



**Model:**  
**DW7933**



## Fast Track Troubleshooting

**IMPORTANT SAFETY NOTICE – “For Technicians Only”** This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.

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### Support Information:

HELP: 1-888-751-4086 (Tech Sup. – ASC/SSD)

1-866-894-0637 (Tech Sup. - FE/ME)

GSPN: [http://service.samsungportal.com/EP/web/portal/jsp/EP\\_Default1.jsp](http://service.samsungportal.com/EP/web/portal/jsp/EP_Default1.jsp)

PLUS ONE: <http://my.plus1solutions.net/clientPortals/samsung>

### Which Detergent Ingredients Give Best Dishwasher Performance ?

Detergent with a separate rinse additive in the dispenser gives better drying performance.

For tough baked on soils an Enzyme detergent is better at hydration of the food soils.

For staining such as tomato, coffee and tea, a detergent with Chlorine bleach will work on the stains much better than an Enzyme based detergent.

Now that phosphate content in dishwasher detergent has plummeted to 0.5 percent from as high as 8.7 percent, conditioned (soft) water is even more critical. The reduction of phosphates may cause spots and film on dishes that can form when the minerals and food bits combine during the wash. **It is important to test water hardness for wash ability complaints.**

**Water** --Too Soft (“over-sudsing”) can leave deposits on clean dishes.

Too Hard can cause spotting/staining and poor wash ability

**Dishes** -- Too Dirty (garbage disposal), Too Clean (over-sudsing) Thoughts? (Drain Suds Lock)

**Detergent** -- Chlorine, Enzyme, All-in-one & Tablets (over-sudsing) Thoughts? (Suds Lock)

**Rinse Additive** -- Liquid in dispenser, All-in-one Thoughts?

### Enter Service Mode:

**HEAVY / QUICK + and POWER** hold for 2 sec  
( check next page for more details )

### Cycle chart

| Cycle             | Pre-wash1 | Pre-wash2 | Main wash                   | Rinse 1 | Rinse2 | Rinse3 | Last Rinse [Sanitize]              | Dry (min.)  | Water [gal(ℓ)]          | Time (min.) |
|-------------------|-----------|-----------|-----------------------------|---------|--------|--------|------------------------------------|-------------|-------------------------|-------------|
| <b>Normal</b>     | ●         | Flex      | 120 ~ 138 °F<br>(49 ~59 °C) | Flex    | ●      | x      | 136 °F (58 °C)<br>[162 °F (72 °C)] | 30          | 3.6~7.2<br>(14.8~27.2)  | 110~132     |
| <b>Heavy</b>      | ●         | ●         | 140 °F (60 °C)              | ●       | ●      | ●      | 158 °F (70 °C)<br>[162 °F (72 °C)] | 40          | 9.0 (34.0)              | 152         |
| <b>Quick +</b>    | ●         | x         | 140 °F (60 °C)              | x       | ●      | x      | 140 °F (60 °C)<br>[162 °F (72 °C)] | 15<br>(+15) | 5.2 (19.6)              | 59          |
| <b>Smart Auto</b> | ●         | Flex      | 122 °F~138 °F<br>(50~59 °C) | Flex    | ●      | x      | 136 °F (58 °C)<br>[162 °F (72 °C)] | 30          | 5.2~7.2<br>(19.6~27.2 ) | 100~149     |

- The numbers in parentheses in the Last Rinse column represent the temperature when you select Sanitize.
- When you select the Smart Auto or Normal cycle, you can eliminate the Flex(flexible) steps depending on the soil level of the dishes.
- The wash time varies depending on the steps or options you add, and on the pressure and temperature of the supplied water.
- If “Rinse Refill” lamp lights during a cycle, the dishwasher adds 30 more minutes to the Drying cycle automatically after the Clean light illuminates.

### Thermistor

| Resistance (kΩ) | Temp. (°F) | Resistance (kΩ) | Temp. (°F) |
|-----------------|------------|-----------------|------------|
| 125.78          | 41         | 26.065          | 104        |
| 98.323          | 50         | 21.385          | 113        |
| 77.454          | 59         | 17.599          | 122        |
| 61.465          | 68         | 14.579          | 131        |
| 49.12           | 77         | 12.14           | 140        |
| 39.517          | 86         | 10.159          | 149        |
| 31.996          | 95         | 8.542           | 158        |

### Components

| Component        | Voltage | Ω       |
|------------------|---------|---------|
| Water Valve      | 120vac  | 1.2 KΩ  |
| Drain Pump       | 120vac  | 37Ω-42Ω |
| Heater           | 120vac  | 13Ω     |
| Fan Mtr          | 120vac  | 2.6kΩ   |
| Disp Wax Mtr     | 120vac  | 2.3KΩ   |
| Thermal Actuator |         | 1.45kΩ  |
| Circulation Mtr  | 120vac  | 15Ω/21Ω |

## Diagnostics

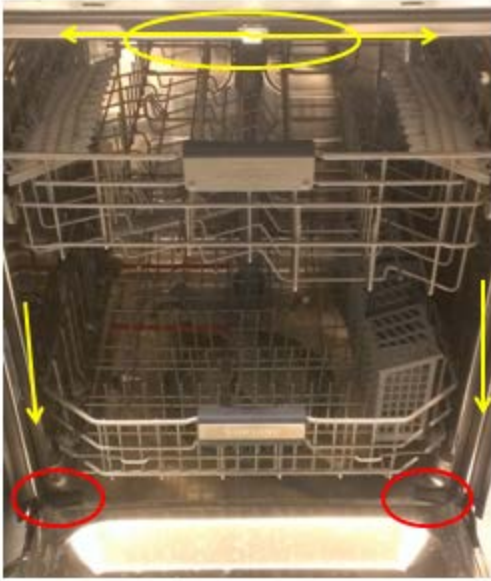
| CODE SYMBOL                                                                                                                                                                                                                                                                                                                       | Meaning                             | Occurring condition                                                                                                                                                                                                                                             | Expected condition                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | Temperature Sensor error            | When 0.2V or below, or 4.5V or above is maintained for over 3 seconds.                                                                                                                                                                                          | Thermistor terminal is not connected.<br>- Possible defect : Thermistor, Main PBA.                                                                        |
|     | Heater error                        | When the temperature change is 4℃ or less within the first 10 minutes after the heating starts.                                                                                                                                                                 | Heater terminal is not connected.<br>- Possible defect : Main Wire-Harness, Heater, Main PBA.                                                             |
|     | High temperature Heating error      | When the temperature of the Thermistor is 80℃ or above for more than 3 seconds during operation.                                                                                                                                                                | Water temperature is 80℃ or above.<br>- Possible defect : Thermistor, Main PBA.                                                                           |
|     | Low-level water error               | 1. During water supplying : After supplying is finished, High-level sensor is off continuous.<br>2. During operating the wash : Low-level sensor is off.                                                                                                        | Water Level Sensor terminal is not connected.<br>- Possible defect : Assy case sensor, Water Level Sensor, Main PBA.                                      |
|     | Water supply error                  | 1. When the pulse of 100 or less is detected even 1 minute after the water supply.<br>2. When flow meter pulse is 5 or less 5 seconds after the water supply starts.<br>3. When the water supply is not finished until 5 minutes after the water supply starts. | Alien particles within water supply valve.<br>Water supply valve terminal not connected.<br>- Possible defect : Main PBA, Water supply valve, Flow Meter. |
|     | High temperature Water supply error | When 80℃ or above is detected during water supply.                                                                                                                                                                                                              | Water supply temperature is 80℃ or above.<br>- Possible defect : Thermistor, Main PBA.                                                                    |
|     | Drain error                         | When OFF status of Low Level S/W is not detected within 3 minutes during the drain.                                                                                                                                                                             | Alien particles clogging in drain hose.<br>Drain pump terminal is not connected.<br>- Possible defect : Drain pump, Water Level Sensor, Main PBA.         |
|     | Over-level water error              | When overflow detection AD data is 4.0V or below for 3 seconds.<br>(When leakage sensor detects 4.0V or below for 1 seconds during water supply)                                                                                                                | Alien particles within water supply valve.<br>Case Sensor part breakdown.<br>- Possible defect : Flow Meter, Main PBA, Water supply valve.                |
|     | Leakage error                       | When leakage sensor detects 4.5V or below for 1 seconds.                                                                                                                                                                                                        | - Possible defect : Each hose connection , Sump and Tub assembly, Drain Pump assembly, Main PBA                                                           |
|     | Button error                        | When the button is pressed continuously for over 30 seconds.                                                                                                                                                                                                    | - Possible defect : Sub PBA in control panel, Main PBA.                                                                                                   |
| -                                                                                                                                                                                                                                                                                                                                 | Door open warning                   | When door is open in washing period.                                                                                                                                                                                                                            | Door is not close properly in test mode only.<br>- Possible defect : Door lock switch, Main PBA                                                           |

## Service Inspection Mode

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

| Mode | Display                                   | Related Parts                                                                                                                                        | Symptoms                                                                                | Note                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.1 | 'Smart Auto' LED                          | <ul style="list-style-type: none"> <li>Drain pump</li> <li>Inlet Valve</li> <li>Flow Meter</li> <li>Water-level sensor</li> <li>Turbidity</li> </ul> | Door open warning<br><br>Water supply Error<br>Low level water Error<br>Turbidity Error | If Door is open, Door open warning ('Quick plus + Smart Auto' LED) will blink.<br>If low level sensor is not detected, Drain is executed. Water supply will be executed when low level sensor is Off.<br>If water is not fully supplied(sensing on flow-meter), the Water Supply Error ('Smart Auto' LED) will blink.<br>When high level sensor is not detected after water supply was done, Low-level water error ('Normal + Heavy + Smart auto' LED) will blink.<br>When Turbidity problem is occurred after water supply was done, Turbidity Error ('Normal + Heavy' LED) will blink.<br>If all functions in this mode are completed, Wash LED will blink.                                                                                                                                                                                |
| No.2 | 'Quick plus' LED                          | <ul style="list-style-type: none"> <li>Circulation Motor</li> </ul>                                                                                  | A nozzle does not inject water.                                                         | If Low Level sensor is detected before Circulation Motor is operating, ('Quick plus + Sanitize' LED) will blink. When water is filled enough, Circulation Motor -2(190W) will be operated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| No.3 | 'Quick plus' + 'Smart Auto' LED           | <ul style="list-style-type: none"> <li>Circulation Motor</li> </ul>                                                                                  | A nozzle does not inject water.                                                         | If Low Level sensor is detected before Circulation Motor is operating, ('Quick plus + Smart auto + Sanitize' LED) will blink. When water is filled enough, Circulation Motor- 1(150W) will be operated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| No.4 | 'Heavy' LED                               | <ul style="list-style-type: none"> <li>Circulation Motor</li> <li>Heater</li> <li>Thermistor</li> <li>Dispenser</li> </ul>                           | Heater Error                                                                            | If Low Level sensor is detected before Circulation Motor is operating, ('Heavy + Sanitize' LED) will blink.<br>When water is filled enough, Circulation Motor 1(150W) and Heater will be operated.<br>When the temperature meet 60℃ or above, the heater is turned off and the 'Wash' LED will blink.<br>If Heater or Thermistor have problems, the Heater Error ('Heavy + Quick plus' LED) will blink.<br>Dispenser will operate during 130 seconds only one time.                                                                                                                                                                                                                                                                                                                                                                          |
| No.5 | 'Heavy' + 'Quick plus' + 'Smart Auto' LED | <ul style="list-style-type: none"> <li>Dry Fan Motor</li> <li>Dispenser</li> </ul>                                                                   | The Dry Fan motor does not work.                                                        | Operate the Dry Fan Motor and check whether Rinse aid is filled or not.<br>If there is not rinse aid in Dispenser, Low Rinse lamp is ON.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| No.6 | 'Normal' LED                              | <ul style="list-style-type: none"> <li>Inlet valve</li> <li>Overflow Sensor</li> </ul>                                                               | Over level water Error                                                                  | Water is supplied until Over-level water error ('Heavy + Smart Auto' LED) is blinked.<br>If Over-level water error occurs, overflow sensor is OK.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| No.7 | 'Normal' + 'Smart Auto' LED               | <ul style="list-style-type: none"> <li>Drain Pump</li> <li>Water-level sensor</li> </ul>                                                             | Drain Error                                                                             | Drain pump will drain until low level sensor is detected.<br>If Low level sensor is not detected after 60 seconds, Drain Error ('Quick plus' LED) will blink.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| No.8 | 'Normal' + 'Quick +' + 'Smart Auto' LED   | <ul style="list-style-type: none"> <li>Inlet Valve</li> <li>Circulation Motor</li> <li>Dry Fan Motor</li> <li>Drain Pump</li> <li>Heater</li> </ul>  |                                                                                         | Operate each operating part when the key is pressed. (See the below)<br>When the 'Smart Auto' Key is pressed Water supply is On('Smart Auto' LED On) and pressed again it is Off ('Smart Auto' LED Off)<br>When 'Heavy' Key is pressed each time, it works the Circulation Motor-1 is On ('Heavy' LED On) → Off ('Heavy' LED Off) → Circulation Motor-2 is On ('Heavy' LED On) → Off ('Heavy' LED Off) → Dry Fan Motor is On ('Heavy' LED On) → Off ('Heavy' LED Off), Drain Pump is On ('Heavy' LED On) → Off ('Heavy' LED Off).<br>When 'Quick plus' Key is pressed, it works Heater On ('Quick plus' LED On during 2 seconds) and Off automatically.<br>When a different key is pressed during individual operation of the operating part, present operating part is stopped and the applicable operation for the pressed key will start. |

# Replacing the door seal



When replacing the door seal its important to note that both the left / right sides should be evenly spaced and should stick out about 1 inch from each side.

The best way to install the seal would be to start from the middle and work your way down, making sure each side is even.

Never cut the seal

## Dry System



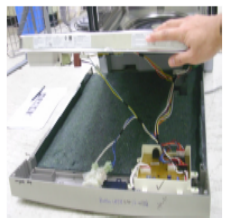
1. Open the door completely.  
Remove the twelve (12) screws holding the tub front, frame front, and panel control in place.

### ⚠ Caution

Before removing the screws, place a cushioned mat on the floor to prevent the handle and frame front from being scratched. After removing them, make sure to hold the tub front with your hand while you are working as the tub may close and harm you.

### ⚠ Caution

Do not place the removed screws on the tub front. They may fall into the sump assy.



2. Remove the fan motor & thermal actuator connectors.

Main PCB is located behind bottom access panel

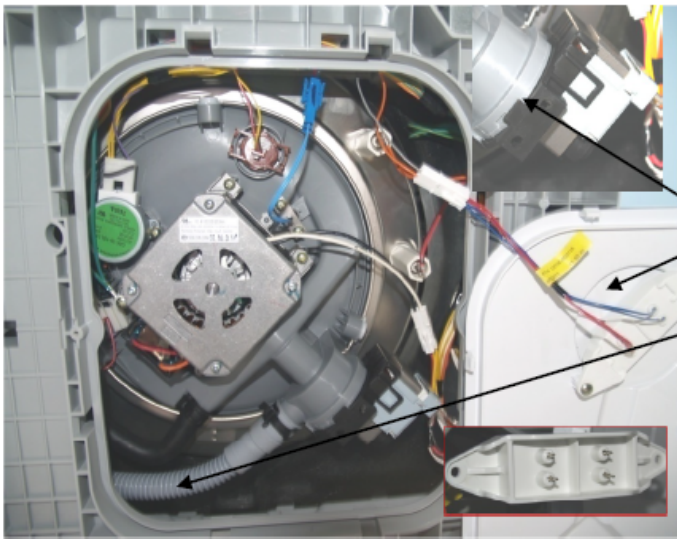


Single rear leg is adjustable from front. Retract to remove D/W



## Sump & Heater





## Leaking Code

**Moisture** creates resistance between the pins. **ALWAYS** clean the area below the pins after troubleshooting.

Check Pump Ass'y for proper twist lock.

Condensation may form on the tray from uninsulated outside walls or large hole in the floor to a cold basement.

Check Drain Hose for cut or small hole.

Check all components mounted to the sump for any leakage.

## Detergent Door Not Opening

1. Never overfill the dispenser compartment with powder or liquid, only go below or up to fill line.
2. If there is residue around the dispenser door area. Previously undispensed, partially dispensed, or door stuck close issue) clean it with mild soap & water. The residue can foul the mating latch.
3. If the customer uses "tablets" or some self contained type of soap tab, make sure it is fully seated and the door does not 'sandwich' it shut.
4. Make sure that in the rack nearest to the dispenser door when the door is shut, is not obstructing the opening of the dispenser with some protruding utensil.



Vent seal actuated by wax motor



## Testing the detergent door and dispenser

1. Disconnect the wires from dispenser. **wax motor** & close detergent door.
2. Put the unit into service mode and check for 120 VAC to the wax motor
3. In approximately 40 seconds the **wax motor** will open the door.
4. After the dispenser opens, the rinse aid will be activated.
5. Close detergent door to repeat test



Upper Nozzle : Remove it by rotating the holder. (counterclockwise)



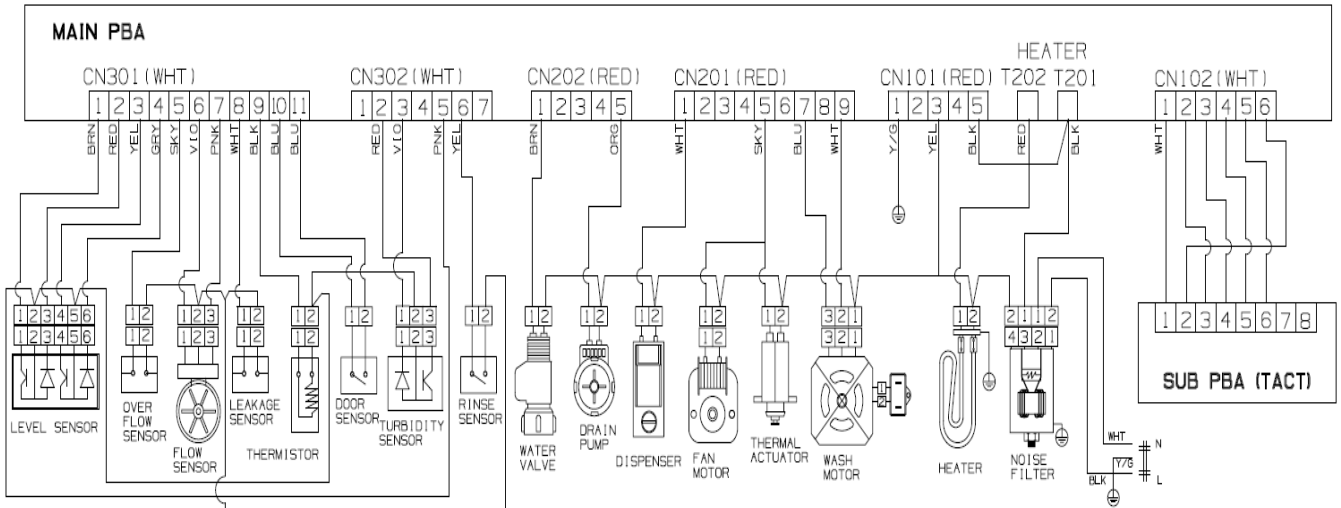
Middle Nozzle : Remove it by rotating the holder. (counterclockwise)



Lower Nozzle : Pull it out carefully from the Assy sump.

# SCHEMATIC DIAGRAM

MODEL : DW7933 SERIES



- ▶ CN101
  - 1) GND
  - 2) NC
  - 3) NEUTRAL
  - 4) NC
  - 5) LIVE
- ▶ CN301
  - 1) HIGH-R
  - 2) HIGH/LOW-T
  - 3) LOW-R
  - 4) HIGH/LOW-T
  - 5) OVER FLOW
  - 6) COLD COUNT
  - 7) 5V
  - 8) LEAKAGE
  - 9) SUMP THERMISTOR
  - 10) 12V
  - 11) DOOR-SENSE
- ▶ CN302
  - 1) HALF LOAD SENSE
  - 2) TURBIDITY-R
  - 3) TURBIDITY-T
  - 4) GND
  - 5) 5V
  - 6) RINSE-SENSE
  - 7) OPTION-SENSE
- ▶ CN102
  - 1) 5V
  - 2) 12V
  - 3) RXD
  - 4) TXD
  - 5) WAKE-UP
  - 6) GND
- ▶ CN501
  - 1) GND
  - 2) MODE
  - 3) 5V
  - 4) OCKIO
  - 5) OCKCK
- ▶ CN202
  - 1) COLD-VALVE
  - 2) NC
  - 3) OPTION
  - 4) NC
  - 5) DRAIN-PUMP
- ▶ CN201
  - 1) DISPENSER
  - 2) NC
  - 3) HALF LOAD (option)
  - 4) NC
  - 5) Dry Fan MOTOR
  - 6) NC
  - 7) WASH MOTOR -1
  - 8) NC
  - 9) WASH MOTOR-2
- ▶ T201
  - LIVE
- ▶ T202
  - HEATER