



# WASHING MACHINE DRUM TYPE

Basic Model : WF906\*\*\*  
(SEINE PROJECT)

Model Name : WF8\*F\*E\*\*  
(F500E PROJECT)

Model Code : WF80F5E5W4W/EF  
(F500E PROJECT)

## ***SERVICE*** Manual

### WASHING MACHINE (DRUM)



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1. Safety Instructions
2. Features and Specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. PCB Diagram
6. Wiring Diagram
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Refer to the service manual in the GSPN (see the rear cover) for the more information.



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# 1. SAFETY INSTRUCTIONS

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## 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**

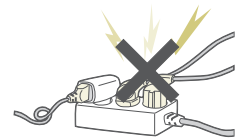
Hazards or unsafe practices that may result in minor personal injury or property damage.



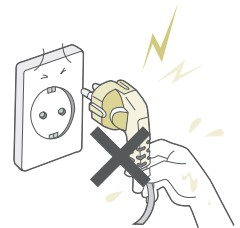
**WARNING**

### BEFORE SERVICING

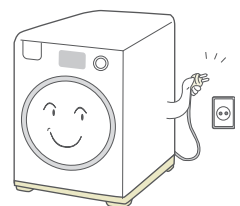
- (When servicing electrical parts or harnesses) Make sure to disconnect the power plug before servicing.
  - ✓ Failing to do so may result in a risk of electric shock.
- Do not allow consumers to connect several appliances to a single power outlet at the same time.
  - ✓ There is a risk of fire due 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 result in accidental operation of the washing machine.



- 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 or short circuiting.
  - When connecting wires, make sure to connect them using the relevant connectors and check that they are completely connected.
    - ✓ Do not use tape 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 the wiring can not be damaged by any sharp edges or moving parts.
  - 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.
- 





**CAUTION****BEFORE SERVICING**

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- 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.



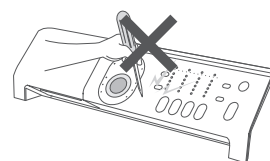
- Do not place any containers with water on the washing machine.
  - ✓ If the water is spilled, it may result in electric shock or fire. This will also shorten the product lifetime.



- 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**

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- When wiring a harness, make sure to seal it completely so no liquid can enter.
  - ✓ Take care when disconnecting connectors, do not use excessive force as this may damage the connector.

- Check to see if there is any residue that would imply liquid has entered the harnesses or electrical parts.
  - ✓ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.

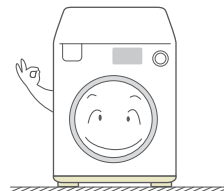
- If you need to place the washing machine on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so its side is on the floor.
    - ✓ Do not lay it down on its front. This may result in the inside tub damaging parts.
-



**CAUTION****AFTER SERVICING**

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- Ensure that all components are reassembled correctly and are safe before connecting the appliance to the mains supplies.
- 
- 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.










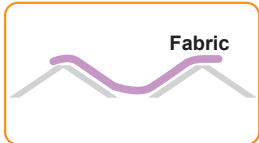
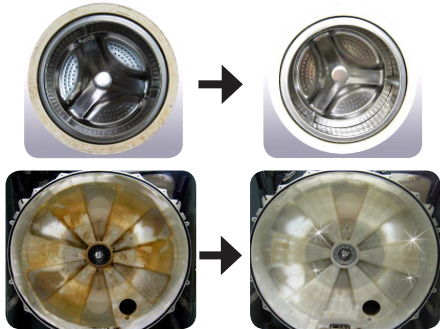
## 2. FEATURES AND SPECIFICATIONS

### 2-1. FEATURES

#### ■ COMMON FEATURES

Features	Description
<b>Bubble Wash Technology</b>	<ul style="list-style-type: none"> <li>Bubble Wash technology activates the detergent solution from the start of the wash and generates bubbles through the Bubble Generator so that the detergent dissolves more quickly and the detergent bubbles generated at the start of the wash penetrate the fabric of the laundry faster and more effectively than a conventional wash guaranteeing a cleaner wash. In particular, the lower the water temperature is, the better the effect. In addition, since washing is performed after the detergent is completely dissolved in the water, there is no need to worry about any remaining detergent residue.</li> <li>Using a Samsung washing machine, you can wash waterproof clothing without worrying about damage to material not previously washable. The outdoor care course of a Samsung washing machine provides an excellent wash performance and fabric care level by minimizing damage to the waterproof material.</li> </ul> <div>  <div> <div>Bubble Outdoor wear course</div>  <p>Safely protected by Bubble care</p> </div> <div> <div>Competitors Sports wear course</div>  <p>Damaged &amp; Wet</p> <p>Water protect function is damaged by mechanic action</p> </div> </div>
<b>Most Efficient (Selected Model)</b>	<ul style="list-style-type: none"> <li>This model offers more efficient energy use compared to standard A rated machine with the special Bubble generator system and Samsung BLDC motor. <ul style="list-style-type: none"> <li>Eco Bubble tech.</li> <li>High efficiency BLDC motor</li> </ul> </li> </ul>
<b>15' Quick Wash</b>	<ul style="list-style-type: none"> <li>No time to lose! Quick Wash will give you time to run out before it's too late. Our Quick Wash program can be the solution to your busy life. Now you can wash your favorite clothes in 15 minutes!</li> </ul>



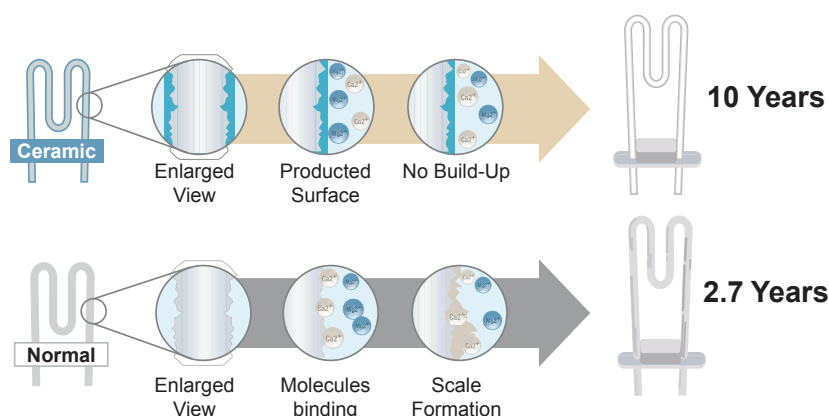
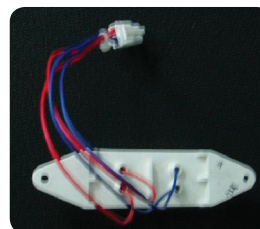
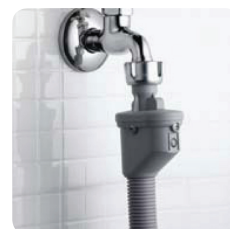
Features	Description
<b>Diamond Drum</b>	<ul style="list-style-type: none"> <li>The washing performance has increased but potential damage to the washing has been minimized. (The size of the holes on the diamond drum has been reduced for minimizing damage to the washing.)</li> <li>The embossed wall of 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.</li> <li>The size of holes has been reduced drastically, maintaining the optimal wash performance while saving on water and electricity required for washing.</li> <li>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.</li> </ul> <div>  <div> <p><b>Conventional</b></p>  <p><b>Diamond Drum</b></p>  </div> </div>
<b>Eco Drum Clean (Selected Model)</b>	<ul style="list-style-type: none"> <li>Using Eco Drum Clean helps to keep your washing machine clean even without any chemical detergent or bleach. Keep your drum cleansed and odorless with this specialized cleaning program.</li> </ul> <div>  </div>



## ■ OPTIONAL FEATURES

► The features below depend on the model.

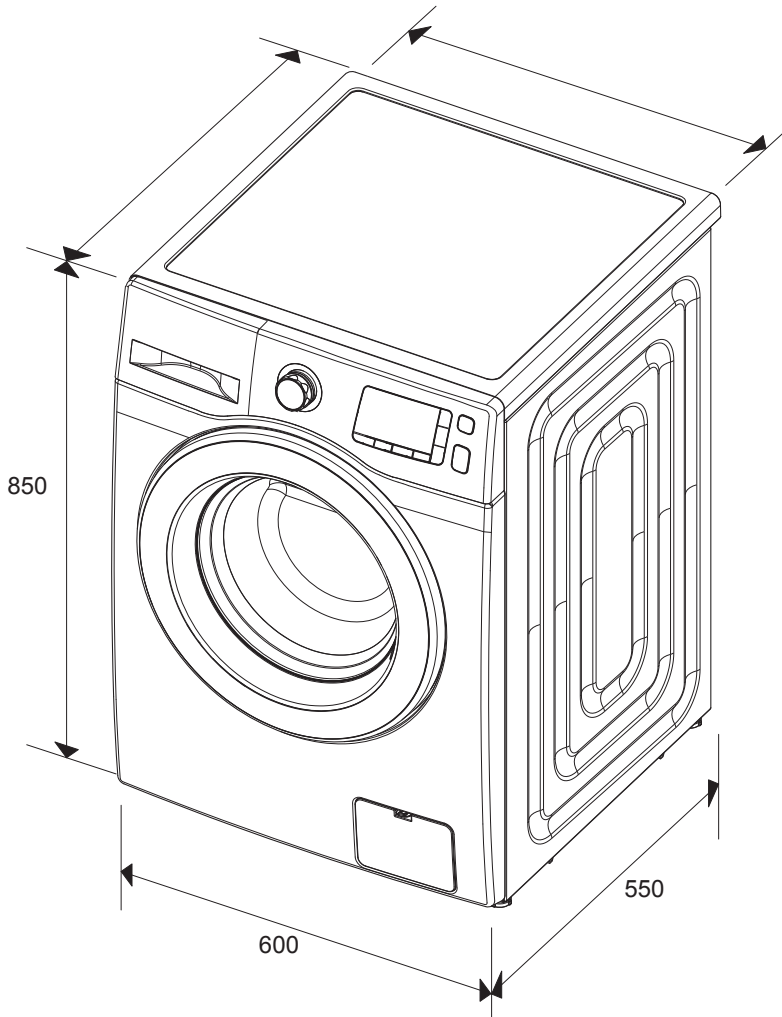
Features	Description
<b>Water Safety System (Selected Model)</b>	<ul style="list-style-type: none"> <li>The Water Safety System allows for perfect leakage protection. The double safety valve connects directly to the water tap. In the event of a leakage, the built-in sensor immediately detects the leak, within a few short seconds, automatically turning off both the water supply and the washing machine.</li> <li>- Inlet hose It is attached to the water supply hose and automatically cuts off the water supply if the hose is damaged. It also displays a warning indicator.</li> <li>- Leakage Sensor A water leakage sensor attached at the bottom of the washing machine to cut off the power automatically if a leakage occurs, to prevent the danger of a fire.</li> </ul>
<b>Ceramic Heater (Selected Model)</b>	<ul style="list-style-type: none"> <li>The ceramic heater in Samsung washing machines prevents metals in hard water from being attach to the heater, which may cause a reduction in heater efficiency. This helps save energy, time and money.</li> <li>- 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.</li> <li>- Time Savings After three years, conventional heaters take 7.5 percent longer to heat up, remove as is a duplicate, whereas ceramic only lose 2.5 percent of their ability to heat up.</li> </ul>





## 2-2. SPECIFICATIONS



Model		WF8*F*E****	WF7*F*E**
Wash Type		FRONT LOADING TYPE	
Dimension		850 X 600 X 550	
Water Pressure		50-800	
Weight		61kg	61kg
Wash & Spin Capacity		8kg	7kg
Power Consumption	WASHING	220V / 150W	
		240V / 150W	
	WASHING and HEATING	220V / 2,000W	
		240V / 2,400W	
Spin Revolution	rpm	1,400 / 1,200	








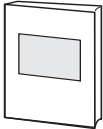
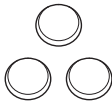


## 2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

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

Grade		F500E	SEINE
Model Name		WF8*F*E**    WF7*F*E**	WF806P4SA**    WF906P4SA** WF806U4SA**    WF906U4SA** WF806UHSA**    WF906UHSA** WF802B2SA**    WF902B2SA**
Image			
Feature		Eco Bubble Wash Diamond Drum Smart Check	Bubble wash Diamond Drum
Capacity		8Kg / 7Kg	9kg / 8kg
Main Spec	Drum Volume	63ℓ	63ℓ / 49ℓ
	Max rpm	1400 / 1000	1400 / 1200
	Motor	BLDC	BLDC
	Control Sys	General	General
	Weight Detection	3 Stages	3 Stages
	Heater Capacity	2,000W / 230V	2,000W / 230V
	Water Supply	Cold only / Cold and Hot	Cold only / Cold and Hot
	Drainage	Pump	Pump
	Power-Outage Compensation	Yes	Yes
	Zero Standby Power	Yes (0.48W or Less)	Yes (1W or Less)
USP	Bubble	Yes (★)	Yes (★)
	Eco Drum Clean	Yes	Yes
	Outdoor Care	Yes (★)	Yes (★)
	Quick Wash	Yes	Yes
	Liquid Detergent Box	Yes (★)	Yes (★)
	Water Safety	Yes (★)	Yes (★)
	Diamond Drum	Yes	Yes
Design	Big Door	Yes (500mm)	Yes (480mm)
	Center Jog Dial	Yes	Yes
	Display	Graphic Display	Graphic Display / Dot LED
Dimension (W X D X H mm)		850 X 600 X 550	598 X 600 X 844



## 2-4. OPTIONS SPECIFICATIONS

Item		Code	QTY	Remarks
	BOLT-SPANER	DC60-40146A	1	Default
	HOSE-WATER	DC62-10289B	1 (★ : Cold only) or 2 (★ : Cold and Hot)	For specific models only
	HOSE-WATER (AQUA-STOP)	DC62-00079A	1 (★ : Cold only) or 2 (★ : Cold and Hot)	For specific models only
	MANUAL-BOOK	DC68-03234A	1	WF80F5E5U4W/EF
	CAP-FIXER	DC67-00307A	3	Default
	HOSE-HANGER	DC62-10278A	1	Default
	GUIDE-LIQUID	DC61-03510A	1	Default

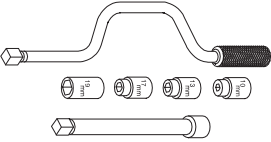
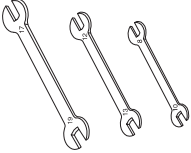

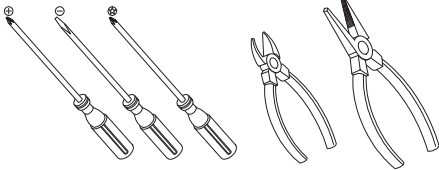
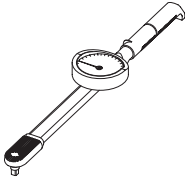
### Note

- (★) 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


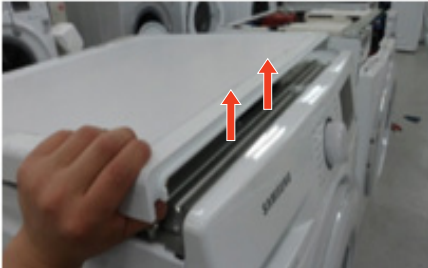
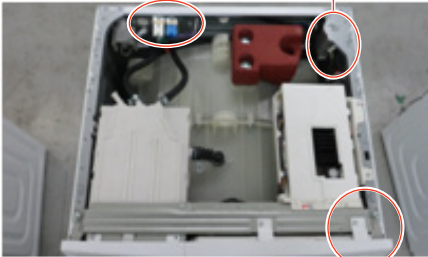
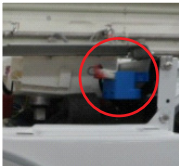
#### 3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

Tool	Type	Remarks
	Box driver	10mm Heater(1), Tub(12), Fixer screw(5), Motor(2), Balance(9)
		13mm Shock Absorber (2 holes each in left/right), Damper(2), Damper(friction 2)
		19mm Pulley(1)
	Double-ended spanner	10mm Replaced by box driver 13mm Leg 19mm
	Vice pliers	A Tool for protecting empty turning of bolt or abrasion from using box driver For disassembly of Spin drum
	Others (screwdriver, nipper, long nose pliers)	Common tools for servicing
	Torque wrench	The Tool for assembly of heater and Tub

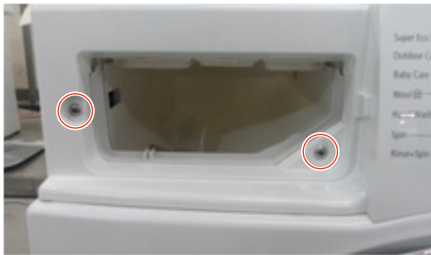
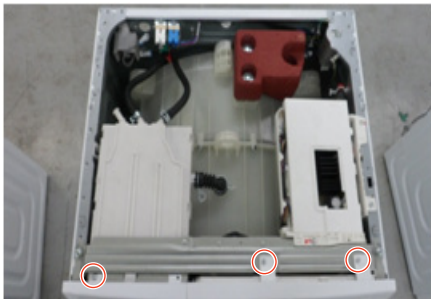

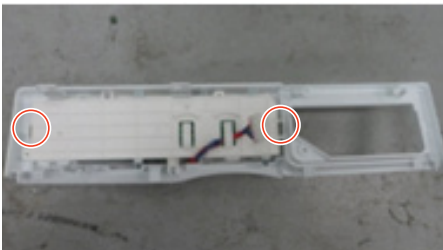


### 3-2. STANDARD DISASSEMBLY DRAWINGS




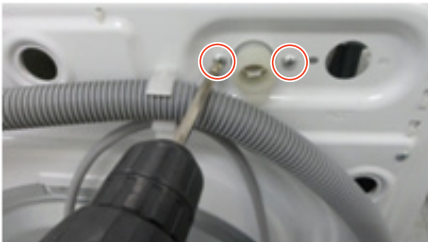
- This is a standard disassembly diagram and may differ from the actual product.  
Use this material as a reference when disassembling and reassembling the product.

Part	Figure	Description
Assy Cover Top		1. Remove the two screws holding the Top Cover at the back of the unit.
		2. Remove the top-cover by lifting it up after pulling it back about 15mm.
	<div><div><p>Water valve</p><p>Noise filter</p></div><div><p>Sensor pressure</p></div></div>	3. Now the Water(pressure) Sensor, Noise Filter, Water Valve and main PCB can be replaced.



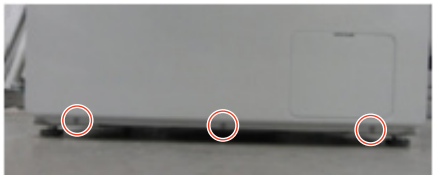



Part	Figure	Description
Sub-pcb panel		1. Remove the 2 screws holding the front operating panel.
		2. Remove the screws at the top of the ASSY-PANEL CONTROL.
		3. Hold the ASSY-PANEL CONTROL while pulling it upwards and release the hook to remove it. 4. Disconnect the 3 terminals connected to the PCB by hand.
		5. Release the hooks on both sides to remove the PCB for repair / replacement.


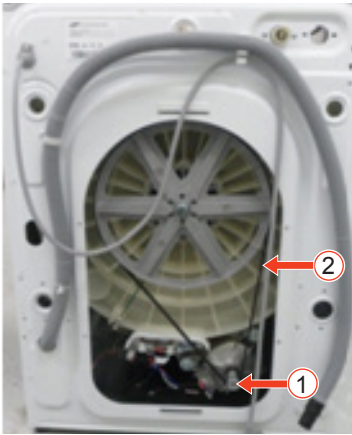

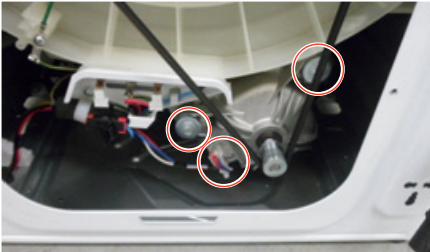
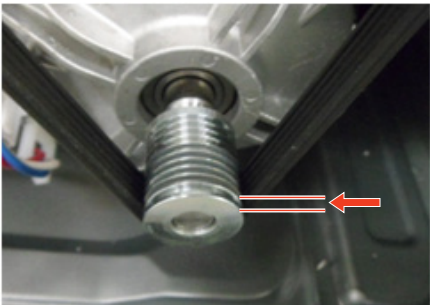



Part	Figure	Description
Assy Housing-drawer		1. Remove this screw.
		2. Remove the Band-ring.
		3. Separate the water supply valve wire.
		4. Remove the screws holding the water supply valve in place.


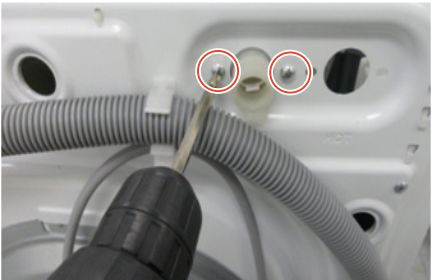


Part	Figure	Description
Frame Front		<p>1. Using the long nose pliers, pick up one of the rings on the Wire-Diaphragm, which connects the sprints and the wire ends. Then separate the Wire-Diaphragm from the Front-Frame and Disconnect the Diaphragm.</p>
		<p>2. Remove the two screws holding the FRAME-FRONT.</p>
		<p>3. Remove the screws holding the bottom of the FRAME-FRONT.</p>
		<p>4. Disconnect the terminal for the DOOR-LOCK switch.</p>

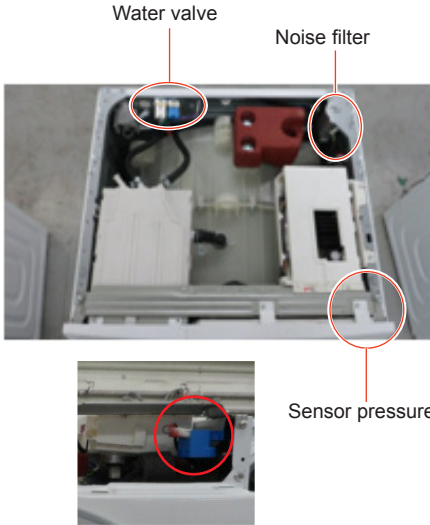
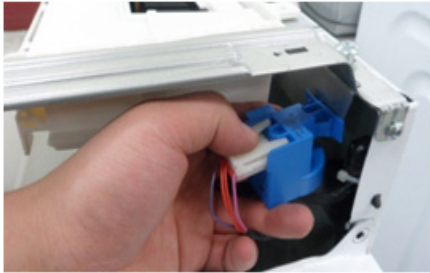
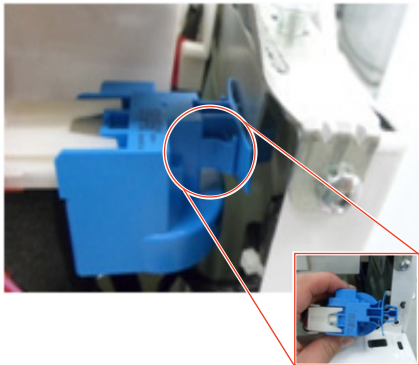


Part	Figure	Description
Cover-Back		Unfasten the 4 screws that hold the back cover in place. Remove the back cover by sliding it down. (When assembling, slide the back cover up.)
Belt		<ol style="list-style-type: none"> <li>1. Remove the Cover back .</li> <li>2. Separate the belt and then assembly it.</li> <li>3. Check if the belt position is at the center of the Pulley.</li> </ol> <p> Assembling the belt Place the belt around the Motor-Pulley (①) and then over the Pulley (②).</p>
UNIVERSAL MOTOR		<ol style="list-style-type: none"> <li>1. Separate the Wire Housing from the motor.</li> <li>2. Remove the bolts holding the motor at the back of the washing machine.</li> <li>3. Separate the motor.</li> </ol>
		<p> <b>Caution</b> When installing the Belt around the Motor Pulley, the bottom of the belt must be located on the second tooth of the motor pulley.</p>

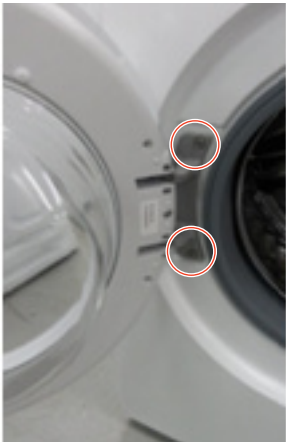




Part	Figure	Description
Water supply valve		<ol style="list-style-type: none"> <li>1. Separate the Assy-Cover Top.</li> <li>2. Separate the water supply valve wire.</li> </ol>
		<ol style="list-style-type: none"> <li>3. Remove the screws holding the water supply valve in place.</li> </ol>

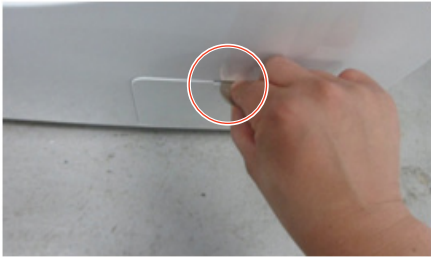

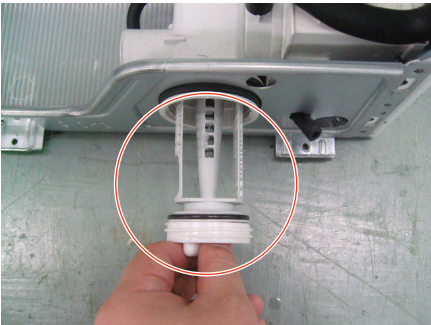

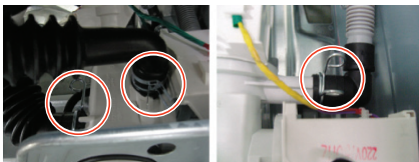


Part	Figure	Description
Water level sensor	 <p>Water valve</p> <p>Noise filter</p> <p>Sensor pressure</p>	1. Separate the Assy Top-Cover.
		2. Disconnect the wire between the PRESSURE HOSE and the water level sensor for repair / replacement.
		3. Push the clip of the water level sensor behind sensor to one side of the frame and pull it out to remove it.


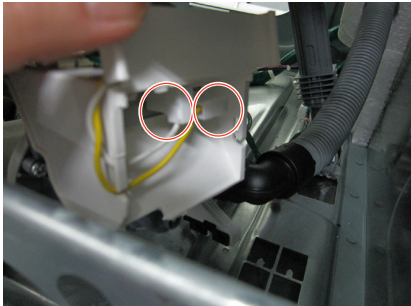
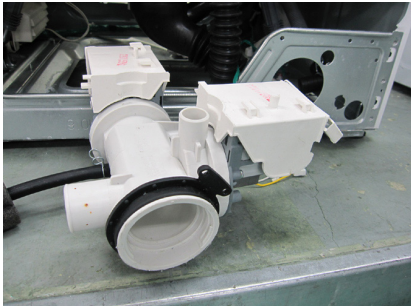
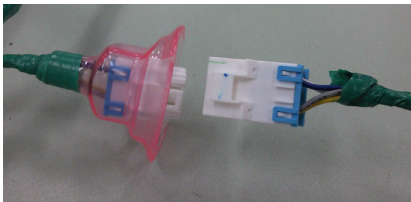


Part	Figure	Description
Door Hinge		1. Remove the 2 screws holding the Door Hinge and separate the door.
		2. Remove the 11 screws holding the Holder Glass and separate the Holder Glass.
		3. Remove the 4 screws holding the bracket hinge and replace the door-hinge.


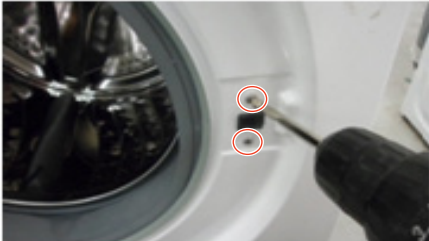

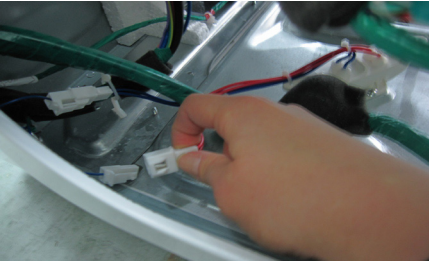
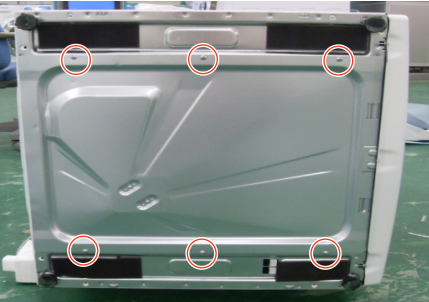
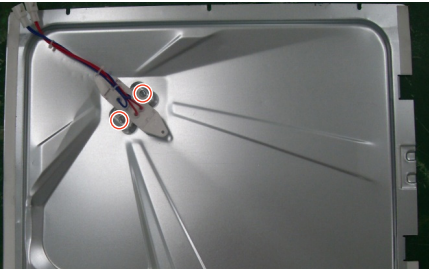


Part	Figure	Description
Drain pump		1. Use coins or pins in order to open the Filter Cover.
		2. Remove the remaining water through the drainage hose. <input checked="" type="checkbox"/> Place a bowl under the drainage hose, or the remaining water may flow out.
		3. Separate the Drain Filter by turning it counterclockwise. <input checked="" type="checkbox"/> Since the remaining water may flow out, place a bowl underneath it when separating the filter.
		4. Remove the 2 screws holding the drain pump.
		5. Release the BAND RING (3EA) to remove the HOSE (3EA).


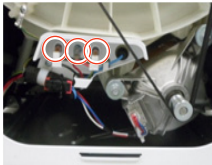




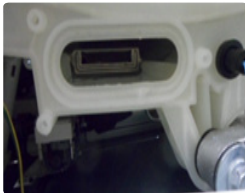


Part	Figure	Description
Drain pump		6. Push the PUMP inward and then remove the HOSE (3EA).
		7. Disconnect the wire (4EA).
		8. Push the TUB inward slightly to remove the PUMP
		<input checked="" type="checkbox"/> Pump wire harness is connected to main wire harness.
	<p>✓ Check Points for Troubleshooting</p> <ol style="list-style-type: none"> <li>1. Separate the Drain Filter and check if any alien substances are inside the pump (e.g. coins, buttons ..., etc.) → Remove these if found.</li> <li>2. Check if the wire driving the pump has come loose → Take the relevant countermeasure if necessary.</li> <li>3. When water leaks, check the assembly status of the Clamp Hose, and Cap Drain → Take the relevant countermeasure if necessary. Turn the filter counterclockwise to remove the remaining water.</li> </ol>	






Part	Figure	Description
Door-lock S/W		<p>1. Open the Door. Remove the Wire Diaphragm and remove it from The Front Frame.</p> <p>☑ For easier disassembly, remove the spring from the lower part of the Diaphragm with a (-) screwdriver.</p> <p>☑ Since the Diaphragm can be damaged when removing it. Use a Longnose plier and remove it slowly in one direction.</p>
		2. Remove the 2 screws.
		<p>3. Remove the screw holding the Door-Lock S/W. Remove the Door-Lock S/W. Remove the connection wire. (Only remove the connector once the connector is released, this can be done by pressing the catch.)</p>
Leakage Sensor (OPTION)		1. Disconnect two wire connectors.
		2. Remove the six screws holding the bottom of the FRAME-FRONT.
		3. Remove the 2 screws.



Part	Figure	Description
Heater		1. Separate the Back Cover.
	 	2. Separate the Connection Housing (3). 3. Remove the wire vinyl. (1)
		4. Separate Connection Housing.
		5. Remove then nut holding the heater in place and then separate out the heater. ☑ Use box Drivers (Socket size: 10mm)
		6. Remove the Heater from the Tub. <b>⚠ Caution</b> 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 the Tub inwards until the packing part comes into the Tub completely when reassembling. Fasten the holding nut with a force of 5Kgf/ cm2. If the nut is not fastened properly, there is a danger of water leaking.



Part	Figure	Description
Replacement of the main PCB		1. Remove the back cover and unfasten the screws that hold the main PCB in place
		2. Remove the PCB cover inside. Remove the wire harness connector which is connected to the PCB.
		3. Replace the main PCB. <input checked="" type="checkbox"/> You cannot remove the PCB separately because urethane is used for water proofing.
	<p>✓ Check Points for Troubleshooting</p> <ol style="list-style-type: none"> <li>1. Check whether there is any error in applying the power.</li> <li>2. Check the voltage between the DC 5V and GND terminals.</li> <li>3. If an error occurs when there is no characteristic error in the electric harnesses, check these points:  HE/HE1 error: The resistance of heater(for 1900W unit) is 27 <math>\Omega</math>  DE1 error: The resistance of door switch is 140 to 145 <math>\Omega</math>  HE/HE1 error: The resistance of thermostat is 0 <math>\Omega</math>  4E error: The resistance of water valve is 4.4 k<math>\Omega</math></li> </ol>	

☒ Reassembly is in the reverse order of the removal.



## 4. TROUBLESHOOTING

### 4-1. ERROR MODES

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

Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Water Level Sensor	1E	1E E7	LE	1E	<ul style="list-style-type: none"><li>- The part of the hose where the water level sensor is located is damaged (punctured).</li><li>- The hose is clogged with foreign material.</li><li>- The hose is folded.</li><li>- Too much lubricant has been applied to the insertion part of the air hose.</li><li>- Hose engagement error (disengaged)</li><li>- Part fault (Faulty internal soldering)</li><li>- The water level sensor terminal is disengaged.</li><li>- Main PBA fault.</li></ul>	
Motor Driving Error and Hall Sensor Error	3E	3E EA EB 8E	3E	3E	<ul style="list-style-type: none"><li>- The PBA connector terminal is not connected.</li><li>- The motor spin net is not engaged.</li><li>- The motor's internal coil is damaged (short-circuited or cut)</li><li>- The hall sensor terminal is not connected.</li><li>- Foreign material (a screw) has entered the motor.</li></ul>	For USA products, this error occurs because of restrained revolutions
	3E1	3E1	E3		<ul style="list-style-type: none"><li>- Motor overloaded due to too much laundry (Non-sensing)</li><li>- The motor hall sensor terminal is not connected.</li><li>- PBA fault</li></ul>	For USA products, this error occurs when an interference is generated due to too much laundry, etc.
	3E2	3E2			<ul style="list-style-type: none"><li>- The motor driving error from the PBA is weak. : Unstable relay operation, etc.</li></ul>	
	3E3	3E3	bE		<ul style="list-style-type: none"><li>- This occurs due to erroneous operating signals for the motor hall sensor.</li><li>- The IPM terminal of the main PBA is not connected.</li><li>- The DD motor cover is out of place.</li></ul>	
	3E4	3E4			<ul style="list-style-type: none"><li>- The PCB housing terminal is not connected.</li><li>- PBA fault</li><li>- DD motor fault</li></ul>	
Water Supply Error	4E	4E E1	nF	4E	<ul style="list-style-type: none"><li>- Foreign material is entering the water supply valve.</li><li>- The water supply valve terminal is not connected. (Wire disconnected)</li><li>- The warm water and rinse connectors are wrongly connected to each other.</li><li>- 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.</li></ul>	If this error occurs in the Wool course
	4E1	4Ed	-		<ul style="list-style-type: none"><li>- The cold and warm water supply hoses are wrongly engaged into each other.</li><li>- The temperature of the water supplied through the dry valve during a dry cycle is sensed as higher than 70 °C.</li></ul>	The water supplied for 1 minute drying the drying cycle is 0.3 ~ 0.4 L.
	4E2 CE	E8	-		<ul style="list-style-type: none"><li>- The water temperature is sensed as higher than 50 °C in the Wool or Lingerie courses.</li></ul>	



Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Drain Error	5E	5E E5	nd	5E	<ul style="list-style-type: none"> <li>- The pump motor impeller is damaged internally.</li> <li>- The wrong voltage (220 V → 110 V) is supplied to the parts.</li> <li>- Part fault</li> <li>- This occurs due to freezing in the winter season</li> <li>- The drain hose is clogged. (Injection error, foreign material)</li> <li>- Clogged with foreign material</li> <li>- The water pump terminal is not connected: rubber band, bills, cotton, hair pins, coins</li> </ul>	
Power Error	9E1 Uc	PH1	2E	-	<ul style="list-style-type: none"> <li>- Check the consumer's power conditions. <ul style="list-style-type: none"> <li>: 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.</li> <li>: Check the voltages. (An error occurs when under or over voltage is supplied.)</li> <li>: Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10 V</li> </ul> </li> <li>- Main PBA fault (sometimes)</li> <li>- Please check the door conditions if there is no problem in a consumer's power and main PBA. (Only this model)</li> </ul>	For fully Automated products, no error code is displayed for a power error.
	9E2 Uc	Plo				
			PF		<ul style="list-style-type: none"> <li>- This error is not a fault but occurs during a momentary power failure <ul style="list-style-type: none"> <li>: If started again when this error code is displayed, the operation restarts from the cycle that was stopped due to the power failure.</li> <li>: If the washing machine is not operating and this error code is displayed, it is displayed to notify that a power failure has occurred.</li> </ul> </li> </ul>	
Communication Error	AE	13E	-	-	<ul style="list-style-type: none"> <li>- The signals between the sub and main PBAs are not sensed because of a communications error.</li> <li>- Check the connector connections between the sub and main PBAs carefully. → Check for incorrect or loose connections, etc.</li> <li>- Remove the sub PBA C/Panel and check for any faulty soldering.</li> </ul>	
Switch Error (Main Relay Error)	bE1	12E	E2	-	<ul style="list-style-type: none"> <li>- The Power button is pressed continually (for more than 12 seconds).</li> <li>- The switch is pressed unevenly because of a deformation of the control panel.</li> <li>- This error may occur when the screws that hold the sub PBA in place are tightened too much.</li> </ul>	
	bE2	14E			<ul style="list-style-type: none"> <li>- A button other than the Power button is continually pressed (for more than 30 seconds).</li> <li>- Deformation of an internal plastic injection part</li> <li>- A screw for assembling the sub PBA is tightened too much.</li> </ul>	
	bE3	18E	Sr	-	<ul style="list-style-type: none"> <li>- The main relay of the PBA is short-circuited.</li> <li>- The main relay terminal is connected incorrectly. (The terminal is bent and contact cannot be made.)</li> </ul>	When the PBA motor relay does not operate



Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Cooling Error	CE	CE cE	-	-	<ul style="list-style-type: none"> <li>- This occurs when the temperature of the washing machine is more than 50 °C and no draining is performed. (Reason: If hot water comes into contact with skin, it may cause burns.)</li> <li>- This occurs when the water temperature, for a specific course, exceeds 50 °C. In that case, the water will be drained to the Reset level.</li> <li>- This represents a thermal sensor error or any misuse of the unit.</li> </ul>	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	<ul style="list-style-type: none"> <li>- A switch contact error because of a deformation of the door hook</li> <li>- When the door is pulled by force</li> </ul>	When the door is not opened after the door open operation
			dL (During operation)		<ul style="list-style-type: none"> <li>- This occurs in the Boil wash because the door is pushed due to a pressure difference from internal temperature changes</li> <li>- Please check the voltage conditions if there is no problem in a door. (Only this model)</li> </ul>	When the door is not locked after the door close operation
	dE1	dE1	LO (Unlock Fail)	-	<ul style="list-style-type: none"> <li>- The door lock switch terminal is connected incorrectly.</li> <li>- The door lock switch terminal is broken.</li> <li>- This occurs intermittently because of an electric wire leakage</li> <li>- Main PCB fault</li> </ul>	
			FL (Lock Fail)			
Heater Error	dE2	dE2	-	-	<ul style="list-style-type: none"> <li>- This occurs if the Power switch is turned on/off continually and too much heat is generated (This error is difficult to be reproduced.)</li> </ul>	
	HE	HE E5	Hr (Heater Relay)	-	<ul style="list-style-type: none"> <li>- The washing heater is short-circuited or has a wire disconnected.</li> <li>- The washing heater in the tub has an error. (Contact error, temperature sensor fault)</li> <li>- If the water level sensor operates without water because water is frozen or for any other reason and the temperature sensor is engaged at the bottom to prevent overheating of the washing, then the sensor detects a temperature of 100-150°C then the washing machine turns the input power off.</li> </ul>	For USA products, if the heater has no error, this occurs because of a PBA relay malfunction.
	HE1	HE1 E1 Ec			<ul style="list-style-type: none"> <li>- This error occurs when the red temperature sensor at the center of the dry heater operates (at a temperature higher than 145 °C)</li> </ul> <p>: Corrective action – Press the button at the center lightly. The washing machine will operate normally.</p> <p>Alternatively, replace the temperature sensor if the temperature sensing is unstable because of functional degradation.</p>	
	HE2	HE2				
Heater Error	HE3	-			<ul style="list-style-type: none"> <li>- This occurs when the steam function does not operate normally.</li> <li>- This error does not occur in existing drum products. Check whether the product is a steam model</li> </ul>	



Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
Water Leakage Error	LE LE1	11E E9	LE	LE	<ul style="list-style-type: none"> <li>- Heater engagement fault (out of place)</li> <li>- The air hose is out of place and water leakage occurs during the spin cycle.</li> <li>- The tube back near the bolt fixing part is broken.</li> <li>- Water leakage occurs at the front with foaming because of too much detergent</li> <li>- Water leakage occurs because the connecting hose to the detergent drawer is connected incorrectly.</li> <li>- The drain pump filter cover is engaged incorrectly.</li> <li>- Water leakage occurs at the drain hose.</li> <li>- The duct condensing holding screws are worn.</li> <li>- The nozzle-diaphragm is engaged in the opposite direction or the rubber packaging is omitted.</li> <li>- Water leakage occurs because the screws that hold the tub back and front in place are fastened incorrectly.</li> <li>- The leakage sensor is faulty.</li> </ul>	
Overflow Error	OE OF	OE OF E3	OE	-	<ul style="list-style-type: none"> <li>- Water is supplied continually because the water level detection does not work.</li> <li>- 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.</li> <li>- Water is supplied continually because of freezing or because there is foreign material in the water supply valve.</li> <li>- This error may occur when the water level sensor is degraded.</li> </ul>	For USA products, this error occurs because the water level sensor terminal is out of place.
Temperature Sensor Error	tE1	tE1 6E	tE	-	<ul style="list-style-type: none"> <li>- The washing heater in the tub has an error. (Contact error, temperature sensor fault)</li> <li>- The connector is connected incorrectly or is disconnected.</li> <li>- 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 of the washing, then the sensor detects a temperature of 100-150°C then the washing machine turns the input power off.</li> </ul>	Heater sensor fault : When the connector is connected incorrectly or has a wire disconnected or contact error
	tE2	tE2	-	-	<ul style="list-style-type: none"> <li>- The temperature sensor for the duct assy fan housing is faulty. (A sensor fault such as an internal short-circuit or wire disconnection)</li> <li>- The connector is out of place or has a contact error.</li> </ul>	Duct condensing temperature sensor fault (for models before the silver nano function was applied)
	tE3	tE3	-	-	<ul style="list-style-type: none"> <li>- This occurs when the duct condensing temperature sensor is open.</li> <li>- This occurs when the duct condensing temperature sensor has a wire disconnected or is short-circuited.</li> <li>- The connector is out of place or has a contact error.</li> </ul>	Dry heater temperature sensor fault (for models before the silver nano function was applied)
Unbalance Error	UE	UE E4	dc	UE	<ul style="list-style-type: none"> <li>- As laundry causes this error, check the laundry.</li> <li>- Find the reason for the unbalance and solve it as directed in the user manual.</li> </ul>	





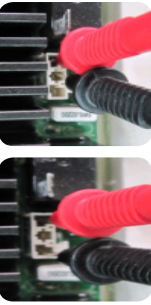


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Error Type	Drum			Fully automatic	Causes	Remarks
	Error mode	Old error mode	For USA			
<b>Foaming Detected</b>	Sud	-	SUdS	-	- This occurs when too much foaming is detected. It is also displayed while foaming is removed. When the removal is finished, 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.)	






## 4-2. CORRECTIVE ACTIONS FOR EACH ERROR CODE

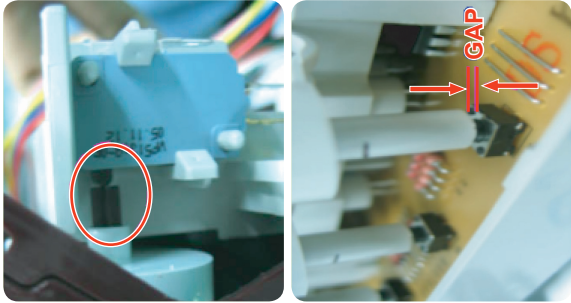
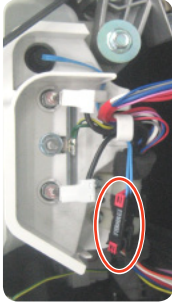
► These are common troubleshooting procedures for each drum-type washer error mode. For detailed information, refer to the general repair scripts.

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Level Sensor	1E	<ul style="list-style-type: none"> <li>Water level sensor fault</li> <li>Incorrect connections of the water level sensor terminal</li> <li>The hose part for the water level sensor is folded.</li> <li>Main PCB fault</li> </ul>	<ul style="list-style-type: none"> <li>Check the water level sensor terminal connections and contacts.</li> <li>An error occurs if an incorrect water level sensor is used. Make sure to check the material code. (Abnormal operation)</li> <li>If the water level sensor is faulty, replace it.</li> <li>If the error persists despite taking the action above, replace the PBA.</li> </ul>	 <p>Check the water level sensor frequency.</p> <ul style="list-style-type: none"> <li>Check it after the water level sensor and the connector are connected.</li> <li>Frequency: Approx. 26.1 KHz with no load</li> </ul>
Washing Motor Error and Hall Sensor Error	3E 3E1 3E2 3E3 3E4	<ul style="list-style-type: none"> <li>Washing motor fault</li> <li>Washing motor hall sensor fault</li> <li>Incorrect connections of the washing motor/hall sensor connector</li> <li>Washing motor rotor and stator fault</li> <li>Main PCB fault</li> </ul>	<ul style="list-style-type: none"> <li>Check the motor connector terminal connections and contacts.</li> <li>3E1 is displayed because overloading occurs due to too much laundry.</li> <li>If the hall sensor terminal is faulty, replace the hall sensor.</li> <li>Check whether the stator of the motor cover is damaged.</li> <li>Check for coil disconnections due to foreign material.</li> <li>If the PBA control circuit is faulty, replace the PBA.</li> </ul>	<p>► MAIN PCB</p> <p>Check the resistance on the main PCB motor.(Between pins 1 and 3, and 1 and 2 of the three(3) pins)</p> <ul style="list-style-type: none"> <li>Resistance : Approx. 2 to 5MΩ</li> <li>Check the voltage when the power is on.</li> </ul>   <p>► Inverter BLDC Motor</p> <p>Check the resistance on the Motor Power &amp; Hall Sensor</p> <ul style="list-style-type: none"> <li>Motor Power Any Terminal 2pin Check 4.8~4.95Φ</li> <li>Hall Sensor <ul style="list-style-type: none"> <li>① Yellow &amp; Red : 7kΩ↓</li> <li>② Yellow &amp; Blue : 7kΩ↓</li> </ul> </li> </ul>  <p>[Motor Power]</p>  <p>[Hall Sensor]</p>

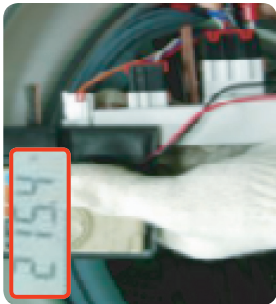
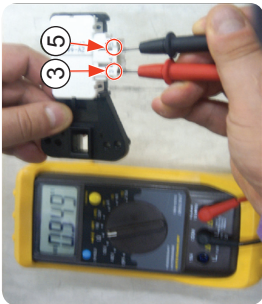




Error Type	Error Mode	Causes	Corrective Actions	Description of Photo				
Water Supply Error	4E 4E1 4E2	<ul style="list-style-type: none"><li>Water supply valve fault</li><li>Main PCB fault</li><li>Freezing in the winter season</li><li>Check the water supply valve whether only cold model or hot and cold model Inorrected connection can occur an error</li></ul>	<ul style="list-style-type: none"><li>If the water supply valve has a wire disconnected, replace it.</li><li>Check whether the water supply valve is clogged with foreign material and whether water is supplied continually.</li><li>Check whether no water is supplied because of freezing in the winter season.</li><li>If the PBA relay operates abnormally, replace the PBA.</li></ul>	<div><div></div><div>[BITRON]</div></div> <div><div></div><div>[SEIL]</div></div> <div><div>1. Check the resistance for the water supply valve.</div><div>- Resistance</div><table><tr><td>BITRON</td><td>3.895 to 4.305 kΩ</td></tr><tr><td>SEIL</td><td>3.645 to 4.455 kΩ</td></tr></table><div>between the terminals of the water supply valve.</div><div>2. Check whether there is foreign material in the water supply valve diaphragm.</div></div>	BITRON	3.895 to 4.305 kΩ	SEIL	3.645 to 4.455 kΩ
BITRON	3.895 to 4.305 kΩ							
SEIL	3.645 to 4.455 kΩ							
Drain Error	5E	<ul style="list-style-type: none"><li>Drain pump fault</li><li>Freezing in the winter season</li><li>Foreign materials in the drain pump</li><li>Main PCB fault</li></ul>	<ul style="list-style-type: none"><li>Check whether the revolutions of the drain pump motor are restrained by foreign material.</li><li>Check the same thing for the natural drain process.</li><li>Check whether the connections are correct and if there is any wires disconnected.</li><li>If the drain pump operates abnormally intermittently when the temperature of the water in the tub is high.</li><li>If the motor revolutions are restrained due to freezing in the winter season, check the method for removing the freezing and remove as directed.</li></ul>	<div></div> <div>▶ DRAIN PUMP</div> <div>Resistance: Approximately 182~222Ω between the Terminals for the Water Supply Valve</div>				
Communication Error	AE	<ul style="list-style-type: none"><li>The signals between the sub and main PBAs are not sensed.</li><li>Incorrect wire connections between the sub and main PBAs.</li></ul>	<ul style="list-style-type: none"><li>Check the wire connections and terminal contacts between the sub and main PBAs.</li><li>Check for disconnected wires.</li><li>Check whether the sub PBA is short-circuited because of moisture.</li><li>If the main PBA's communication circuit is faulty, replace it.</li></ul>	-				

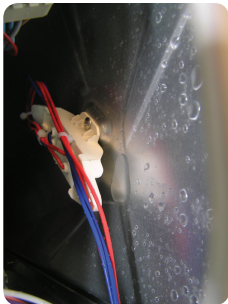



Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Switch Error (Main Relay Error)	bE1 bE2 bE3	<ul style="list-style-type: none"> <li>The Power button is continually pressed.</li> <li>A button other than the Power button is continually pressed.</li> <li>Main PCB relay fault</li> </ul>	<ul style="list-style-type: none"> <li>Check whether either the Power switch or a tact switch is continually pressed.</li> <li>Check whether the service PBA holding screws are fastened too much. If they are fastened too much, loosen them a little.</li> <li>If the main PBA switching IC on/off error has occurred, replace the main PBA.</li> <li>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.</li> </ul>	<p>Check the contact between the control panel buttons and their corresponding tact switch.</p> <ul style="list-style-type: none"> <li>There must be a gap between a control panel button and its corresponding micro switch.</li> <li>Otherwise, an error occurs after approx. 30 seconds has passed.</li> </ul> 
Cooling Error	CE	<ul style="list-style-type: none"> <li>Washing Temperature sensor fault</li> <li>Description of PL hazard prevention</li> </ul>	<ul style="list-style-type: none"> <li>This error occurs if the water temperature is more than 50 °C in draining. Check the temperature.</li> <li>If the water temperature is normal, this error is due to a temperature sensor fault. Replace the washing heater.</li> <li>When replacing the washing heater, take care to prevent water leakage.</li> </ul>	<p>Check the resistance on the Heater. (For faulty features)</p> <p>Check the voltages on the red / blue terminals of the Heater while washing.</p> <ul style="list-style-type: none"> <li>Check 25.1275 ~ 27.7725Ω (at 5°C) 11.4518~12.3938kΩ (at 25°C) on both terminals of the voltage of the Heater.</li> </ul> 



Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Door Error	dE dE1 dE2	<ul style="list-style-type: none"> <li>Door switch fault</li> <li>Main PCB fault</li> </ul>	<ul style="list-style-type: none"> <li>If a dE error occurs, check whether it occurs during the Boil cycle.</li> <li>If it is detected that the door is open, close the door.</li> <li>The 220V is directly connected to the door. Check and repair the power wire connections and insulation state.</li> <li>Check the door switch. Replace if faulty.</li> <li>Check the main PBA door sensing circuit. Replace if faulty.</li> <li>Check the drain Pump wire connection.</li> </ul>	<p>▲ TYPE 1</p> <p>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.)</p>  <p>▲ TYPE 2</p> <p>The resistance of Nos. 3 and 5 of the DOOR LOCK SWITCH must be approximately 1000Ω±50%.</p> 
Heater Error	HE HE1 HE2 HE3	<ul style="list-style-type: none"> <li>Heater fault</li> <li>A fault of the temp sensor located between the heater terminals</li> <li>Steam function fault</li> <li>Freezing in the winter season</li> </ul>	<ul style="list-style-type: none"> <li>Check if the wire is cut or has a short. if it faulty, Replace it. <ul style="list-style-type: none"> <li>- An HE or HE1 error occurs.</li> </ul> </li> <li>Check if the overheating sensor of the dry heater (or air wash heater) is faulty. if it faulty, Replace it. <ul style="list-style-type: none"> <li>- An HE2 error occurs.</li> </ul> </li> <li>Check the steam heater. Replace if faulty. <ul style="list-style-type: none"> <li>- An HE3 error occurs.</li> </ul> </li> </ul>	<p>Air Wash Heater</p>  <p>Wash Heater</p> 



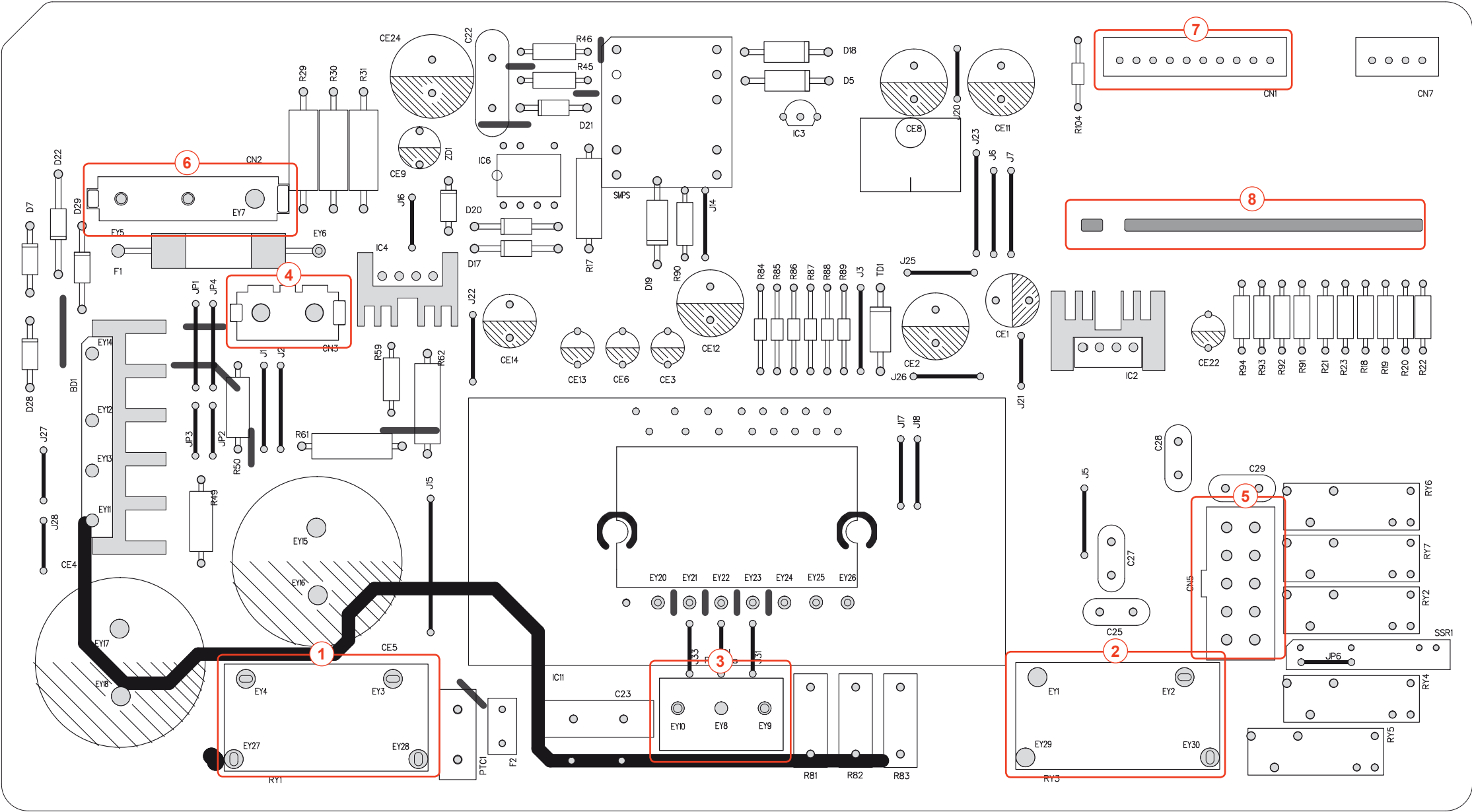
Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Leakage Error	LE LE1	<ul style="list-style-type: none"> <li>Check for any leakage.</li> <li>Foreign material in the DV case</li> <li>Fault of a hose or incorrect part engagement in the product</li> </ul>	<ul style="list-style-type: none"> <li>Check for any leakage on the base, Hose, Valve and Tub connections and take any required action.</li> <li>Check the drain motor operation. Replace if it does not operate normally.</li> </ul>	 <p>Check for any leakage on the base, Hose, Valve and Tub connections.</p>
Overflow Error	OE OF	<ul style="list-style-type: none"> <li>Water level sensor fault</li> <li>Freezing in the winter season</li> </ul>	<ul style="list-style-type: none"> <li>If the water level sensor has a functional error, replace it.</li> <li>Check the hose. This error occurs if it is torn or has a hole.</li> <li>This error occurs if water is frozen in the winter season. Check the method to remove freezing and follow as directed.</li> </ul>	 <p>Check the hose connected to the water level sensor.  <input checked="" type="checkbox"/> Check whether the hose is folded, cut, or damaged.</p>
Temperature Sensor Error	tE1 tE2 tE3	<ul style="list-style-type: none"> <li>Washing temperature sensor fault</li> <li>Dry temperature sensor fault</li> <li>Faulty and incorrect connections of the dry condensing sensor</li> <li>Main PCB fault</li> <li>Freezing in the winter season</li> </ul>	<ul style="list-style-type: none"> <li>Check the connections for the washing heater temperature sensor connector.</li> <li>If the washing heater temperature sensor has a functional error, replace it. <ul style="list-style-type: none"> <li>A tE1 error occurs.</li> </ul> </li> <li>Check the connections for the dry heater temperature sensor connector.</li> <li>If the dry heater temperature sensor has a functional error, replace it. <ul style="list-style-type: none"> <li>A tE2 error occurs.</li> </ul> </li> <li>Check the connections for the duct condensing temperature sensor connector.</li> <li>If the duct condensing temperature sensor has a functional error, replace it. <ul style="list-style-type: none"> <li>A tE3 error occurs.</li> </ul> </li> </ul>	-
Unbalance Error	UE	<ul style="list-style-type: none"> <li>Motor hall sensor fault</li> <li>Caused by the laundry</li> </ul>	<ul style="list-style-type: none"> <li>Check the type of laundry. Check whether they may cause an unbalanced situation. <ul style="list-style-type: none"> <li>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.</li> </ul> </li> </ul>	-



5. PCB DIAGRAM

5-1. MAIN PCB

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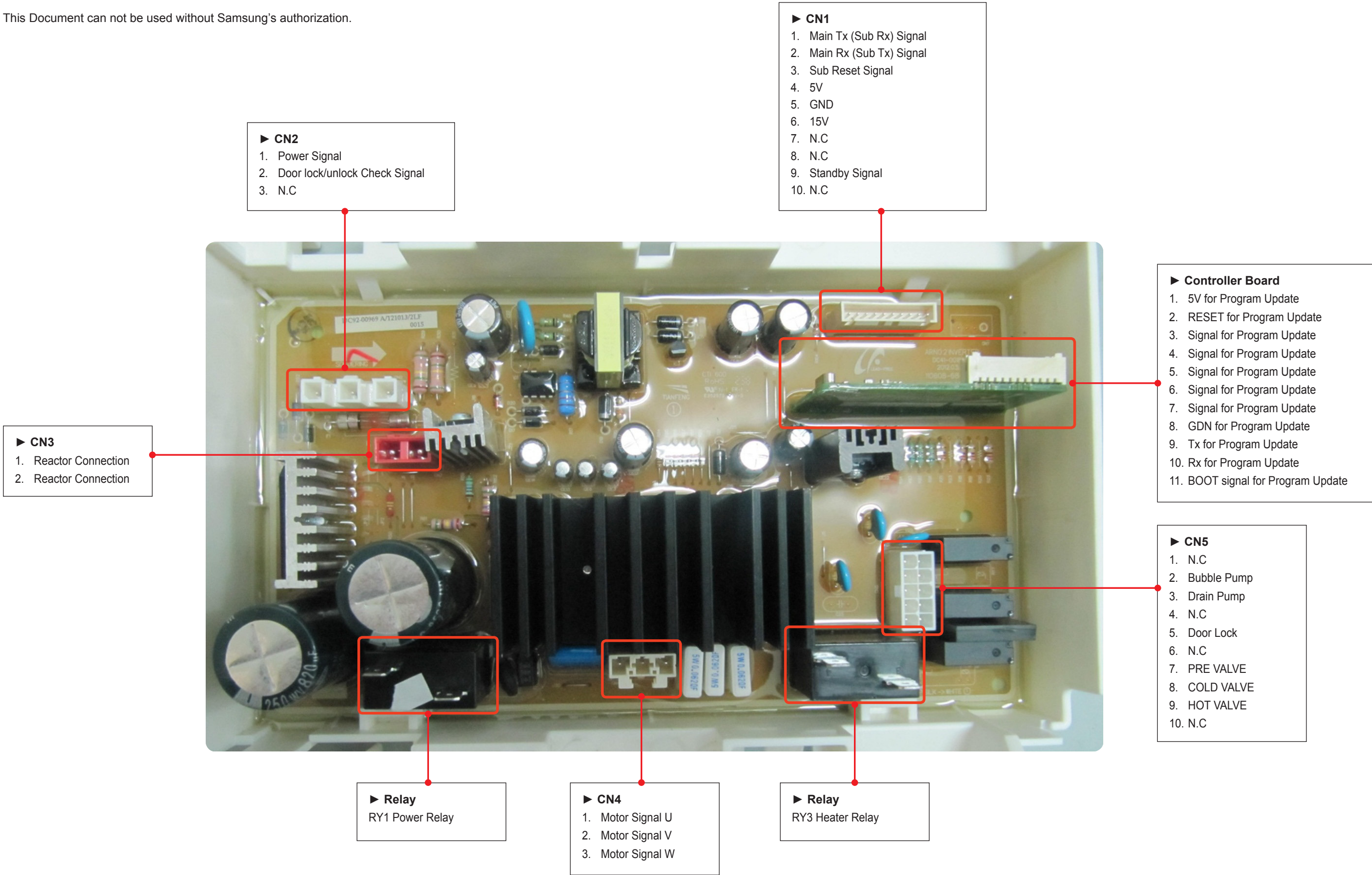


Location	Part No.	Function	Description
1	RY1	POWER SUPPLY RELAY	Receive 230V AC to operate PBA
2	RY3	HEATER RELAY	Heater power output
3	CN4	MOTOR CONTROL TERMINAL	Motor signal output
4	CN3	REACTOR TERMINAL	Connect with the Reactor
5	CN5	DRIVING SECTION TERMINAL	Signal Output for door lock, water valve, drain pump and bubble pump.
6	CN2	POWER SUPPLY AND DOOR CHECK TERMINAL	Receive 230V AC to operate PBA and Door lock check
7	CN1	SUB PBA CONNECTION TERMINAL	Connect with SUB PBA
8	-	CONTROLLER BOARD	Control whole PBA and have Program Update terminal



5-2. CIRCUIT DIAGRAMS OF MAIN PARTS

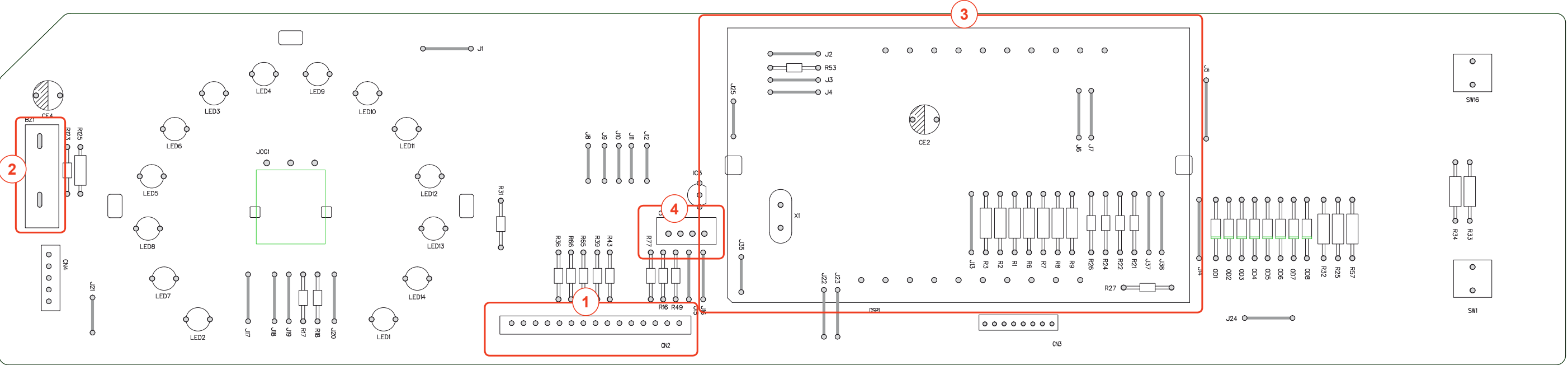
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5-3. F500 BEST

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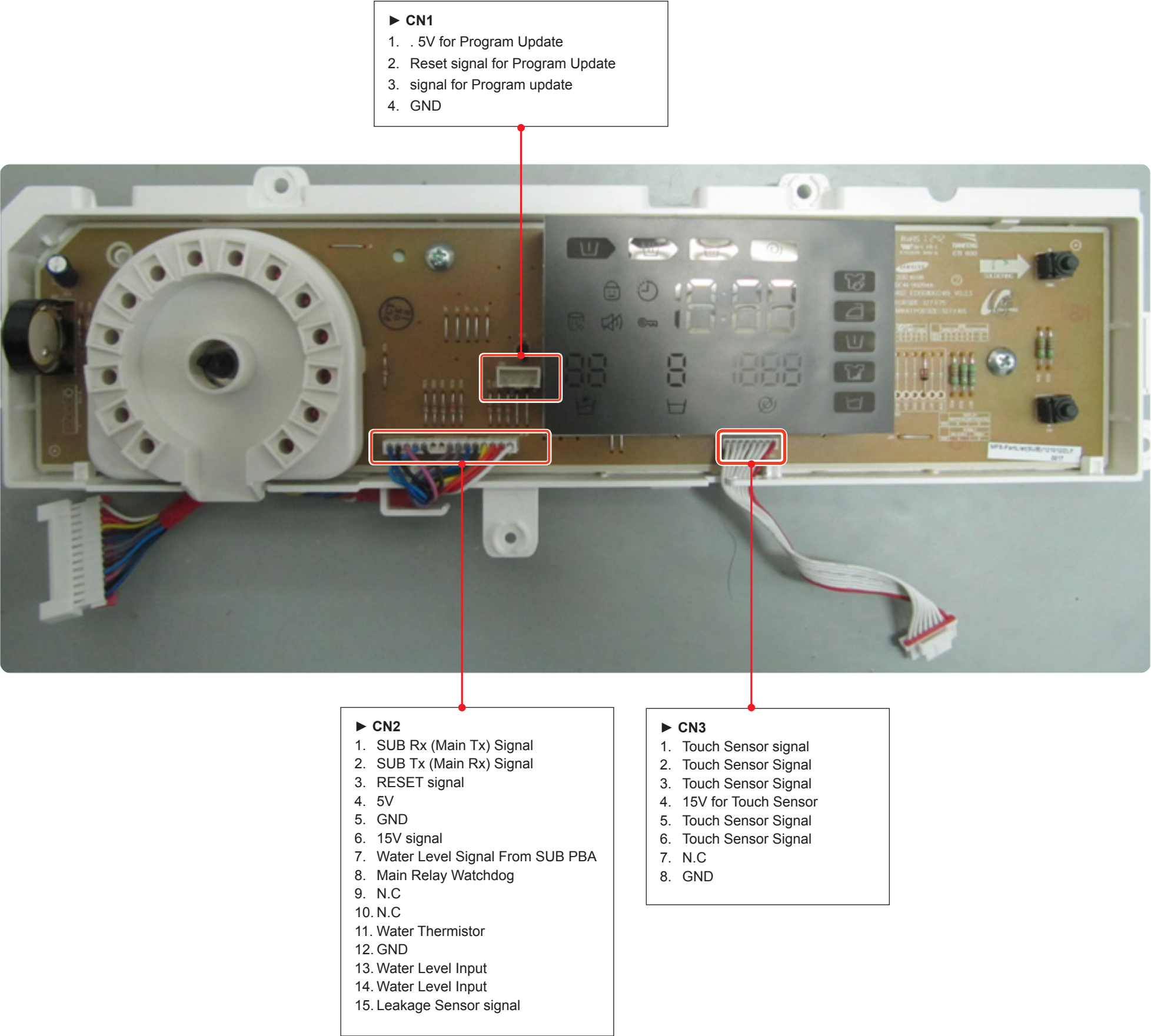


Location	Part No.	Function	Description
1	CN2	COMMUNICATION TERMINAL (MAIN PBA)	Connect with MAIN PCB
2	BZ1	BUZZER	Make sound for key input, or program finish, etc.
3	DSP1	GRAPHIC DISPLAY	Display information about selected Operation Mode.
4	CN1	PROGRAM UPDATE TERMINAL	Terminal for program update



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

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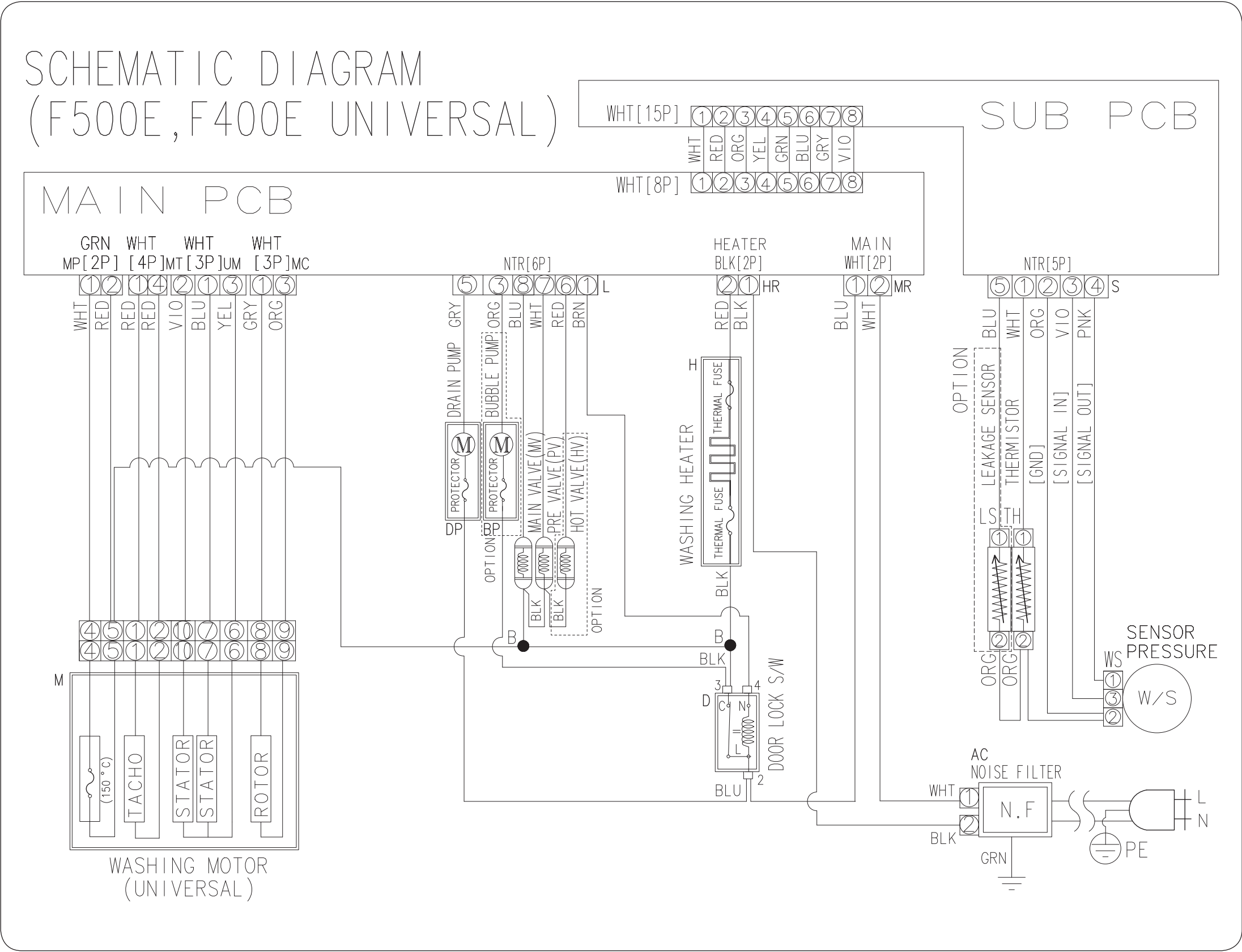
6. WIRING DIAGRAM

6-1. WIRING DIAGRAM

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■ REFERENCE INFORMATION

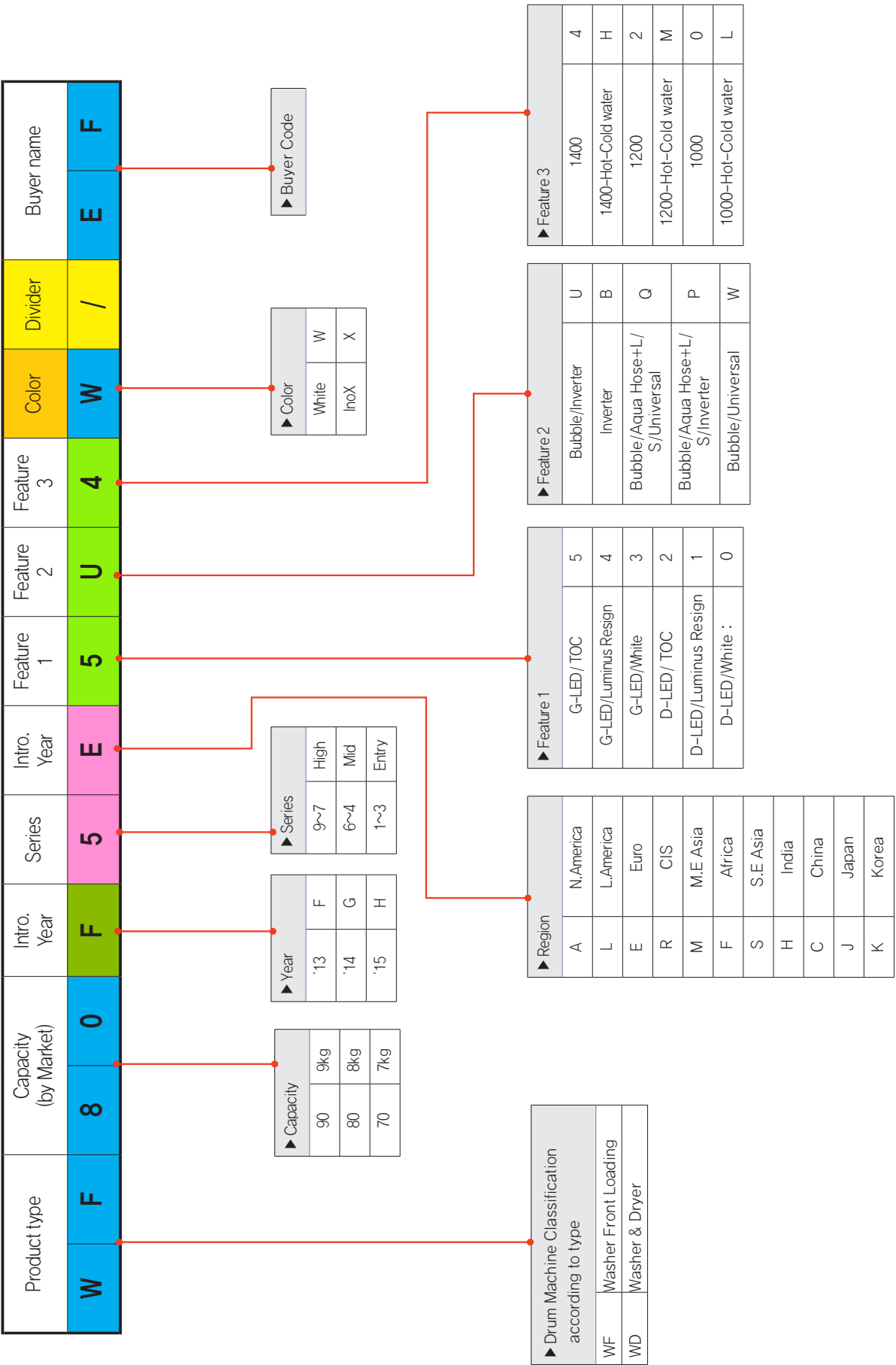
BLK	BLACK
BLU	BLUE
GRN	GREEN
GRY	GRAY
NTR	NATURAL
ORG	ORANGE
PNK	PINK
RED	RED
SKYBLU	SKYBLUE
VIO	VIOLET
WHT	WHITE
YEL	YELLOW





# 7. REFERENCE

## 7-1. F500 PROJECT NAME







## **GSPN (GLOBAL SERVICE PARTNER NETWORK)**

<b>Area</b>	<b>Web Site</b>
Europe, CIS, Mideast & Africa	<a href="http://gspn1.samsungcsportal.com">gspn1.samsungcsportal.com</a>
Asia	<a href="http://gspn2.samsungcsportal.com">gspn2.samsungcsportal.com</a>
North & Latin America	<a href="http://gspn3.samsungcsportal.com">gspn3.samsungcsportal.com</a>
China	<a href="http://china.samsungportal.com">china.samsungportal.com</a>

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