



Fast Track Trouble shooting

Model:

WA422****



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://gspn3.samsungcsportal.com/main.jsp>

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

Bulletins:

ASC20131127001

WARNING!!!

ENTERING QUICK TEST MODE BEFORE ENTERING SERVICE MODE WILL DELETE STORED ERROR CODES

QUICK TEST MODE – PRESS:

SPIN

SOIL
LEVEL

POWER

Together - 3 Seconds

WITH POWER OFF



SERVICE MODE – PRESS:

DELAY START

EXTRA RINSE

Together - 3 Seconds

WITH POWER ON (& MACHINE IN USE)

QUICK TEST MODE

All LED's light up Beep Sound when entered.
Displays software version for a sec and Clear EEprom.
When the version is displayed, turn the Jog-Dial so that the version disappears.

Press the following keys to test the various components.

Temp Key	Water Valve Test
Spin Key	Drain Pump Test
Soil Key	Door Lock/Unlock Test
tSt or SPn	On Display Motor Test (Turn Jog Dial)

SERVICE MODE

The washer must be on to go into the Service Mode. The motor speed will be displayed when started. To exit Service Mode, press Delay Start + Extra Rinse Keys for 3 second again, or Power Key. If no key is pressed during service mode after 5 minutes, the machine will return to normal user mode.

Refer to page 2 for a list of checks available

SERVICE MODE

QUICK SPIN TEST - Press the DELAY START + PRE SOAK Keys for 3 seconds.
Cannot enter once the washing cycle has started (will not spin with water in tub).

Unit starts spinning and reaches to its maximum RPM then speed drops immediately.
To hold speed press the START PAUSE (will hold for 10 minutes then revert back to QUICK SPIN TEST MODE.
Exit test same way as entered.

CAUTION: OUT OF BALANCE DETECTION IS BYPASSED

CYCLE COUNT CHECK - Press the PRE SOAK Key during Service Mode.

When the SIGNAL key is pressed, the total number of washings will light up and a signal LED will glow.
The maximum number of cycles will be 9999 before recounts. Exit test same way as entered

SOFTWARE VERSION CHECK - Press the SOIL LEVEL key during Service Mode

Example: AE49 (AE is Micom code, 49 is it’s software version). Exit test same way as entered

FAST TIME DOWN - Press the TEMP key during Service Mode

To forward the program to the next cycle stage.

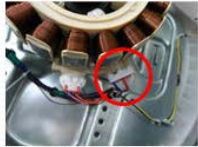
BOARD INPUT TEST - Press the EXTRA RINSE key during Service Mode

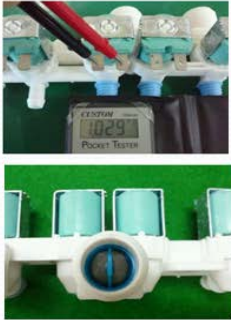
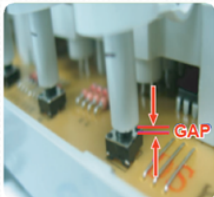
To display specific input data.
Turn the Jog-Dial to NORMAL WASH. Water Temperature will be displayed in Celsius.
Turn the Jog-Dial to PERMANENT PRESS . Water Temperature will be displayed in Fahrenheit.
Turn the Jog-Dial to DELICATES/HAND WASH. The door status will be displayed (OP if open, CL if closed).
Turn the Jog-Dial to QUICK WASH. The Door Lock Switch status will be displayed (UL if unlocked, LO if locked).
Turn the Jog-Dial to PURE CYCLE The Water Frequency will be displayed.

DIAGNOSTIC CODE CHECK - Press the SPIN key during Service Mode

To display stored diagnostic codes. To cycle through the diagnostic codes (d1,d2,d3~d7), turn the Jog Dial in one direction (either Clockwise or Counterclockwise). It will then show the diagnostic codes from the latest (d1).
When turning it in the opposite direction, it shows the diagnostic codes in the reverse order.

MEMS Sensor Error	8E 8E1	If the output from the MEMs sensor is over 4.5V or under 0.5V and it continues for 5 seconds, this error occurs.	MemS sensor will detect an error if too much vibration, this is normal. In no vibration and issue remains replace the Main PCB.
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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. 1. Check it after the water level sensor and the connector are connected. Checking Part : Blue Color Wire Oragne Color Wire 2. Frequency: Approx. 26.4 KHz without water (Min 25.9KHz) 
Washing Motor Error and Hall Sensor Error	3E	- 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. 3E 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.	► Check the motor Winding Coil - Plug out the connector and read resistances at any two of the three terminals on Motor : Should be 19.3Ω (at 25oC)  ► Check the motor Hall Sensor - Check the resistance on the main PCB motor (Between pins 2 and 4, 3 and 4 of the four (4) pins) - Resistance : Approx. 2 to 4 MΩ - Check the voltage when the power is on. CN1 1-5V-1 2-Hall-A 3-Hall-B 4-GND 5-Clutch Hall IC 
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.	-

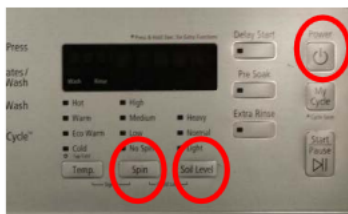
Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Water Supply Error	nF	- Water supply value fault - Main PCB fault - Freezing in the winter season	- If the water supply valve has a wire disconnected, replace it. - Check whether the water supply valve is clogged with foreign material 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 : 0.9KΩ to 1.1KΩ between the terminals of the Water Supply Valve. 2. Check whether there is foreign material in the Water supply valve filter. 
Drain Error	nd	- Freezing in the winter season - Foreign materials in the drain pump - Poor physical connection - Drain pump fault - Main PCB fault	- If the drain pump revolutions are restrained due to freezing in the winter season, check the method to remove the freezing and remove as directed. - Check whether the revolutions of the drain pump motor are restrained by foreign material, and remove as directed. - Check the wire connectors on Main PCB and Drain Pump ASSY. The connector or wire may have poor physical connection. - Check the drain pump resistance.	Check the drain pump resistance. (Resistance : 13.5 ~ 16.5Ω) 
Switch Error (Main Relay Error)	E2	- The Power button is continually pressed. - A button other than the Power button is continually pressed.	- Check whether either the Power switch or a tact switch is continually pressed. - Check whether the service PBA holding screws are fastened too tight. If they are fastened too tight, loosen them a little. - If the main PBA switching IC on/off error has occurred, replace the main PBA. - The "E2" 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. 

Error Type	Error Mode	Causes	Corrective Actions	Description of Photo
Door Error	dS FL LO	- Door-Lock SW fault - Reed SW fault - Main PCB fault	- Check the Door-Lock SW terminal connections and contacts. - Bring the probe of tester into contact with two terminals of Door-Lock SW.[DS Error] In state of Door Close, Check Reed SW Resistance.[FL Error] In state of Door Unlock, Check Motor Resistance. And In state of Door Lock, Check Door Lock Contact Resistance.[LO Error] In state of Door Unlock, Check Motor Resistance and Door Unlock Contact Resistance. - If Resistance is satisfied with Spec, Replace the PBA.	 - Check the resistance for Reed SW (Checking Part : White-Green Wire) - Resistance: Approx 0.2Ω between the terminals of Reed SW.  - Check the resistance for Motor (Checking Part : Black-Brown Wire) - Resistance: 33Ω to 46Ω between the terminals of Motor.  - Check the resistance for Lock/Unlock Contact (Checking Part : Lock White-Red Wire Unlock White-Blue Wire) - Resistance: Resistance: Approx 0.2Ω between the terminals of Contact. ☒ Check the Door Lock/Unlock state. Lock Unlock
Water Leakage Error	LE	- 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. - During natural draining, this error occurs when the drain bellows are clogged with foreign material. Remove the foreign material. - Check the drain motor operation. Replace if it does not operate normally.	
Overflow Error	OE	- 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. Use hair dryer to defrost hose. Consider relocating the unit to warmer location.	
Temperature Sensor Error	tE	- Washing temperature sensor fault - Faulty and incorrect connections of sensor - Main PCB Fault - Freezing in the winter season	- Check the connections of the temperature sensor. - If the temperature sensor has a functional error, replace it.	Check the thermistor resistance (Resistance at 20~30°C: 66.187~36.941 kΩ)  
Unbalance Error	dc	- Motor hall sensor fault - Caused by the laundry contents	- Check the type of laundry. Check whether it may cause an unbalanced situation. - Educate the consumer in this case is to press pause reposition the load or remove a few items. Press start to continue and complete the wash cycle.	-

Testing the Water Level Sensor & Water Valves on the Hudson Model washer (WA400, 422, 456)

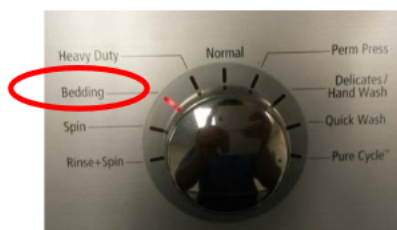
The best way of checking the water valves and water level sensor on the Hudson Washers is to put the washer machine into the **quick test mode** to activate each component.

Step1. With the power off, hold the **Spin + Soil Level + Power** to enter quick test mode. If done correctly all LED's will light up, let go of all the buttons at this point. The Version number will be displayed.



Step2. Turn the Jog dial so the version number disappears

Step3. Put the setting into Bedding a 2 digit number will be displayed as shown in the image below. Note that 60 means 2600HZ , only the middle digits are displayed on Hudson models.



Step4. Press the **Temp Key** to turn on the water valves. After turning the water valves on the displayed number should drop if water is added. With no water the number will be between 55 – 60. If you leave the valves running the number will stop around 40 when the tub is full of water. After the water is shut off (including any dripping), the number should eventually stop moving..



If water is being added to the tub and the displayed number does not move, the water pressure hose might be blocked or disconnected.

If the digits continue to fluctuate and do not stop after the water has stopped filling the tub, the water pressure hose might be leaking (Replace hose)

If the Water Level Sensor is defective or the connection is bad a 1E error will be displayed at startup.

- **CN4**
1. Bleach Valve(WA456*)
 2. Rinse Valve
 3. Hot Valve
 4. Cold Valve
 5. Pump
 6. N.C
 7. Mist Valve
 8. Clutch

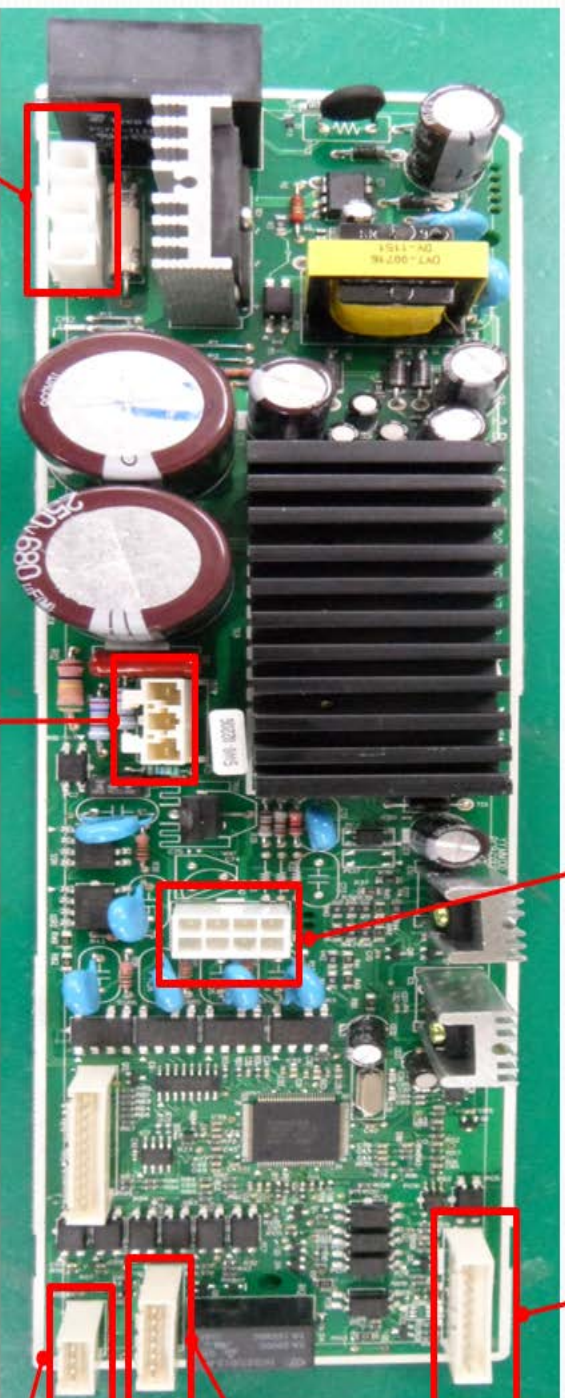
- **CN8**
1. Water Level
 2. Standby
 3. TX
 4. RX
 5. Sub Reset
 6. 5V
 7. GND
 8. 12V
 9. Power On

- **CN8**
1. DoorLock Motor
 2. DoorLock Motor
 3. GND
 4. Unlock Contact
 5. Lock Contact
 6. Reed Switch
 7. 5V_1

- **CN9**
1. 5V
 2. Hall_A
 3. Hall_B
 4. GND

- **CN1**
1. AC1
 2. AC2
 3. AC2-1

- **CN3**
1. Motor_U
 2. Motor_V
 3. Motor_W



Hall Sensor Check

Check Voltage at Pin #4 and #3 of CN9
Tester Check = DC0.6V
Check Voltage at Pin #4 and #2 of CN9
Tester Check = DC0.6V

Motor Check

Resistance at Pin #1 of CN3 and GND
= 226k Ω
Resistance at Pin #2 of CN3 and GND
= 226k Ω
Resistance at Pin #3 of CN3 and GND
= 226k Ω

Drain Motor_Pump Check

Check Voltage at Pin #3 of CN1 and Pin #5 of CN4
When Drain Pump operates = AC 120V

Water Valves/ Check

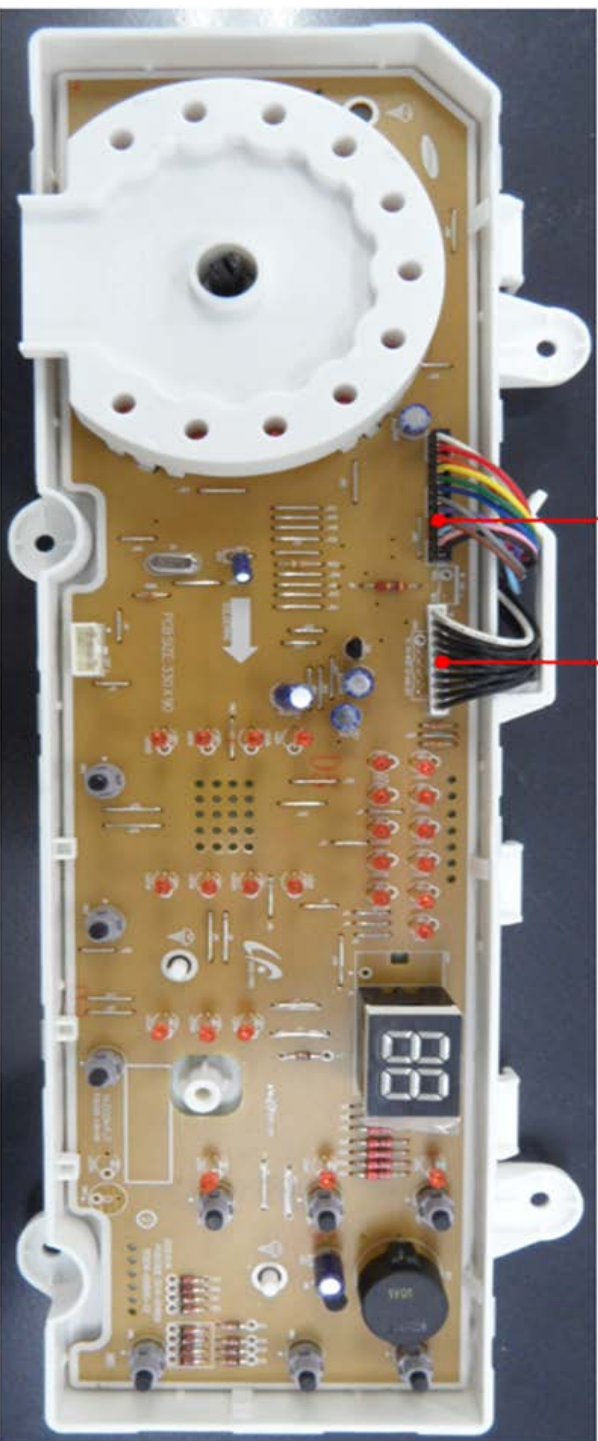
Check Voltage at Pin #3 of CN1 and Pin #1,2,3,4 of CN4
When Valves operates = AC 120V

Clutch-Motor

Check Voltage at Pin #3 of CN1 and Pin #8 of CN4
When Valves operates = AC 120V

Door Lock Check

Check Voltage at Pin #3 and #5 of CN8
When Door Lock = DC 6.5V



- CN8
1. NC
 2. NC
 3. NC
 4. NC
 5. NC
 6. NC
 7. NC
 8. GND
 9. Water_Therm
 10. Reed_1
 11. Water_Level_Sensor
 12. Water_Level_Sensor

- CN9
1. EMG
 2. WL_MAIN
 3. STANDBY
 4. TX
 5. RX
 6. RESET
 7. 5V
 8. GND
 8. 12V
 10. POWER ON

DC Voltage Check

Check Voltage at Pin #1 of CN1 and #2 of CN1

Tester Check = DC 12V

Check Voltage at Pin #3 of CN1 and #2 of CN1

Tester Check = DC 3.3V

Check Voltage at Pin #4 of CN1 and #2 of CN1

Tester Check = DC 3.3V

SCHEMATIC DIAGRAM

