

**DIAGNOSTIC SYSTEM – FFL(E/G)3911QW and FFL(E/G)4033QW (Washer)**

This information is intended for Qualified Technicians Only.

CAUTION: DISCONNECT ELECTRICAL POWER BEFORE SERVICING**1 Diagnostic Mode**

This mode is used in several conditions:

- In factory assembly line to perform a manual test of the machine functionality (final assembly test).
- By service to check for faults and repair the machine.
- In the labs to check the machine functions.

2 Entering Diagnostic Mode

1. Set the cycle selector to pre-soak on both models (near 9 o'clock position) and the temperature knob at the far left CCW position (hot for both models). The other knobs and switches do not matter.
2. If the unit is not plugged in, plug in and skip to step 6 or do a full control reset as in steps 3 to 5.
3. **Hold the selector knob for 6 to 8 seconds and within 5 seconds complete steps 4 and 5.**
4. **Move the temperature knob to the far right position CW and push the selector knob momentarily (<1 second)**
5. **The unit will indicate a full control reset by beeping 3 times, then move the temperature knob to the far left CCW position (hot for both models)**
6. Within 5 seconds complete the following to enter diagnostic mode.
7. Move the temperature knob to the far right CW position and push the selector knob momentarily (<1 second)
8. Move the temperature selector to the far left CCW and push the selector knob momentarily (<1 second)
9. There will be a long beep signalling the entry into diagnostic / line test mode, if not start over with an effort to perform the series faster or with more precision.

3 Diagnostic Program Definition

1. Cycle Selector knob in the Normal position 12 o'clock is the zero position where the switches can be checked.
2. Turn the Cycle Selector knob (1) click clockwise from Normal position.
 - The lid lock will activate and the hot water solenoid will activate and hot water shall enter the tub.
 - Note: Clutch actuator starts rotating to find the "disengaged" position, when there it stops.
3. Turn the Cycle Selector knob (2) clicks clockwise from Normal position.
 - The cold water solenoid will activate and cold water shall enter the tub.
 - Note: Clutch actuator rotates to find the "disengaged" position, when there it stops.
4. Turn the Cycle Selector knob (3) clicks clockwise from Normal position.
 - The lid lock will deactivate and the lid can be opened.
5. Turn the Cycle Selector knob (4) clicks clockwise from Normal position.
 - The lid lock will activate and both the hot and cold water solenoids will turn on and fill up to a certain level. After the Pressure Sensor has been satisfied, agitation will begin.
 - If softener option is available on the machine, then the softener solenoid will also activate and the softener compartment will be filling up and siphoning cold water at the same time.
6. Turn the Cycle Selector knob (5) clicks clockwise from Normal position.
 - The drum will stop and the drain pump will activate, draining out any water in the tub.
 - After draining the clutch actuator will start moving continuously, for about 1 minute
7. Turn the Cycle Selector knob (6) clicks clockwise from Normal position.
 - The Drain Pump turns on until no water is detected on the sensor, the clutch actuator rotates to find the "engaged" position
 - The Drain Pump turns off just before the drum starts its rotation to a high speed spin.
8. Turn the Cycle Selector knob (7) clicks clockwise from Normal position.
 - The control will signal the last 3 error codes. Press the cycle Selector to scroll through them. (See the part about reading error codes)
 - Press and hold the selector knob for at least 5 seconds in this position to clear the alarm history.

4 Exiting Diagnostics Mode

Any one of the following methods may be used to exit DM:

- Disconnect power and wait 5-8 seconds then reconnect power.
- Press and hold the knob for at least 5 seconds in selector position modes 1 to 6 CW.
- The machine exits diagnostic mode after 15 minutes of no UI activity.

NOTE

The machine configuration for electrical test mode at the next power on after diagnostic mode, is not active. So it is not necessary to power off the machine again.

1 User Interface Test

Selector position:	Position 0, 12 o'clock, top center, the normal wash position
Purpose of test:	Function of switches and buzzer.
Activated components:	Buzzer with a switch change
UI behaviour	Change switch positions and the buzzer beeps
Working conditions:	Drum stopped, door unlocked

2 Hot Water Valve Test

Selector position:	Turn 1 click clockwise from the top.
Purpose of test:	Water loading from the hot water valve.
Activated components:	Door lock, hot water valve, clutch motor
UI behaviour	None
Working conditions:	Door locked, water level lower then 140mm, for max. 5 minutes. The clutch moves to the agitate position, if it was in spin.

3 Cold Water Valve Test

Selector position:	Turn 2 clicks clockwise from the top.
Purpose of test:	Water loading from the cold water valve.
Activated components:	Door lock and cold water valve, clutch actuator
UI behaviour	None
Working conditions:	Door locked, water level lower then 140mm, for max. 5 minutes. The clutch moves to the agitate position, if it was in spin.

4 Door Lid Unlock Test

Selector position:	Turn 3 clicks clockwise from the top.
Purpose of test:	Deactivate the door lock.
Activated components:	Door lock.
UI behaviour	None
Working conditions:	Drum stopped

5 Three Water Valves Test

Selector position:	Turn 4 clicks clockwise from the top.
Purpose of test:	To test both hot and cold and, if present, softener water valves and the
Activated components:	Door lock, three water valves, main motor
UI behaviour	None
Working conditions:	Door locked, Add while water level lower than 55mm, for max. 5 minutes.

6 Drain and Clutch Test

Selector position:	Turn 5 clicks clockwise from the top.
Purpose of test:	Drain system with the clutch mechanism
Activated components:	Door lock, drain pump, clutch actuator
UI behaviour	None
Working conditions:	Door locked, drum stop, run clutch to spin mode and drain until empty +10

7 Drain and Spin Test

Selector position:	Turn 6 clicks clockwise from the top.
Purpose of test:	Verify drain system, and Pressure Sensor calibration procedure
Activated components:	Door lock, main motor, drain pump.
UI behaviour	None
Working conditions:	Door locked, empty tub water level <5mm, if not the drain will run, if not in spin mode the clutch actuator will run to spin position, spin up to maximum speed.

8 Alarm History Test

Selector position:	Turn 7 clicks clockwise from the top.
Purpose of test:	Communicate alarm history
Activated components:	Buzzer
UI behaviour	A series of beeps separated by a short pause for one character and a long
Working conditions:	Drum stopped, Door unlocked

Error code	Fault condition
E11	Difficulties in water fill for washing
E13	Water leakage
E21	Difficulties in draining for washing
E31	Electronic Pressure Sensor faulty
E32	Electronic Pressure Sensor calibration problems
E35	Water Overload
E41	Door opened
E42	Door lock device failure
E43	Door lock device triac failure
E44	Door closed sensing failure
E45	Door triac sensing failure
E55	Motor Under-speed Failure
E58	Motor Control Board Over current
E59	Motor Control Board Not Following
E5A	Motor Control Board Heating
E5H	Motor Control Board Heating
E5C	Motor Control Board Over Voltage
E5D	Motor Control Board Unknown Message
E5E	Motor Control Board-MB Communication
E5F	Motor Control Board Fault
E71	Washing NTC failure
E87	User Interface microcontroller fault
E91	UI-MB communication error
E92	UI-MB protocol incongruence error
E93	Machine configuration error
E94	Cycle Configuration error
E97	Incongruence between selector and cycles configuration
E98	Motor Control Board_MB protocol incong. error
E9C	User Interface Configuration fault
EB1 (EH1)	Power supply frequency out of limits
EB2 (EH2)	Power supply voltage too high
EB3 (EH3)	Power supply voltage too low
EBE (EHE)	Motor Control Board Relay failure
EBF (EHF)	Motor Control Board relay sensing failure
EC6	Clutch Alarm
EC7	Clutch Triac Sensing Failure
EF2	Foam warning
EF5	Load too unbalanced
EF6	Safety reset

Alarms summary table

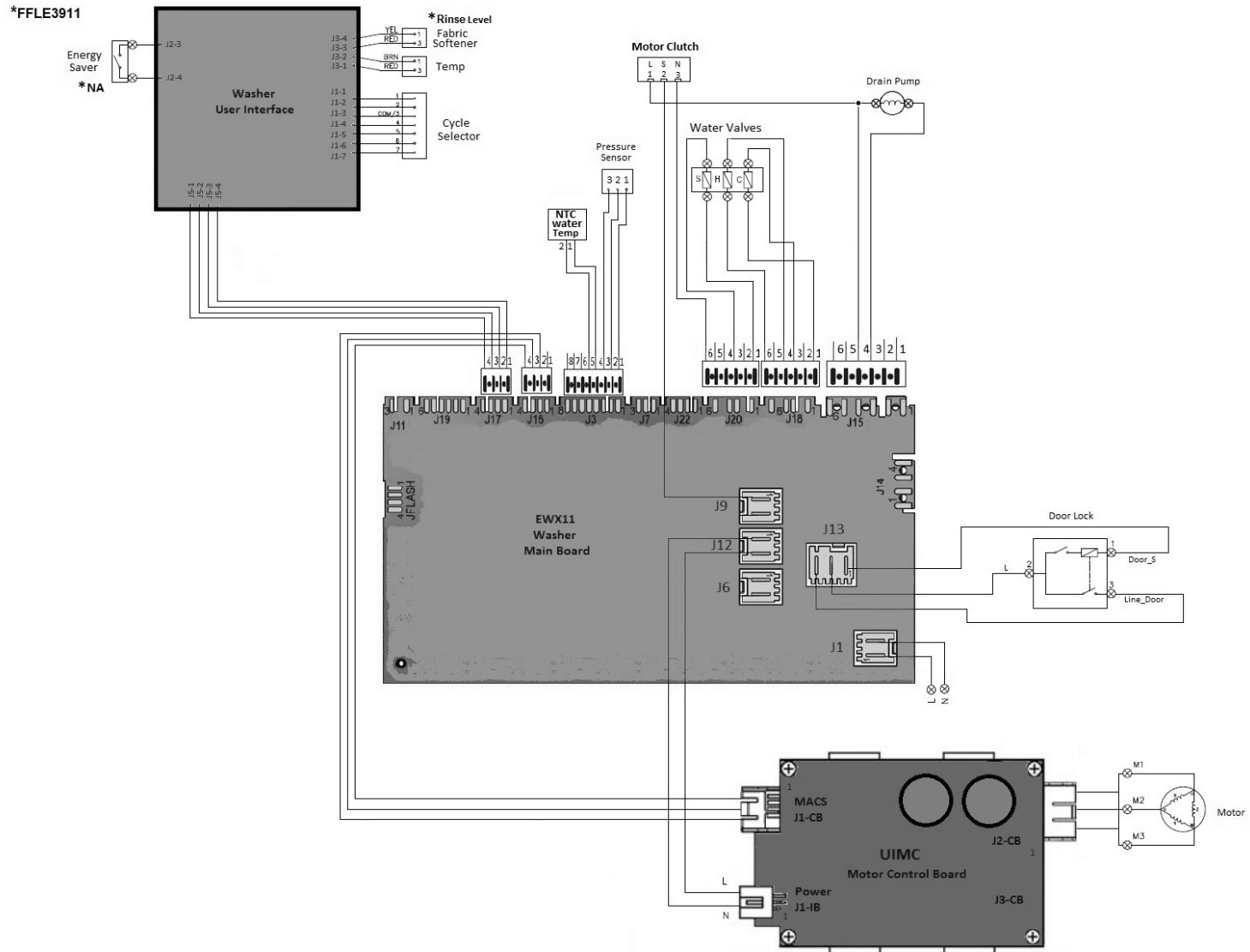
Alarm Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Action to Clear
E11	Difficulties in water fill for washing	Water fill takes too long (timeout occurs before reaching target water level)	Tap closed or water flow too low Wrong drain pipe position (siphon) Water leak Water inlet valve Pressure switch Wiring or main board	Cycle Paused	START RESET
E13	Water leakage	Water refills too many times during the cycle (maximum water quantity reached)	Wrong drain pipe position (siphon) Water leak Water flow too low Water inlet valve Pressure sensor or hose	Cycle Paused	START RESET
E21	Problem draining	Water draining takes too long (timed during each drain)	Drain pipe blocked Drain pump defective or rotor locked Pressure switch defective or blocked Drain pump not energized (wiring or main board)	Cycle Paused (after 2 attempts)	START ON/OFF RESET
E31	Pressure sensor fault	Frequency of electronic pressure sensor out of limits	Pressure sensor Wiring or main board	Cycle abort	RESET
E32	Electronic pressure sensor calibration problems	Frequency of electronic pressure sensor not stable during draining phase	Water inlet valve Pressure sensor Drain pipe blocked Drain pump, wiring or main board	Cycle pause	START RESET
E35	Water overload	Pressure sensor over maximum water level	Pressure sensor hose blocked Water inlet valve	Cycle abort Safety drain	
E41	Door opened	Door not locked after 3 attempts	Door lock Wiring or main board	Cycle Paused	START RESET
E42	Door lock failure	Door will not unlock after 3 attempts	Door lock Low input AC voltage Wiring	Cycle Paused	START RESET

Alarm Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Action to Clear
E43	Door lock triac failure	door lock triac sensing and triac control status difference	Door lock Wiring or main board	Cycle abort Safety drain	RESET
E44	Door closed sensing failure	Wrong input signal to microprocessor	Wiring or main board	Cycle abort Safety drain	RESET
E45	Door triac sensing failure	Incorrect triac sense signal	Wiring or main board	Cycle abort Safety drain	RESET
E55	Motor under-speed Failure	During spin, the motor speed is lower than the target for 2 minutes	Foam or drum weight overload Drum mechanical drag Motor Drain pump	Cycle abort	ON/OFF RESET
E58	Motor over current	High current on motor phase (>4.5A)	Foam or drum weight overload Motor Wiring or motor control board	Cycle abort	ON/OFF RESET
E59	Motor not following	No rotation detected for 3 seconds	Drum mechanical locked Motor Wiring or motor control board	Cycle abort	ON/OFF RESET
E5A	Motor control overheating	High temperature on heat sink (>88°C) or NTC of motor control board open	Drum weight overload Motor control board Motor	Cycle abort	ON/OFF RESET
E5H	Motor control under voltage	DC bus voltage below the minimum (175V)	Low input AC voltage Wiring or motor control board Main board	Cycle abort	ON/OFF RESET
E5C	Motor control over voltage	DC bus voltage above the maximum (430V)	High input AC voltage Motor control board	Cycle abort	ON/OFF RESET
E5D	Motor Control Board Unknown Message	Message received by Motor Control Board is not correct	Communication wiring Motor control board Main board Software not matching	None	
E5E	Motor control to main board communication incorrect	Communication between motor control board and main board incorrect	Wiring Motor control board Main board User interface board	Cycle ends	ON/OFF RESET

Alarm Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Action to Clear
E5F	Motor Control Board Fault	Motor Control Board control board is continuously in reset	Wiring Motor control board Main board	Cycle ends	ON/OFF RESET
E71	Washing NTC failure	Wrong input signal to microprocessor (open circuit or short circuit)	Wiring open Washing NTC Wiring or main board	Water load not temperature controlled	START RESET
E87	User Interface microcontroller fault	User interface microcontroller damaged	User interface	No actions to be performed. If still present replace the User Interface Board	START ON/OFF RESET
E91	User interface and main board communication error	Communication problem between user interface and main board	Wiring User interface Main Board Motor control board	---	RESET
E92	User interface and main board protocol incongruence error	Protocol communication between user interface and main board not compatible	Main board User interface board	Cycle blocked	OFF/ON
E93	Machine configuration error	Incorrect configuration of appliance	Main board	Cycle blocked	OFF/ON
E94	Cycle Configuration error	Incorrect configuration of washing cycles	Main board	Cycle blocked	OFF/ON
E97	Software selector and cycles configuration error	Incongruence between program selector and cycle configuration	Main board	Cycle blocked	RESET
E98	Motor control to main board software error	Protocol communication between Motor Control Board and MB not aligned	Main board Motor control board	Cycle blocked	OFF/ON
E9C	User interface configuration fault	Configuration wrongly or not received	User interface	No actions	ON/OFF START RESET
EB1 (EH1)	Power supply frequency out of limits	Power supply period lower/higher than configured values	AC input Main board	Wait for improved power supply conditions	OFF/ON
EB2 (EH2)	Power supply voltage too high	MAIN_V sensing input voltage value greater than configured value	High AC input voltage Main board	Wait for improved power supply conditions	OFF/ON
EB3 (EH3)	Power supply voltage too low	MAIN_V sensing input voltage value lower than configured value	Low AC input voltage Main board	Wait for improved power supply conditions	OFF/ON

Alarm Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Action to Clear
EBE (EHE)	Motor Control Board Relay error	Incongruence between safeties relay sensing and Motor Control Board relay status	Motor Control Board Relay defective Wiring or main board	Safety drain Cycle abort	RESET
EBF (EHF)	Motor Control Board relay sensing error	Input voltage value on microprocessor always to 0V or to 5V	Main board	Safety drain Cycle abort	RESET
EC6	Clutch Alarm	Clutch positioning timeout to reach or failure to stay in desired position	Clutch mechanism failure Main board defective Wiring/connection problem	Cycle abort	
EC7	Clutch triac sensing Failure	The sensing of the clutch triac is out of the limits	Clutch mechanism failure Main board Wiring/connection problem	Cycle abort	
EF2	Foam warning	Suds lock detected during spin phase at the end of the washing phase	Incorrect or excessive detergent Drain pipe blocked or clogged	Alarm is silent and the cycle is extended	
EF6	Safety reset	Main board microcontroller damaged	Main Board	None	

WASHER BLOCK WIRING DIAGRAM



DRYER BLOCK WIRING DIAGRAM

