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**Washing machines**

**guide to diagnostics of  
electronic controls**

**EWM09312**

**TC5/TC4/TC3**



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# 1 INTRODUCTION

## 1.1 Purpose of this manual

The purpose of this manual is to explain, simply and schematically, the steps any Technician should take when faced with the problems indicated by the various alarm codes on appliances with electronic control in the EWM09312 series.

Depending on the appliance configuration, the alarms may be entirely or partially displayed to the user: the latter solution is usually adopted.

The diagnostics system is used by Service Technicians to:

- ◆ read alarms
- ◆ delete the alarm stored
- ◆ test the appliance operation

## 1.2 Cautions

- Any work on electrical appliances must only be carried out by qualified technicians.
- Before servicing an appliance, check the efficiency of the electrical system in the home using appropriate instruments. For example: refer to the indications provided/illustrated in the <<metrater>> course at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.

When the work is finished check that the equipment's safety conditions have been reinstated, as though it were straight off the assembly line.

- If the circuit board has to be handled/replaced, use the ESD kit (Cod. 405 50 63-95/4) to avoid static electricity from damaging the circuit board, see S.B. No. 599 72 08-09 or consult the course "Electrostatic charges" at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.
- This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to cut the power supply.
- Make resistance measurements, rather than direct voltage and current measurements.
- Warning the sensors located on the display board could be at a potential of 220 Volts.
- When replacing the heating element, replace it with one that has the same characteristics (2 thermal fuses) in order not to compromise the safety of the appliance. Do not remove/switch the NTC sensors between heating elements.
- Always empty the appliance of all the water before laying it on its side.
- Never place the appliance on its right side (electronic control system side): some of the water in the detergent dispenser could leak onto the electrical/electronic components and cause these to burn.
- When replacing components, please refer to the code shown in the list of spare parts relating to the appliance.
- The resistance values of the components shown in this S.M. are purely indicative (relating to a sample appliance with new components). For the actual value of the component, please refer: to S.B. 599706597 for motors, while for the other components, please consult S.M. 599728903 "Component Characteristics".

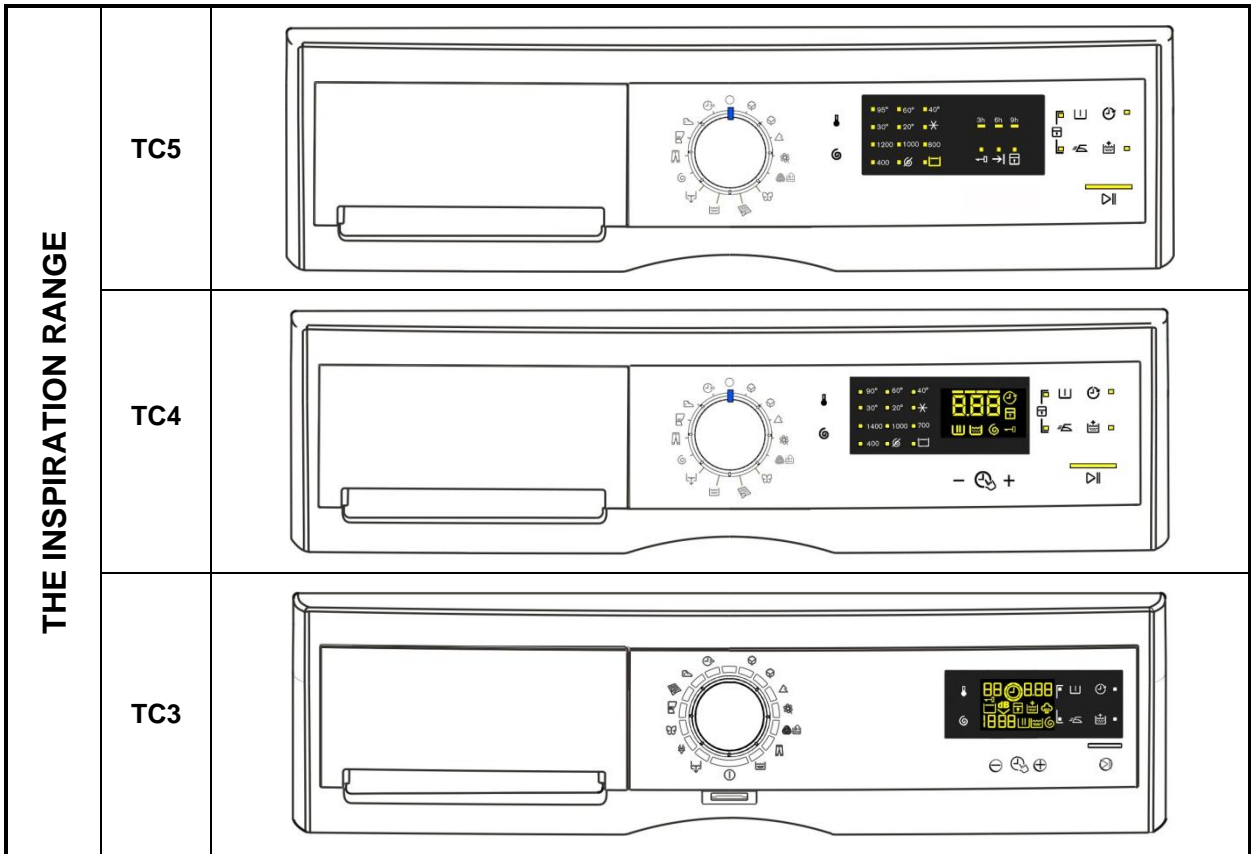


How to proceed

1. Identify the type of control in question (**page 8**) and access the diagnostic cycle (**see page 9**).
2. Read the alarm stored (**page 15**) and consult the instructions regarding the “alarm codes”, **page 18÷21**.
3. Delete the alarms stored (**page 17**).
4. If you are unable to access the diagnostic mode, consult the chapter entitled “The diagnostics system cannot be accessed” (**page 22**).
5. Should the main electronic circuit board need to be replaced, make sure there are no burns (**see page 67**).
6. After all interventions, check the appliance is operating correctly using the diagnostic cycle (**page 10**).
7. Delete any alarm that may have been stored during the diagnostics operations (**page17**).

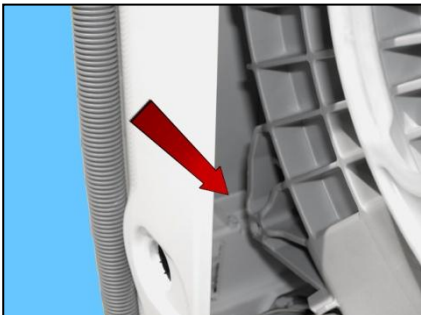
## 2 WM APPLIANCE CONTROL PANELS

These are the stylings available at the time of printing of this Service Manual. Others may be developed in future.



### 2.1.1 Programming/Updating the main circuit board

In order to update/programme the main board, insert the **Sidekick** connector in the position indicated by the red arrow:



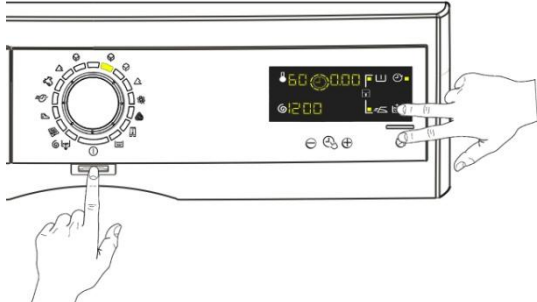

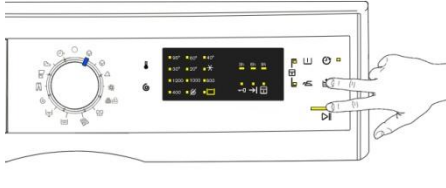


### 3 DIAGNOSTICS SYSTEM

#### 3.1 Accessing diagnostics

The operations listed below must be carried out within 7 seconds.

**Do not start the procedure with your fingers over the combination sensors**

<b>TC 3</b>	
	
<ol style="list-style-type: none"> <li>1. Switch on the appliance using the ON/OFF button. The first LED lights up.</li> <li>2. Touch the <b>START/PAUSE</b> and the nearest <b>option sensor</b> simultaneously (as shown in the figure).</li> <li>3. Hold your fingers over the sensors until the LEDs and symbols begin to flash in sequence (approximately 3 seconds).</li> </ol> <p>In the first position, the operation of the sensors, the LEDs and the groups of symbols shown on the LCD display is checked; When the programme selector is turned in a <b>clockwise direction</b>, operation of the various components is diagnosed and the alarms are read (see diagnostic test on the next page).</p>	
<b>TC4</b>	<b>TC5</b>
	
<ol style="list-style-type: none"> <li>1. Set the selector dial to position 0 (zero).</li> <li>2. Rotate the programme selector by <b>one position clockwise</b>.</li> <li>3. Simultaneously press the <b>START/PAUSE</b> button and the nearest <b>option sensor</b> (as shown in the diagram).</li> <li>4. Hold your fingers over the sensors until the LEDs and display symbols begin to flash in sequence (approximately 3 seconds).</li> </ol> <p>In the first position, the operation of the sensors, the LEDs and the groups of symbols shown on the LCD display is checked; When the programme selector is turned in a <b>clockwise direction</b>, operation of the various components is diagnosed and the alarms are read (see diagnostic test on the next page).</p>	

#### 3.2 Quitting the diagnostics system

- **Styling TC4-TC5:** To exit the diagnostics system, turn the selector dial to position 0 (zero).
- **Styling TC3:** In order to exit the diagnostic system turn the appliance off using the ON/OFF push button.









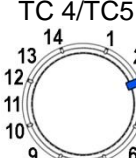


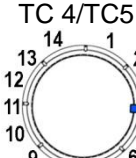
If "ELE" (electricity trials) appears on the screen when you turn the appliance on, repeat the operation of turning it on and off.



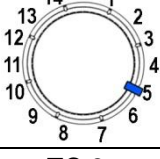
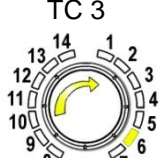

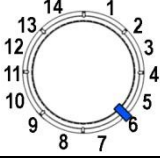


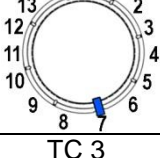


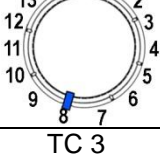


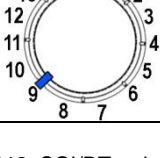
### 3.3 Diagnostic test phases


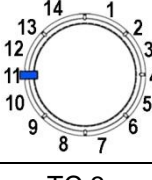


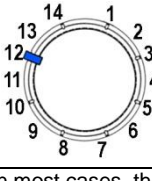
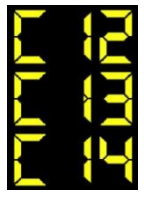
Irrespective of the type of PCB and the configuration of the programme selector, after entering the diagnostic mode, turn the programme selector dial **clockwise** to perform the diagnostic cycle for the operation of the various components and to read any alarms.

Concurrently, a selector control code is shown on the LCD display, which indicates for **two** seconds the description in the last column of the table below.

(All alarms are enabled in the diagnostic cycle.)

Selector position	Components activated	Working conditions	Function tested	LCD display	
1	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence</li> <li>Touch a sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time</li> </ul>	Always active	User interface functions	
	 <p>TC 4/TC5</p>				
2	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Wash solenoid</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to wash compartment	
	 <p>TC 4/TC5</p>				
3	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Pre-wash solenoid</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to pre-wash compartment	
	 <p>TC 4/TC5</p>				
4	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Solenoid valve pre-wash and wash</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to conditioner compartment	
	 <p>TC 4/TC5</p>				

Selector position	Components activated	Working conditions	Function tested	LCD display	
5	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Third solenoid valve</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to third solenoid valve compartment	
	 <p>TC 4/TC5</p>				Water level in the tub is displayed (mm)
6	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Fourth solenoid valve (hot water where featured)</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to fourth solenoid valve compartment	
	 <p>TC 4/TC5</p>				Water level in the tub is displayed (mm)
7	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Wash solenoid, if the water in the tub is not enough to cover the heating element</li> <li>Heating element</li> <li>Weight sensor (if there is one, an extra litre of water is loaded)</li> <li>Circulation pump</li> </ul>	Door closed Water level above the heating element Maximum time 10 mins or up to 90 °C (*)	Reheating Circulation	
	 <p>TC 4/TC5</p>				Temperature in °C measured using the NTC probe
8	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Wash solenoid, if the water in the tub is not enough to cover the heating element</li> <li>Motor (55 rpm clockwise, 55 rpm anti-clockwise, 250 rpm pulse)</li> </ul>	Door closed Water level above the heating element	Check for leaks from the tub	
	 <p>TC 4/TC5</p>				Drum speed in rpm/10
9	 <p>TC 3</p>	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Drain pump</li> <li>Motor up to 650 rpm then at maximum spin speed (**)</li> </ul>	Door closed Water level lower than anti-boiling level for spinning.	Drain, calibration of analogue pressure switch and spin	
	 <p>TC 4/TC5</p>				Drum speed in rpm/10

Selector position	Components activated	Working conditions	Function tested	LCD display	
10	-----	-----	-----	-----	
11	 TC 3  TC 4/TC5	Reading/Deleting the last alarm	-----	----	
12 ÷ 14	 TC 3  TC 4/TC5	- The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence - Touch a sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time	Always active	User interface functions	

(\*) In most cases, the established time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostic cycle and then back to the heating control phase (if the temperature is higher than 80 °C, heating does not take place).

(\*\*) The check at the maximum speed occurs without control of the A.G.S. and no garments must be inside the appliance.

## 4 ALARMS

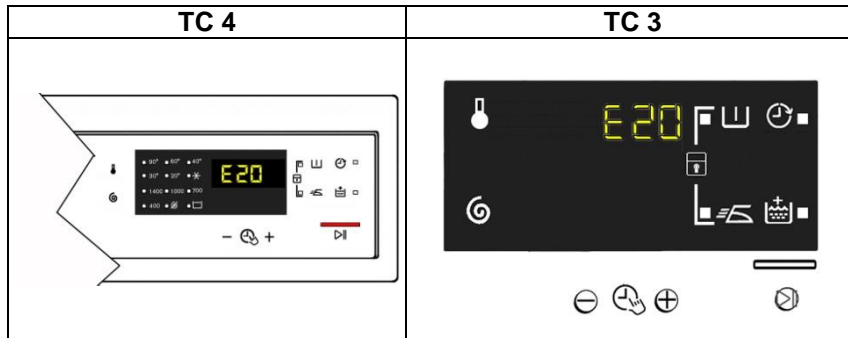
### 4.1 Displaying user alarms

#### 4.1.1 Styling TC3/TC4

When a problem occurs in the appliance, the LCD display shows a “WARNING”, represented by a code (in the three digits, where the remaining time for the cycle to finish is shown) and simultaneously the buzzer emits three short beeps every twenty seconds for five minutes.

Once the fault has been repaired/solved, the buzzer stops beeping and the LCD display shows the chosen programme.

This does not occur for alarm EH0.



The alarms displayed to the user are listed below and can also be eliminated by the user:

TC4/TC3
<b>E10 – Water fill difficulty (tap closed)</b>
<b>E20 – Drain difficulty (filter dirty)</b>
<b>E40 – Door open</b>
<b>EF0 – Excessive detergent</b>
<b>EH0 – Voltage or frequency outside normal values</b>

While the alarm listed below:

TC4/TC3
<b>EF0 – Water leakage (Aqua Control System)</b>

For its solution, the intervention of a Service engineer is required

The other alarms are displayed by a code

The alarms are enabled during the execution of the washing programme. With the exception of alarms associated with the configuration and the power supply voltage/frequency, which are also displayed during the programme selection phase.

The door can normally be opened (except where specified) when an alarm condition has occurred, on condition that:

- The level of the water in the tub is below a certain level.
- The water temperature is lower than 55 °C.
- The motor has stopped.

Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

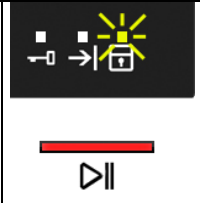


- Cooling water fill if the temperature is higher than 65 °C.
- Drain until the analogue pressure switch is on empty, during a max. 3-minute interval.

#### 4.1.2 Styling TC5

The alarms are displayed by the flashing red LED of the START/PAUSE sensor and by one of the three LEDs in the lower right hand corner of the display.

As soon as a problem arises these LEDs start flashing (half a second on and half a second off), until the problem is resolved.

The table below illustrates the combinations of LED lightings.

E10		E20		E40	
<b>Water fill difficulty (tap closed)</b>		<b>Drain difficulty (filter fouled)</b>		<b>Door open</b>	

While the alarms listed below:

↪ **EF0 – If generated by water leaks inside the appliance (Aqua Control System)**  
For its solution, the intervention of a Service engineer is required.

While for the alarm:

↪ **EH0 – Voltage or frequency outside normal values**  
**It is necessary to wait for power supply voltage and/or frequency to restore normal conditions.**

The alarms are enabled during the execution of the washing programme. With the exception of alarms associated with the configuration and the power supply voltage/frequency, which are also displayed during the programme selection phase.

The door can normally be opened (except where specified) when an alarm condition has occurred, on condition that:

- The level of the water in the tub is below a certain level.
- The water temperature is lower than 55 °C.
- The motor has stopped.

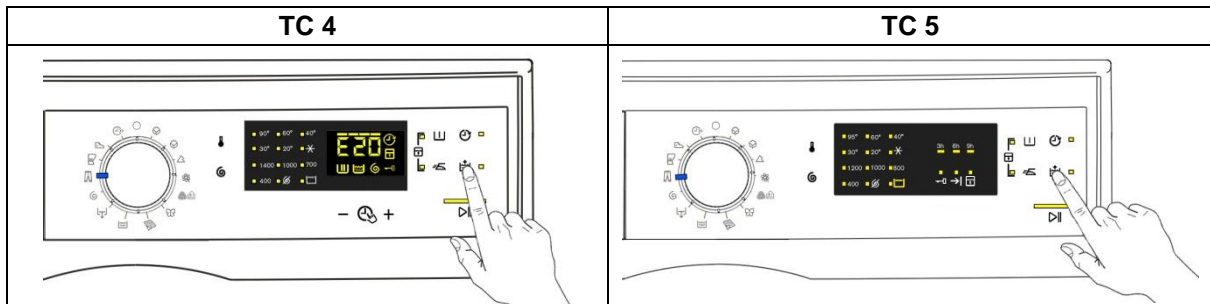
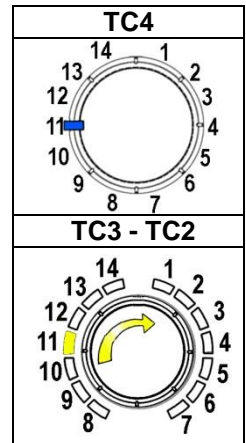
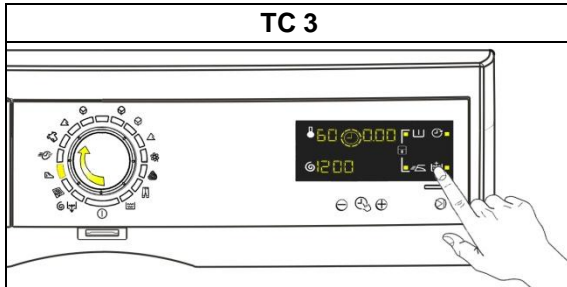
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

- Cooling water fill if the temperature is higher than 65 °C.
- Drain until the analogue pressure switch is on empty, during a max. 3-minute interval.

## 4.2 Reading the alarms

The last three alarms stored in the FLASH memory of the PCB can be displayed:

- Enter the diagnostic mode (para. 3.1).
- Irrespective of the type of PCB and configuration, turn the programme selector knob **clockwise** to the **eleventh position** and the last alarm is displayed.
- To display previous alarms, touch the sensor closest to the START/PAUSE sensor in sequence (as shown in the figure).
- To return to the last alarm, touch the START/PAUSE sensor.

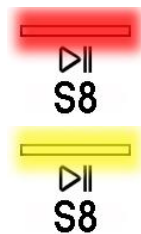


### 4.2.1 Viewing the TC5 aesthetic alarm

The alarm is displayed by a repeated flashing sequence of the START/PAUSE sensor red and yellow lights (0.5 seconds on, 0.5 seconds off with a 2.5 second pause between sequences).

- START/PAUSE sensor indicator with red light → indicates the first digit of the alarm code (family)
- START/PAUSE sensor indicator with yellow light → indicates the second digit of the alarm code (number inside the family)

These two LEDs are featured in all models.



















#### Notes:

- The first letter of the alarm code "E" (Error) is not displayed, since this letter is common to all alarm codes.
- Alarm code families are shown in hexadecimals; in other words:
  - **A** is represented by **10** flashes
  - **B** is represented by **11** flashes
  - ...
  - **F** is represented by **15** flashes
- Configuration errors are shown by the flashing of all LEDs (user interface not configured).

### 4.2.2 Example of alarm display

Let us take alarm E43 (problem with the door safety TRIAC) as an example; the following will be displayed:

- a sequence of four flashes of the START/PAUSE sensor red light indicates the first number **E4**3;
- the sequence of three flashes of the START/PAUSE sensor with the yellow light indicates the second number **E4****3**.

START/PAUSE sensor with red light			START/PAUSE sensor with green light		
ON/OFF	Time (Sec.)	Value	ON/OFF	Time (Sec.)	Value
	0.5	1		0.5	1
	0.5			0.5	
	0.5	2		0.5	2
	0.5			0.5	
	0.5	3		0.5	<b>3</b>
	0.5			0.5	
	0.5	<b>4</b>		2.5	Pause
	0.5				
	1.5	Pause			

### 4.2.3 Operation of alarms during the diagnostic cycle

All alarms are enabled during the components' diagnostic cycle.

### 4.2.4 Rapid reading of alarms

The last alarm can be displayed even if the programme selector is not in the eleventh position (diagnostics) or if the appliance is in normal operating mode (e.g. during the execution of the washing programme):

→ 10 seconds after turning on the appliance, simultaneously touch the **START/PAUSE** sensor and the nearest **sensor option** (as if accessing DIAGNOSTICS) for at least 2 seconds:

In the TC3 and TC4 aesthetics, the display shows the last alarm.

In the TC5 aesthetics, the LEDs initially switch off, and then display the flashing sequence indicating the last alarm.

→ The alarm continues to be displayed for the required time and then returns to its normal function or until a sensor is touched.

→ The alarm reading system is as described in para. 4.2.

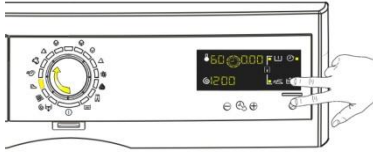

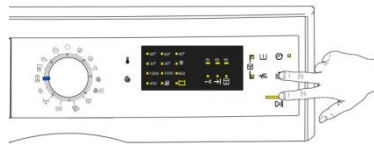
→ While the alarm is being displayed, the appliance continues to perform the cycle or, if in the programme selection phase, it maintains the previously selected options in memory.



#### 4.2.5 Deleting the last alarm

It is good practice to cancel the alarms stored:

- after reading the alarm codes, to check whether the alarm re-occurs during the diagnostic cycle
- after repairing the appliance, to check whether it re-occurs during testing

TC 3	TC 4	TC 5
		
<ol style="list-style-type: none"> <li>1. Enter the diagnostic mode (para. 3.1).</li> <li>2. Turn the selector clockwise until the <b>eleventh</b> LED lights up.</li> <li>3. Touch the <b>START/PAUSE</b> and the nearest <b>option sensor</b> simultaneously (as shown in the figure).</li> <li>4. Keep the buttons pressed until:                      In the TC3, TC4 aesthetics: "E00" appears on the LCD screen (at least 5 seconds).                      In the TC5 aesthetics: the LEDs stop flashing (at least 5 seconds).</li> </ol>		

### 4.3 ALARM SUMMARY TABLE

alarm	Description	Possible fault	Machine status/action	Reset	Page
E00		No alarm		-----	-----
E11	Water fill difficulty during washing	Tap closed or water pressure too low; Drain pipe improperly positioned; Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; Main PCB faulty.	Cycle is paused with door locked.	START/RESET	24
E13	Water leaks	Drain pipe improperly positioned; Water pressure too low; Water fill solenoid valve faulty; Water circuit on pressure switch is leaking/clogged; Pressure switch faulty.	Cycle is paused with door locked.	START/RESET	26
E21	Drain difficulty during washing	Drain pipe kinked/fouled/improperly positioned; Drain filter clogged/fouled; Wiring faulty; Drain pump faulty; Pressure switch faulty; Main PCB faulty.	Cycle paused (after 2 attempts).	START/RESET	28
E23	Faulty triac for drain pump	Wiring faulty; Drain pump faulty; Main PCB faulty.	Safety drain cycle - Cycle stops with door open.	RESET	30
E24	Malfunction in sensing circuit on triac for drain pump (wrong input voltage to micro-processor)	Main circuit board faulty.	Safety drain cycle - Cycle stops with door unlocked.	RESET	32
E31	Malfunction in electronic pressure switch circuit (frequency of signal from pressure switch outside limits)	Wiring; Electronic pressure switch; Main PCB.	Cycle stops with door locked.	RESET	32
E32	Calibration error of the electronic pressure switch (The electronic pressure switch generates a signal with unstable frequency during the drain phase)	Drain pipe kinked/clogged/improperly positioned; Solenoid valve faulty; Drain filter clogged/fouled; Drain pump faulty; Pressure chamber; Leaks from water circuit on pressure switch; pressure switch; Wiring; Main PCB.	Cycle paused.	START/RESET	33
E35	Overflow	Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Wiring faulty; Pressure switch faulty; Main PCB faulty.	Cycle interrupted. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off. etc.).	RESET	34
E38	Internal pressure chamber is clogged (water level does not change for at least 30 sec. of drum rotation)	Motor belt broken; water circuit on pressure switch clogged.	Heating phase is skipped.	ON/OFF RESET	35
E41	Door open (after 20 sec.)	Check whether the door is closed properly; Wiring faulty; Door safety interlock faulty; Main circuit board faulty.	Cycle paused.	START/RESET	36
E42	Problems with door lock Door still locked after 4' 25"	Wiring faulty; Door safety interlock faulty; Electrical current leak between heating element and ground; Main PCB faulty.	Cycle paused.	START/RESET	38
E43	Faulty triac supplying power to door delay system	Wiring faulty; Door safety interlock faulty; Main circuit board faulty.	(Safety drain cycle) Cycle blocked.	RESET	40

Guide to diagnostics of EWM09312 electronic controls

alarm	Description	Possible fault	Machine status/action	Reset	Page
E44	Faulty sensing by door delay system	Main circuit board faulty.	(Safety drain cycle) Cycle blocked.	RESET	41
E45	Faulty sensing by triac on door delay system (wrong input voltage to microprocessor)	Main circuit board faulty.	(Safety drain cycle) Cycle blocked.	RESET	41
E51	Motor power triac short-circuited	Current leakage from motor or from wiring; Main PCB faulty.	Cycle stops with door open (after 5 attempts).	ON/OFF	42
E52	No signal from motor tachometric generator	Wiring faulty; Motor faulty; Main circuit board faulty.	Cycle stops with door locked (after 5 attempts).	ON/OFF	44/46
E53	Motor triac sensing circuit faulty (wrong input voltage to microprocessor)	Main circuit board faulty.	Cycle blocked.	RESET	48
E54	Motor relay contacts sticking (high voltage level when the relay switches to OFF)	Current leakage from motor or from wiring; Main PCB faulty.	Cycle blocked (after 5 attempts).	RESET	49
E62	Overheating during washing (temperature higher than 88 °C for more than 5 min.)	Wiring faulty; NTC probe for wash cycle faulty; Heating element faulty; Main PCB faulty.	Safety drain cycle. Cycle stops with door open.	RESET	50
E66	Heating element power relay faulty (inconsistency between sensing and K2 relay status)	Main PCB faulty.	Safety water fill. Cycle stops with door closed.	ON/OFF RESET	51
E68	Earth-leakage (value of grid voltage different from main value)	Earth leakage between heating element and earth.	The heating phase is skipped.	START/RESET	52
E69	Heating element interrupted	Wiring faulty; Heating element for washing interrupted (thermal fuse open).	-----	START ON/OFF RESET	53
E6A	Heating relay sensing faulty	Main circuit board faulty.	Cycle stops with door locked.	RESET	54
E6H	Heating element power relay faulty (inconsistency between sensing and K1 relay status)	Earth leakage between heating element and earth. Main circuit board faulty.	Safety water fill. Cycle stops with door closed.	ON/OFF RESET	54
E71	NTC probe for wash cycle faulty (short-circuited or open)	Wiring faulty; NTC probe for wash cycle faulty; Main circuit board faulty.	The heating phase is skipped.	START/RESET	55
E74	NTC probe for wash cycle improperly positioned	Wiring faulty; NTC probe for wash cycle improperly positioned; NTC probe faulty; Main PCB faulty.	The heating phase is skipped.	START/RESET	56
E83	Error in reading selector	Main PCB faulty (Incorrect configuration data).	Cycle cancelled.	START/RESET	57
E86	Selector configuration error	Display board	-----	START ON/OFF RESET	57
E87	Display board microprocessor faulty	If this continues, replace the display board.	No action to be taken.	START ON/OFF RESET	57

Guide to diagnostics of EWM09312 electronic controls

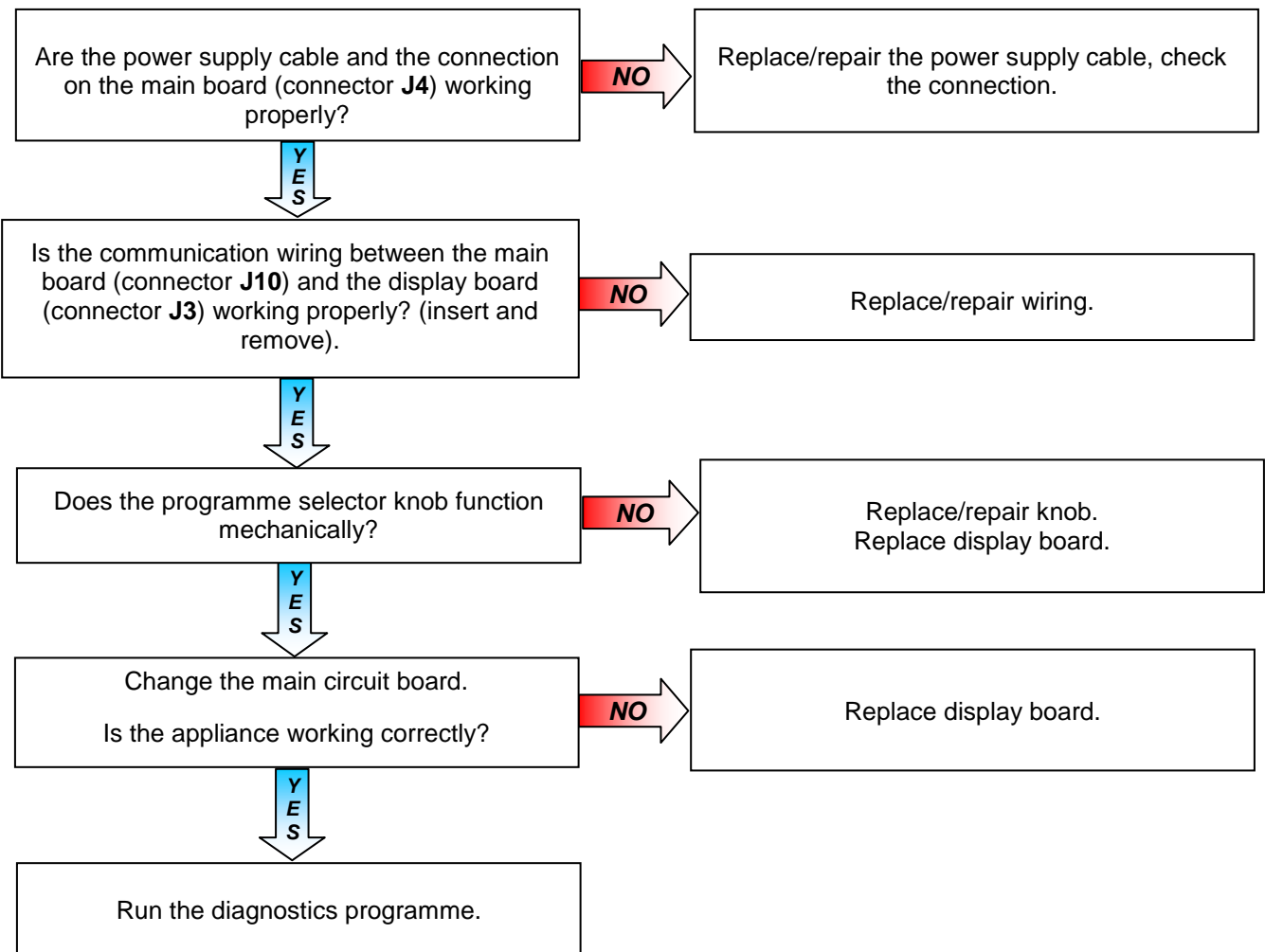
alarm	Description	Possible fault	Machine status/action	Reset	Page
E91	Communication error between main PCB and display	Wiring faulty; Control/display PCB faulty; Main circuit board faulty.	-----	RESET	58
E92	Communication inconsistency between main PCB and display (incompatible versions)	Incorrect control/display PCB; Incorrect PCB (does not correspond to the model).	Cycle blocked.	ON/OFF	59
E93	Appliance configuration error	Main PCB faulty (incorrect configuration data).	Cycle blocked.	ON/OFF	59
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data).	Cycle blocked.	ON/OFF	59
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked.	RESET	59
E9C	Display board configuration error	Display board	-----	START ON/OFF RESET	59
E9E	Display board sensor/touch key faulty	Display board faulty	-----	ON/OFF	59
EC1	Electronically controlled valve blocked with operating flowmeter	Faulty wiring; Faulty/blocked solenoid, PCB faulty,	Cycle stops with door locked. Drain pump continues to operate (5 mins. on, then 5 mins. off, and so on).	RESET	60
EC4	AGS current sensor faulty	Main board faulty.	Spin speed reduced to safety speed of 150 rpm.	RESET	61
EF1	Drain filter clogged (drain phase too long)	Drain filter clogged/dirty. Drain hose blocked/kinked/too high.	Warning displayed at the end of cycle.	START/RESET	61
EF2	Overdosing of detergent (too much foam during drain phases)	Excessive detergent dosing; Drain hose kinked/blocked; Drain filter clogged/dirty.	Warning displayed after 5 attempts or by the specific LED.	RESET	61
EF3	Aqua control system intervention	Water leaks onto base frame; Aqua control system faulty.	Appliance drains.	ON/OFF RESET	61
EF4	Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open	Tap closed, water fill pressure too low	-----	RESET	61
EF5	Unbalanced load	Final spin phases skipped.	-----	START/RESET	62
EF6	Reset	If it continues, replace the main board.	No action to be taken.	-----	62
EH1	Power supply frequency of appliance outside the limits	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal frequency conditions.	ON/OFF	62
EH2	Supply voltage too high	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	63
EH3	Supply voltage too low	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	63

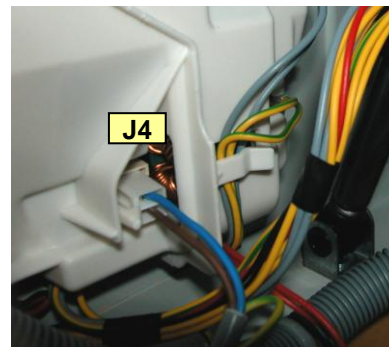
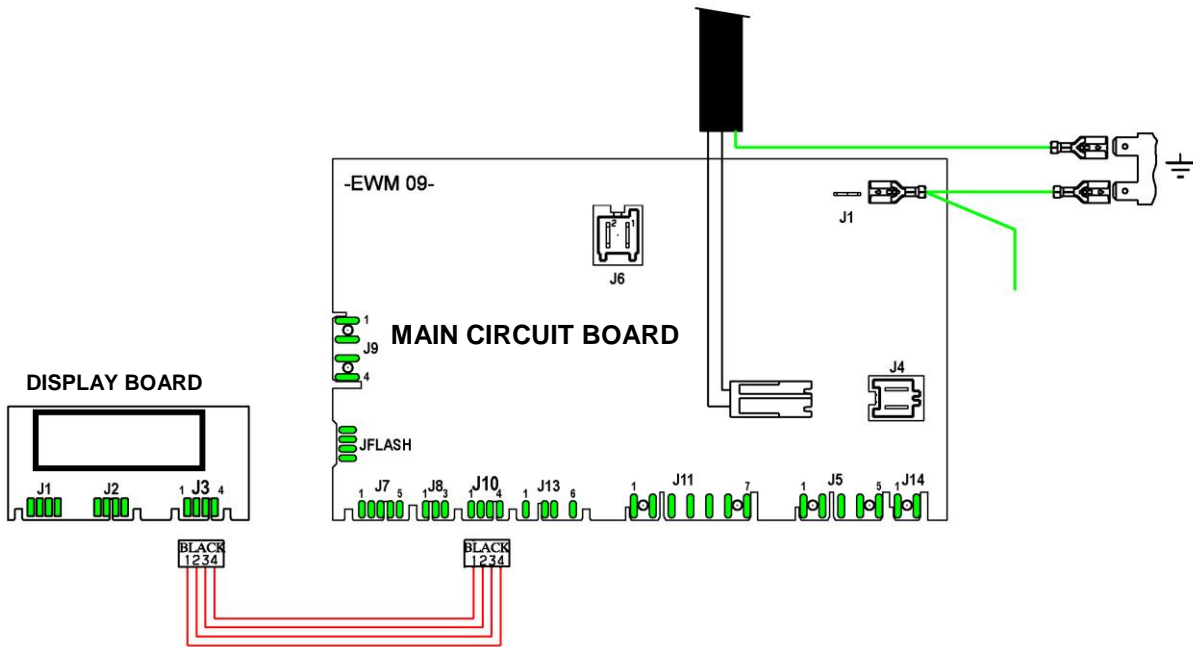
#### 4.4 Notes on the behaviour of certain alarms

- **Configuration alarm E93:** when this alarm is detected (on switching on the appliance), the appliance stops, the LEDs in the START/PAUSE button start to flash, displaying the complete code (family plus alarm), the display shows the alarm code provided the relevant configuration part is intact. It will not be possible to access diagnostics mode and the only available option is to turn the appliance off.
- **Configuration alarm E94:** the LEDs in the START/PAUSE button start to flash, displaying the complete code (family plus alarm) and the code is also shown on the display. The diagnostics mode cannot be accessed and the “quick alarm viewing” mode cannot be used.
- **Alarms EH1-EH2-EH3:** in the event of problems with the supply voltage, the appliance remains in alarm status until the mains frequency or voltage returns to acceptable values or the appliance is switched off (programme selector set to “0”). Only the family of the alarm “H” is displayed if the problem occurs during normal appliance operation. The family plus the alarm are displayed if the problem occurs when the appliance is switched on. The LEDs above or in the START/PAUSE button flash and the code is concurrently shown on the display. The diagnostics mode cannot be accessed and the “quick alarm viewing” mode cannot be used: the alarm can only be read in full when the situation has normalised.
- **Alarms E51- E52:** all the alarms are displayed during diagnostic testing: normally, when shifting from one control phase to another, the appliance quits the alarm mode and executes the selected phase. This is not the case for alarms E51 (motor power supply TRIAC short-circuiting) and E52 (no signal from the tachometric generator (motor)): the only choice to quit the alarm mode is to turn the programme selector to position “0” (reset).

## 5 CANNOT ACCESS THE DIAGNOSTICS PROGRAMME

### 5.1 None of the LEDs on the circuit board light up

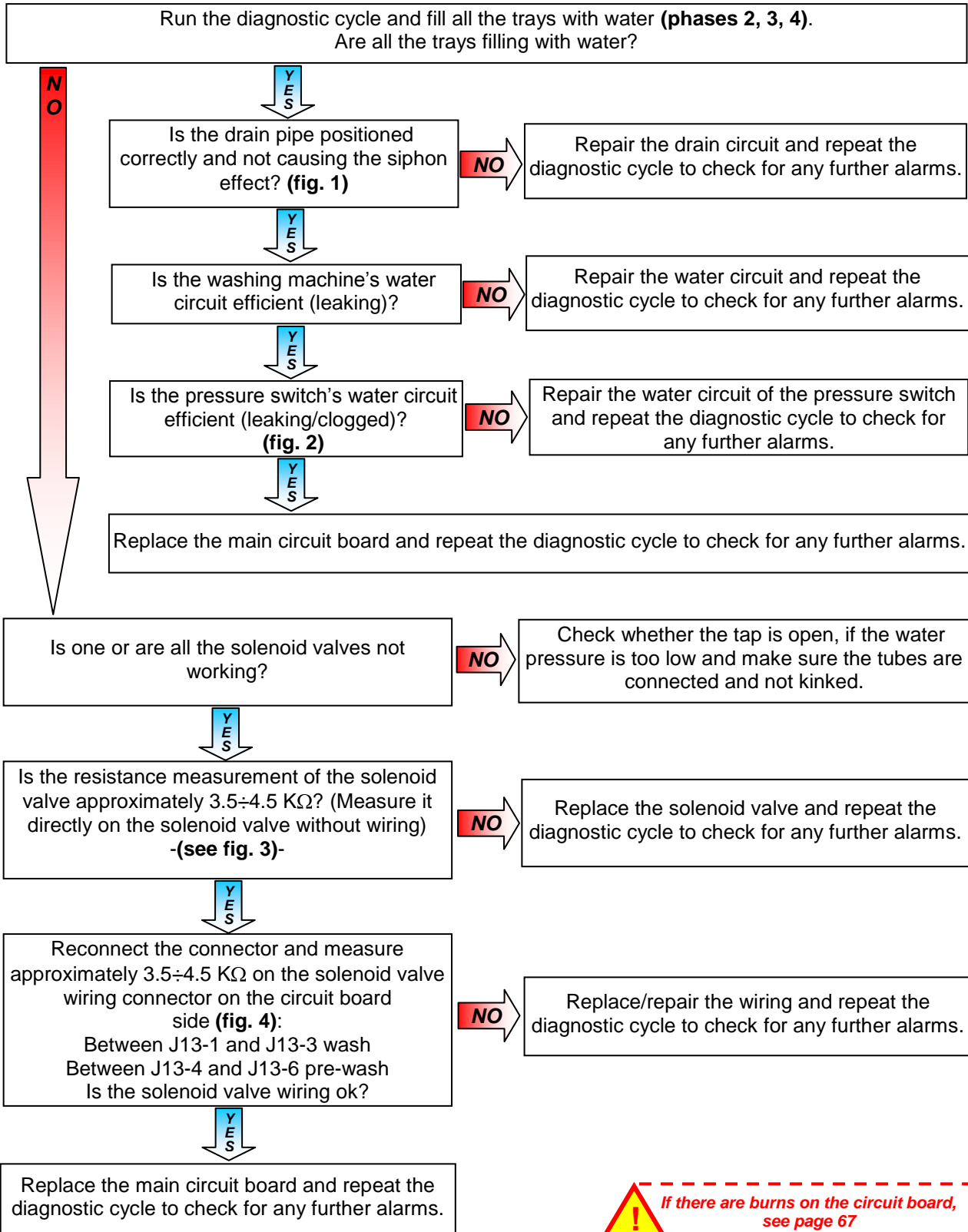




## 6 TROUBLESHOOTING BASED ON ALARM CODES

<b>E11</b>	<b>E11: Water fill difficulty during washing</b>	<b>E11</b>
	Maximum water fill time for every level of the pressure switch (the time is reset every time the level is achieved)	

Checks to perform:





**E11**

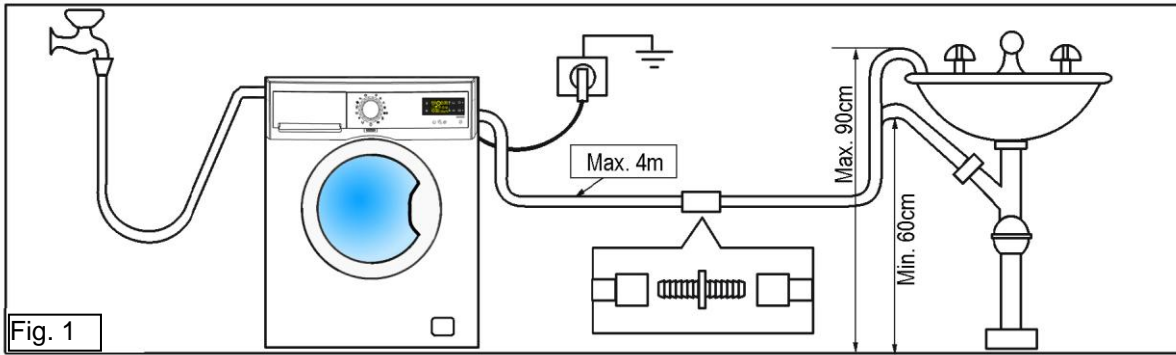


Fig. 1

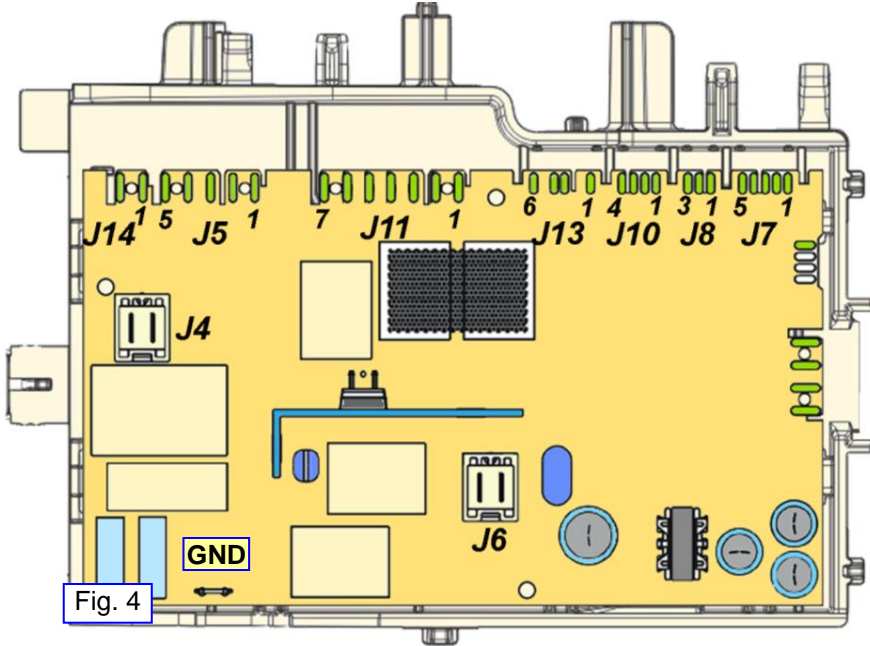


Fig. 4

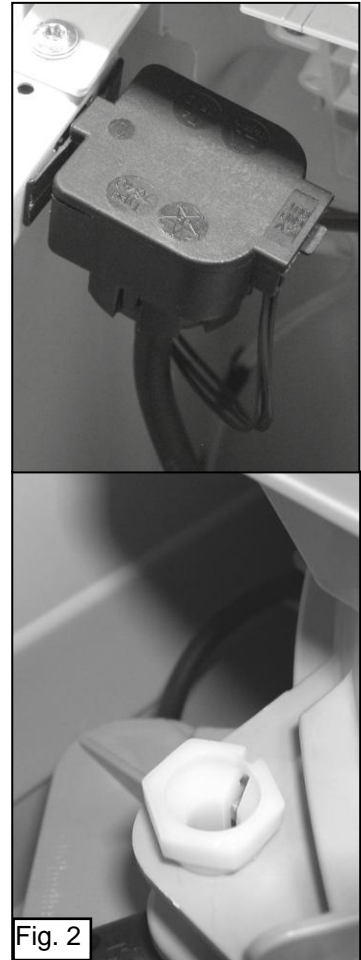


Fig. 2

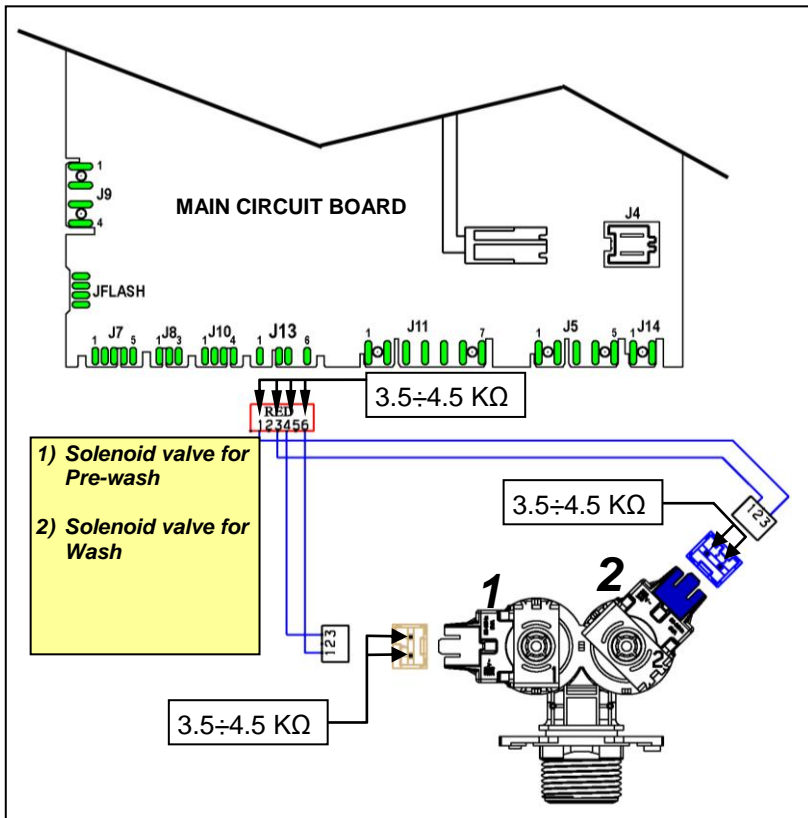
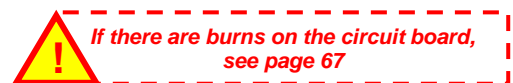
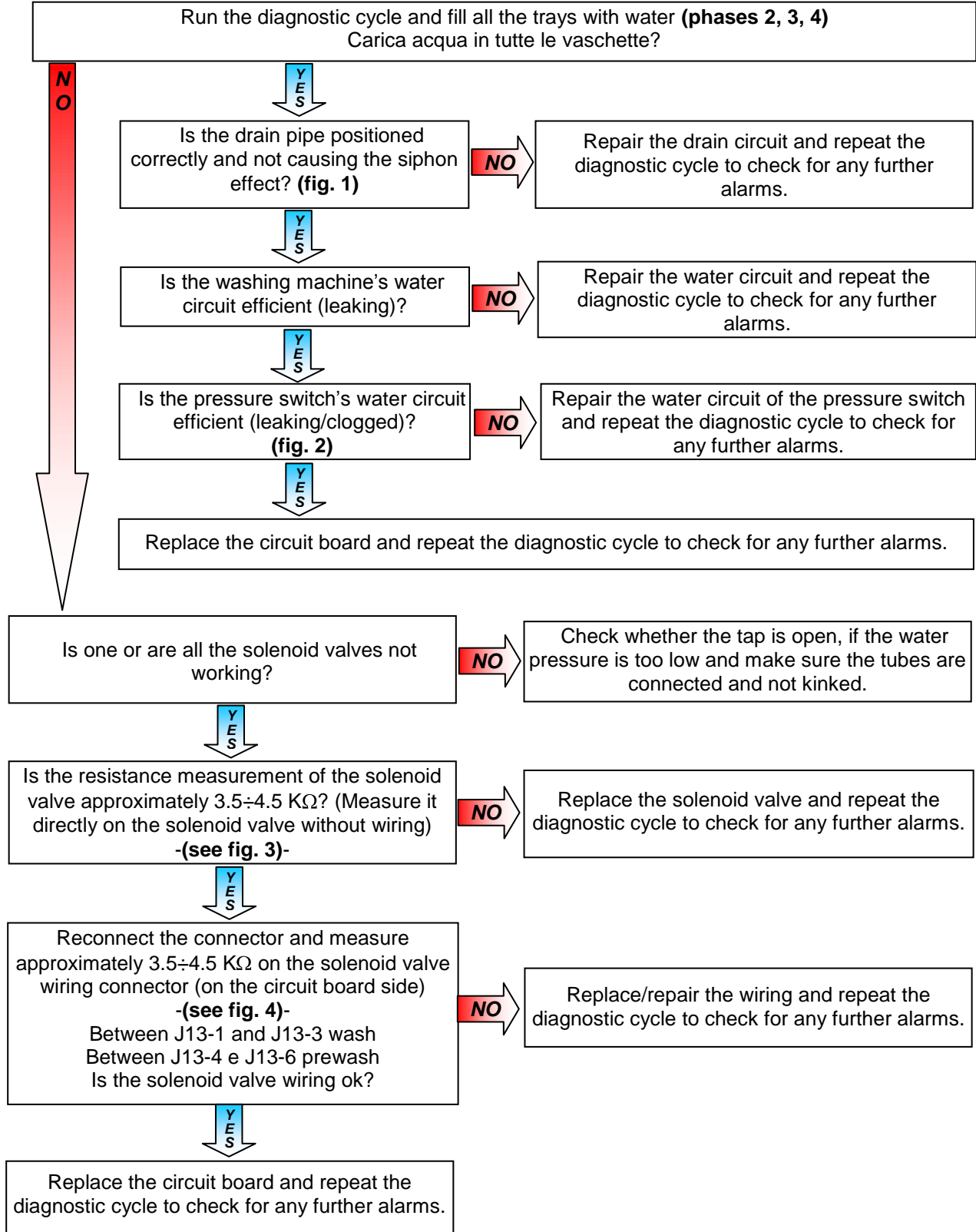


Fig. 3

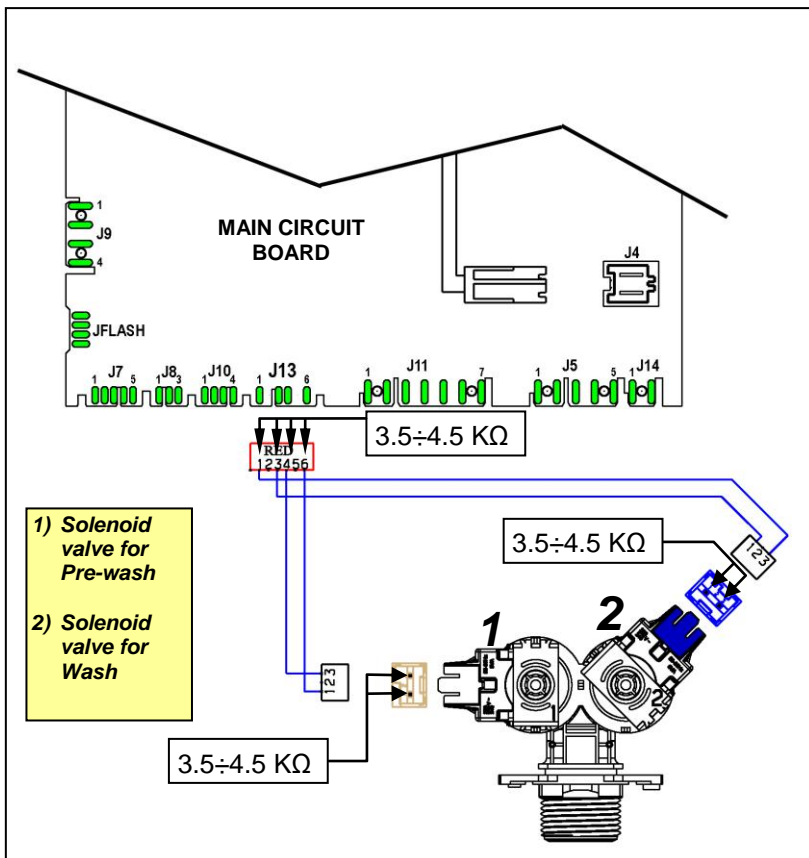
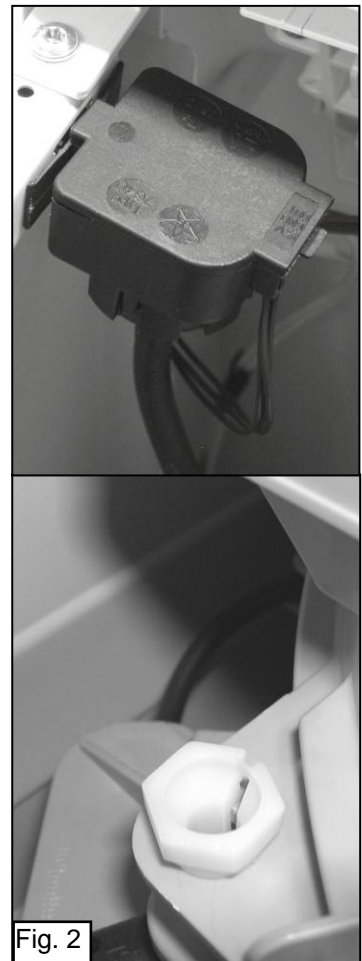
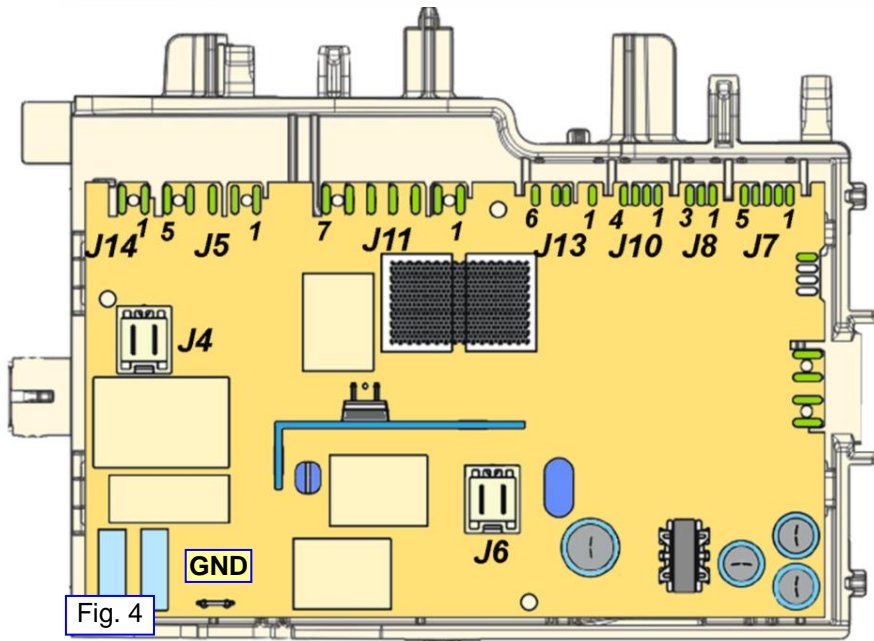
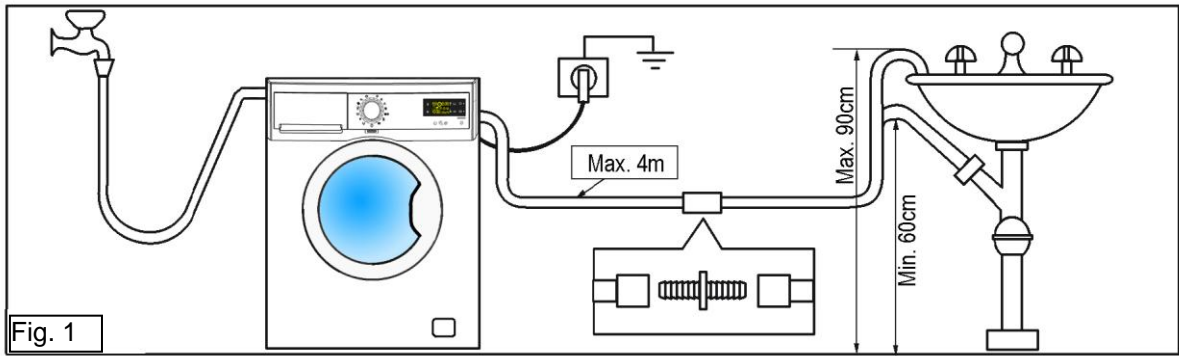
**!** If there are burns on the circuit board, see page 67

<b>E13</b>	<b>E13: Water leaks</b>	<b>E13</b>
	Maximum overall water fill time exceeded (sum of all water fills between one drain phase and the next to avoid exceeding the maximum volume)	

Checks to perform:



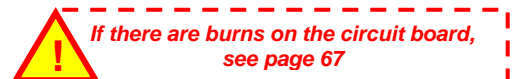
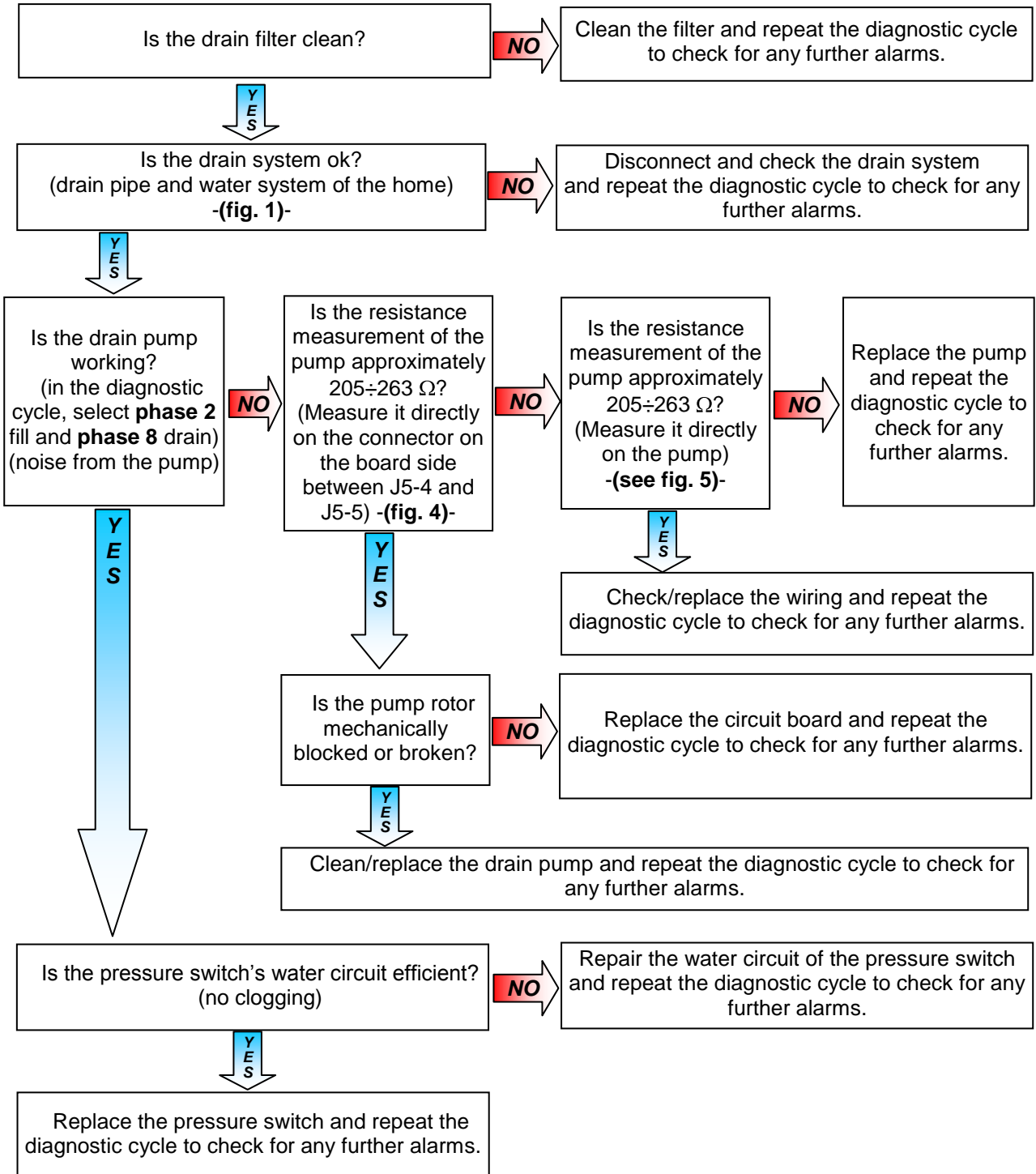
E13



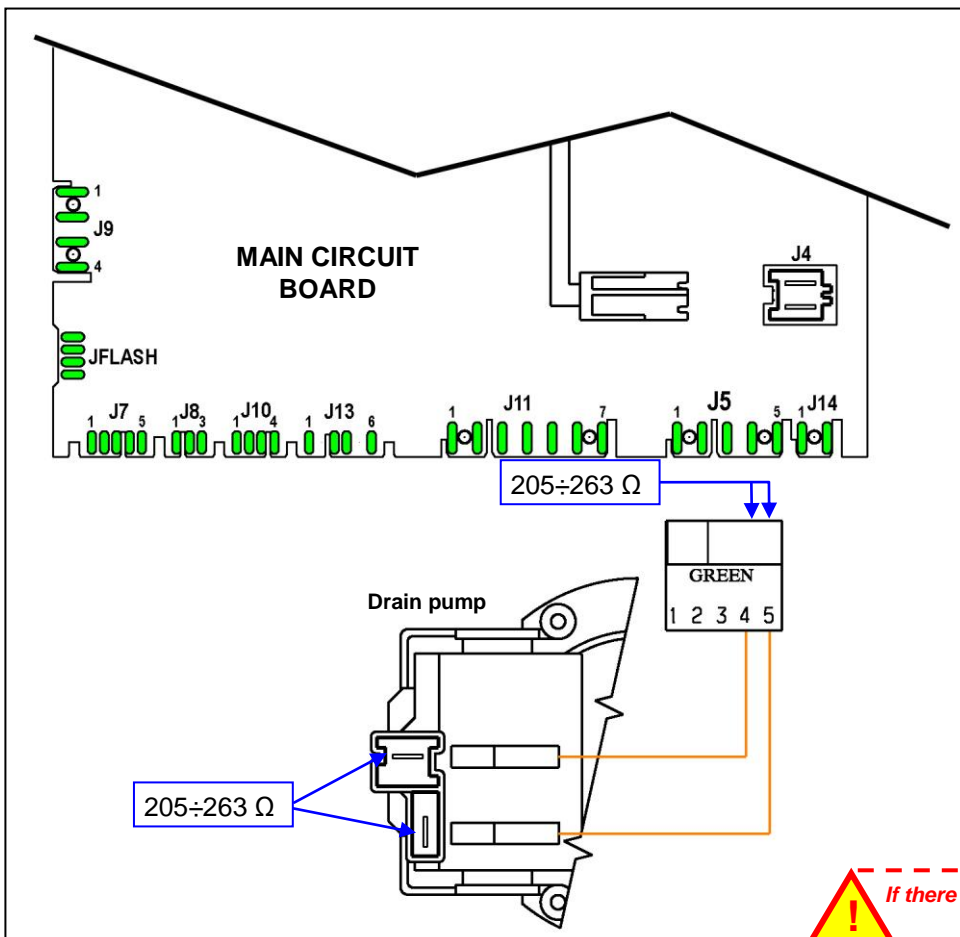
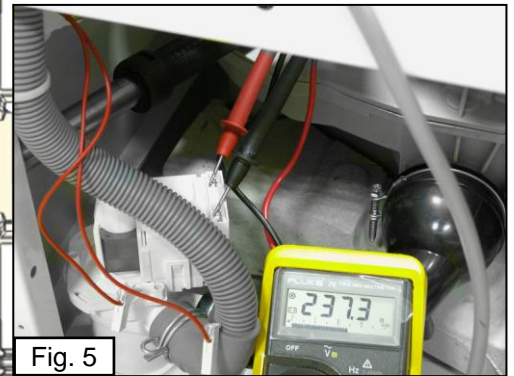
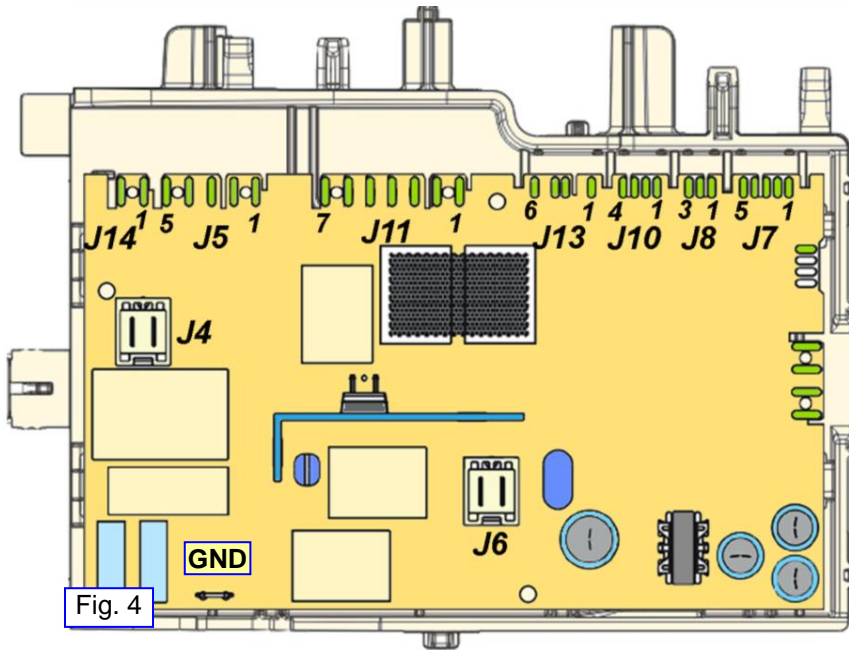
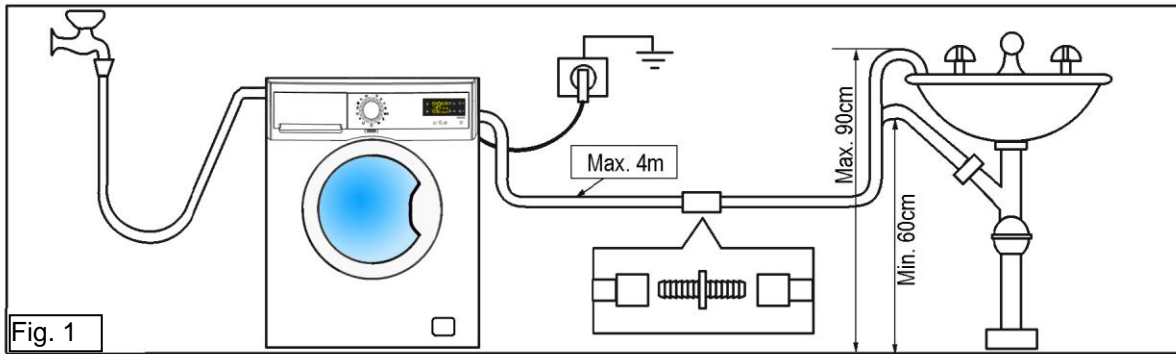
**!** If there are burns on the circuit board, see page 67

<b>E21</b>	<b>E21: Drain difficulty</b>	<b>E21</b>
	Maximum drain time exceeded (measured for every cycle phase)	

Checks to perform:

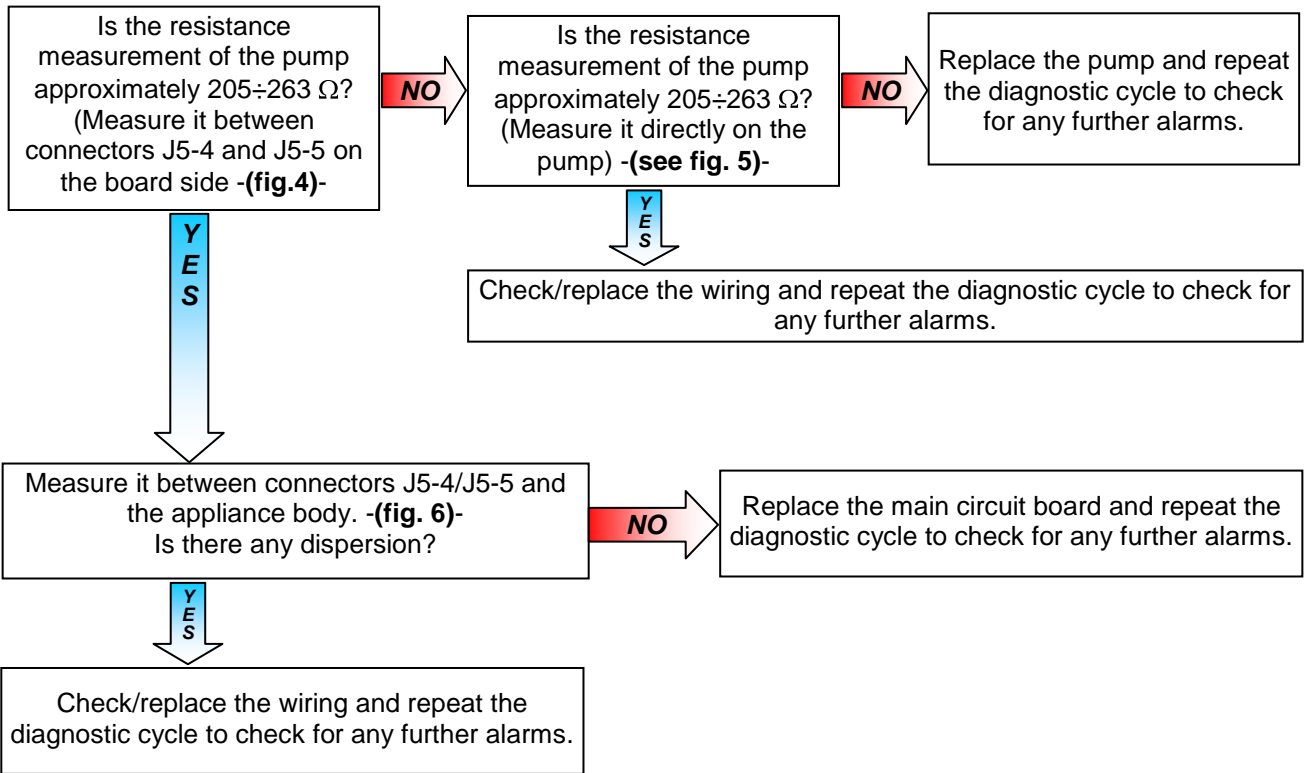


E21



**E23 E23: Problems with the component (Triac) controlling the drain pump E23**

Checks to perform:



E23

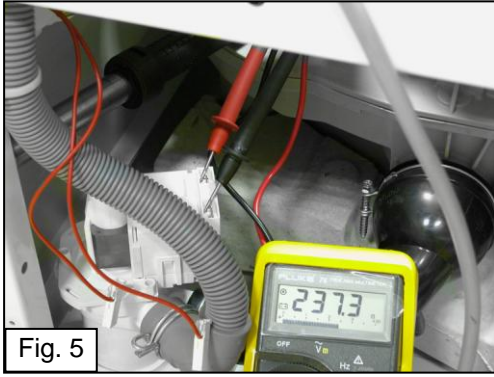


Fig. 5



Fig. 6

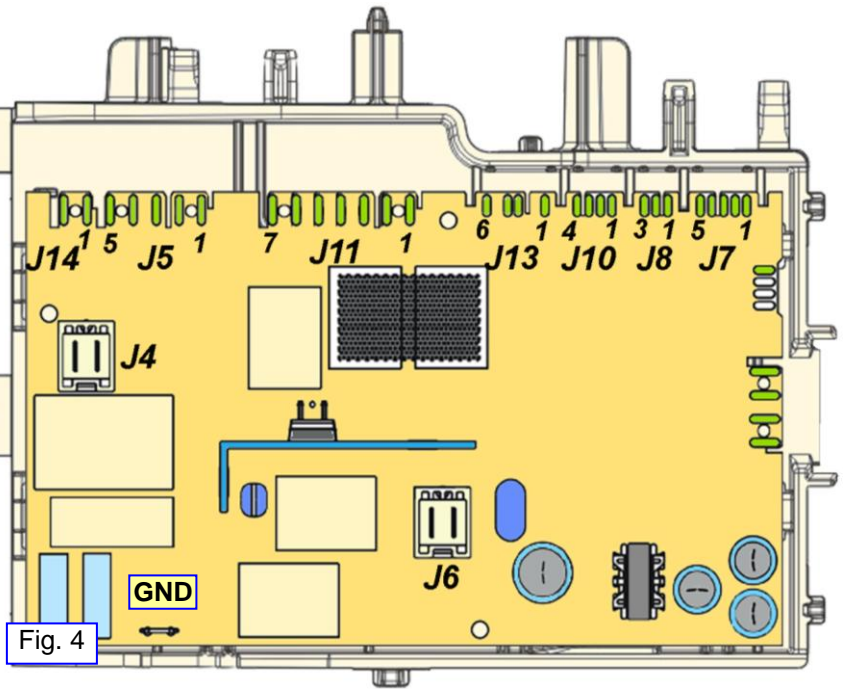
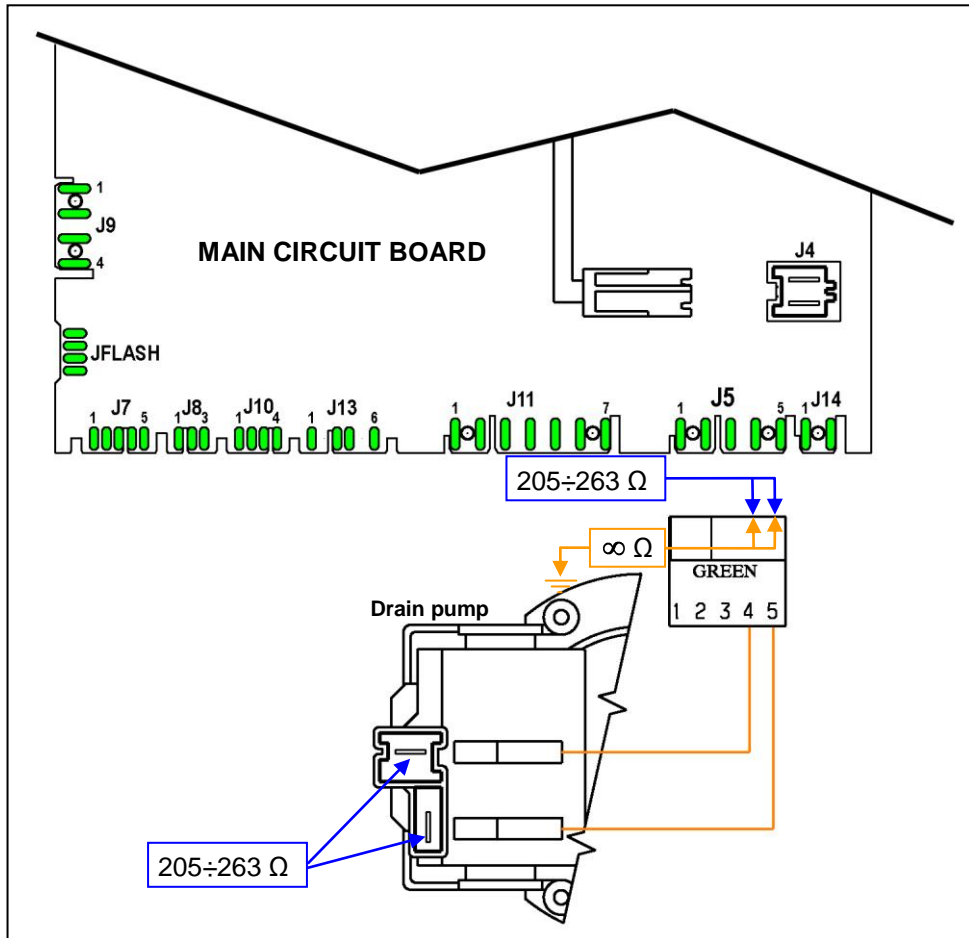


Fig. 4



**!** If there are burns on the circuit board, see page 67

<b>E24</b>	<b>E24: Sensing circuit of the component (Triac) controlling the drain pump faulty</b>	<b>E24</b>
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*Checks to perform:*

Check that all the connectors are correctly inserted

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

If there are burns on the circuit board, see page 67

<b>E31</b>	<b>E31: The analogue pressure switch provides the main circuit board with a signal outside the limits</b>	<b>E31</b>
------------	-----------------------------------------------------------------------------------------------------------	------------

*Checks to perform:*

Check that all the connectors are correctly inserted

Measure that the circuit is closed between J7-1, J7-2, J7-3 and the connector of the analogue pressure switch (they are three independent wires **(see fig. 7)**.  
is the wiring between the main circuit board and the analogue pressure switch ok and is it connected correctly on both sides?

NO

Reconnect and/or replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES

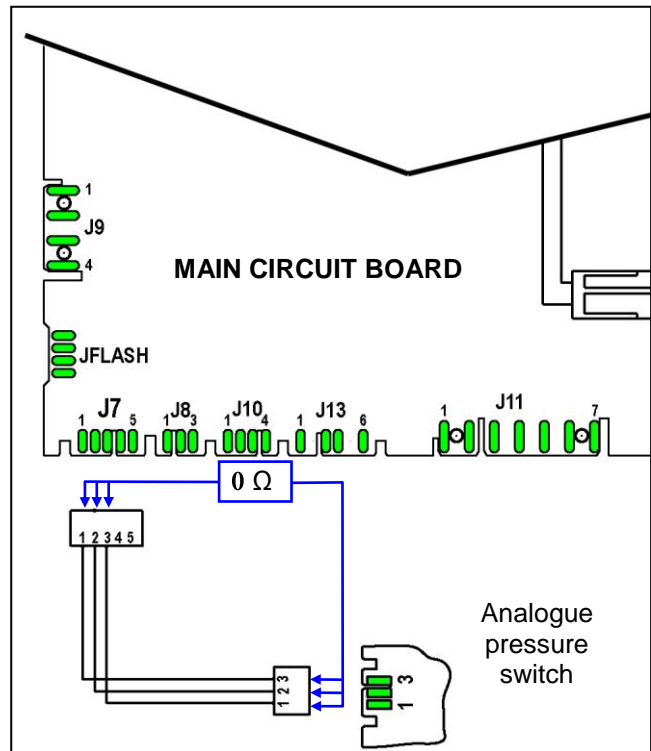
Replace the analogue pressure switch and repeat the diagnostic cycle to check for any further alarm codes.  
Is the appliance displaying the alarm code again?

YES

Replace the main circuit board and repeat the diagnostic cycle to check for any further alarm codes.



Fig. 7

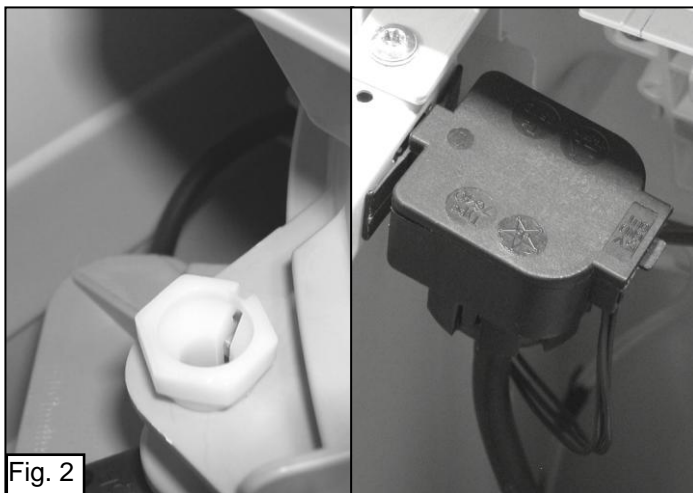
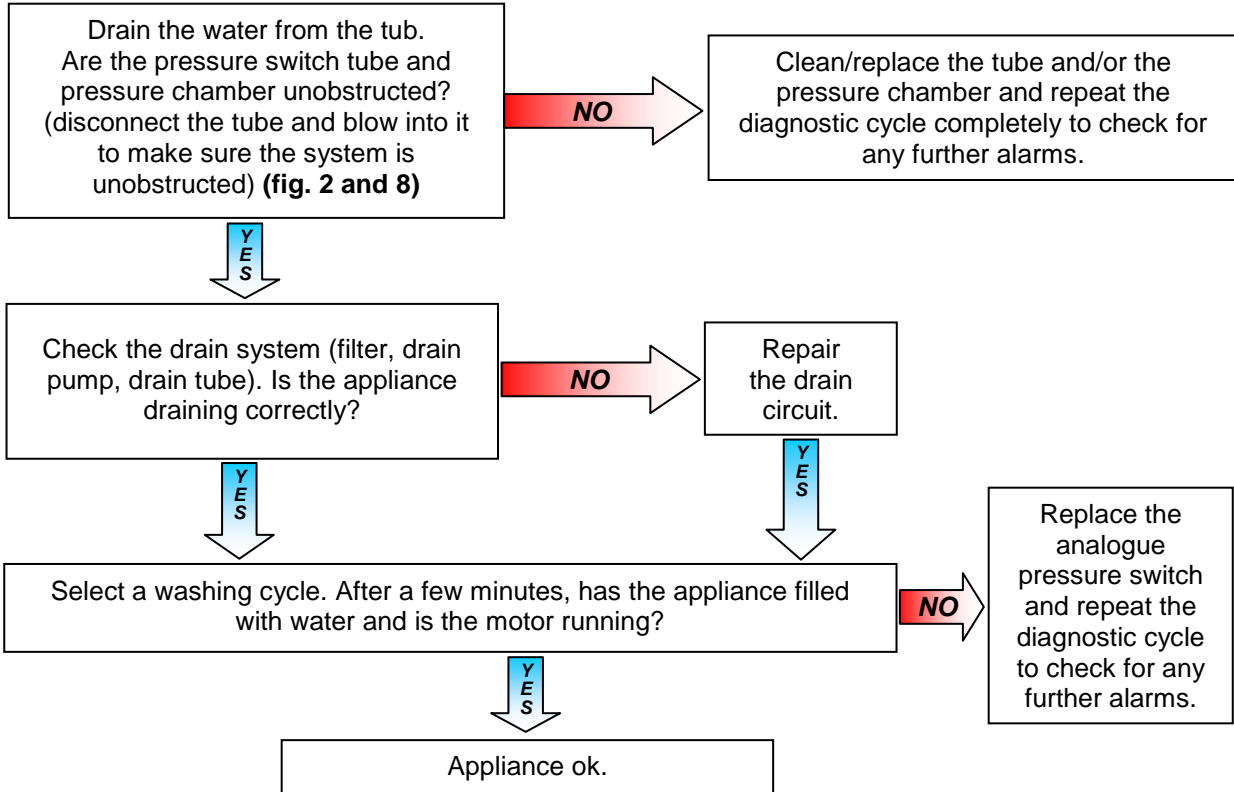


If there are burns on the circuit board, see page 67



<b>E32</b>	<b>E32: The analogue pressure switch causes an error during calibration</b> (At the start of every cycle, the appliance drains to empty the tub and creates a level 0 to check the calibration of the analogue pressure switch)	<b>E32</b>
------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------

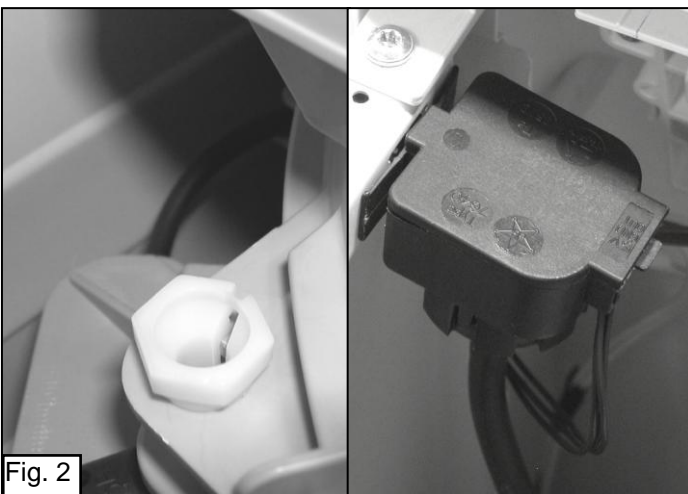
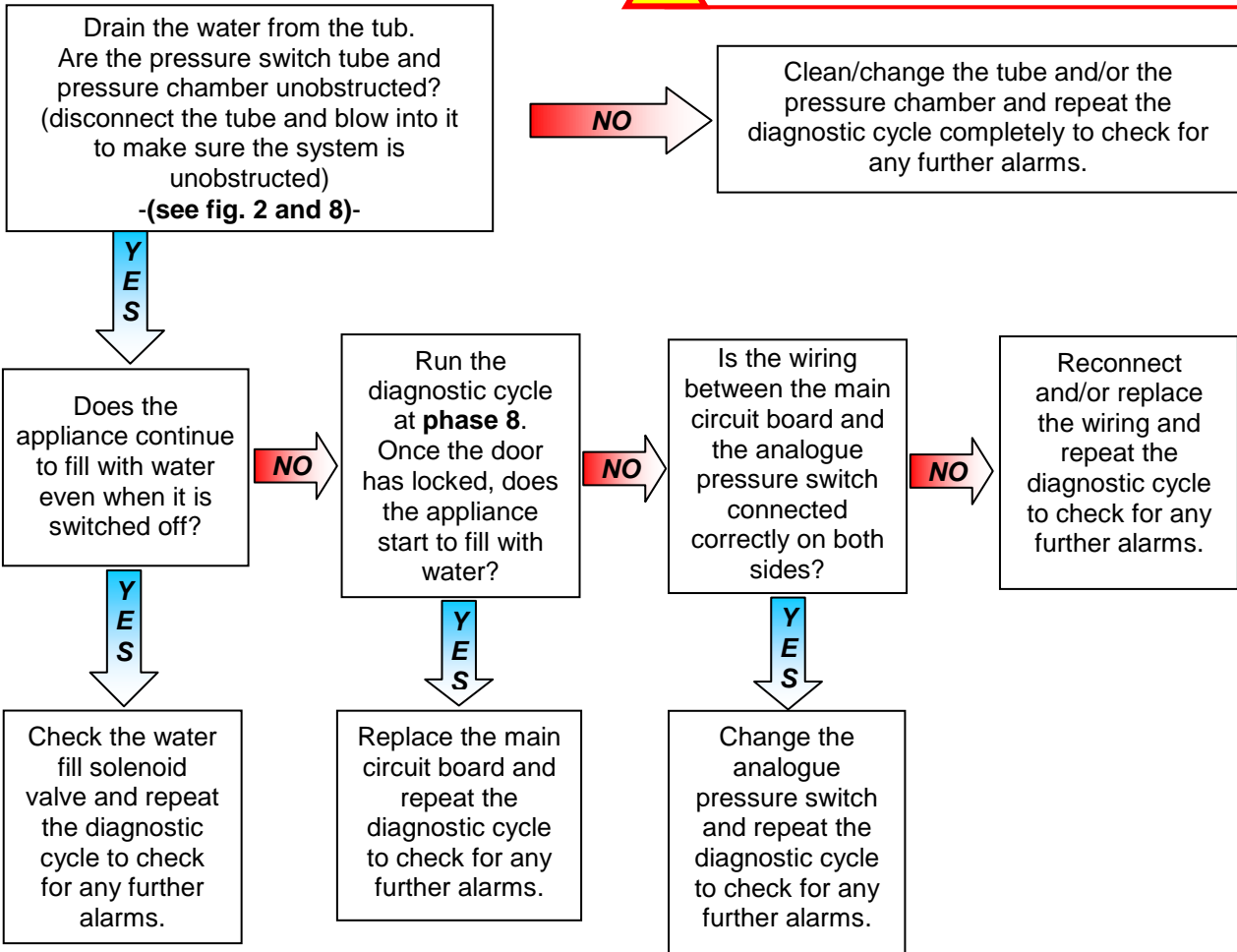
Checks to perform:



<b>E35</b>	<b>E35: Water level too high</b>	<b>E35</b>
	The main circuit board measures a water level, using the electronic pressure switch, of more than 300 mm for longer than 15 secs.	

**Checks to perform:**

**!** Check that all the connectors are correctly inserted



**!** If there are burns on the circuit board, see page 67

<b>E38</b>	<b>E38: Internal pressure chamber is clogged</b>	<b>E38</b>
	The analogue pressure switch is not able to measure any variation in the water level for at least 30 secs during drum rotation.	

Checks to perform:

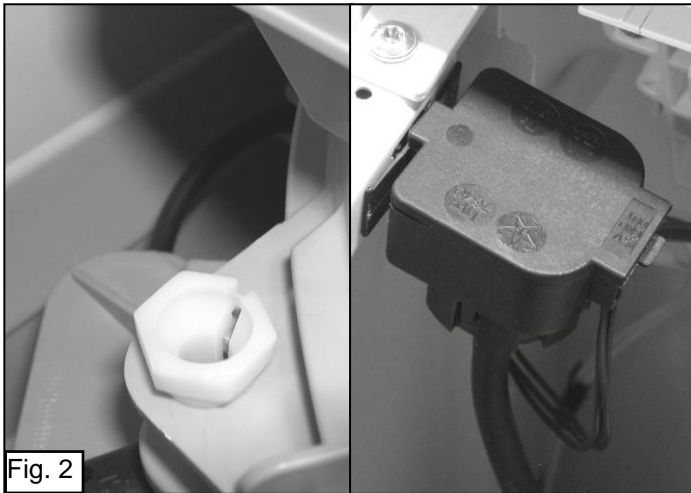
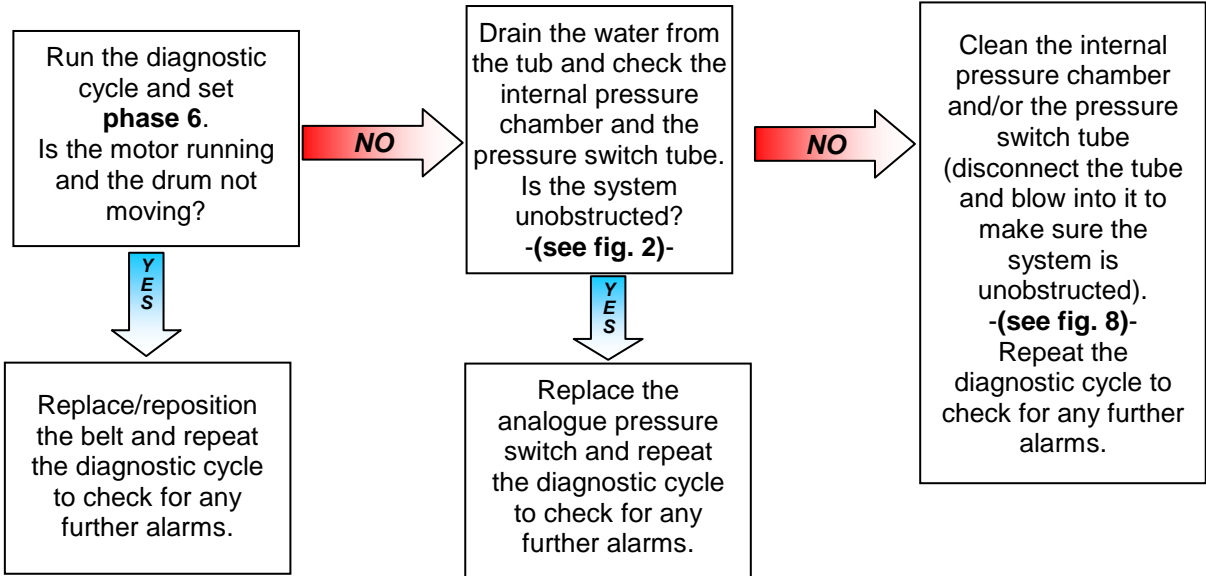
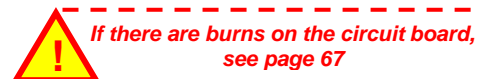


Fig. 2

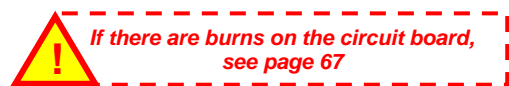
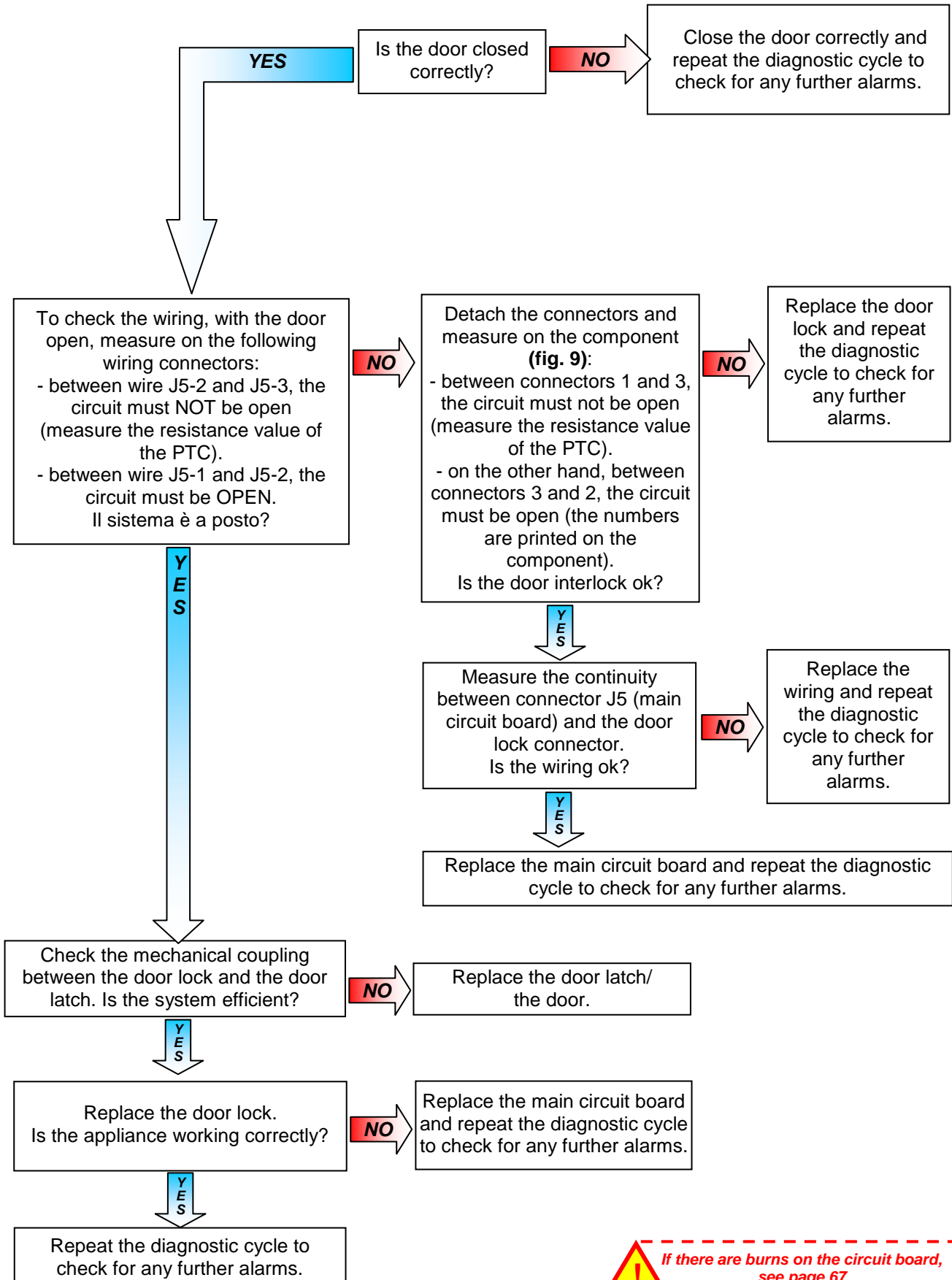


Fig. 8



<b>E41</b>	<b>E41: Door open</b>	<b>E41</b>
	Maximum time exceeded (PTC = 15 seconds)	

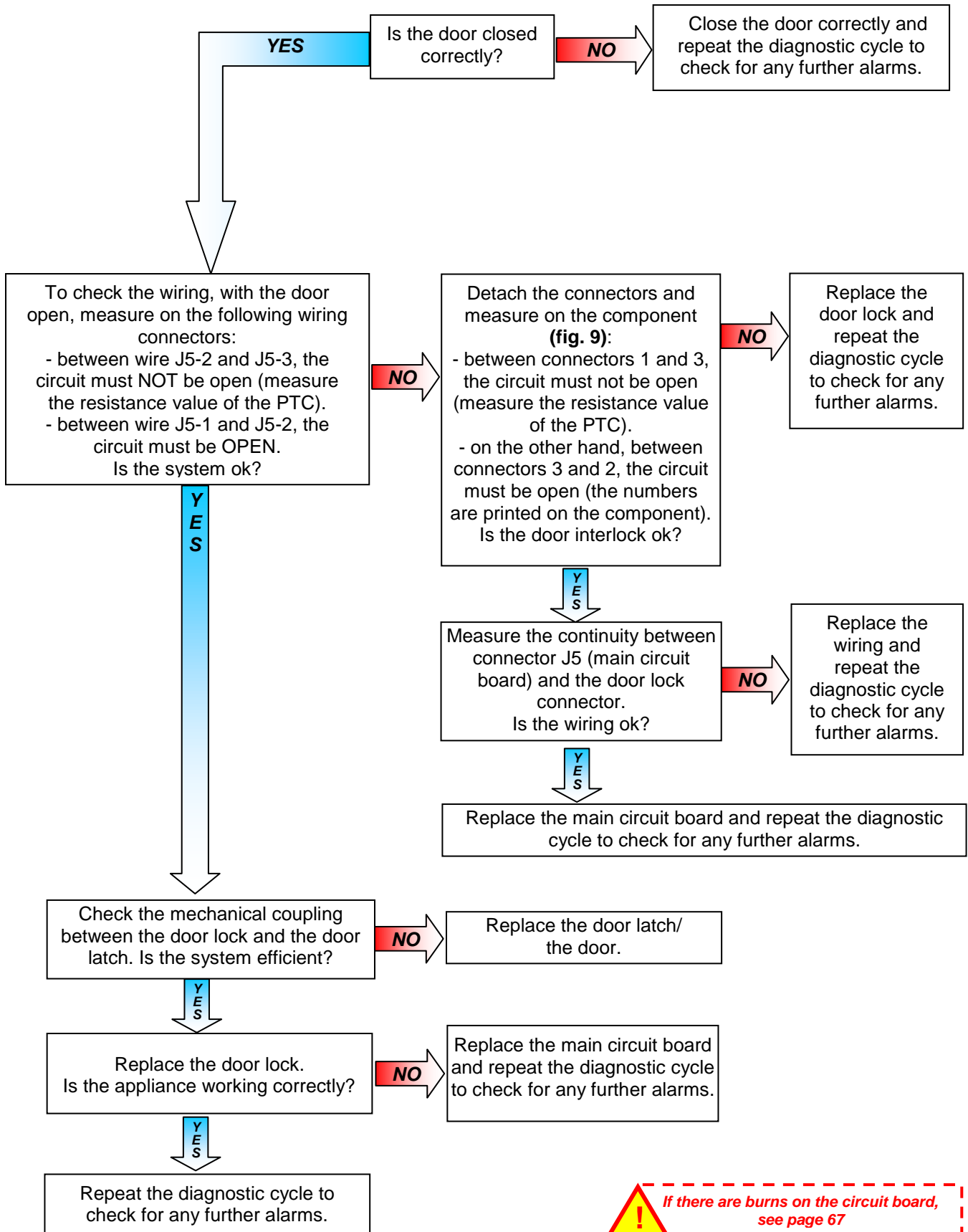
Checks to perform:



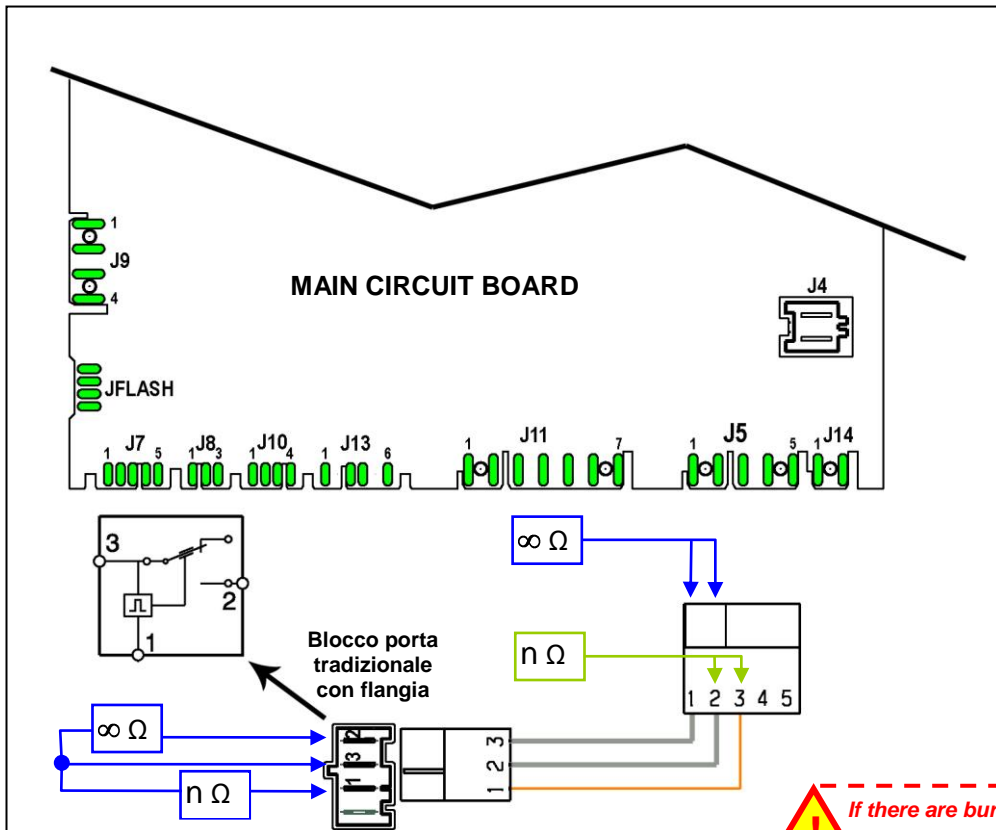
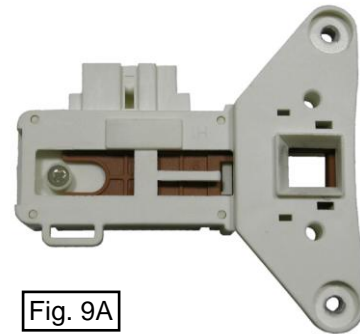
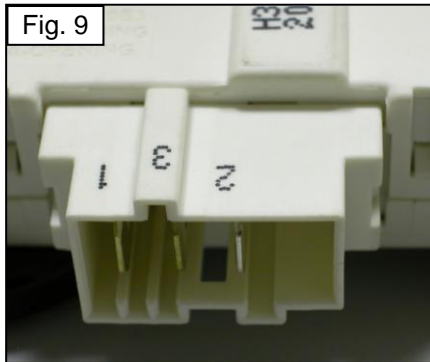
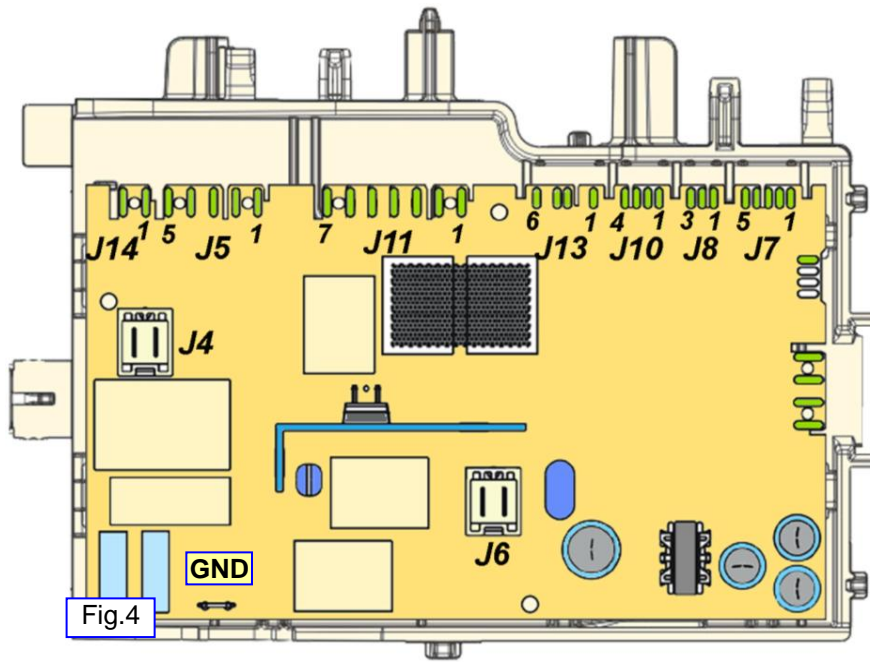


<b>E42</b>	<b>E42: Door opening problems</b>	<b>E42</b>
	Maximum time exceeded (255 seconds)	

Checks to perform:



E42



**E43** **E43: Problems with the component (Triac) controlling the door delay system** **E43**

Checks to perform:

**!** Check that all the connectors are correctly inserted

To check the wiring, with the door open, measure on the following wiring connectors (fig. 4):

- between wire J5-2 and J5-3, the circuit must NOT be open (measure the resistance value of the PTC).
- between wire J5-1 and J5-2, the circuit must be OPEN.

Is the system ok?

**NO**

Detach the connectors and measure on the component (fig. 9):

- between connectors 1 and 3, the circuit must not be open (measure the resistance value of the PTC).
- on the other hand, between connectors 3 and 2, the circuit must be open (the numbers are printed on the component).

Is the door interlock ok?

**NO**

Replace the door lock and repeat the diagnostic cycle to check for any further alarms.

**YES**

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**YES**

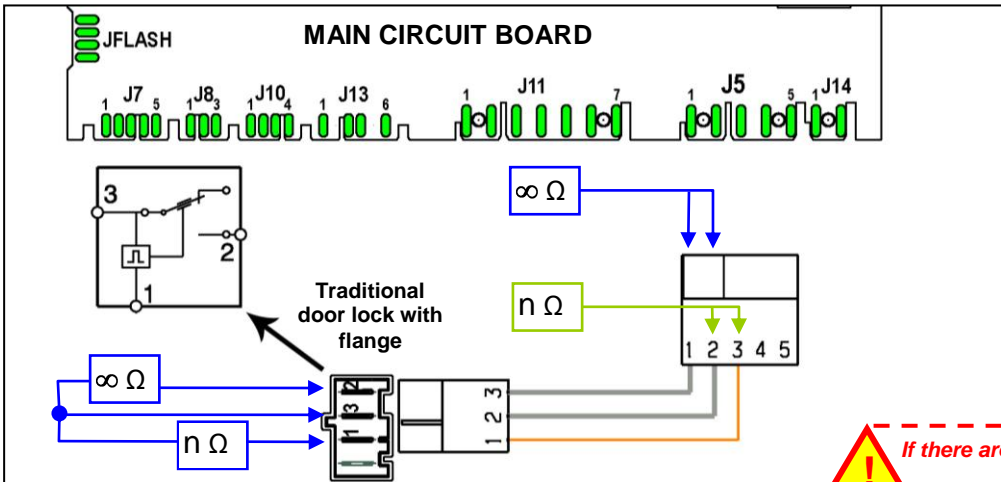
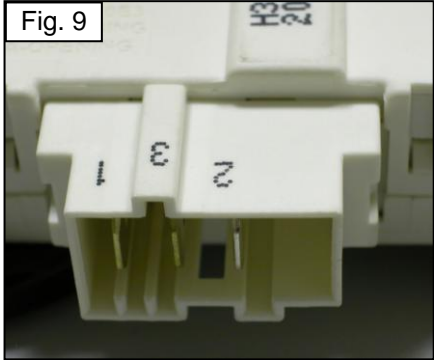
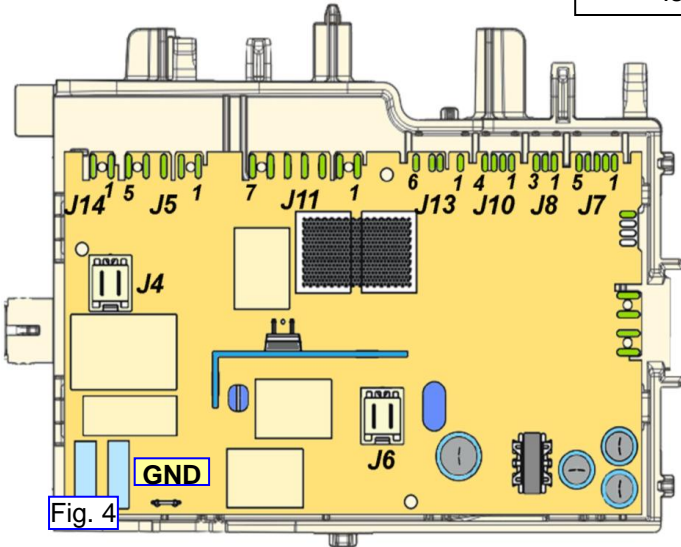
Measure the continuity between connector J5 (main circuit board) and the door lock connector. Is the wiring ok?

**NO**

Replace the wiring and repeat the diagnostic cycle to check for any further alarms.

**YES**

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



**!** If there are burns on the circuit board, see page 67



<b>E44</b>	<b>E44: Door closed “sensing” circuit faulty</b>	<b>E44</b>
------------	--------------------------------------------------	------------

*Checks to perform:*



*Check that all the connectors are correctly inserted*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

<b>E45</b>	<b>E45: Problems with the “sensing” circuit of the component (Triac) controlling the door delay system</b>	<b>E45</b>
------------	------------------------------------------------------------------------------------------------------------	------------

*Checks to perform:*



*Check that all the connectors are correctly inserted*

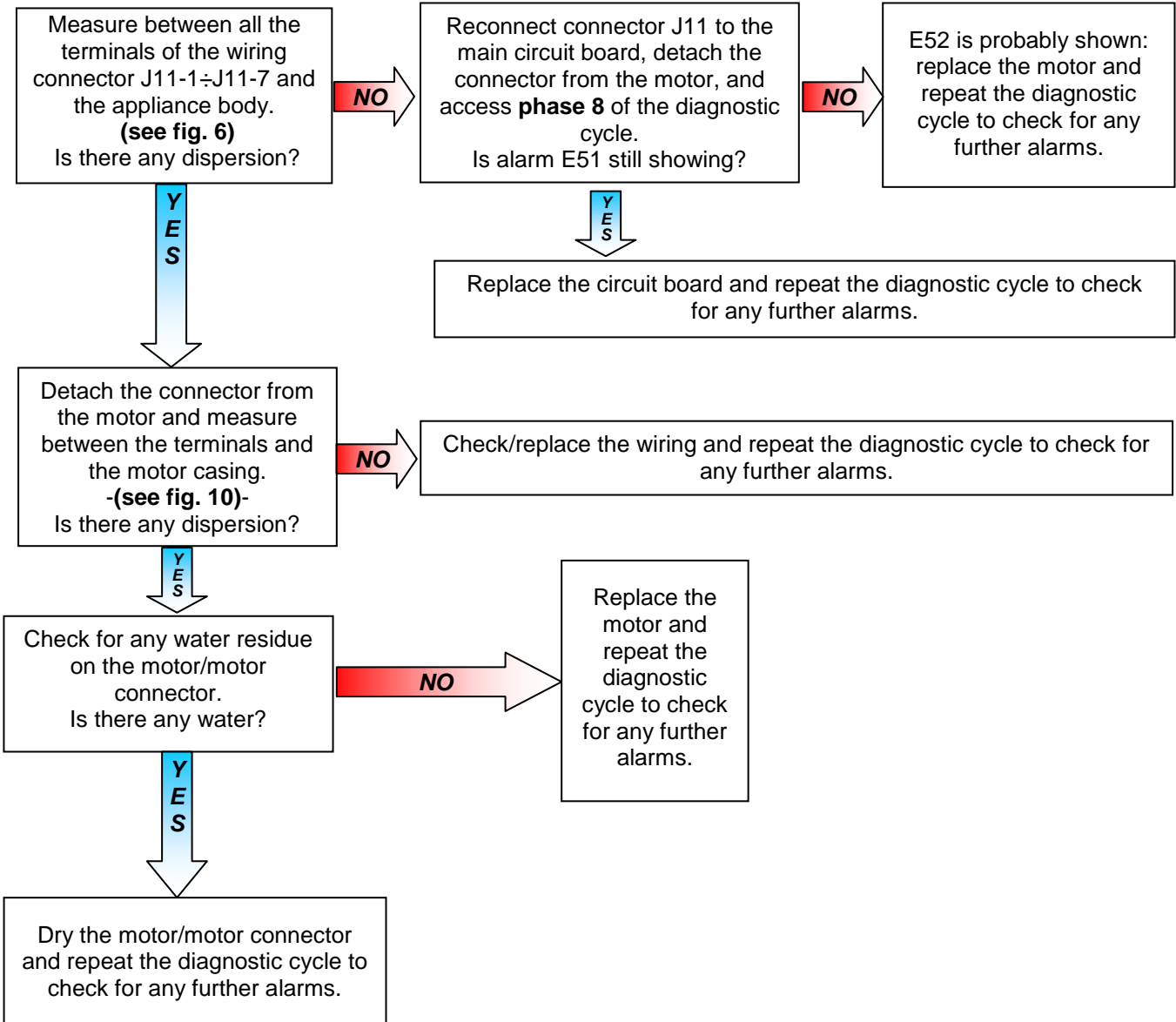
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



*If there are burns on the circuit board, see page 67*

<b>E51: Motor power TRIAC short-circuited</b>		
<b>E51</b>	Activation of the protection system for the Triac short-circuit (after 5 attempts separated by a 5-minute pause, during the cycle, immediately if recognised at the start of the cycle or during diagnostics)	<b>E51</b>

Checks to perform:



E51

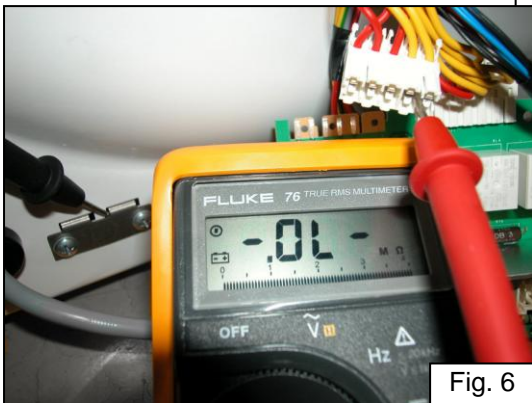
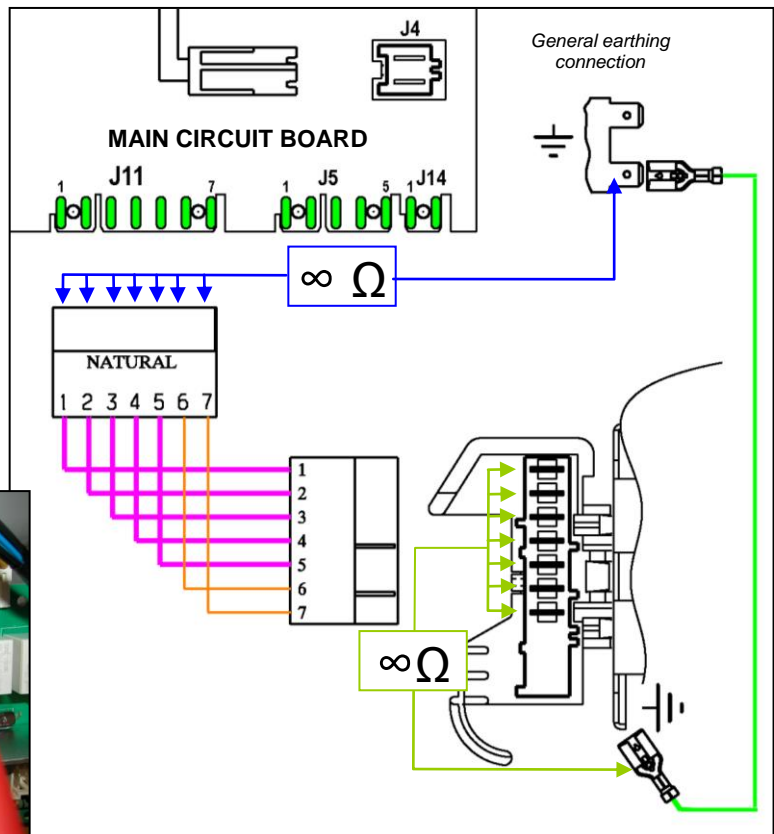
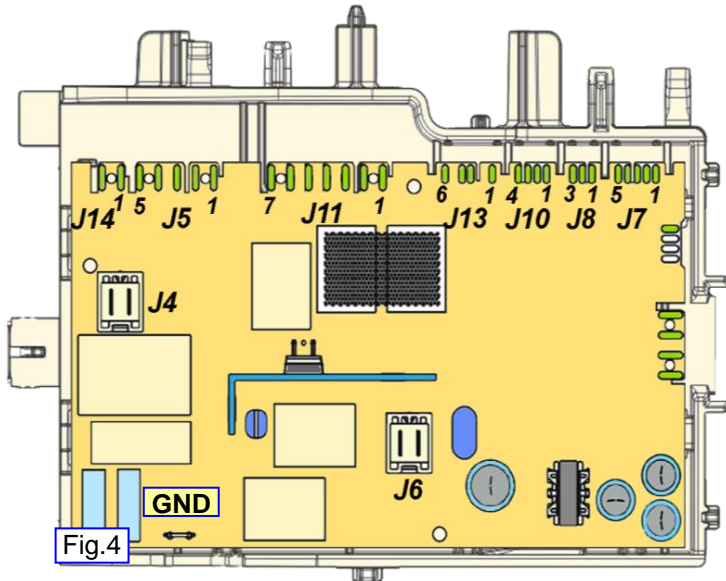


Fig. 6

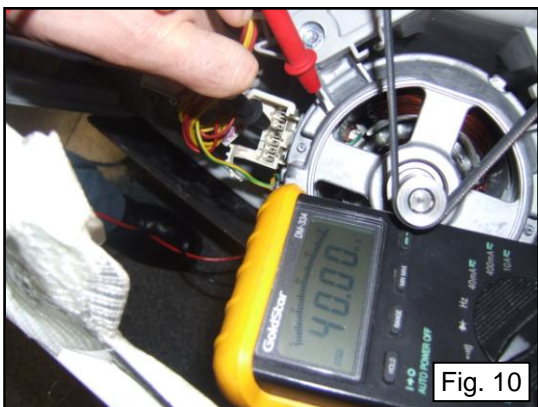
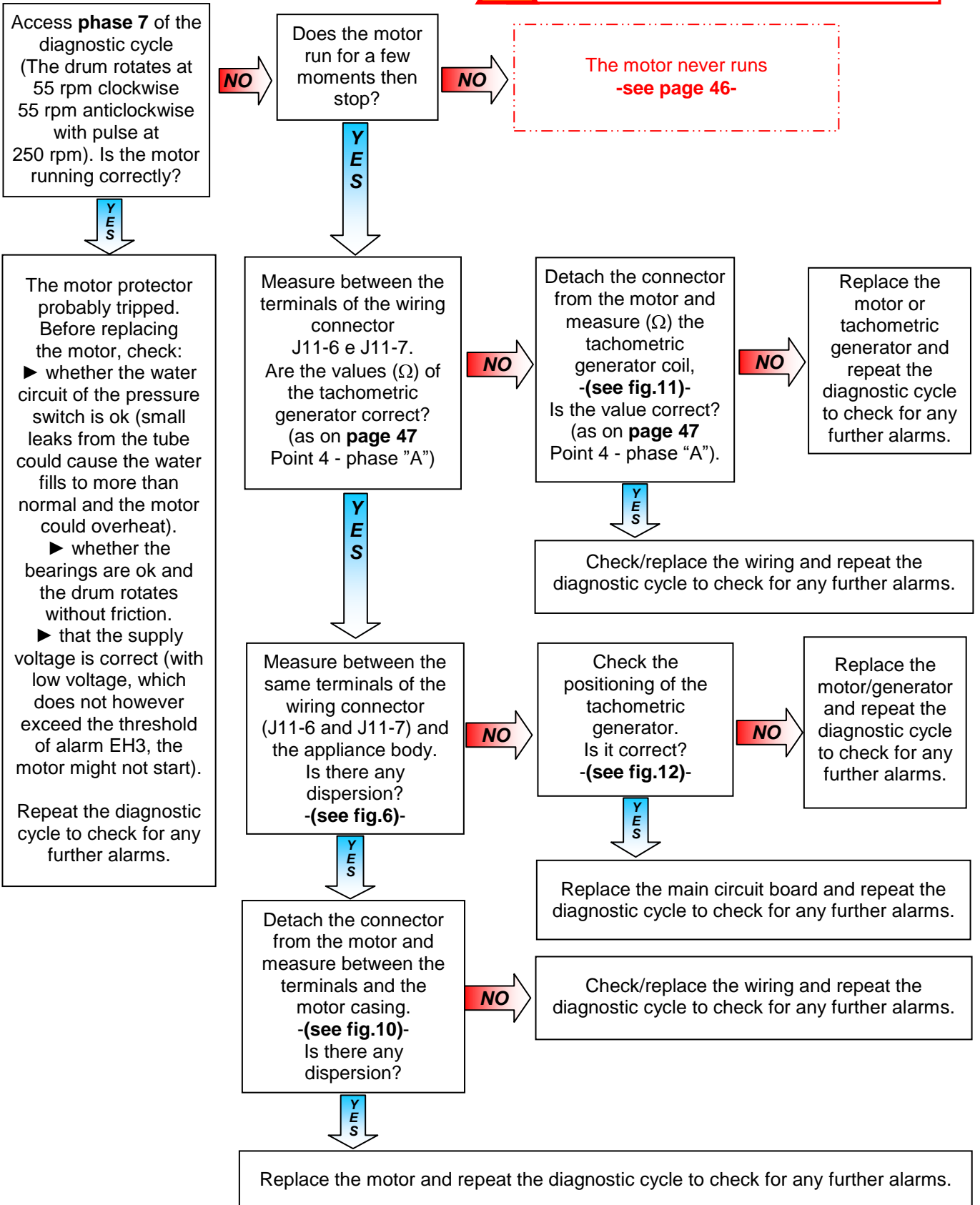


Fig. 10

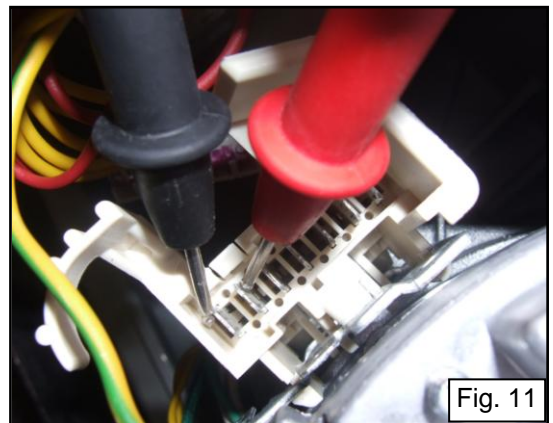
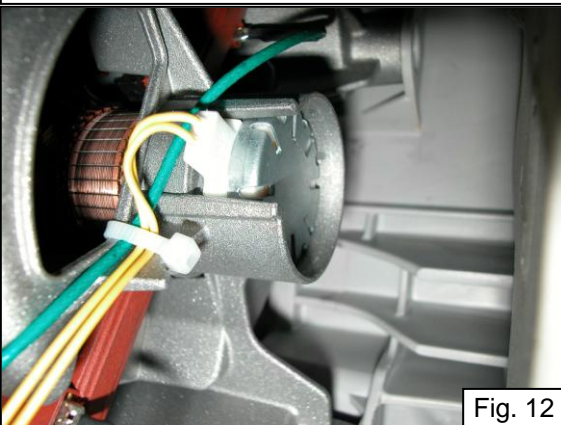
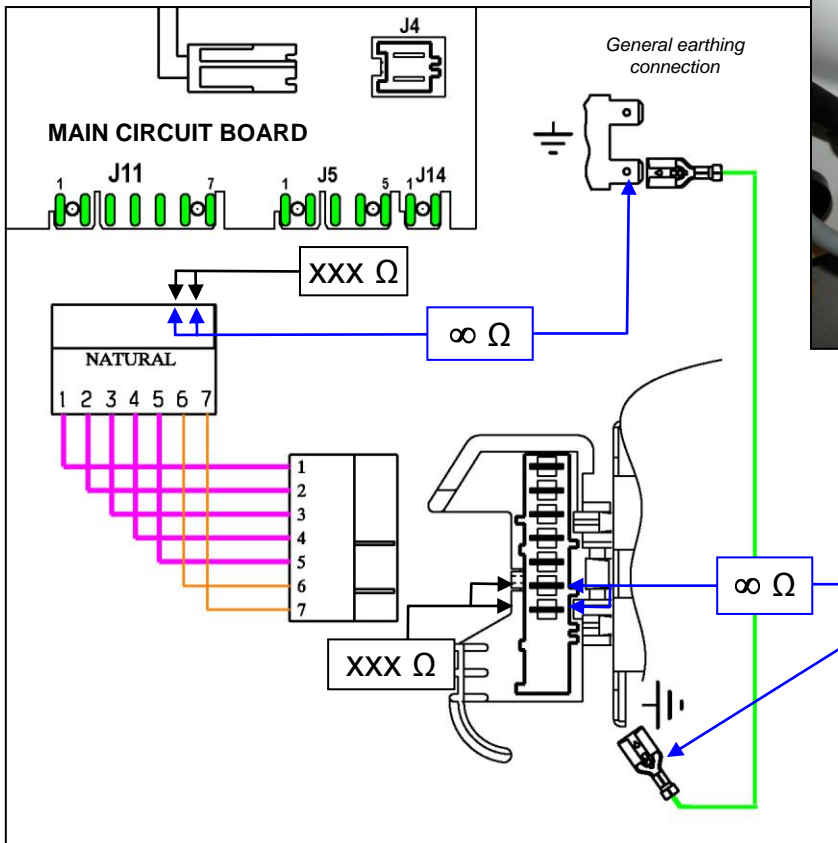
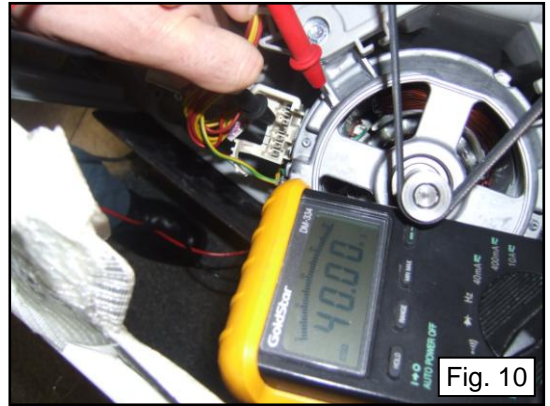
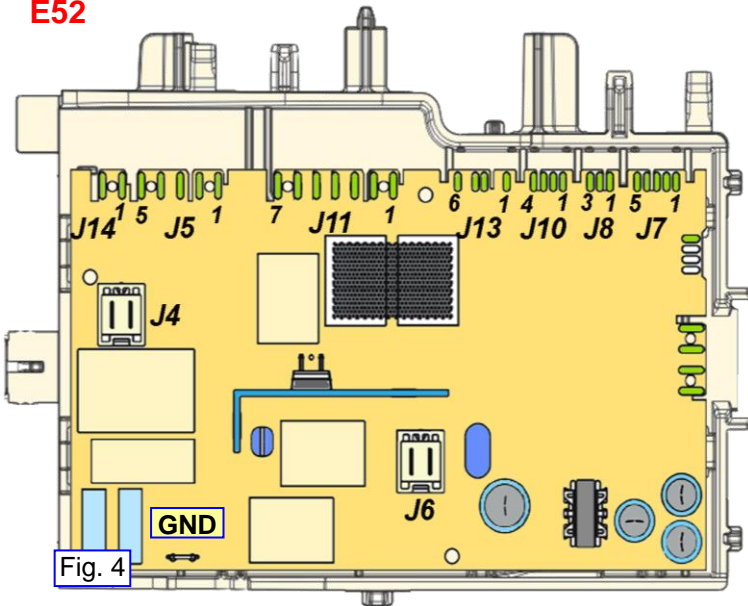
**!** If there are burns on the circuit board, see page 67

<b>E52</b>	<b>E52: No signal from motor tachometric generator (first part)</b>	<b>E52</b>
	Cycle interrupted after 5 attempts during the cycle, immediately if recognised at the start of the cycle or during diagnostics	

Checks to perform:



**E52**



**!** If there are burns on the circuit board, see page 67

**E52: No signal from motor tachometric generator (second part)**

**E52**

Cycle interrupted after 5 attempts during the cycle, immediately if recognised at the start of the cycle or during diagnostics

**E52**

Checks to perform:



Check that all the connectors are correctly inserted

**The motor never runs**

To check the wiring, measure ( $\Omega$ ) between the following wiring connectors of the main circuit board (fig.4) and compare the values with the correct ones (see page 47: point 4 - motor parameters)

- between J11-2 and J11-5, a value as in point 4 - B (Stator) must be found
- between J11-1 and J11-5, where featured, a value as in point 4 - D must be found (half field stator).
- between J11-3 and J11-4, a value as in point 4 - C (rotor) must be found.

Are the values correct?

**NO**

Check the motor as on page 47. Il motore è a posto?

**NO**

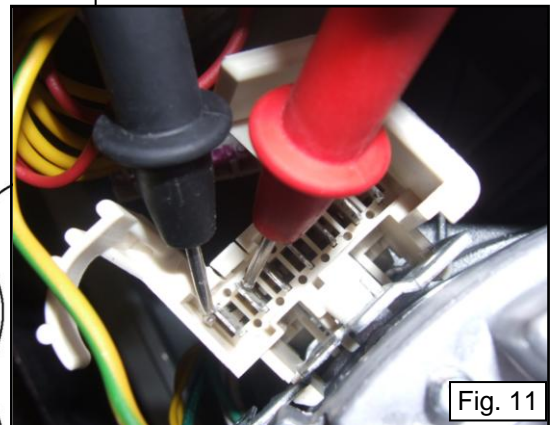
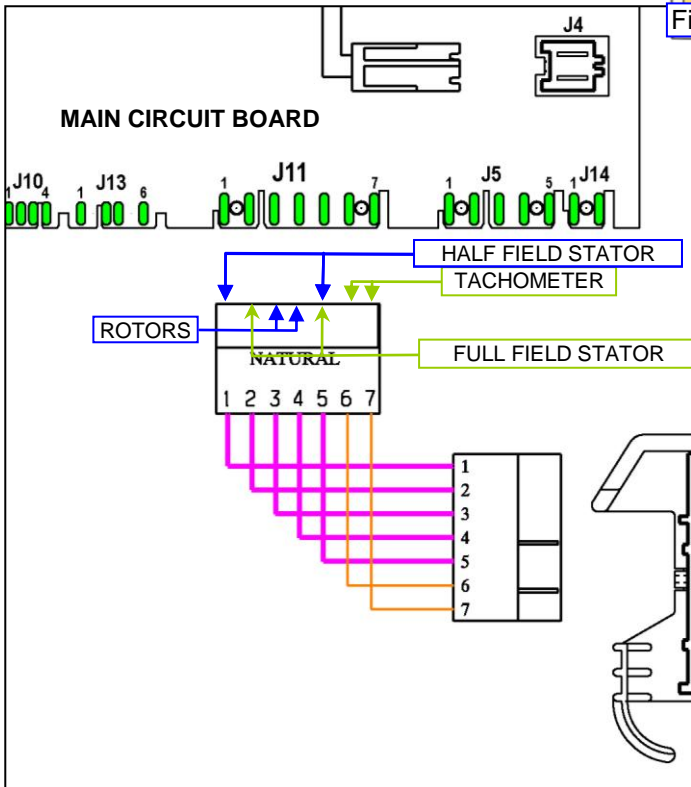
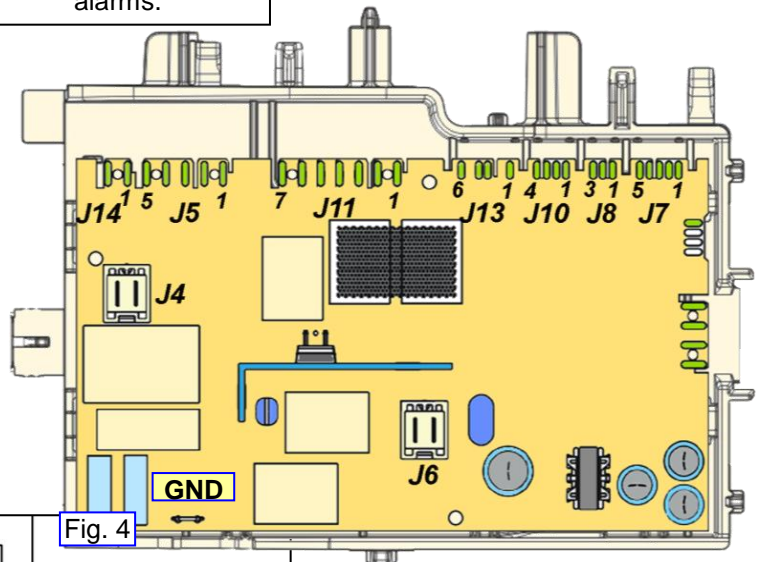
Replace the motor and repeat the diagnostic cycle to check for any further alarms.

**YES**

Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.

**YES**

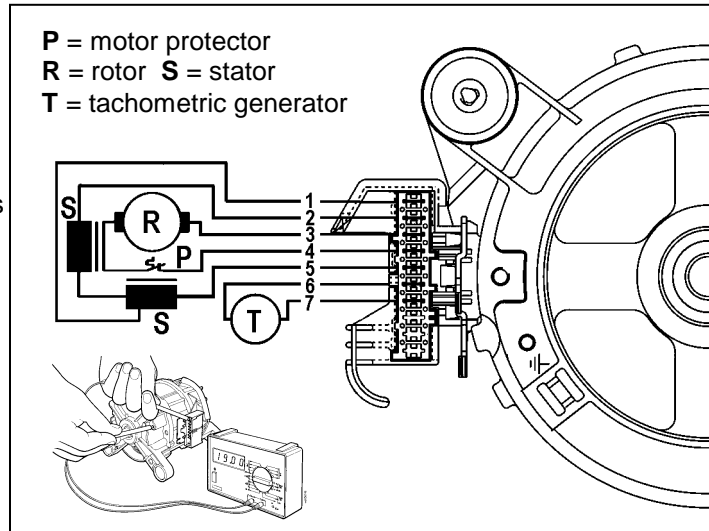
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



If there are burns on the circuit board, see page 67

### How to check collector motors

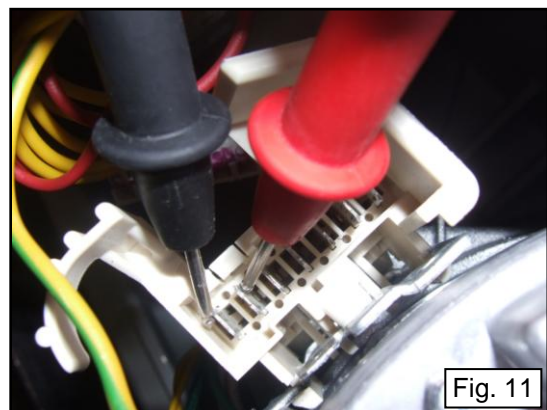
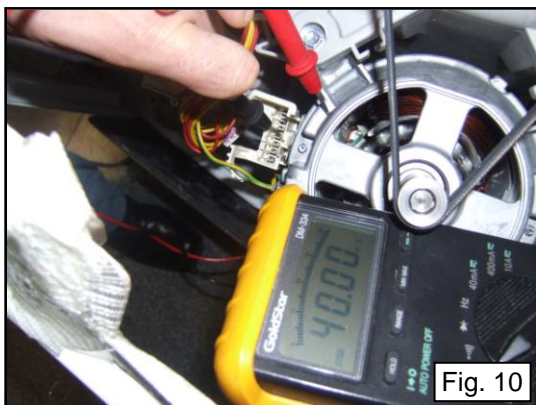
- 1) Check the connection blocks (wiring) and for the presence of any protruding/kinked terminals.
- 2) Check for the presence of any marks/residue/water or detergent deposits on the motor and where these come from.
- 3) Proceed by checking for any windings/earthed parts or parts with poor earthing insulation. Use a tester with a minimum capacity of 40 MΩ: between each individual terminal and the motor casing, read ∞ (**fig. 10**).
- 4) Proceed by checking each individual winding according to the following table (**fig. 11**).



	MOTOR TERMINAL BOARD TERMINALS	CHECK:	MOTORS		
			NMSC	AP&C	ECM
<b>A</b>	<b>6-7</b>	Tachometric generator winding	184 Ω	68.7 Ω	91 Ω
<b>B</b>	<b>2-5</b>	Stator winding (full field)	1.1÷2.2 Ω	1.62÷2.12 Ω	1.46÷1.95 Ω
<b>C</b>	<b>3-4</b>	Rotor winding (plus thermal cutout)	1.6÷1.8 Ω	1.9÷2.42 Ω	2÷2.3 Ω
<b>D</b>	<b>1-5</b>	Stator winding (half field, terminal 1 is present)	0.55÷0.56 Ω	0.67 Ω	0.68 Ω

The tolerance of the resistance of windings is ± 7%

**Note:** when checking the rotor winding, the measurement must be made along the entire profile, turning the shaft very slowly and checking for the presence of any short circuits between visible blades. Also check the condition of the brushes.



**E53**

**E53: Problems with the “sensing” circuit of the component (Triac) powering the motor**

**E53**

*Checks to perform:*



*Check that all the connectors are correctly inserted*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



*If there are burns on the circuit board, see page 67*



**E54** **E54**  
**E54: Motor relay contacts sticking**  
 Voltage value on the motor circuit even when the same should not be operating

Checks to perform:

**!** Check that all the connectors are correctly inserted

Measure between all the terminals of the wiring connector J11-1 ÷ J11-5 and the appliance body -see page 47- point 3. Is there any dispersion? -(see fig. 6)-

**NO** →

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**YES** ↓

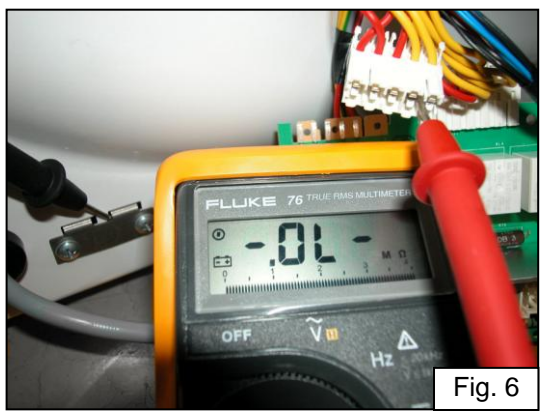
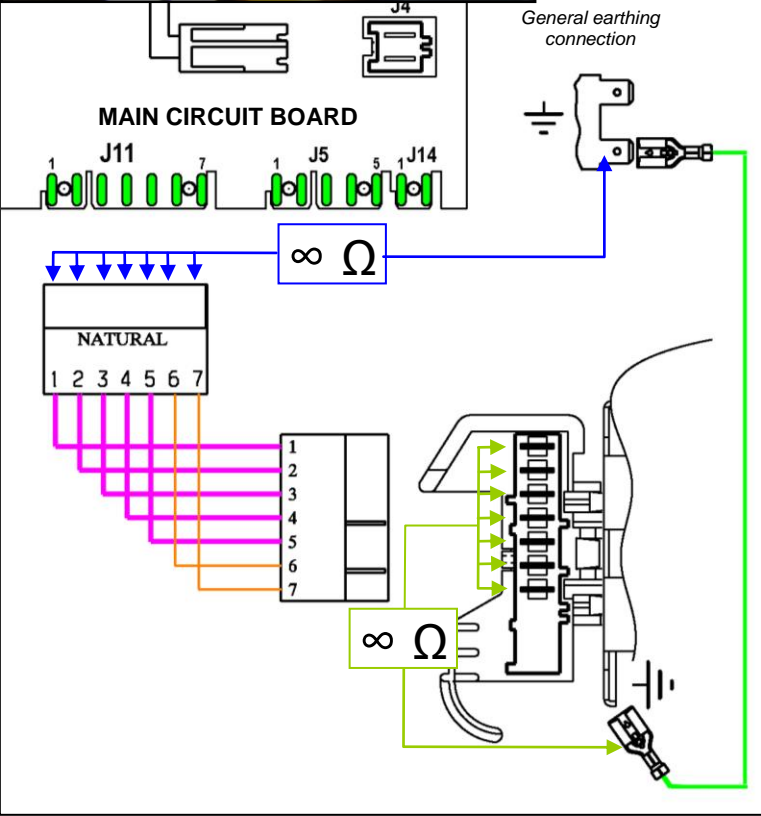
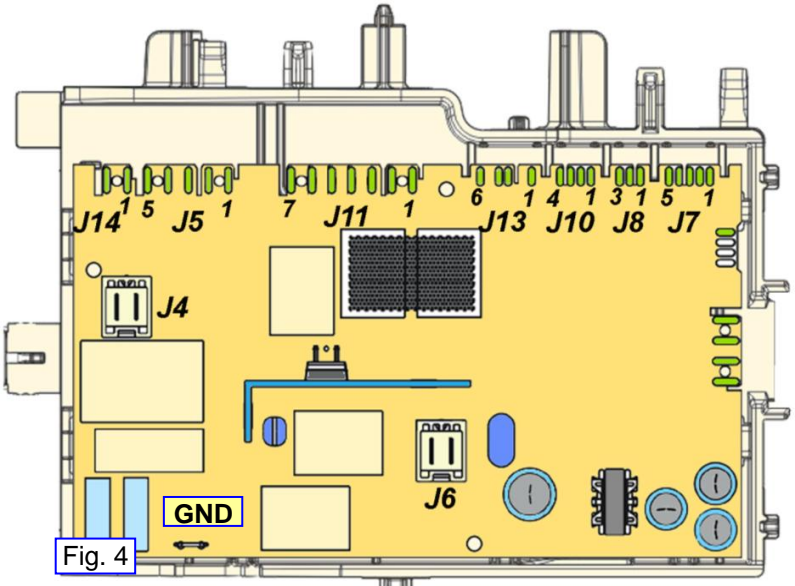
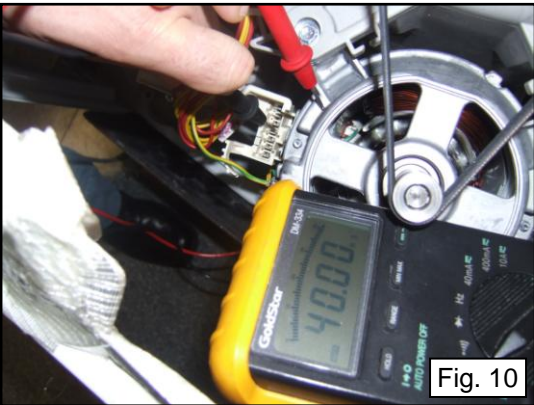
Detach the connector from the motor and measure between the terminals and the motor casing. -(see fig. 10)- Is there any dispersion?

**NO** →

Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.

**YES** ↓

Replace the motor and repeat the diagnostic cycle to check for any further alarms.

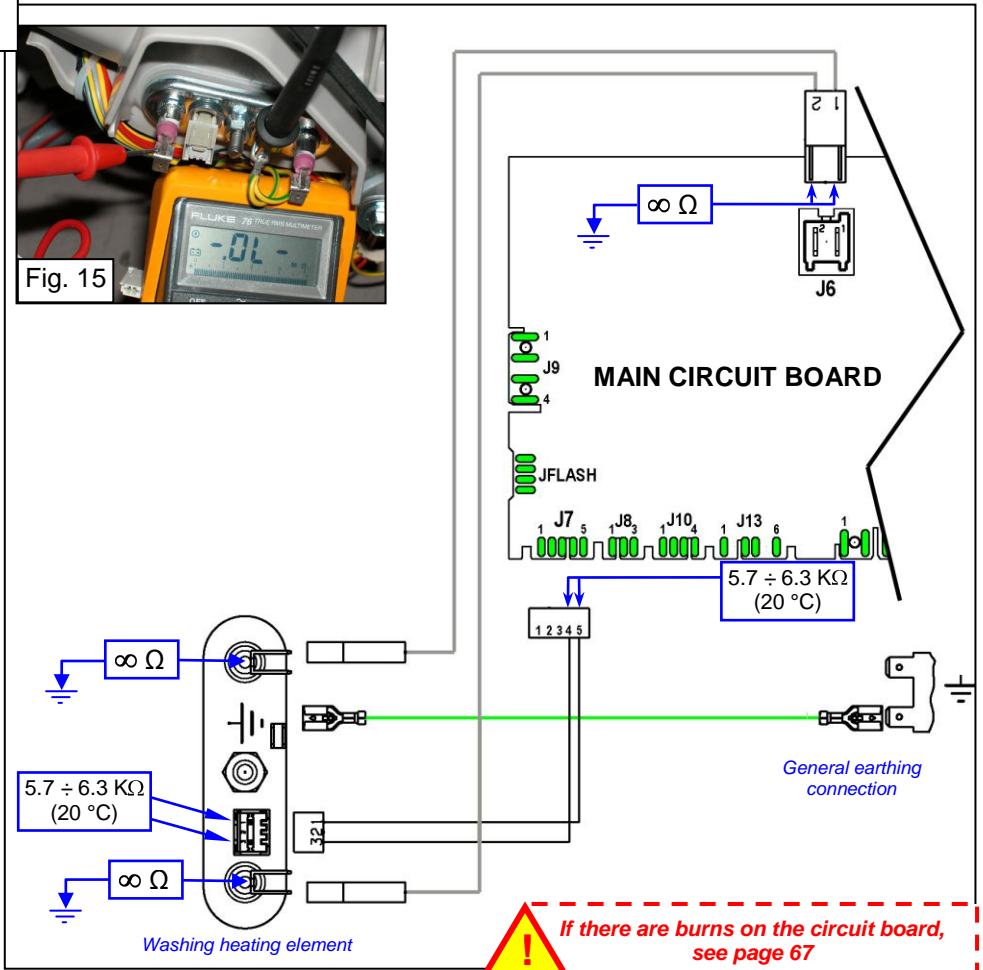
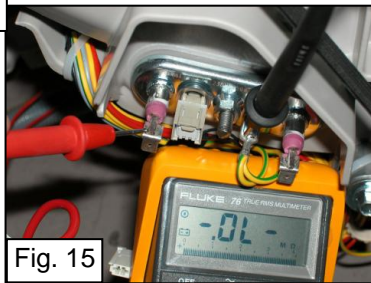
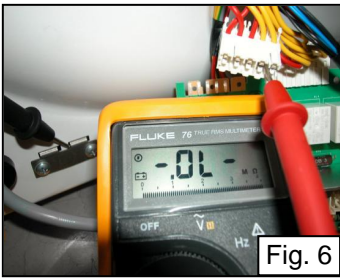
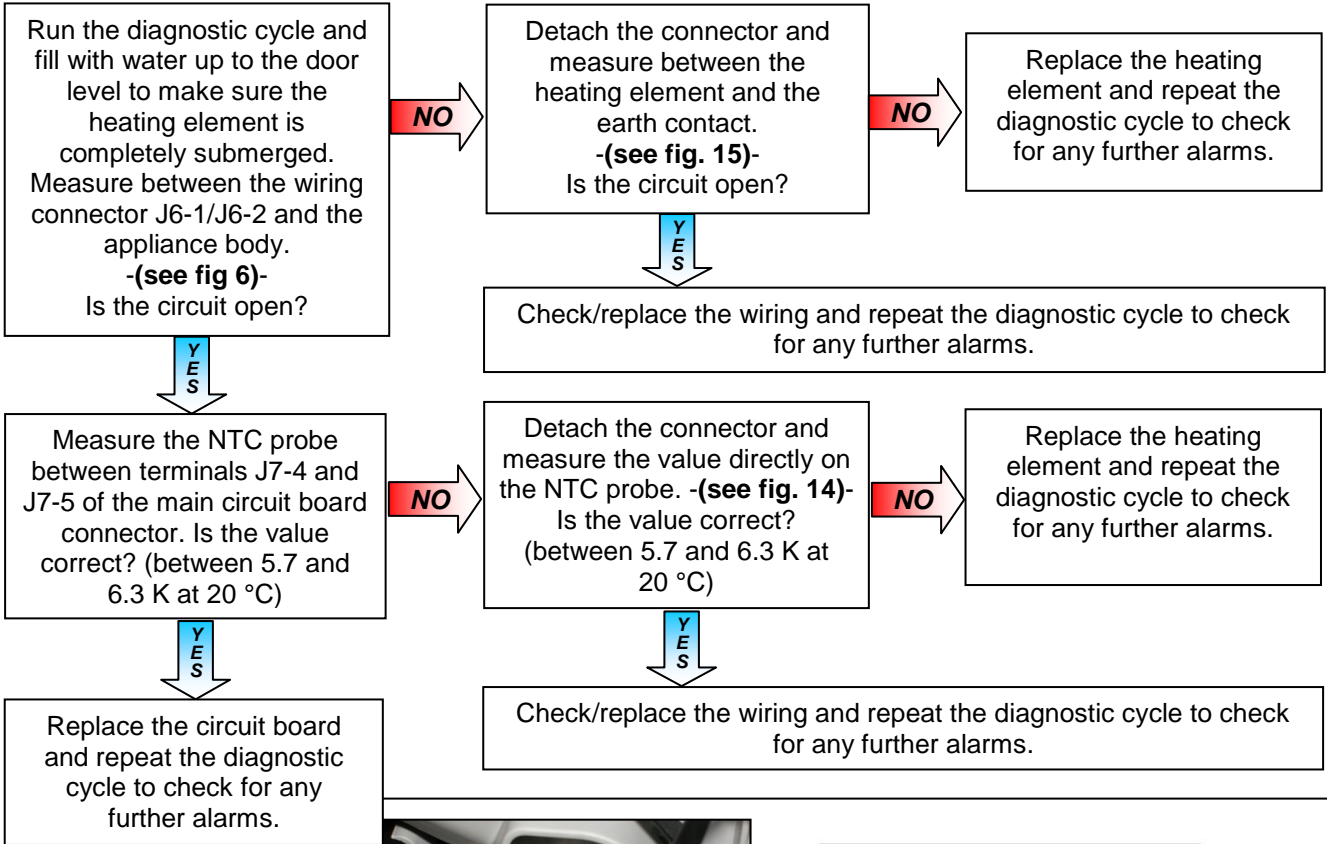


**!** If there are burns on the circuit board, see page 67

**E62** **E62: Overheating during washing** **E62**  
 The temperature of the NTC probe exceeds 88°C for more than 5 mins.

Checks to perform:

**!** Check that all the connectors are correctly inserted



**E66**

**E66: Heating element power supply relay faulty**

**E66**

*Checks to perform:*

**!** Check that all the connectors are correctly inserted

Measure between the connector J6-1/J6-2 of the main circuit board and the appliance body. **(fig. 6)** Is there any dispersion?

**NO**

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**YES**

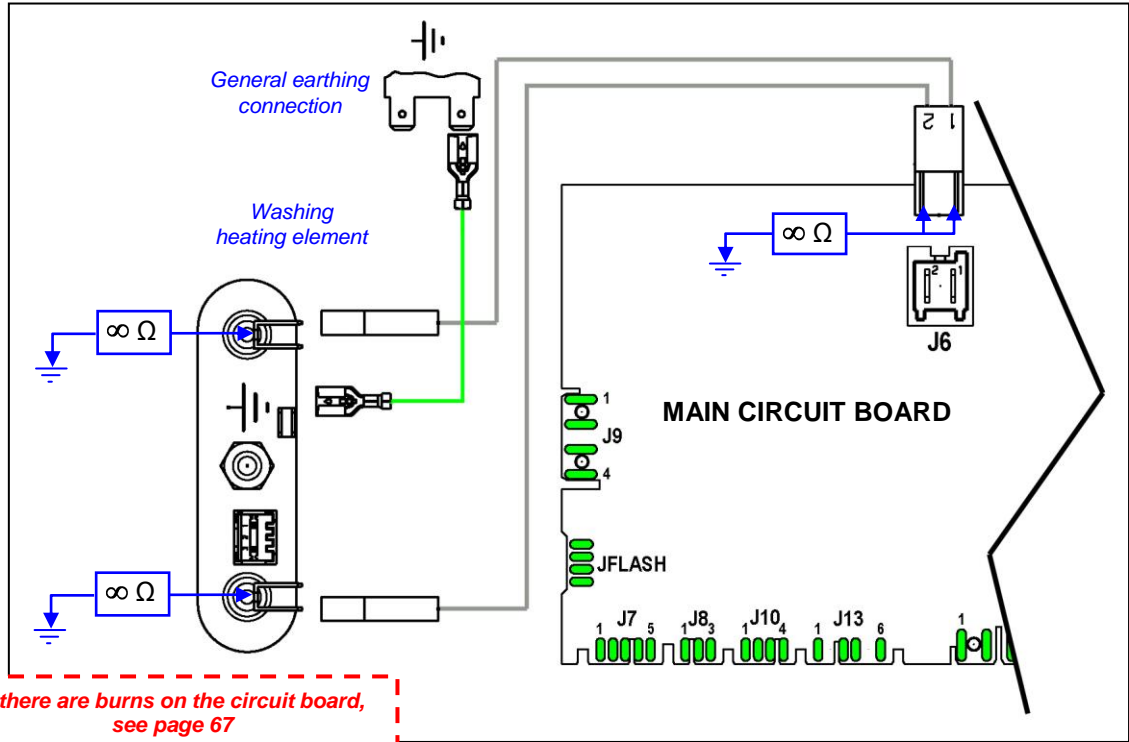
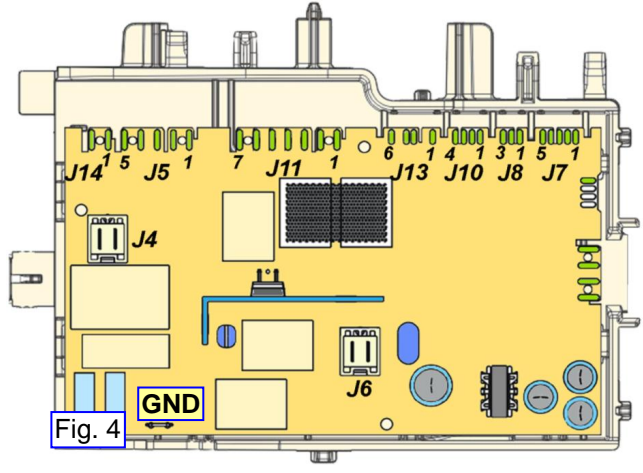
Detach the connector J6 and measure between the heating element and the earth contact. **-fig. 15-** Is the circuit open?

**NO**

Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

**YES**

Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.



**!** If there are burns on the circuit board, see page 67

**E68**

**E68: Washing heating element leakage**

**E68**

*Checks to perform:*



*Check that all the connectors are correctly inserted*

Run the diagnostic cycle and fill with water up to the door level to make sure the heating element is completely submerged. Measure between the wiring connector J6-1/J6-2 and the appliance body.  
**-(see fig.6)-**  
 Is the circuit open?

**NO**

Detach the connector and measure between the heating element and the earth contact.  
**-(see fig. 15)-**  
 Is the circuit open?

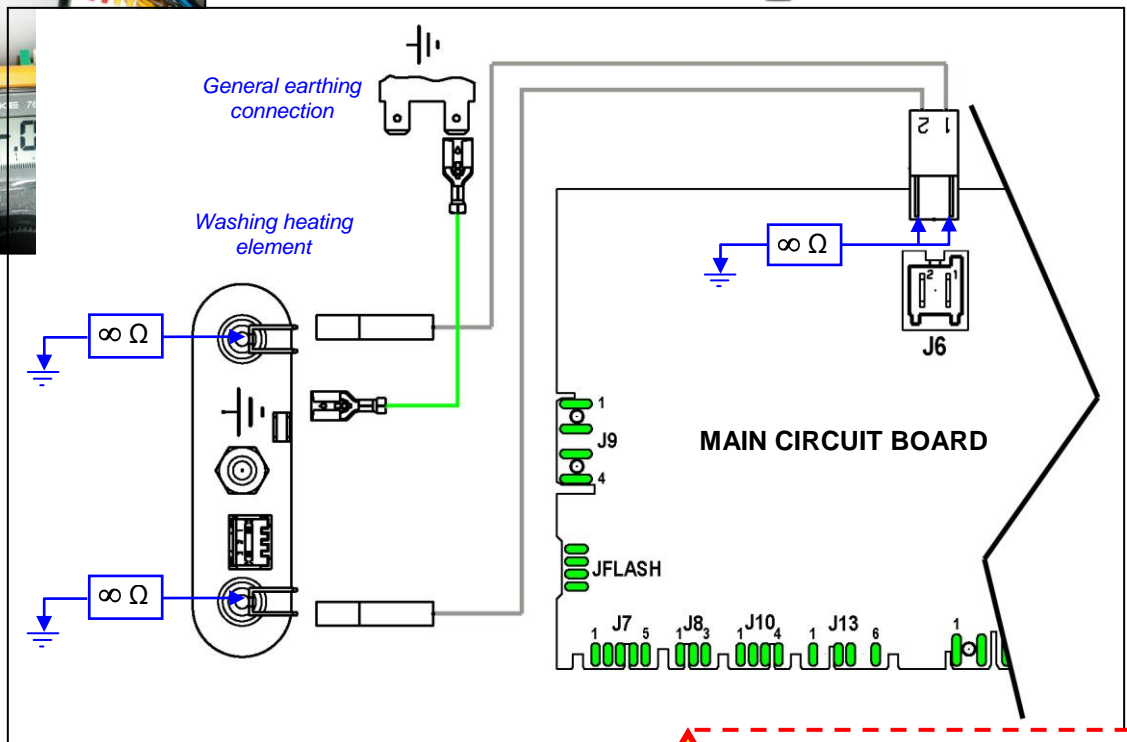
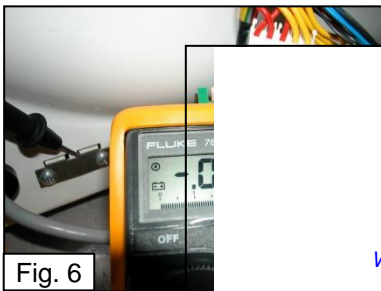
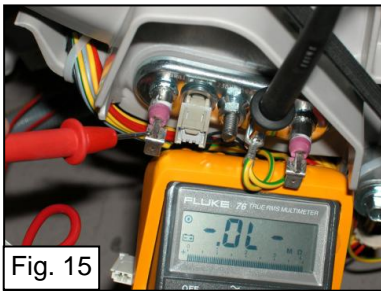
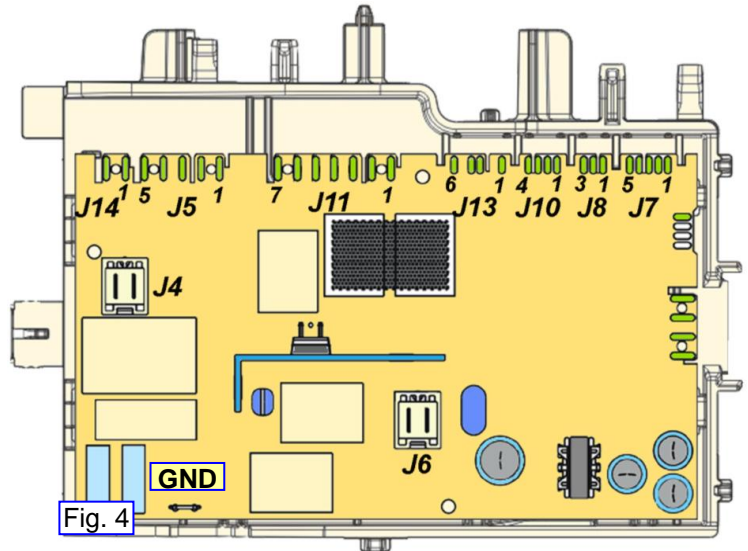
**NO**

Run phase 8 of the diagnostic cycle, drain water from the tub. Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

**YES**

Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.

Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.



*If there are burns on the circuit board, see page 67*

**E69**

**E69: Washing heating element damaged**

**E69**

*Checks to perform:*

**!** *Check that all the connectors are correctly inserted*

Measure the resistance value of the heating element ( $\Omega$ ) between terminals J6-1  $\div$  J6-2 of the wiring connector **-(see fig. 4)-**  
Is the value correct?  
( $28 \div 31 \Omega$  for 230 V/1.750 W)

**NO**

Measure the resistance value directly on the terminals of the heating element (detach the connectors) **-(see fig. 13)-**  
Is the value correct?  
( $28 \div 31 \Omega$  for 230 V/1.750 W)

**NO**

Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

**YES**

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**YES**

Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.



Fig. 13

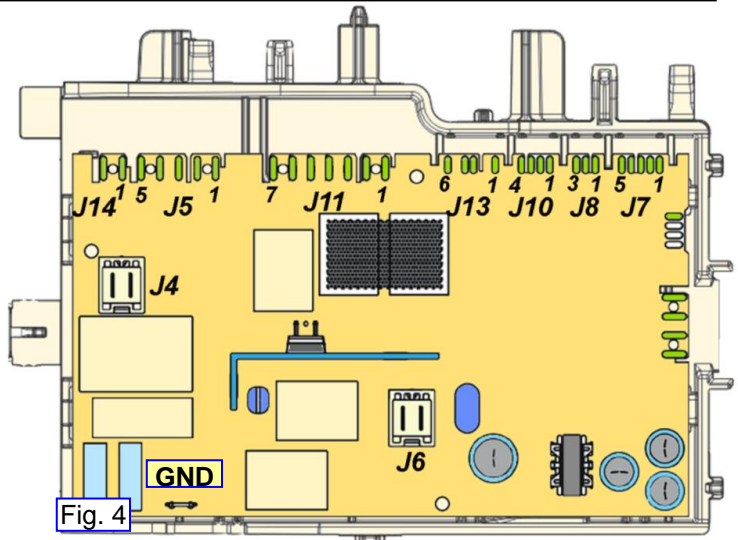
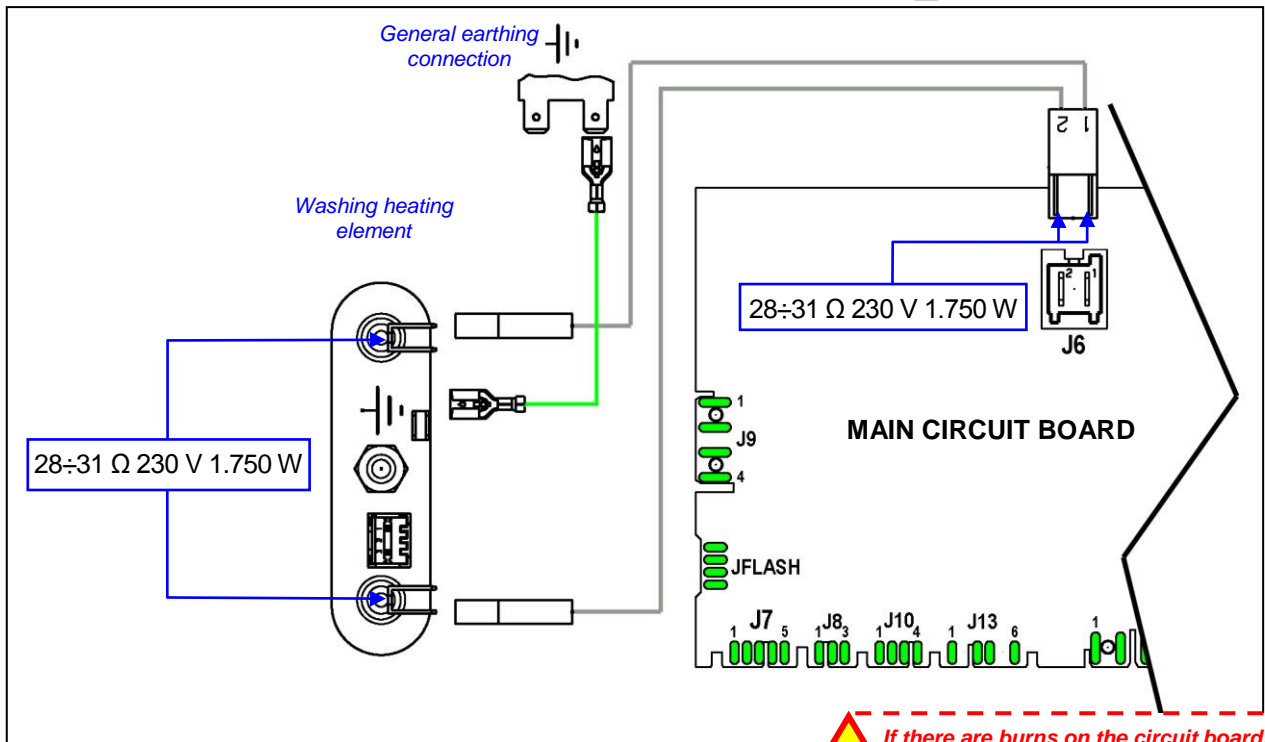


Fig. 4



**!** *If there are burns on the circuit board, see page 67*

**E6A** **E6A: Heating relay sensing faulty** **E6A**

Checks to perform:

**!** Check that all the connectors are correctly inserted

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**!** If there are burns on the circuit board, see page 67

**E6H** **E6H: Heating element power relay faulty (incongruence between sensing and relay status)** **E6H**

Checks to perform:

**!** Check that all the connectors are correctly inserted

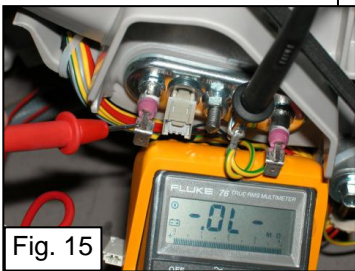
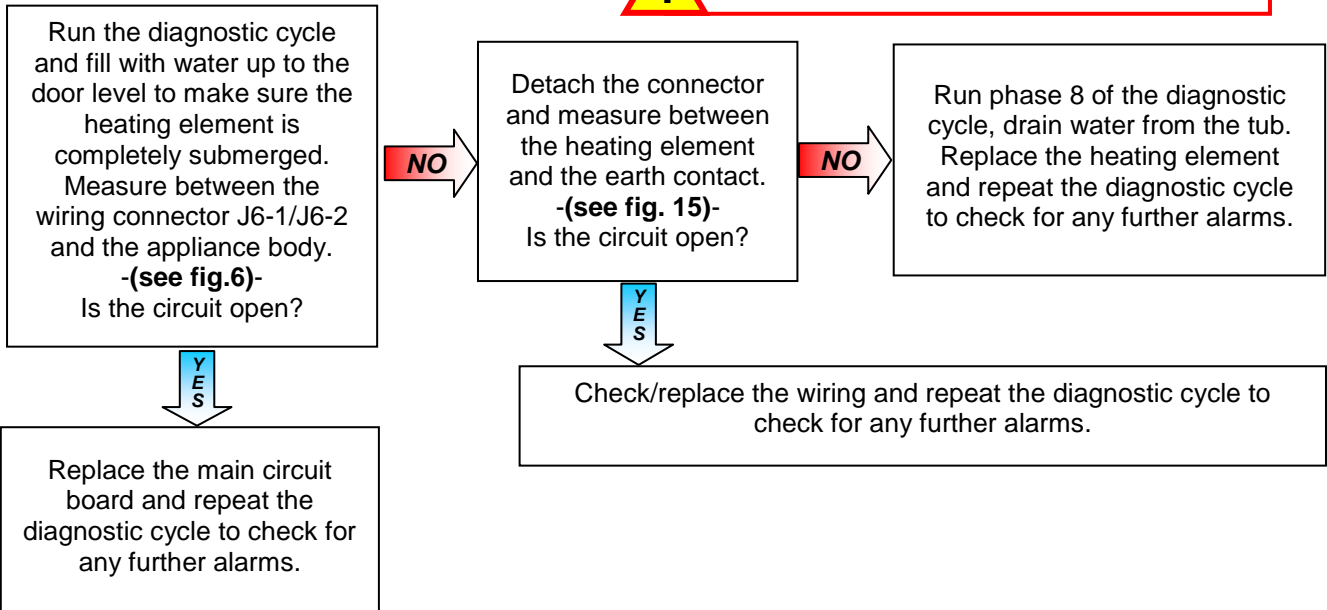


Fig. 15

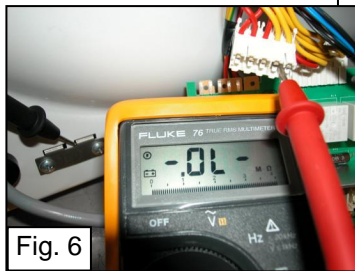
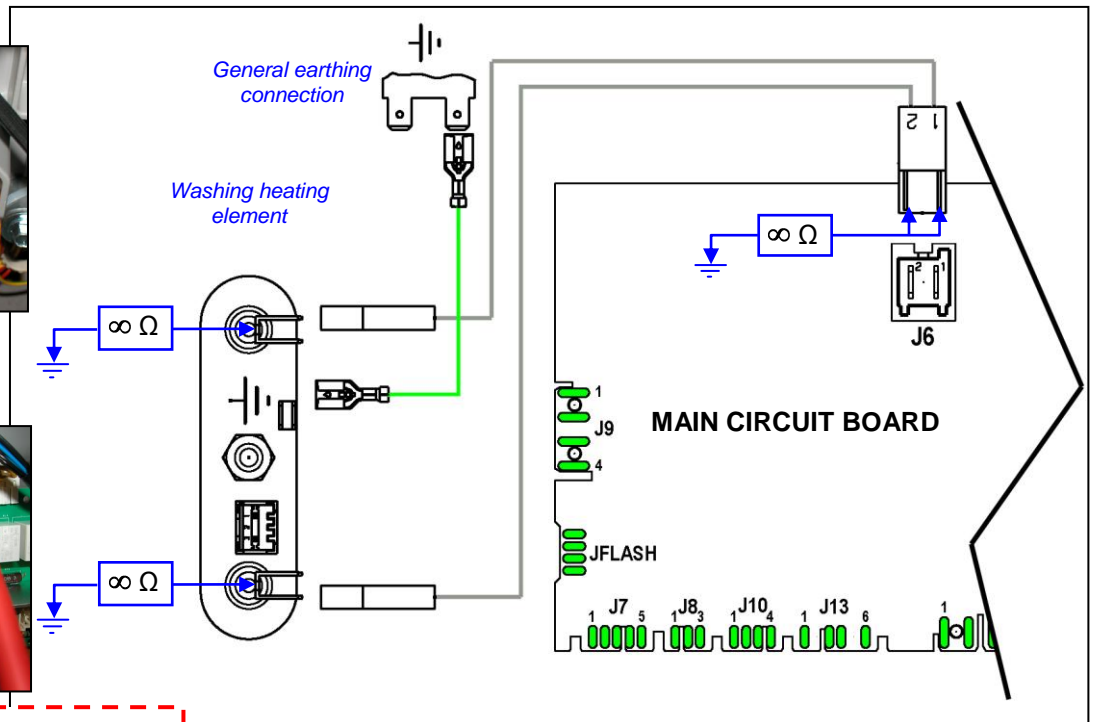


Fig. 6

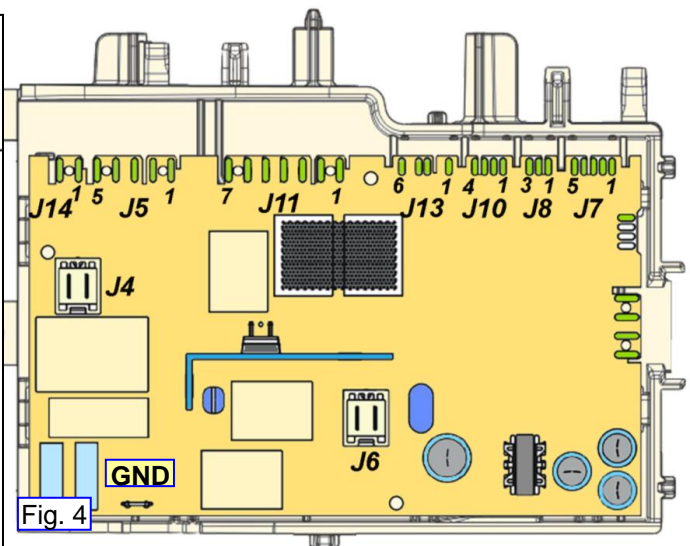
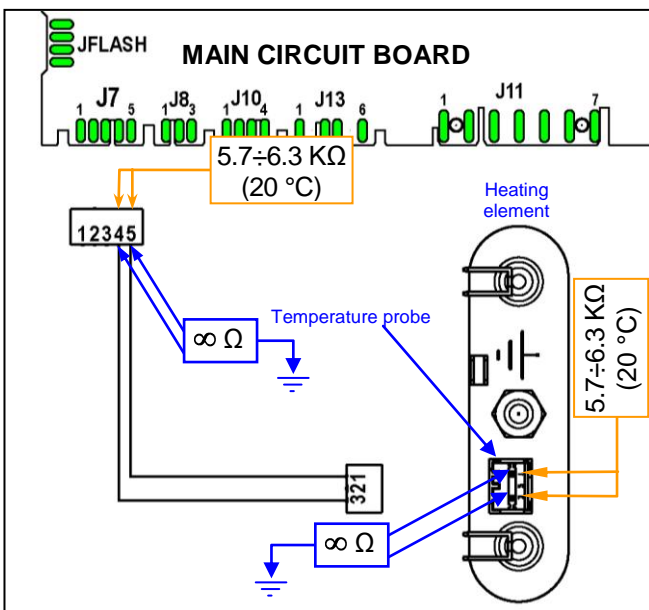
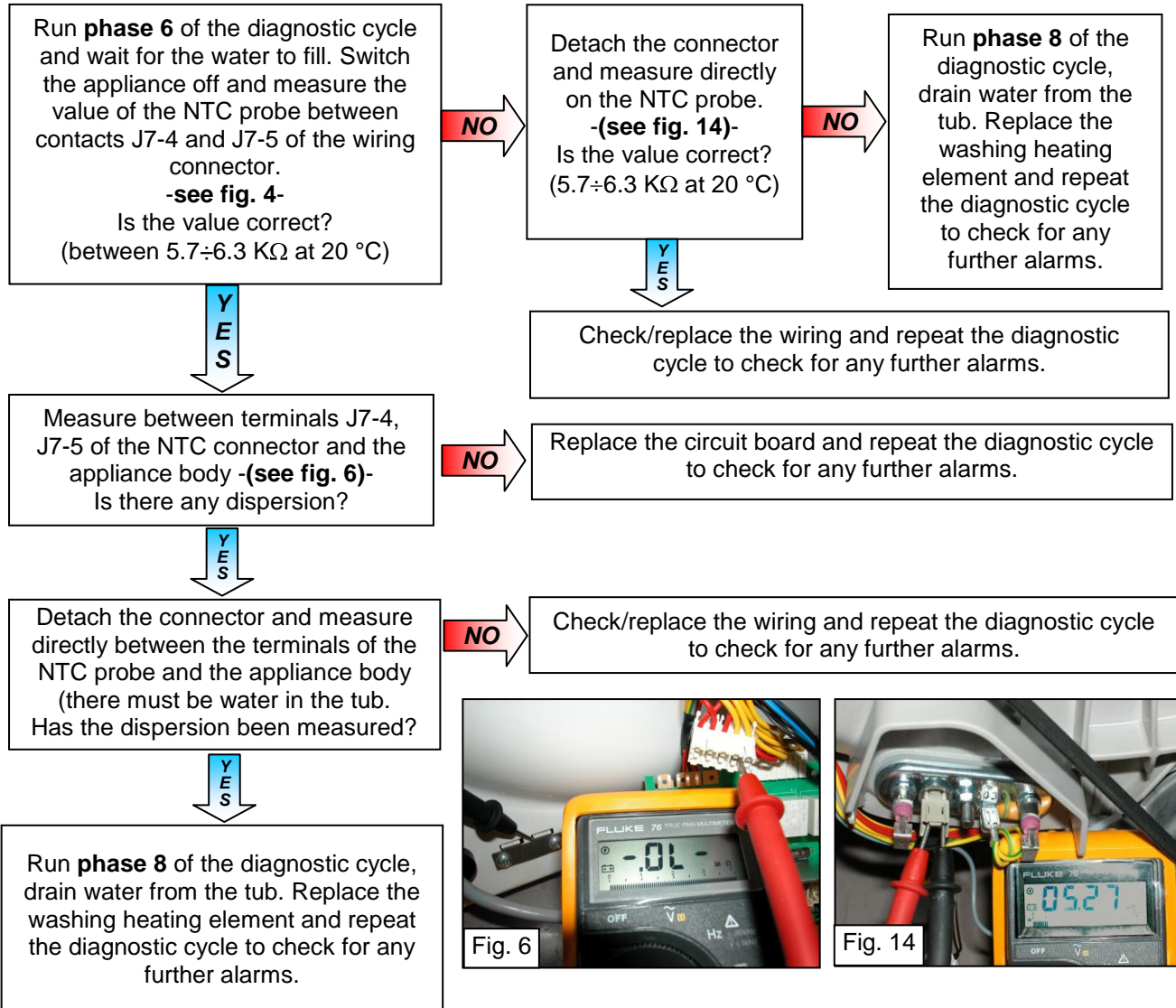


**!** If there are burns on the circuit board, see page 67

**E71** **E71: Washing NTC probe faulty** **E71**  
 Voltage value out of range (short-circuit or open circuit)

Checks to perform:

**!** Check that all the connectors are correctly inserted



**!** If there are burns on the circuit board, see page 67

**E74** **E74: NTC probe improperly positioned** **E74**

Checks to perform:

**!** Check that all the connectors are correctly inserted

Is the probe visibly positioned correctly in its seat?  
-see fig.17-

**NO** →

Reposition the probe in its seat and repeat the diagnostic cycle to check for any further alarms.

**YES** ↓

Measure the value of the NTC probe (5.7÷6.3KΩ at 20°C) between contacts J7-4 and J7-5 of the wiring connector (fig. 4). Is the value correct?  
(from 5.7 and 6.3 KΩ at 20 °C)

**NO** →

Replace the washing heating element and repeat the diagnostic cycle to check for any further alarms.

**YES** ↓

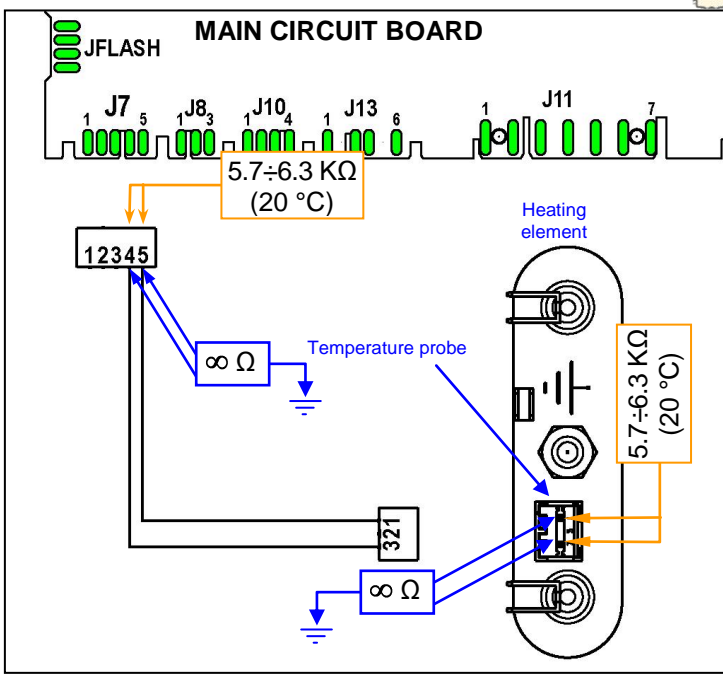
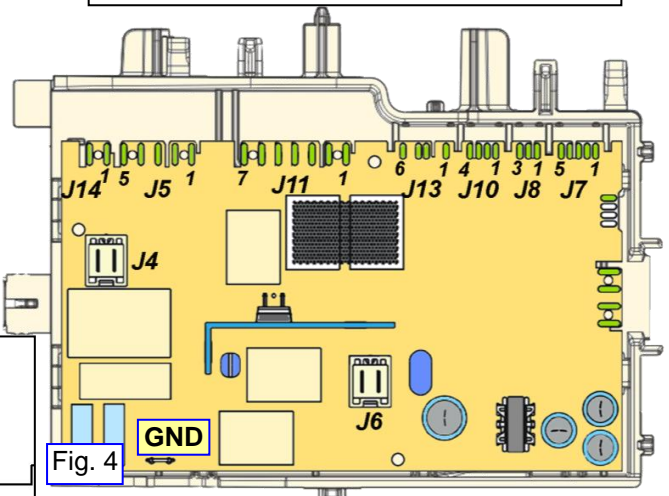
Run phase 6 of the diagnostic cycle and wait for the water to fill. Wait in this phase for five minutes. Switch the appliance off and measure the value of the NTC probe between contacts J7-4 and J7-5 of the wiring connector (fig. 4). Is the value below 5 KΩ?

**NO** →

**!!WARNING!!**  
**DRAIN THE WATER FROM THE TUB BECAUSE IT IS BOILING HOT**  
Replace the washing heating element and repeat the diagnostic cycle to check for any further alarms.

**YES** ↓

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



**!** If there are burns on the circuit board, see page 67



**E83** **E83: Error reading the programme selector code** **E83**  
 Selector position code not envisaged by the configuration data or configuration error

*Checks to perform:*



Turn the appliance on, turn the programme selector to every setting: wait at least 10 seconds on each of the settings before moving on to the next one. Is alarm E83 shown again?



Repeat the diagnostic cycle to check for any further alarms.



Check for any friction between the control panel and the knob. Is it difficult to turn the knob?



Replace the display board and repeat the diagnostic cycle to check for any further alarms.



Repair the coupling between the control panel/selector knob. Repeat the diagnostic cycle to check for any further alarms.



**E86** **E86: Programme selector configuration error** **E86**

*Checks to perform:*



Replace the display board and run the diagnostic cycle to check for any further alarms.

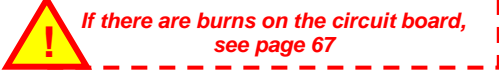


**E87** **E87: Display board microprocessor faulty** **E87**

*Checks to perform:*



Replace the display board and run the diagnostic cycle to check for any further alarms.



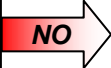
**E91** **E91: Communication error between the display board and the main circuit board** **E91**  
 Inconsistency between configuration values on starting the appliance

Checks to perform:



Check the wiring between the main circuit board and the display board:

- ▶ Detach and reconnect the connectors on both boards several times.
- ▶ Measure the continuity between connector J10 (main circuit board) and J13 (display board). Is the wiring ok?



Replace/repair the wiring and repeat the diagnostic cycle to check for any further alarms.



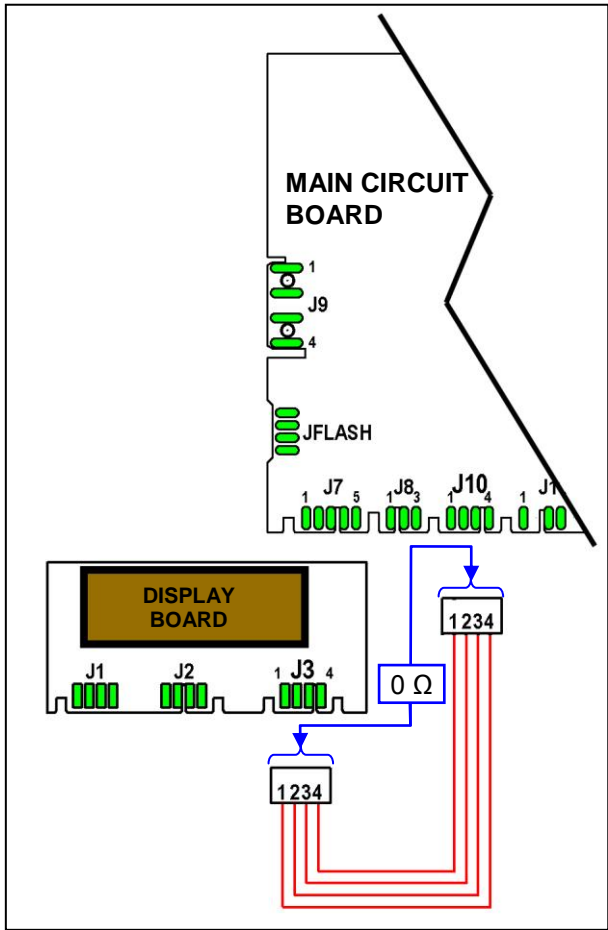
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms. Is the appliance still displaying E91?



Appliance ok.



Replace the display board and repeat the diagnostic cycle to check for any further alarms.



**E92** **E92: protocol incongruence** **E92**  
 Inconsistency between configuration values on starting the appliance

Checks to perform:



Check that all the connectors are correctly inserted

*Incorrect configuration possible.*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**E93** **E93: Appliance configuration error** **E93**  
 Inconsistency between configuration values on starting the appliance

Checks to perform:



Check that all the connectors are correctly inserted

*Incorrect configuration possible.*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**E94** **E94: Incorrect configuration of washing cycle** **E94**  
 Inconsistency between configuration values on starting the appliance

Checks to perform:



Check that all the connectors are correctly inserted

*Incorrect configuration possible.*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**E97** **E97: Inconsistency between control selector version and configuration data** **E97**  
 Discrepancy between programme configuration data and selector recognition data

Checks to perform:



Check that all the connectors are correctly inserted

*Incorrect configuration possible.*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**E9C** **E9C: Display board configuration error** **E9C**

Checks to perform:



Check that all the connectors are correctly inserted

*Incorrect configuration possible.*

Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**E9E** **E9E: Display board sensor/touch key faulty** **E9E**

Checks to perform:



Check that all the connectors are correctly inserted

*Display board faulty*

Replace the display board and repeat the diagnostic cycle to check for any further alarms

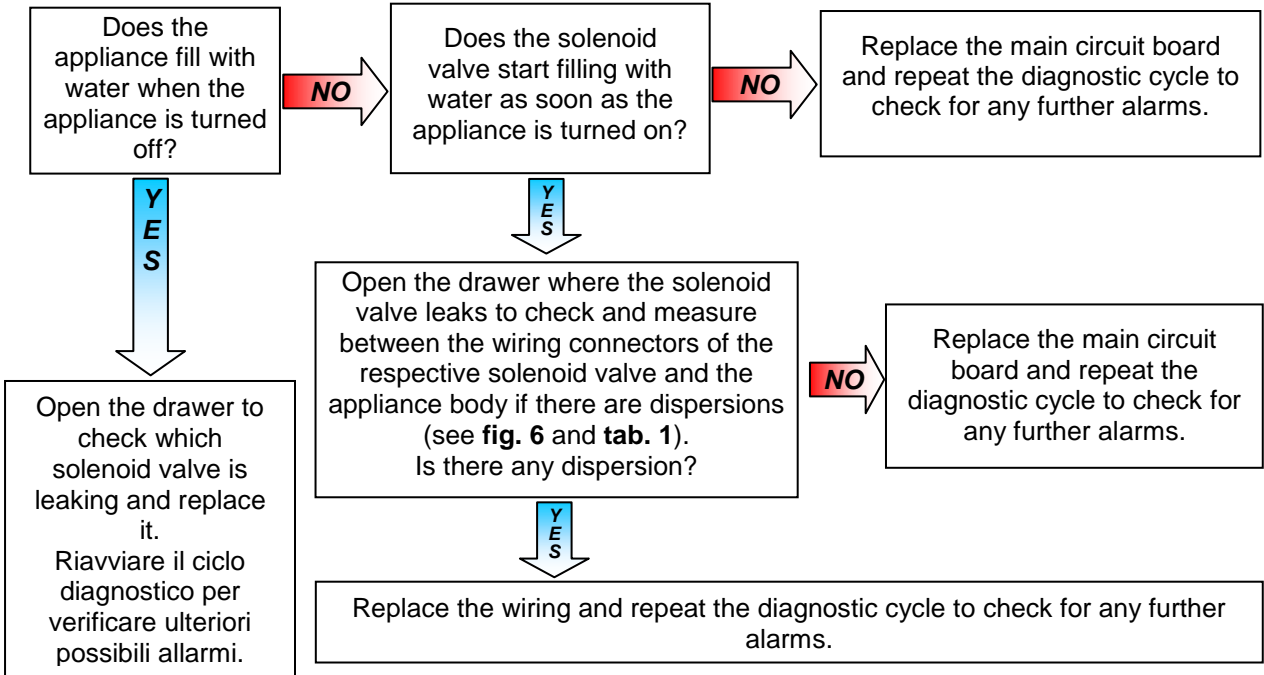


If there are burns on the circuit board, see page 67

**EC1** **EC1: Water fill solenoid valves blocked** **EC1**  
 The flowmeter has to fill water even with the solenoid valve not piloted

Checks to perform:

**!** Check that all the connectors are correctly inserted



**Tab. 1**  
 Between J 13-1 and J 13-3 wash solenoid valve  
 Between J 13-4 and J 13-6 prewash solenoid valve

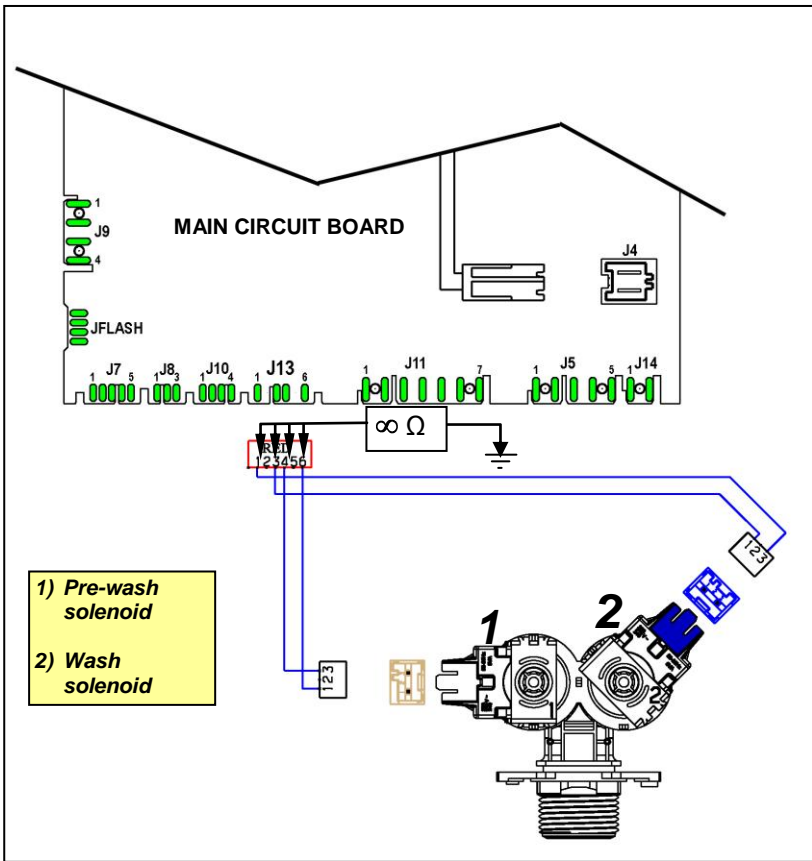


Fig. 6

**!** If there are burns on the circuit board, see page 67

<b>EC4</b>	<b>EC4: AGS current sensor faulty error</b>	<b>EC4</b>
Spin speed reduced to safety speed of 150 rpm		

*Checks to perform:*



*Check that all the connectors are correctly inserted*

Replace the main circuit board and run the diagnostic cycle to check for any further alarms.



*If there are burns on the circuit board, see page 67*

<b>EF1</b>	<b>EF1: Drain hose blocked/kinked/too high; drain filter clogged/dirty</b>	<b>EF1</b>
------------	----------------------------------------------------------------------------	------------

*Checks to perform:*



*Check that all the connectors are correctly inserted*

This warning only appears at the end of the cycle. The appliance detected long drainage phases during the cycle. (E.g.: More than 20 seconds when draining after rinses). Check/clean the drain filter.

<b>EF2</b>	<b>EF2: Excessive detergent dosing; drain hose kinked/blocked; drain filter clogged/dirty</b>	<b>EF2</b>
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*Checks to perform:*



*Check that all the connectors are correctly inserted*

This is an excessive detergent dosing warning. The system detected too much foam was forming during the drain phases. Advise the Customer to use the correct quantity of detergent and to make sure the filter and drain circuit are clean.

<b>EF3</b>	<b>EF3: Aqua Control device triggered</b>	<b>EF3</b>
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*Checks to perform:*



*Check that all the connectors are correctly inserted*

This warns about the presence of water at the bottom of the appliance. Check for any water leaks and that the Aqua Control device float is positioned correctly.  
Or caused by excessive overheating of the drain pump. Check for any items which may obstruct the normal operation of the rotor.

<b>EF4</b>	<b>EF4: Water fill pressure too low and solenoid valve open</b>	<b>EF4</b>
------------	-----------------------------------------------------------------	------------

*Checks to perform:*



*Check that all the connectors are correctly inserted*

It is a warning that the water pressure is too low. If the water pressure is correct, check: the wiring of the flowmeter and the Flowmeter.



*If there are burns on the circuit board, see page 67*

<b>EF5</b>	<b>EF5: Unbalanced load, spin phases skipped.</b>	<b>EF5</b>
------------	---------------------------------------------------	------------

*Checks to perform:*

*Check that all the connectors are correctly inserted*

This is an unbalanced load warning. The appliance detected an extremely unbalanced load during the spin phases. Avvisare il cliente di caricare più biancheria nel cesto e non singoli capi.

<b>EF6</b>	<b>EF6: Reset appliance.</b>	<b>EF6</b>
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*Checks to perform:*

*Check that all the connectors are correctly inserted*

No action to be performed, if continues, replace the main circuit board

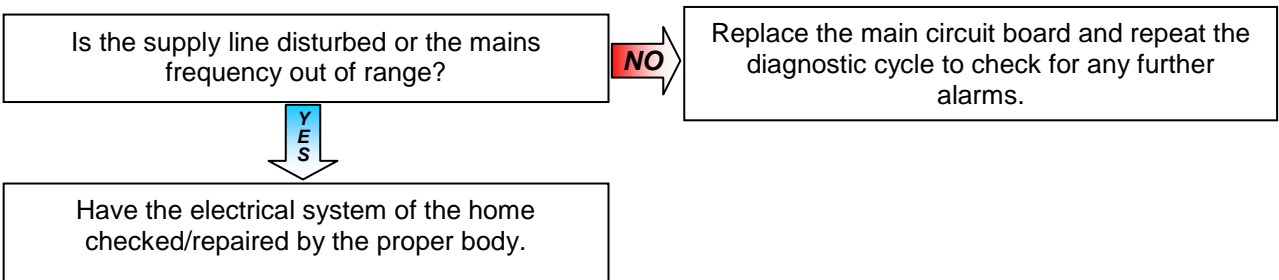
<b>EH1</b>	<b>EH1: Mains frequency incorrect</b>	<b>EH1</b>
	Power supply frequency out of configured range	

*Checks to perform:*

*Check that all the connectors are correctly inserted*

**Important!**

The appliance remains in alarm status until the mains frequency returns to the correct values or the appliance is switched off (programme selector set to "0"). Only the family of the alarm is displayed and the diagnostics mode cannot be accessed. The complete alarm can only be read when the situation has normalised.



*If there are burns on the circuit board, see page 67*

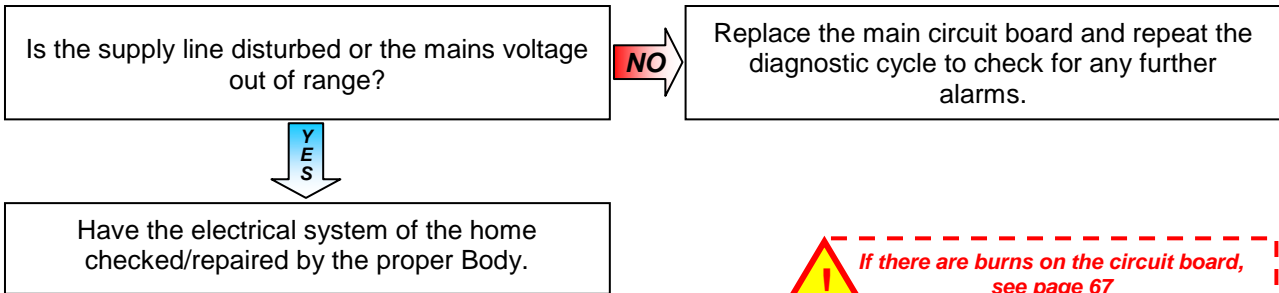
<b>EH2</b>	<b>EH2: Supply voltage too high</b>	<b>EH2</b>
	Supply voltage value higher than the one configured (for more than 10 seconds)	

*Checks to perform:*

**Check that all the connectors are correctly inserted**

**Important!**

The appliance remains in alarm status until the mains frequency returns to the correct values or the appliance is switched off (programme selector set to "0"). Only the family of the alarm is displayed and the diagnostics mode cannot be accessed. The complete alarm can only be read when the situation has normalised.



**If there are burns on the circuit board, see page 67**

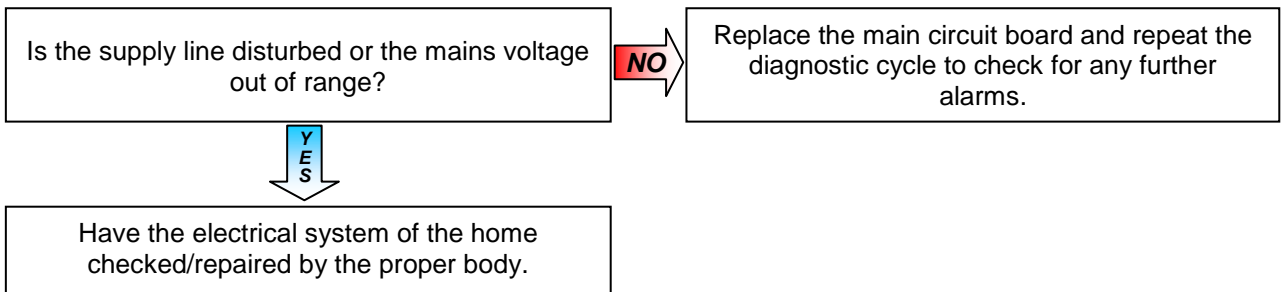
<b>EH3</b>	<b>EH3: Supply voltage too low</b>	<b>EH3</b>
	Supply voltage value higher than the one configured	

*Checks to perform:*

**Check that all the connectors are correctly inserted**

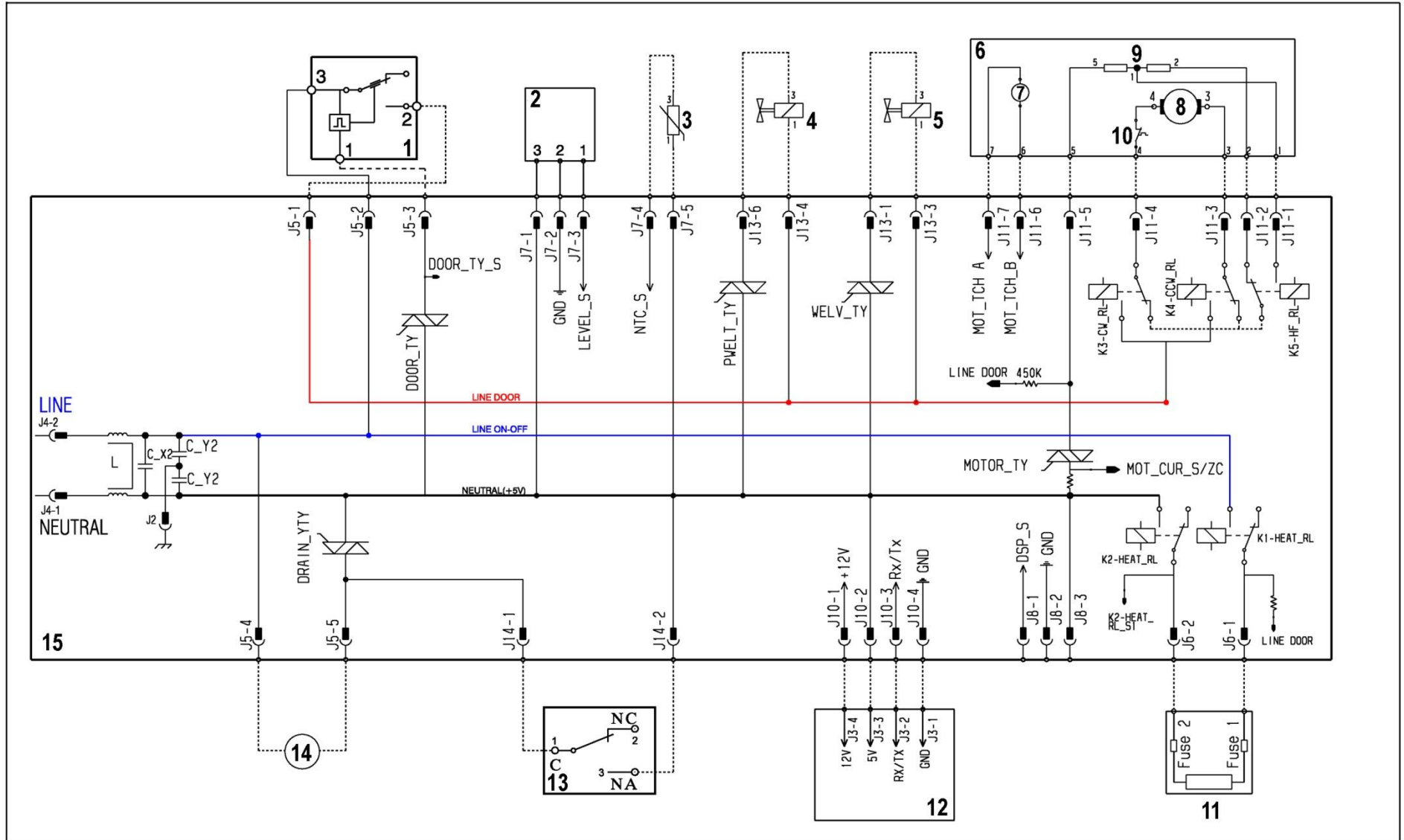
**Important!**

The appliance remains in alarm status until the mains frequency returns to the correct values or the appliance is switched off (programme selector set to "0"). Only the family of the alarm is displayed and the diagnostics mode cannot be accessed. The complete alarm can only be read when the situation has normalised.



**If there are burns on the circuit board, see page 67**

## 7 WM OPERATING CIRCUIT DIAGRAM



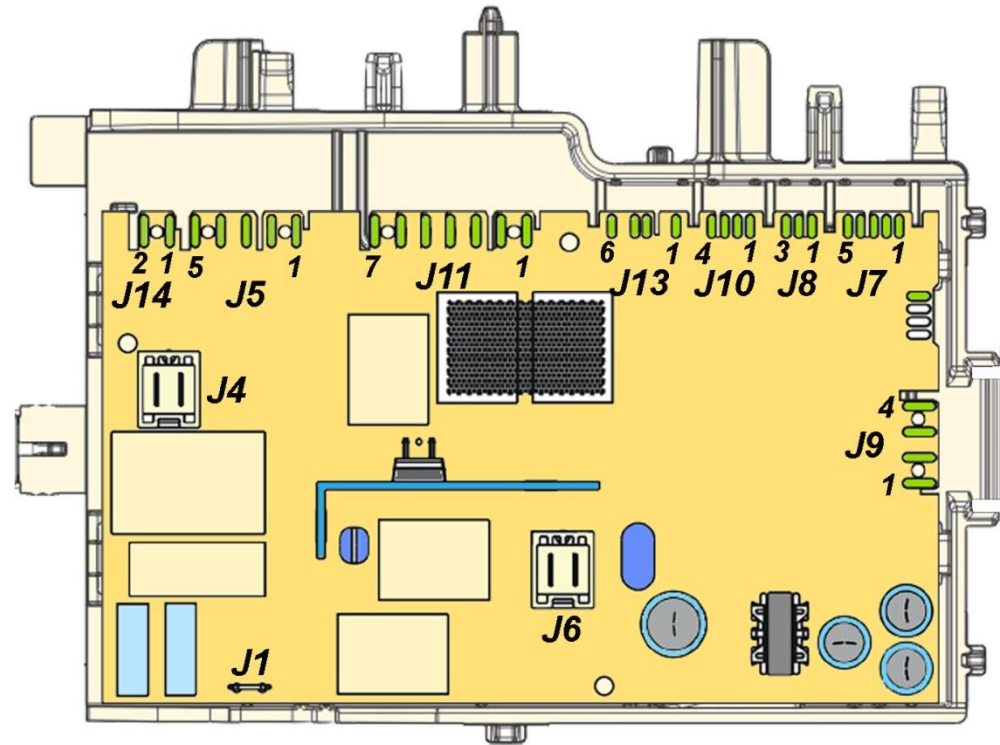


### 7.1 Key to circuit diagram WM

Appliance electrical components	PCB components	
<ol style="list-style-type: none"> <li>1. Door safety interlock - traditional</li> <li>2. Analogue pressure switch</li> <li>3. NTC temperature probe</li> <li>4. Pre-wash solenoid</li> <li>5. Wash solenoid</li> <li>6. Motor with half-range</li> <li>7. Motor tachometric generator</li> <li>8. Rotor (motor)</li> <li>9. Stator (motor)</li> <li>10. Thermal cut-out (motor)</li> <li>11. Heating element (with thermal fuses)</li> <li>12. Display board</li> <li>13. Aqua control</li> <li>14. Drain pump</li> <li>15. Main circuit board</li> </ol>	<p>DOOR_TY                      DRAIN_YTY                      PWELT_TY                      WELV_TY                      K1                      K2                      K3                      K4                      K5</p>	<p>Door interlock Triac                      Drain pump Triac                      Pre-wash solenoid Triac                      Wash solenoid Triac                      Heating element relay (line)                      Heating element relay (neutral)                      Motor relay: clockwise rotation                      Motor relay: anti-clockwise rotation                      Motor relay: half-range power supply (some models)</p>

## 7.2 Main circuit board connectors

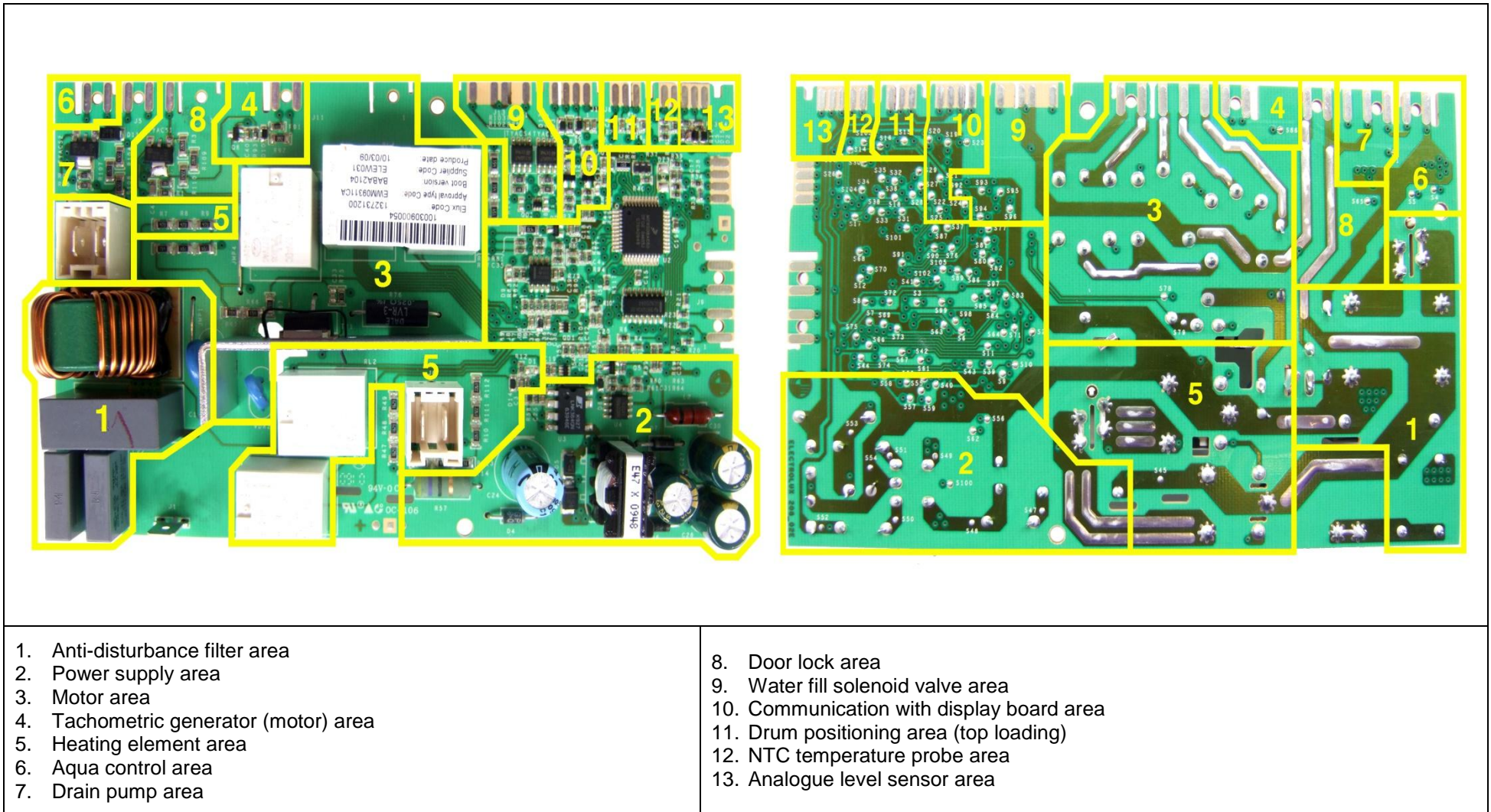
J9	J7
Serial interface: J9-1 ASY_IN J9-2 ASY_OUT J9-3 +5 V J9-4 GND	J7-1 Analogue pressure switch (+5 V) J7-2 Analogue pressure switch (GND) J7-3 Analogue pressure switch (signal) J7-4 NTC temperature probe J7-5 NTC temperature probe
J10	J13
Communication with display board: J10-1 Vee 12 V J10-2 5 V J10-3 Rx/Tx J10-4 GND	J13-1 Wash solenoid valve (Triac) J13-3 Solenoid valves (line) J13-4 Solenoid valves (line) J13-6 Pre-wash solenoid valves (Triac)
J11	J5
J11-1 Motor (stator - half range) J11-2 Motor (stator full range) J11-3 Motor (rotor) J11-4 Motor (rotor) J11-5 Motor (Triac) J11-6 Motor (tachometric generator) J11-7 Motor (tachometric generator)	J5-1 Door lock (sensing line) J5-2 Door lock (line) J5-3 Door lock (Triac) J5-4 Drain pump (line) J5-5 Drain pump (Triac)
J14	J4
J14-1 Pump J14-2 line (neutral)	U4-1 line (neutral) U4-2 line
J6	J1
J6-1 heating element (Line Relay) J6-2 heating element (Neutral Relay)	J1 GND



### 7.3 Burns on the main circuit board EWM09312

In the event of burns on the main circuit board, check whether the problem was caused by another electrical component (short-circuits, poor insulation, water leaks). Use the figures that follow to pinpoint the component which may have caused the problem, depending on the area of the burns.

*The type of board illustrated is the one with the largest number of components; other boards do not feature some of these components.*





**REVISION:**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>Author</b>	<b>Approved by:</b>
00	07/2012	Document creation	DMM	XX – 07/2012