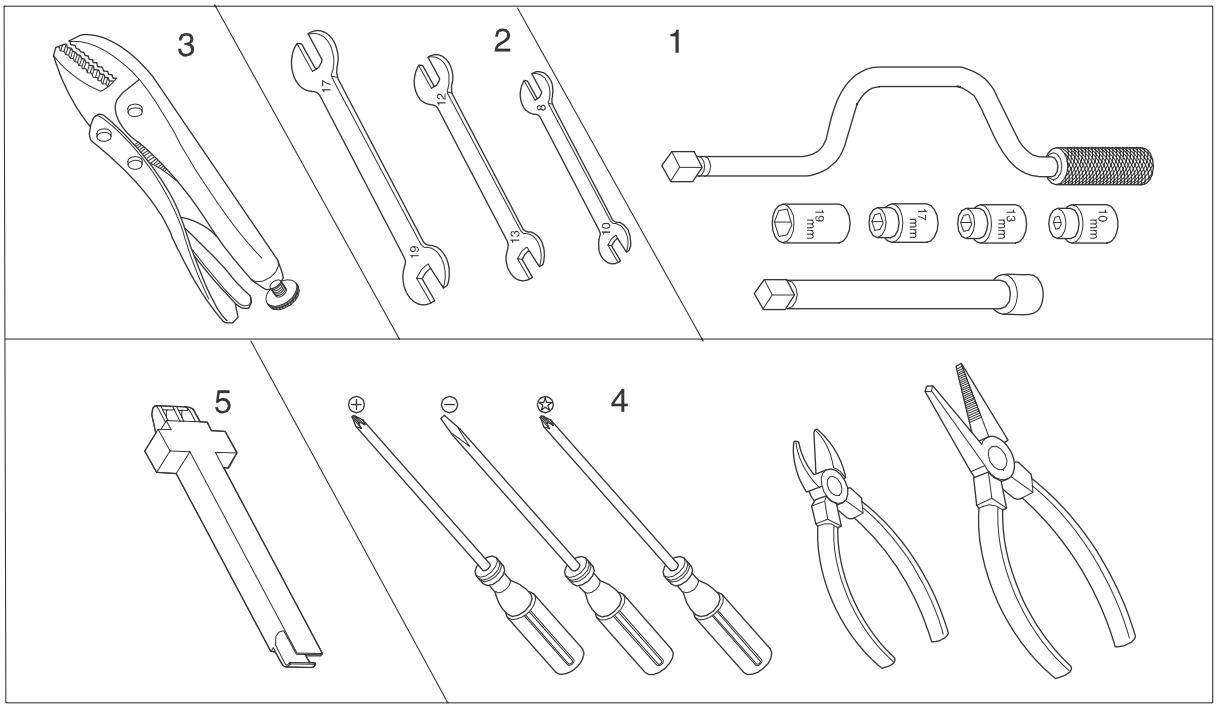
Note

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

3.Disassembly and Reassembly

3-1.TOOLS FOR DISASSEMBLY AND REASSEMBLY

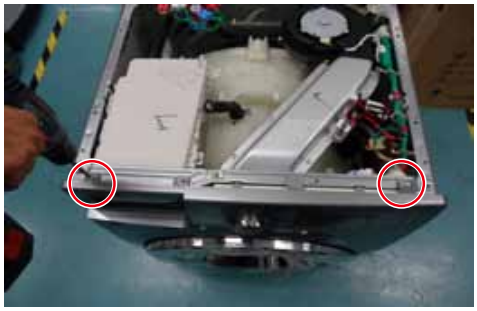
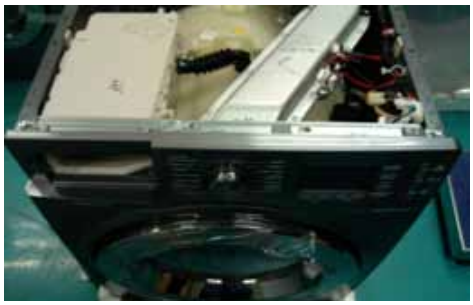
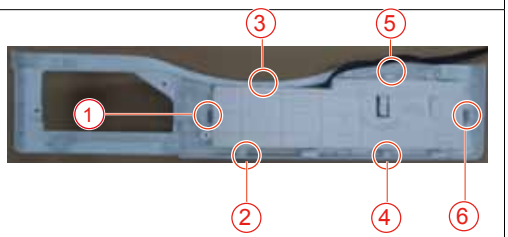
No.	Tool	Type	Remarks
1	Box driver	10mm 13mm 19mm	Heater(1),Tub(16), Fixer screw(5), Motor(2), Balance (6) shock Absorber (2 holes each in left/right), Damper(2), Damper(friction 2) Pulley(1)
2	Double-ended-spanner	10mm 13mm 19mm	Replaced by box driver Leg
3	Vice plies		A Tool for protecting empty turning of bolt or abrasion from using box driver For disassembly of Spin drum
4	Others (screwdriver, nipper, long nose pliers)		A Tool for protecting empty turning of bolt or abrasion from using box driver For disassembly of Spin drum
5	Tools for spring		Disassembly and reassembly

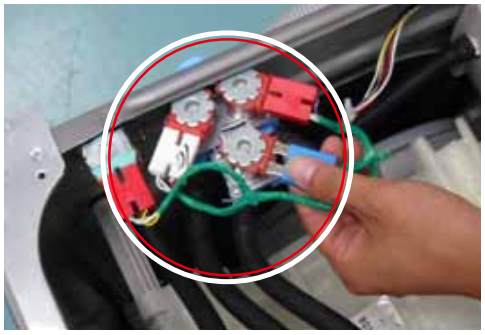
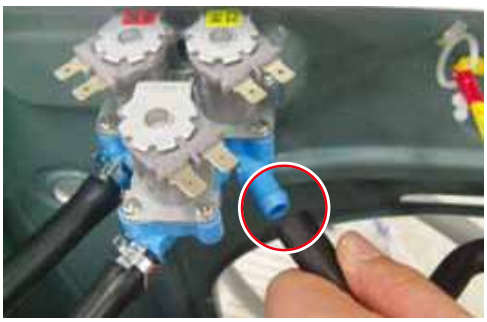


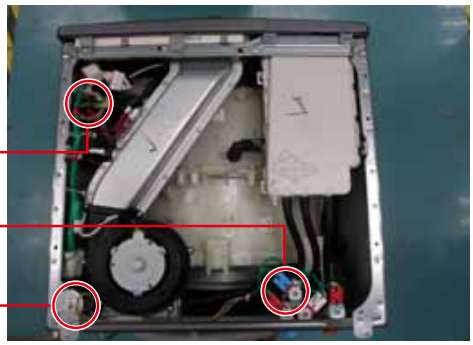
3-2.STANDARD DISASSEMBLY DRAWINGS

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

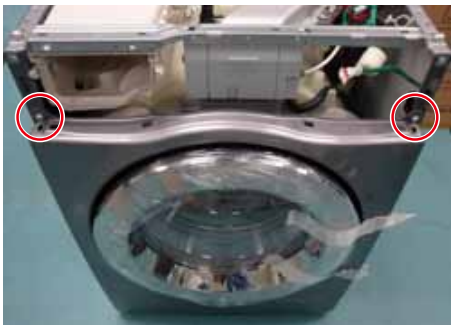
No.	Part name	Description	Figure
01	ASSY TOP COVER	1. Remove the 2 screws holding the back of top-cover on the unit.	
		2. Remove the top-cover by pulling it back.	
		3. Then, the water pressure sensor, noise filter and water valve can be replaced.	

No.	Part name	Description	Figure
02	ASSY PANEL CONTROL	1. Remove the 2 screws fixed the front of the operating panel.	
		2. Remove the 2 screws at the top of the assy panel control.	
		3. Hold the assy panel control while pulling it outwards and release the hook to remove it.	
		4. Disconnect the terminals connected to the pcb by hands.separate the assy panel control.	
		5. Press the clasp ① and clasp ② at the same time, separate clasp ③ and ④ as the same way, Lift pcb up, then take it out from left.	 

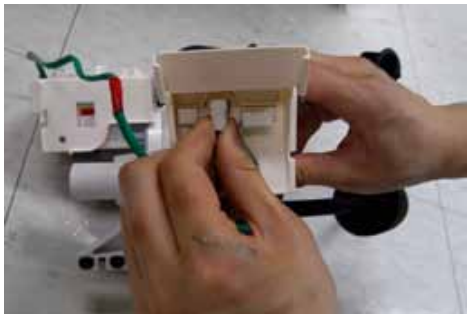
No.	Part name	Description	Figure
03	ASSY HOUSING DRAWER	1. Remove the screw as figure shows that fixed the assy housing drawer.	
		2. Disconnect the clamper-hose.	
		3. Disconnect the terminals from the assy housing drawer (3 point).	
		4. Remove the hose (1 Point).	
		5. Remove the 4 screws holding the water supply valve.	

No.	Part name	Description	Figure
04	WATER LE-VER SENSOR	1. Separate the assy top-cover. SENSOR PRESSURE WATER VALVE NOISE FILTER	
		2. Disconnect the wire between the pressure hose and the water level sensor for repair or replacement.	
05	DOOR HINGE	1. Remove the 2 screws holding the door hinge and separate the door.	
		2. Remove the 11 screws holding the holder glass, separate the holder glass and replace the hinge.	

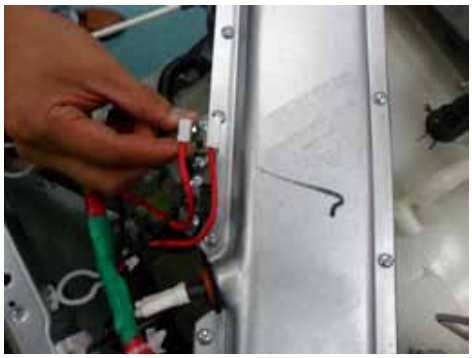
No.	Part name	Description	Figure
06	DOOR LOCK S/W	1. Open the door. Remove the wire diaphragm and remove it from the front frame. ☑ For easier disassembly, remove the spring from the lower part of the diaphragm with a (-) screwdriver. ☑ Since the diaphragm can be damaged when removing it, remove it slowly along one direction.	 
		2. Remove the 2 screws fixed the door lock switch.	
		3. Remove the door lock switch. Remove the connection wire. (Remove the connector after releasing it by pressing the catch.)	

No.	Part name	Description	Figure
07	FRAME FRONT	1. Remove the 2 screws holding the top of the frame-front.	
		2. Remove the three screws holding the bottom of the frame-front.	
		3. Disconnect the terminal for the door lock switch.	
		4. Separate the frame front.	

No.	Part name	Description	Figure
08	BUBBLE PUMP AND DRAIN PUMP	1. Insert the (-) screwdrver into the upper part of the filter cover and push it downwards to release the catch. Then seperate frame front.	
		2. Remove the remaining water through the drain-age hose. ☑ Place a bowl under the drainage hose, or the remaining water may flow out.	
		3. Remove the screw hold-ing the drain pump.	
		4. Remove the clips holding the drain pump hose.	
		5. Disconnect the terminal of wire.	

No.	Part name	Description	Figure
08	BUBBLE PUMP AND DRAIN PUMP	6. Release all band rings and remove the hoses from the hose drain.	
		7. Disconnect the terminal of wire.	
		8. Remove the screws holding the Drain Pump. then separate it.	
		★ Check points for troubleshooting 1. After separate the drain filter. please check if any alien sub-stances are inside the pump (such as coins, buttons .., etc.) → If found, please clean up. 2. Check whether wire connection correct, if not correct, please reconnect and ensure the correct. 3. When water leak happens, please check the assembly status of the clamp hose and the cap drain. → Take the relevant countermeasure if necessary. Turn the filter counterclockwise to remove the remaining water.	

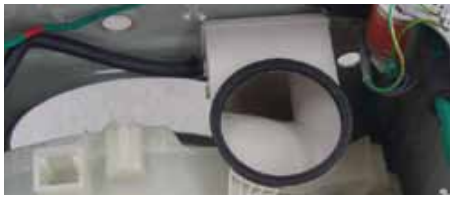
No.	Part name	Description	Figure
10	Removing the Duct	☑ Proceed with these steps after removing the top cover and the assy panel control. 1. Remove this screw fixed the assy duct-scroll on the frame-plate(u).	
		2. Remove the 2 screws fixing the frame-plate(u).	
		3. Remove the screw fixing the frame.	
		4. Remove the screws fixing the assy duct condenser and the assy duct scroll.	

No.	Part name	Description	Figure
10	Removing the Duct	5. Remove the three housings (Red) for the the rmostat, fan motor and thermistor.	
			
			

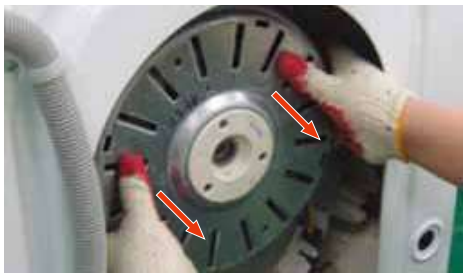
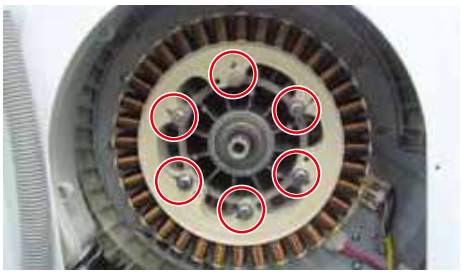
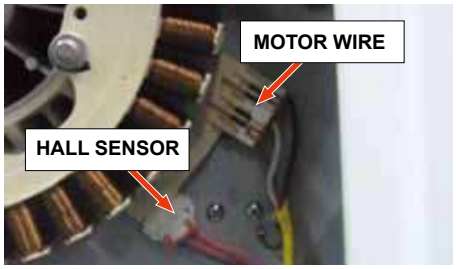
No.	Part name	Description	Figure
10	Removing the Duct	1. Release the Joint-diaphragm and remove the diaphragm.	
		2. Remove the assy duct scroll.	
10	Removing the Duct (Replacing the Dry Motor)	1. Remove the screws, and separate the upper-plate and diaphragm to disassemble the duct.	
		2. Remove the dry motor assembled with the cover-housing (U/R) and remove M10 as shown in the figure.	

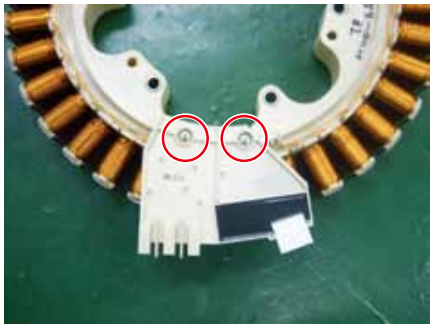
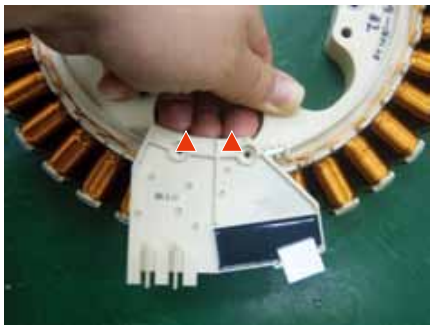
No.	Part name	Description	Figure
10	Removing the Duct (Replacing the Dry Motor)	3. Remove the screws.	
		√ Check the following 2 points for troubleshooting 1. Revolve the dry motor manually and check whether spin the dry motor manually and check that it rotates freely. 2. Measure the internal resistance (between the white and blue wire terminals) → several Ω: short-circuited, ∞: disconnected.	
10	Removing the Duct (THERMO-STAT)	1. Remove the connector. Remove the jacks connected to the thermostat and remove the four (4) screws, as show in the figure.	
		√ Check Points for Troubleshooting ● Measure the resistance between both ends of the thermostat: 0 Ω → If the studio is raised due to overheating and it is pressed, it will be returned to the original position with a ‘snapping’ sound.	
10	Removing the Duct (THERMIS-TOR)	1. Remove the 2 screws connected to the dry duct and remove the white thermistor.	

No.	Part name	Description	Figure
10	Removing the Duct (heater)	1. Remove the dry duct. Remove the screws as shown in the figure and remove the assy S.duct-scroll.	
			
			

No.	Part name	Description	Figure
11	Condensa-tor	1.Remove the the clamp hose as right figure marked.	 
		2.Remove the screw.	
		3.Remove the clamp hose.	
		4.Remove the wire harness. replace the condensator.	

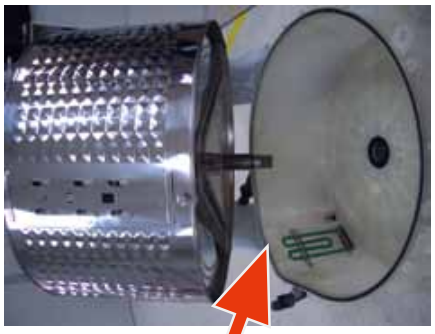
No.	Part name	Description	Figure
12	WASH HEATER	1. Separate the back cover.	
		2. Separate the connection housing (4). separate the cover heater.	
		3. Remove the nut holding the heater and separate the heater.	
		4. Remove the heater from the tub.	
		⚠Caution  Make sure to insert the heater into the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

No.	Part name	Description	Figure
13	DD MOTOR	1.Unfasten the 4 screws that hold the back cover in place. Remove the back cover by sliding it down.	
		2. After removing the back cover, unfasten the M19 nut that holds the motor in place. ☑ Do not try to unfasten the nut by inserting a screw driver into the motor. This may cause a motor malfunction.	
		3. Remove the M19 nut washer and then remove the rotor.	
		4. Unfasten the six (6) M10 screws. Remove the assy bracket motor. Remove the stator.	
		5. Remove the motor wire and hall sensor while holding down the navel of the housing.	
		√ Check the follwing points for troubleshooting 1. Check whether there are any foreign substances between the rotor and the stator. 2. Check whether the motor power wires (blue, while, red) are connected correctly. 3. Check whether the hall sensor wire is connected correctly. - Connect the motor power wires in the order blue, white and red, starting from the furthest right. Check whether each voltage between blue and white, white and red, red and blue is 15Ω.	

<table>
<tr><th>No.</th><th>Part name</th><th>Description</th><th>Figure</th></tr>
<tr><td rowspan="4">13</td><td rowspan="4">DD
MOTOR</td><td> 
STATOR</td><td> 
ROTOR</td></tr>
<tr><td>1. To remove the hall sensor, unfasten the 2 screws holding both the stator and hall sensor in place.</td><td>  </td></tr>
<tr><td rowspan="2">2. Remove the hall sensor by exerting some force to the ▲ part.</td><td>  </td></tr>
<tr><td> 
HALL SENSOR REMOVED</td></tr>
<tr><td colspan="2">√ Check Points for Troubleshooting
● A “3E” error occurs when the tub is driven in a wash or rinse cycle but there is no problem with the stator.
→ Replace the hall sensor.</td></tr>
</table>

No.	Part name	Description	Figure
14	WEIGHT BLANCE	1. Separate the screws fixed the weight-balance(f). ☑ Before assembly, make sure the nut bracket installed in the tub corresponding position correctly.	
		2. Separate the weight-balance(f). ☑ For disassembly, please make sure assembled the bracket-nut into the tub first. ☑ Make sure the hole and hole respond to each other correctly. ☑ There is no ringt and left direction for weight-balance(f).	

No.	Part name	Description	Figure
15	SPRING HANGER	1. Insert the vertical hook of spring-hanger into the guide-spring on the assy-frame.	
		2. Drag the spring-hanger to insert the elliptical hook into the hole that's at the side of the assy-tub as the left figure shows.	
		3. Make sure the spring-hanger's two hooks are assenbled right.	

No.	Part name	Description	Figure
16	ASSY TUB	1. Remove the 16 screws holding the tub.	
		2. Separate the assy drum.	
17	PACKING TUB	1. Assemble packing-tub's one side of "凹" to tub-back use two hands.	

No.	Part name	Description	Figure
18	OIL-SEAL	1. Assemble the oil-seal in the tub-back.	
		2. Press the oil-seal gently and turn it back and forth.	
19	ASSY-DRUM	1. Remove the washer-wave from the shaft.	
		2. Remove the three screws holding the assy flange shaft.	

4. TROUBLESHOOTING

4-1. ERROR MODES

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

Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Water Level Sensor	1E	1E E7	LE	1E	- The part of the hose where the water level sensor is located is damaged (punctured). - The hose is clogged with foreign material. - The hose is folded. - Too much lubricant has been applied to the insertion part of the air hose. - Hose engagement error (disengaged) - Part fault (Faulty internal soldering) - The water level sensor terminal is disengaged. - Main PBA fault.	
Motor Driving Error and Hall Sensor Error	3E	3E EA EB 8E	3E	3E	- The PBA connector terminal is not connected. - The motor spin net is not engaged. - The motor's internal coil is damaged (short-circuited or cut) - The hall sensor terminal is not connected. - Foreign material (a screw) has entered the motor.	For USA products, this error occurs because of restrained revolutions
	3E1	3E1	E3		- Motor overloaded due to too much laundry (Non-sensing) - The motor hall sensor terminal is not connected. - PBA fault	For USA products, this error occurs when an interference is generated due to too much laundry, etc.
	3E2	3E2			- The motor driving error from the PBA is weak. : Unstable relay operation, etc.	
	3E3	3E3	bE		- This occurs due to erroneous operating signals for the motor hall sensor. - The IPM terminal of the main PBA is not connected. - The DD motor cover is out of place.	
	3E4	3E4			- The PCB housing terminal is not connected. - PBA fault - DD motor fault	
Water Supply Error	4E	4E E1	nF	4E	- Foreign material is entering the water supply valve. - The water supply valve terminal is not connected. (Wire disconnected) - The warm water and rinse connectors are wrongly connected to each other. - This occurs if the PCB terminal from the drain hose to the detergent drawer is not connected. Check whether the transparent hose is folded or torn.	If this error occurs in the Wool course
	4E1	4Ed	-		- The cold and warm water supply hoses are wrongly engaged into each other. - The temperature of the water supplied through the dry valve during a dry cycle is sensed as higher than 70 ˚C.	The water supplied for 1 minute drying the drying cycle is 0.3 ~ 0.4 L.
	4E2	E8	-		- The water temperature is sensed as higher than 50 ˚C in the Wool or Lingerie courses.	

Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Drain Error	5E	5E E5	nd	5E	- The pump motor impeller is damaged internally. - The wrong voltage (220 V → 110 V) is supplied to the parts. - Part fault - This occurs due to freezing in the winter season - The drain hose is clogged. (Injection error, foreign material) - Clogged with foreign material - The water pump terminal is not connected: rubber band, bills, cotton, hair pins, coins	
Motor Error	8E		-	3E	- This occurs when motor driving is unstable because the motor hall sensor does not work. - This occurs when the PBA IPM operation is unstable or the control circuit has an error. - Check whether the wire connector is connected correctly or whether there is a contact error.	
Power Error	9E1	PH1	2E	-	- Check the consumer's power conditions. : Make sure to check the operating voltage. Connect a tester to the internal power terminals during the Boil or Dry operations and observe the washing machine's operation carefully. : Check the voltages. (An error occurs when under or over voltage is supplied.) : Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V - Main PBA fault (sometimes)	For Full Automated products, no error code is displayed for a power error.
	9E2	Plo				
			PF		- This error is not a fault but occurs during a momentary power failure : If started again when this error code is displayed, the operation restarts from the cycle that was stopped due to the power failure. : If the washing machine is not operating and this error code is displayed, it is displayed to notify that a power failure has occurred.	
	Uc	-	-	-	- If the voltage of the supplied power is equal to or less than 176V, or it is equal to or greater than 287V, the washing machine will be paused to protect its electric devices. - If the correct voltage (187V ~ 276V) is supplied, the cycle will resume automatically.	
Communication Error	AE	13E	-	-	- The signals between the sub and main PBAs are not sensed because of a communications error. - Check the connector connections between the sub and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove the sub PBA C/Panel and check for any faulty soldering.	

Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Switch Error (Main Relay Error)	bE1	12E	E2	-	- The Power button is pressed continually (for more than 12 seconds). - The switch is pressed unevenly because of a deformation of the control panel. - This error may occur when the screws that hold the sub PBA in place are tightened too much.	
	bE2	14E			- A button other than the Power button is continually pressed (for more than 30 seconds). - Deformation of an internal plastic injection part - A screw for assembling the sub PBA is tightened too much.	
	bE3	18E	Sr	-	- The main relay of the PBA is short-circuited. - The main relay terminal is connected incorrectly. (The terminal is bent and contact cannot be made.)	When the PBA motor relay does not operate
Cooling Error	CE	CE cE	-	-	- This occurs when the temperature of the washing machine is more than 55 ˚C and no draining is performed. (Reason: If hot water comes into contact with skin, it may cause burns.) - This occurs when the water temperature, for a specific course, exceeds 55 ˚C. In that case, the water will be drained to the Reset level. - This represents a thermal sensor error or any misuse of the unit.	If this error occurs for another reason, it is due to a washing heater sensor fault. Replace it.
Door Error	dE door	dE Ed door	dS (Before operation)	dE	- A switch contact error because of a deformation of the door hook - When the door is pulled by force	When the door is not opened after the door open operation
			dL (During operation)		- This occurs in the Boil wash because the door is pushed due to a pressure difference from internal temperature changes	When the door is not locked after the door close operation
	dE1	dE1	LO (Unlock Fail)	-	- The door lock switch terminal is connected incorrectly. - The door lock switch terminal is broken. - This occurs intermittently because of an electric wire leakage - Main PCB fault	
			FL (Lock Fail)			
	dE2	dE2	-	-	- This occurs if the Power switch is turned on/off continually and too much heat is generated (This error is difficult to be reproduced.)	
Fan Error	FE	F FE	-	-	- The start condenser terminal comes out of place when inserting the top cover. - The fan motor has a wire disconnected or the belt is out of place. Therefore, the fan does not start. - The cooling wings are restrained or stains have developed on the bearings. Therefore, the fan does not start. - Start condenser fault → In this case, you cannot detect it with a tester. Always replace the start condenser	

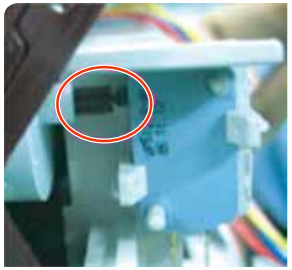
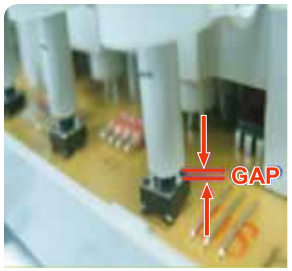
Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Heater Error	HE	HE E5	Hr (Heater Relay)	-	- The washing heater is short-circuited or has a wire disconnected. - The washing heater in the tub has an error. (Contact error, temperature sensor fault) - If the water level sensor operates without water because water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150 ˚C, the washing machine turns the input power off.	For USA products, if the heater has no error, this occurs because of a PBA relay malfunction.
	HE1	HE1 E1 Ec				
	HE2	HE2			- This error occurs when the red temperature sensor at the center of the dry heater operates (at a temperature higher than 145 ˚C) : Corrective action – Press the button at the center lightly. The washing machine will operate normally. Alternatively, replace the temperature sensor if the temperature sensing is unstable because of functional degradation.	
	HE3	-			- This occurs when the steam function does not operate normally. - This error does not occur in existing drum products. Check whether the product is a steam model	
Water Leakage Error	LE LE1	11E E9	LE	LE	- Heater engagement fault (out of place) - The air hose is out of place and water leakage occurs during the spin cycle. - The tub back at the safety bolts fixing part is broken. - Water leakage occurs at the front with foaming because of too much detergent - Water leakage occurs because the connecting hose to the detergent drawer is connected incorrectly. - The drain pump filter cover is engaged incorrectly. - Water leakage occurs at the drain hose. - The duct condensing holding screws are worn. - The nozzle-diaphragm is engaged in the opposite direction or the rubber packaging is omitted. - Water leakage occurs because the screws that hold the tub back and front in place are fastened incorrectly. - The leakage sensor is faulty.	
Overflow Error	OE OF	OE OF E3	OE	-	- Water is supplied continually because the water level detection does not work. - Because the drain hose is clogged and there is an injection error (at a narrow section), the water level detection does not work and water is supplied continually. - Water is supplied continually because of freezing or because there is foreign material in the water supply valve. - This error may occur when the water level sensor is degraded.	For USA products, this error occurs because the water level sensor terminal is out of place.

Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Temperature Sensor Error	tE1	tE1 6E	tE	-	- The washing heater in the tub has an error. (Contact error, temperature sensor fault) - The connector is connected incorrectly or is disconnected. - If the water level sensor operates without water because the water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150 ˚C, the washing machine turns the input power off.	Heater sensor fault : When the connector is connected incorrectly or has a wire disconnected or contact error
	tE2	tE2	-	-	- The temperature sensor for the duct assy fan housing is faulty. (A sensor fault such as an internal short-circuit or wire disconnection) - The connector is out of place or has a contact error.	Duct condensing temperature sensor fault (for models before the silver nano function was applied)
	tE3	tE3	-	-	- This occurs when the duct condensing temperature sensor is open. - This occurs when the duct condensing temperature sensor has a wire disconnected or is short-circuited. - The connector is out of place or has a contact error.	Dry heater temperature sensor fault (for models before the silver nano function was applied)
Unbalance Error	UE	UE E4	dc	UE	- As laundry causes this error, check the laundry. - Find the reason for the unbalance and solve it as directed in the user manual.	
Foaming Detected	Sud	-	SUdS	-	- This occurs when too much foaming is detected. It is also displayed while foaming is removed. When the removal is finished, the normal cycle proceeds. “Sud” or “SUdS” is displayed when too much foaming is detected and “End” is displayed when the removal of the foaming is finished. (This is one of the normal operations. It is an error for preventing non-sensing faults.)	
Mems PBA Error Detected	-	-	E8	-	- Error detected in the Mems PBA or data error detected. Check the wire connections. Replace if necessary. 1. Check the wire connections. 2. Replace the Mems PBA. 3. Main PBA wire connection error or PBA’s silver nano part malfunction. Replace if necessary.	

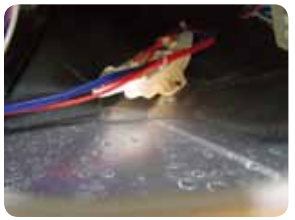
► These are common troubleshooting procedures for each drum-type washer error mode. For detailed information, refer to the general repair scripts.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Level Sensor	1E	• Water level sensor fault • Incorrect connections of the water level sensor terminal • The hose part for the water level sensor is folded. • Main PCB fault	• Check the water level sensor terminal connections and contacts. • An error occurs if an incorrect water level sensor is used. Make sure to check the material code. (Abnormal operation) • If the water level sensor is faulty, replace it. • If the error persists despite taking the action above, replace the PBA.	 Check the water level sensor frequency. - Check it after the water level sensor and the connector are connected. - Frequency: Approx. 26.4 KHz with no load
Washing Motor Error and Hall Sensor Error	3E 3E1 3E2 3E3 3E4	• Washing motor fault • Washing motor hall sensor fault • Incorrect connections of the washing motor/hall sensor connector • Washing motor rotor and stator fault • Main PCB fault	• Check the motor connector terminal connections and contacts. • 3E1 is displayed because overloading occurs due to too much laundry. • If the hall sensor terminal is faulty, replace the hall sensor. • Check whether the stator of the motor cover is damaged. • Check for coil disconnections due to foreign material. • If the PBA control circuit is faulty, replace the PBA.	 ► DD MOTOR Check the resistance on the main PCB motor. (Between pins 1 and 3, and 1 and 4 of the four (4) pins) - Resistance: Approx. 2 to 4 MΩ - Check the voltage when the power is on.
				  ► UNIVERSAL MOTOR Check the Resistance of Nos.1 and 4 of the wire pin on the side of the TACHO SENSOR. - Resistance: Approximately 40 to 45 Ω (Normal)
				 ► THREE PHASE MOTOR Measure the Resistance of Nos. 2 and 3 of the wire pin on the side of the HALL SENSOR. - The revolution of the drum needs to be reproduced. (Turn the drum by hand.) - Resistance: Approximately 3 to 12V (Voltages may differ depending on the speed of the revolutions.)

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Supply Error	4E 4E1 4E2	• Water supply value fault • Main PCB fault • Freezing in the winter season	• If the water supply valve has a wire disconnected, replace it. • Check whether the water supply valve is clogged with foreign material and whether water is supplied continually. • Check whether no water is supplied because of freezing in the winter season. • If the PBA relay operates abnormally, replace the PBA.	  1. Check the resistance for the water supply valve. - Resistance: 4.0 to 5.0 Ω between the terminals of the water supply valve. 2. Check whether there is foreign material in the water supply valve diaphragm.
Drain Error	5E	• Drain pump fault • Freezing in the winter season • Foreign materials in the drain pump • Main PCB fault	• Check whether the revolutions of the drain pump motor are restrained by foreign material. • Check the same thing for the natural drain process. • Check whether the connections are correct and if there is any wires disconnected. • If the drain pump operates abnormally intermittently when the temperature of the water in the tub is high. • If the motor revolutions are restrained due to freezing in the winter season, check the method to remove the freezing and remove as directed.	 ► DRAIN MOTOR Resistance: Approximately 6.3 Ω between the Terminals for the Water Supply Valve  ► DRAIN PUMP Resistance: Approximately 174 Ω between the Terminals for the Water Supply Valve
Communication Error	AE	• The signals between the sub and main PBAs are not sensed. • Incorrect wire connections between the sub and main PBAs.	• Check the wire connections and terminal contacts between the sub and main PBAs. • Check for disconnected wires. • Check whether the sub PBA is short-circuited because of moisture. • If the main PBA's communication circuit is faulty, replace it.	-

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Switch Error (Main Relay Error)	bE1 bE2 bE3	• The Power button is continually pressed. • A button other than the Power button is continually pressed. • Main PCB relay fault	• Check whether either the Power switch or a tact switch is continually pressed. • Check whether the service PBA holding screws are fastened too much. If they are fastened too much, loosen them a little. • If the main PBA switching IC on/off error has occurred, replace the main PBA. • The “bE3” error occurs if the main relay connections are incorrect. Check the connections. If there is no error in the connections, replace the main PBA.	  Check the contact between the control panel buttons and their corresponding tact switch. - There must be a gap between a control panel button and its corresponding micro switch. Otherwise, an error occurs after approx. 30 seconds has passed.
Cooling Error	CE	• Washing temperature sensor fault • Description of PL hazard prevention	• This error occurs if the water temperature is more than 50 ˚C in draining. Check the temperature. • If the water temperature is normal, this error is due to a temperature sensor fault. Replace the washing heater. When replacing the washing heater, take care to prevent water leakage.	  Check the resistance on the Heater. (For faulty features) Check the voltages on the red / blue terminals of the Heater while washing. Check 27±10% on both terminals and the voltage of the Heater.

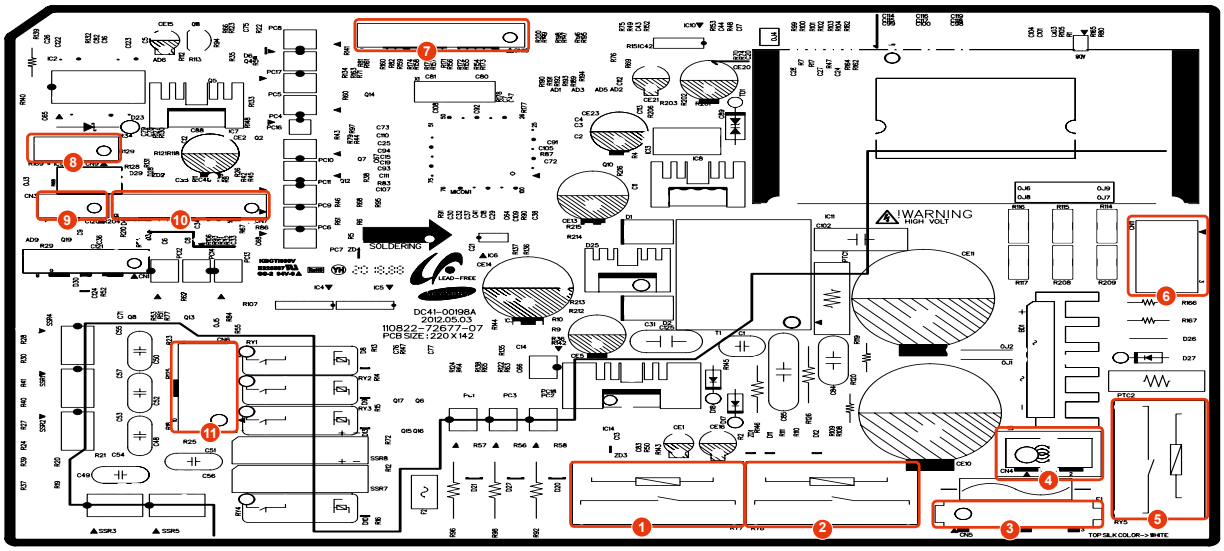
Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Door Error	dE dE1 dE2	• Door switch fault • Drain pump fault • Dry duct fan motor fault. • Main PCB fault	• If a dE error occurs, check whether it occurs during the Boil cycle. - If it is detected that the door is open, close the door. • The 220 V is directly connected to the door. Check and repair the power wire connections and insulation state. • Check the door switch. Replace if faulty. • Check the main PBA door sensing circuit. Replace if faulty.	 ► TYPE 1 Check the door switch voltage. Check the voltage after the power is on. (That is, check the door switch when the power button is turned on and no operating key is pressed.)  ► TYPE 2 The resistance of Nos. 3 and 5 of the DOOR LOCK SWITCH must be approximately 949 Ω.
Dry Duct Fan Error	FE	• Dry duct fan motor fault • Main PCB fault	• Check for disconnected wires and insulation defects for the dry motor. • Check connector connections and contact faults. • If the start condenser has a functional error, the motor rotates normally. However, because the start condenser operates unstably, replace it.	 ► TYPE 1 Check the dry fan motor operation. Check the motor voltage during the dry cycle.  ► TYPE 2 The resistance of both terminals of the AIR WASH MOTOR must be approximately 298 Ω.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Heater Error	HE HE1 HE2 HE3	• Heater fault • A fault of the red temperature sensor at the center of the dry heater • Steam function fault • Freezing in the winter season	• Check for disconnected wires for the washing heater. Replace if faulty. - An HE or HE1 error occurs. • Because the dry heater or air refresh heater overheating sensor is faulty, replace it. - An HE2 error occurs. • Check the steam heater. Replace if faulty. - An HE3 error occurs.	-
Water Leakage Error	LE LE1	• Check for any leakage. • Foreign material in the DV case • Fault of a hose or incorrect part engagement in the product	• Check for any leakage on the base, Hose, Valve and Tub connections and take any required action. • For natural draining, this error occurs because the drain bellows are clogged with foreign material. Remove the foreign material. • Check the drain motor operation. Replace if it does not operate normally.	  ► DRAIN PUMP TYPE (Automatic Drainage) Check whether there is any foreign material in the bellows. Check for any foreign material, such as underwear wires or coins.  ► PUMP TYPE Check for any leakage on the base, Hose, Valve and Tub connections.
Overflow Error	OE OF	• Water level sensor fault • Freezing in the winter season	• If the water level sensor has a functional error, replace it. • Check the hose. This error occurs if it is torn or has a hole. • This error occurs if water is frozen in the winter season. Check the method to remove freezing and follow as directed.	 Check the hose connected to the water level sensor. Check whether the hose is folded, cut, or damaged.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Temperature Sensor Error	tE1 tE2 tE3	• Washing temperature sensor fault • Dry temperature sensor fault • Faulty and incorrect connections of the dry condensing sensor • Main PCB fault • Freezing in the winter season	• Check the connections for the washing heater temperature sensor connector. • If the washing heater temperature sensor has a functional error, replace it. - A tE1 error occurs. • Check the connections for the dry heater temperature sensor connector. • If the dry heater temperature sensor has a functional error, replace it. - A tE2 error occurs. • Check the connections for the duct condensing temperature sensor connector. • If the duct condensing temperature sensor has a functional error, replace it. - A tE3 error occurs.	-
Unbalance Error	UE	• Motor hall sensor fault • Caused by the laundry	• Check the type of laundry. Check whether they may cause an unbalanced situat ion. - If they are small but absorb a lot of water, make sure to check and follow the related directions in the user manual and follow the directions.	-

5.PCB DIAGRAM

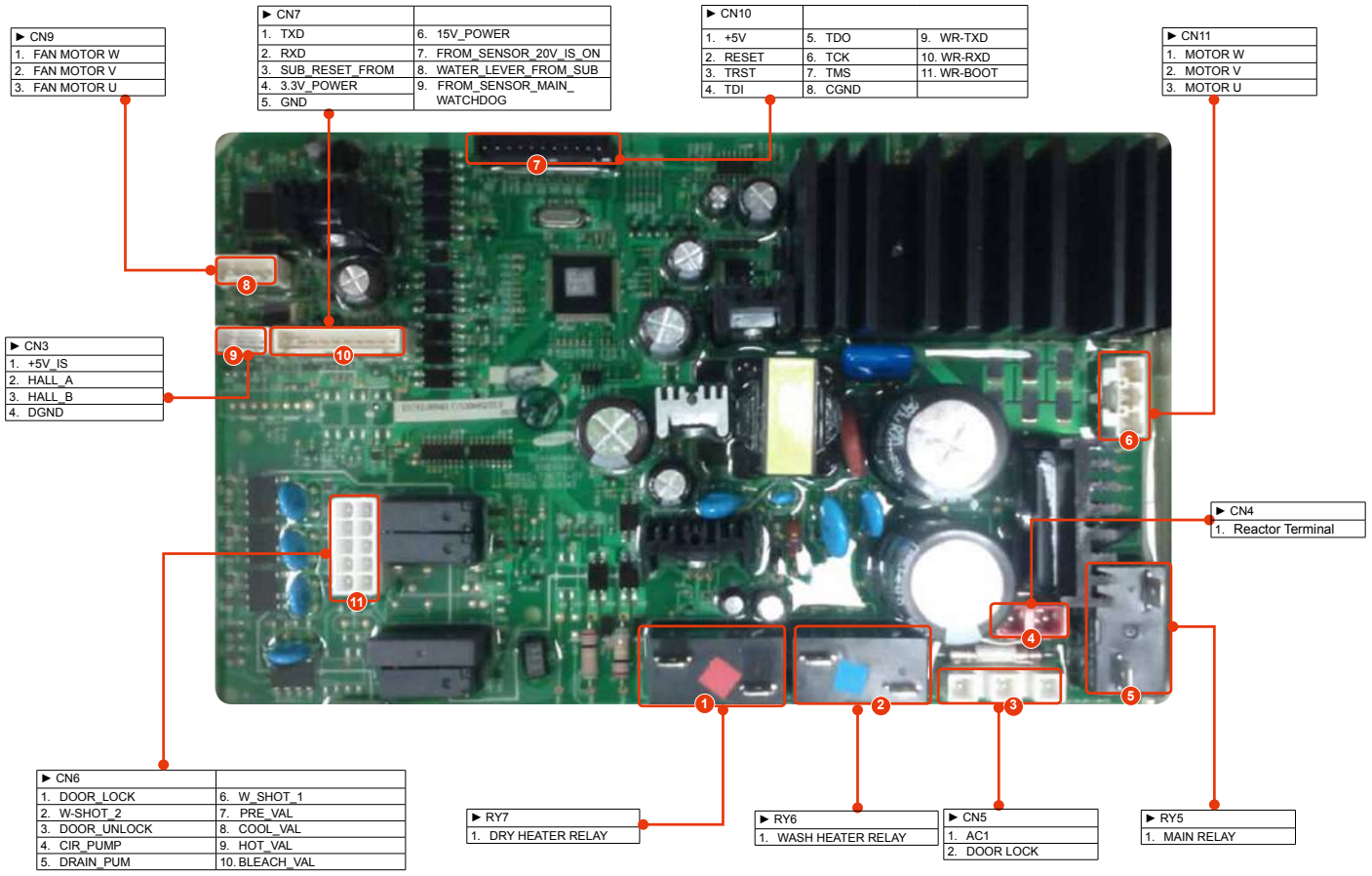
5-1.MAIN PCB



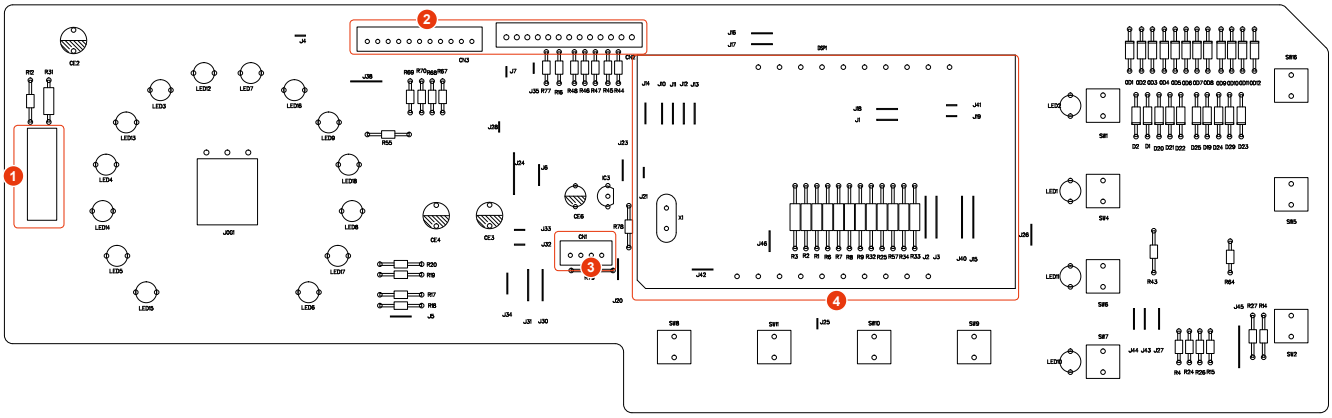
Location	Part No.	Function	Description
1	RY7	Dry heater relay	Drive the dry heater
2	RY6	Wash heater relay	Drive the wash heater
3	CN5	Power supply terminal	Power Supply
4	CN4	Reactor connector	Connector Reactor
5	RY5	Main Relay/Power supply	Power Supply
6	CN11	Motor power supply terminal	Drive the motor

Location	Part No.	Function	Description
7	CN10	Program Terminal	For flash programming
8	CN9	Fan Motor Terminal	Drive the fan motor
9	CN3	Hall sensor Terminal	Receive the hall signal
10	CN7	Sub communication & Sensor terminal	Communication with sub PBA
11	CN6	Load driving section terminal	Drive the load like Valve/Pump...

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

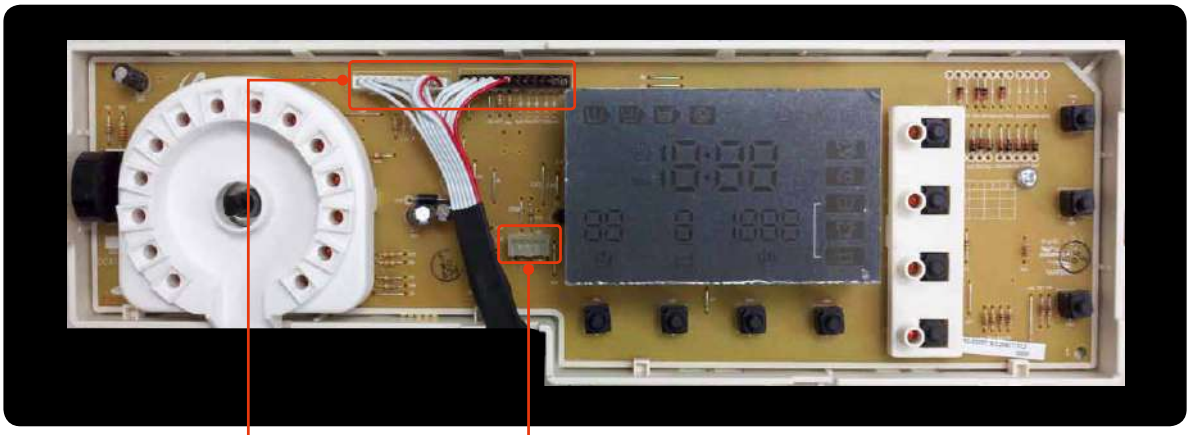


5-3.SUB PCB



Location	Part No.	Function	Description
1	BZ1	Buzzer Circuit	Generates sound when the menu key and encoder-key are operated or when the menu is closed.
2	CN2/CN3	Main and Sub PCB Connection Port	Main and sub PBA communication.
3	CN1	Program Writing	Attach the connector for writing the program when an upgrade or change of the program is required.
4	DSP1	Display	Displays the remaining time for the selected cycle,Displays the menu and progress status.

5-4.DETAILED DESCRIPTIONS OF CONTACT TERMINALS(SUB PCB)

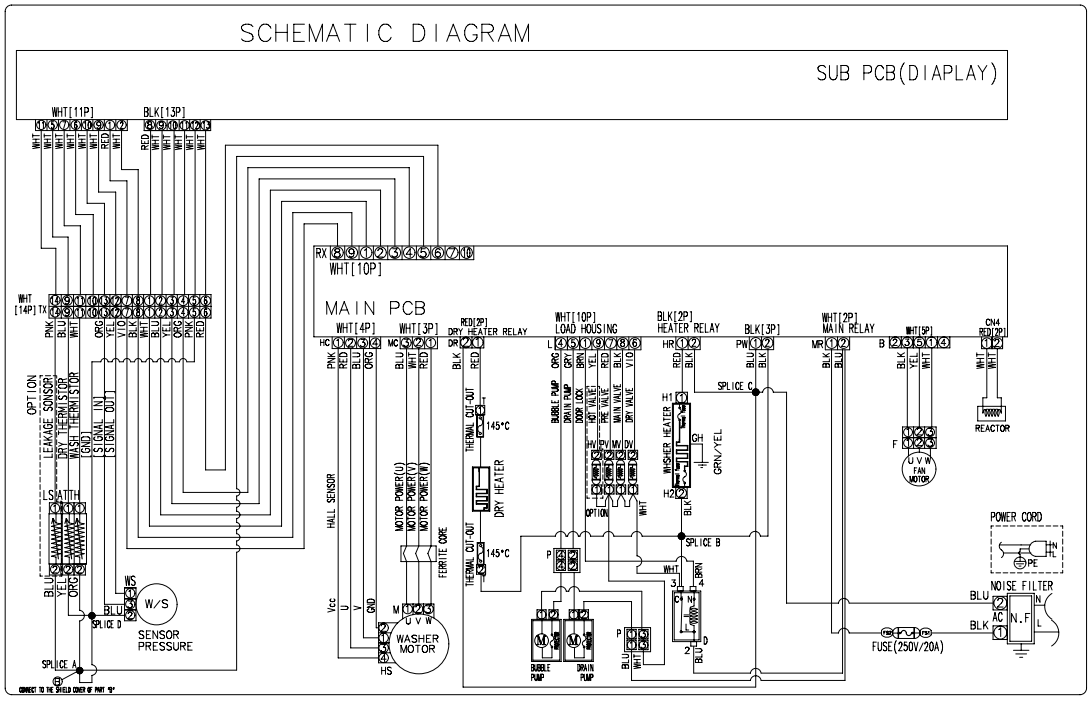


6.Wiring diagram

6-1.Wiring diagram

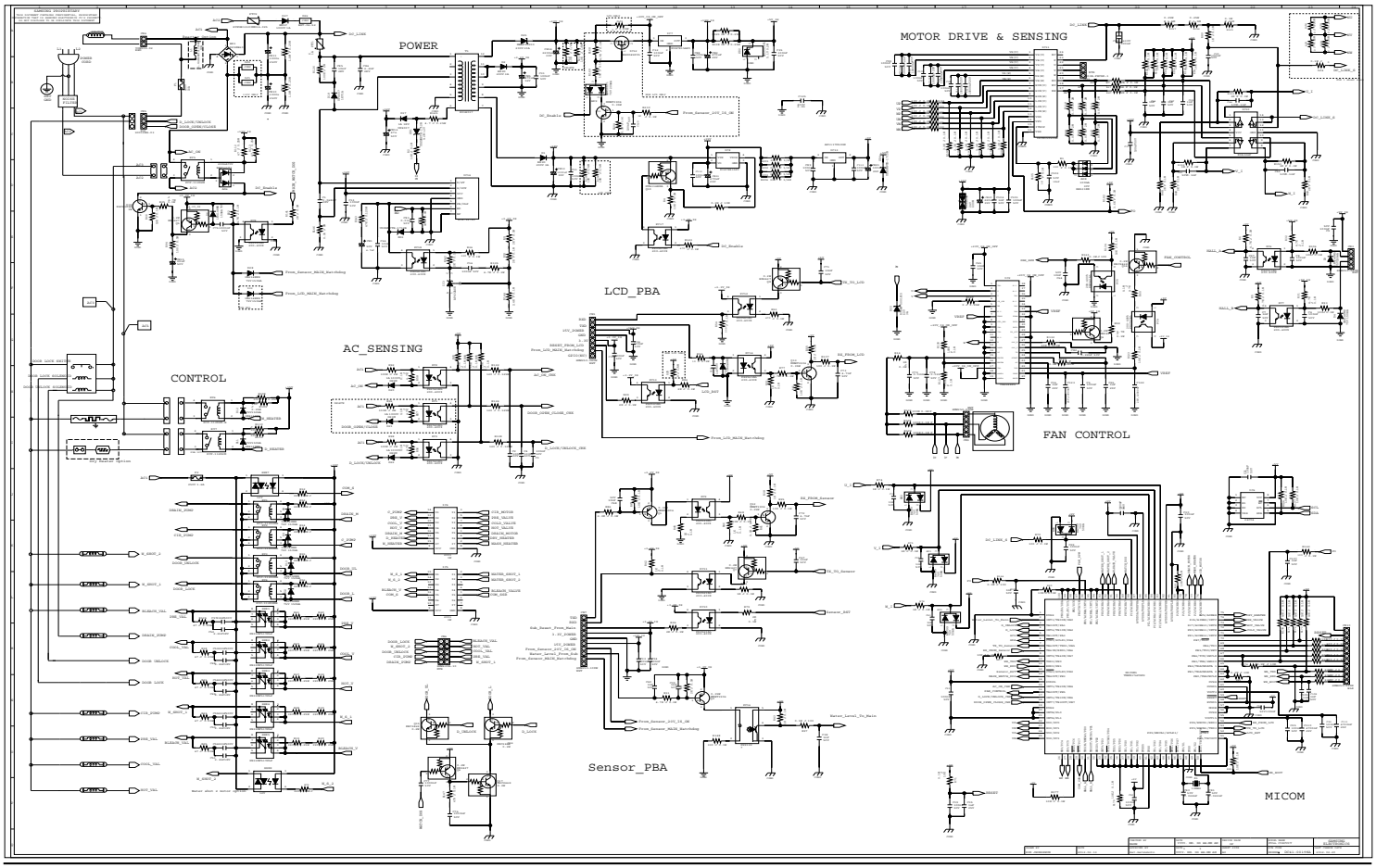
■ **Reference information**

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

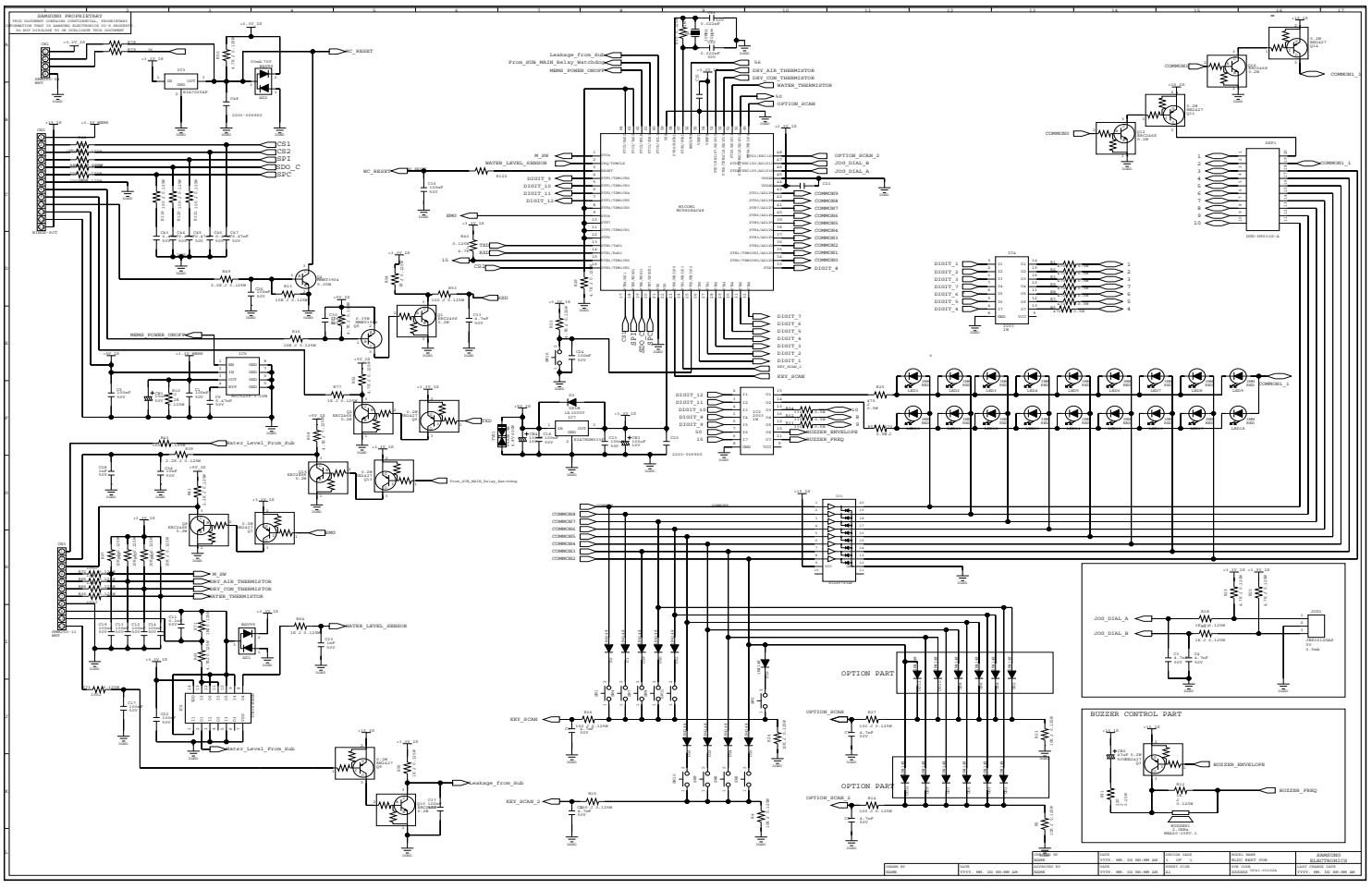


7.SCHEMATIC DIAGRAM

7-1.MAIN CONTROL

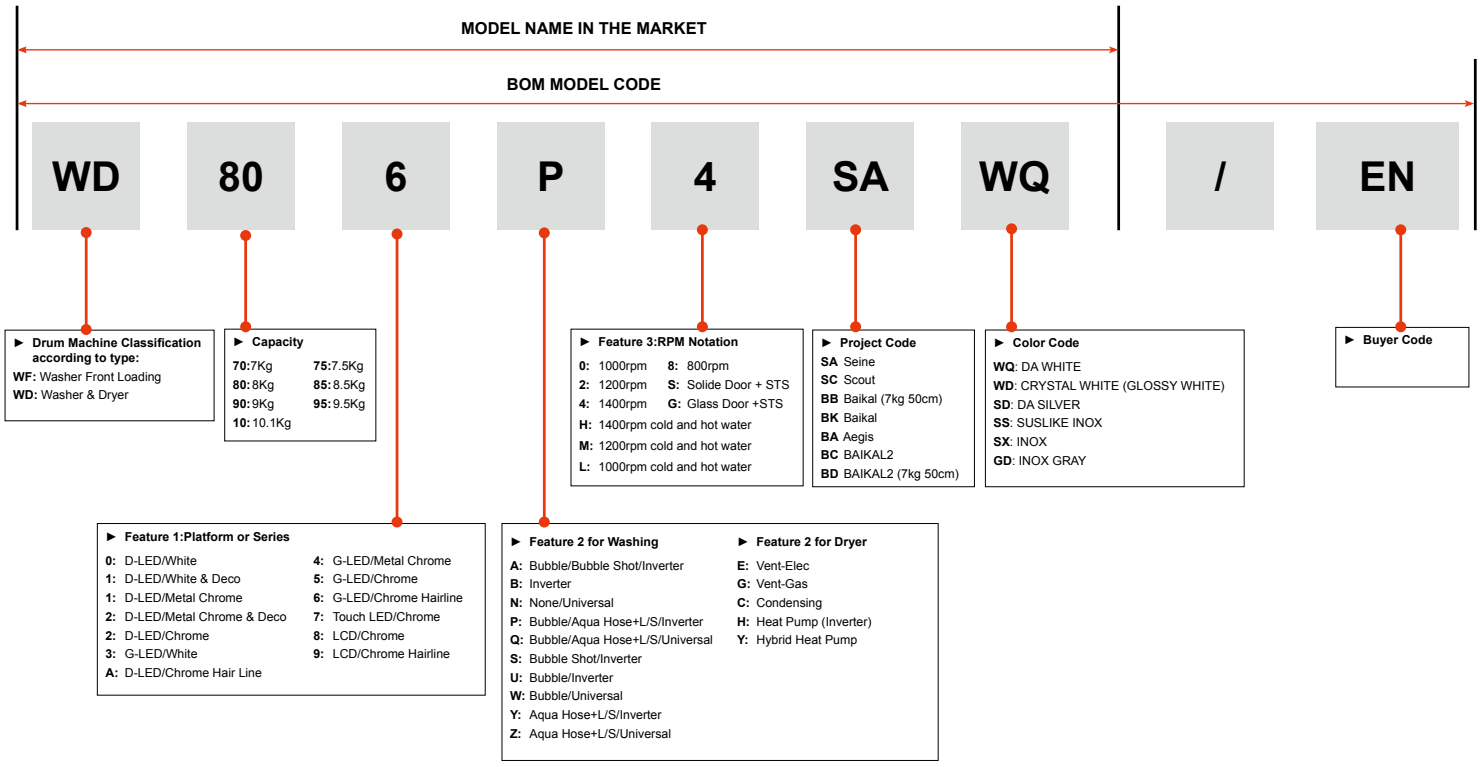


7-2.SUB CONTROL



8.REFERENCE

8-1.PROJECT NAME



8-2. MOTOR UNIVERSAL PARAMETER

CODE	MAKER	Resistance/ Ω				temp./℃
		Tacho	Full Field	Tap field	Rotor	
DC31-00002A	WELLING	38.8	1.24	0.81	2.21	20
DC31-00002F	WELLING	38.8	1.95	0.98	2.75	20
DC31-00002M	WELLING	46.36	1.54	0.83	2.18	20
	G&J	38.25	1.66	0.84	1.62	20
	APPLIM	42.7	1.64	0.71	1.65	20

CODE	MAKER	Resistance/ Ω			temp./℃
		U-V	V-W	W-U	
DC31-00045A	NMT	4.2	4.2	4.2	25
DC93-00316A	SAMSUNG	5.7	5.7	5.7	25

GSPN (GLOBAL SERVICE PARTNER NETWORK)

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19 June 2013