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**Washing machines**  
**guide to diagnostics of**  
**electronic controls**

**EWM10931**

**THE INSPIRATION**  
**RANGE**

**TC4 / TC3**

**G50XXL**



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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 a Technician must take when faced with the problems indicated by the various alarm codes on appliances with electronic control in the EWM10931 series.

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

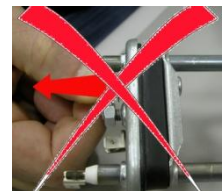
The diagnostics system is used by Service Technicians to:

- ◆ 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 personnel.**
- **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, and for the other components, please consult S.M. 599728903 "Component Characteristics".**

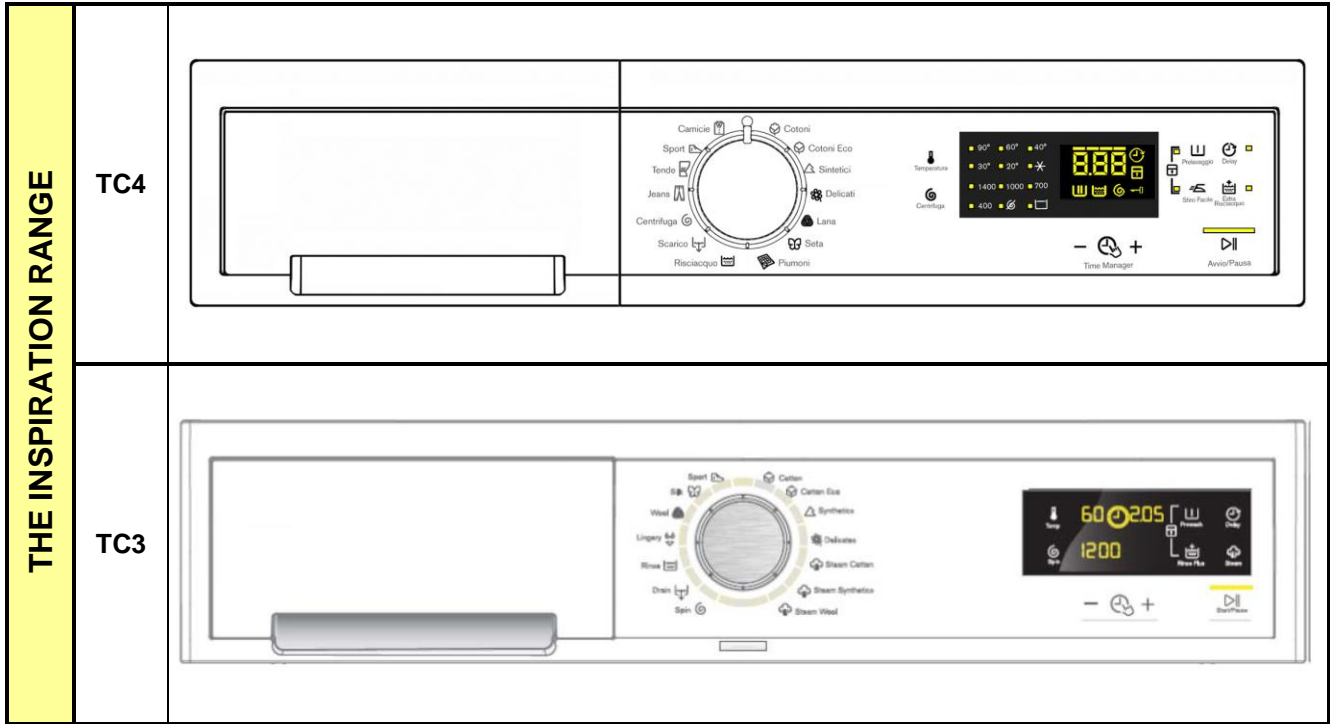


### 1.3 How to proceed

1. Identify the type of control in question (**pag 7**) and access the diagnostic cycle (**see page 8**)
2. Read the alarm stored (**page 13**) and consult the instructions regarding the “alarm codes”, **page 14÷18**
3. Delete the alarms stored (**page 13**)
4. If you are unable to access the diagnostic mode, consult the chapter entitled “The diagnostics system cannot be accessed”. (**page 19**)
5. Should the main electronic circuit board need to be replaced, make sure there are no burns. (**See page 72**)
6. After all intervention, check the appliance is operating correctly using the diagnostic cycle (**pag.9**)
7. Delete any alarm that may have been stored during the diagnostics operations (**pag.13**)

## 2 WM APPLIANCE CONTROL PANELS

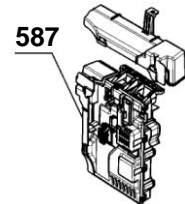
These are the stylings available at the time of printing of this Service Manual. Others may be developed in future.



## 3 PROGRAMMING/UPDATING THE MAIN CIRCUIT BOARD

In the Service Notes the main circuit board (587) is identified with two spare parts codes:

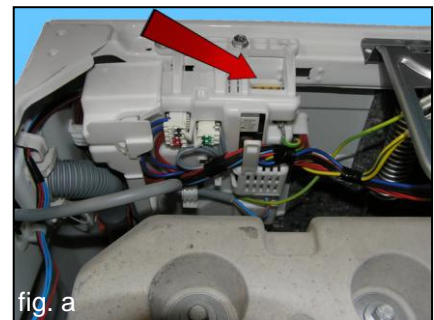
- ↔ Code 973 914... identifies the pre-programmed board.
- ↔ Code 132... identifies the unprogrammed board.



The circuit board can be programmed/updated using the **Sidekick** application.

For further information, please refer to the instructions provided/illustrated in the course entitled << **Guide to Sidekick** >> at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.

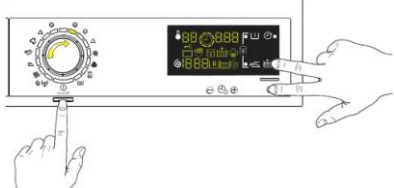

To update/program the main board, insert the **Sidekick** connector in the position shown by the red arrow:



## 4 DIAGNOSTICS SYSTEM

### 4.1 Accessing diagnostics

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

TC 3	TC4
	
<p><b><u>Do not start the procedure with your fingers over the combination sensors</u></b></p>	
<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. Simultaneously press the <b>START/PAUSE</b> button and the nearest <b>option sensor</b> (as shown in the diagram).</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>, the operation of the various components is diagnosed and the alarms are read (see diagnostic test on the next page).</p>	<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. Keep your fingers above the sensors until the LEDs and display symbols start flashing.</li> </ol> <p>In the first position, the operation of the buttons and the related LEDs is checked; turning the programme selector dial <b>clockwise</b> runs the diagnostic cycle for the operation of the various components and reads any alarms.</p>

### 4.2 Quitting the diagnostics system

- **TC4 Styling:** Exit the diagnostic system by turning the knob to 0 (zero).
- **TC3 Styling:** Exit the diagnostic system by turning 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 off and on.





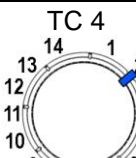


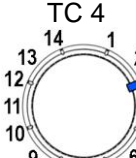


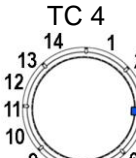





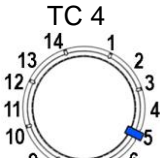
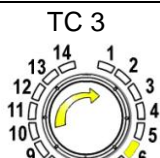

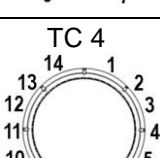


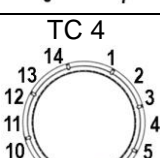


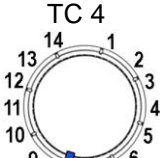


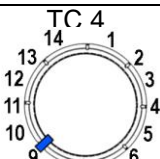
### 4.3 Phases of the diagnostics test

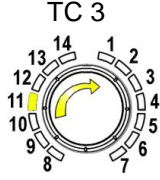

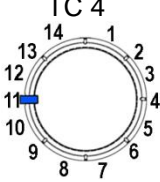

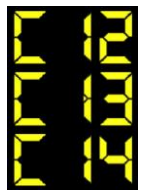
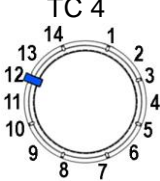
Irrespective of the type of PCB and the configuration of the programme selector, after entering the diagnostic mode, turn the programme selector dial **clockwise** to perform the diagnostic cycle for the operation of the various components and to read any alarms.

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
<p><b>1</b></p> <p>TC 3</p>  <p>TC 4</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 functioning	
<p><b>2</b></p> <p>TC 3</p>  <p>TC 4</p> 	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Wash solenoid valve</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to wash compartment	  Water level in the tub (mm)
<p><b>3</b></p> <p>TC 3</p>  <p>TC 4</p> 	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Pre-wash solenoid valve</li> </ul>	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to pre-wash compartment	  Water level in the tub (mm)
<p><b>4</b></p> <p>TC 3</p>  <p>TC 4</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	  Water level in the tub (mm)

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</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</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 valve, 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 up to 90°C. (*)	Reheating Circulation	
	 <p>TC 4</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 valve, 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</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</p>				Drum speed in rpm/10

Selector position	Components activated	Working conditions	Function tested	LCD display	
10	-----	-----	-----	-----	
11	 <p>TC 3</p>	- Reading/Deleting the last alarm	-----	----	
	 <p>TC 4</p>				
12 ÷ 14	 <p>TC 3</p>	- 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 functioning	
	 <p>TC 4</p>				

(\*) In most cases, this 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.

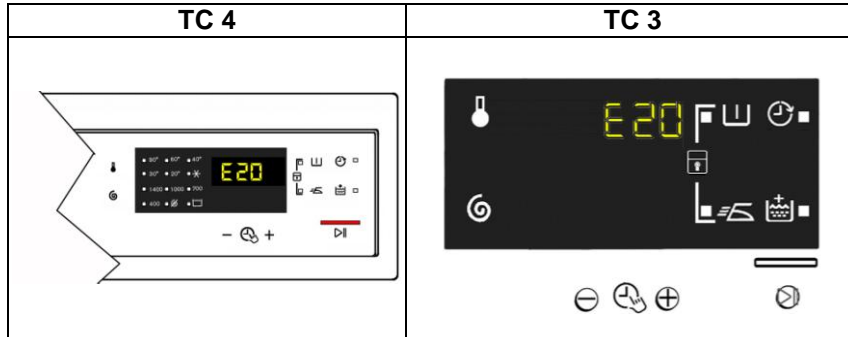
## 4.4 ALARMS

### 4.4.1 Displaying the alarms to the user

When a problem arises with the appliance, "WARNING" appears on the LCD screen, represented by a code (three digits, indicating the time required for the cycle to end). At the same time the buzzer gives off three short "beeps" every 20" for a period of 5 minutes.

Once the fault has been repaired the buzzer does not give off any "beeps" and the selected programme appears on the LCD screen.

This does not occur for EH0 alarm.



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>

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.

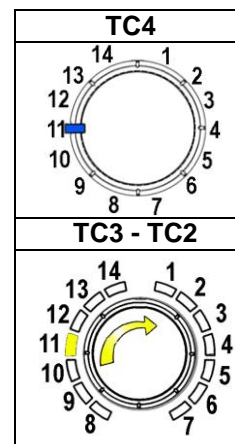
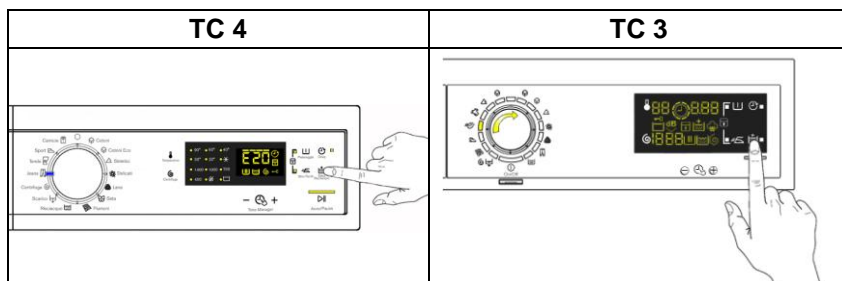
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

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

### 4.4.2 Reading the alarms

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

- enter the diagnostic mode (para. 4.1)
- 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.



### 4.4.3 Rapid reading of alarms

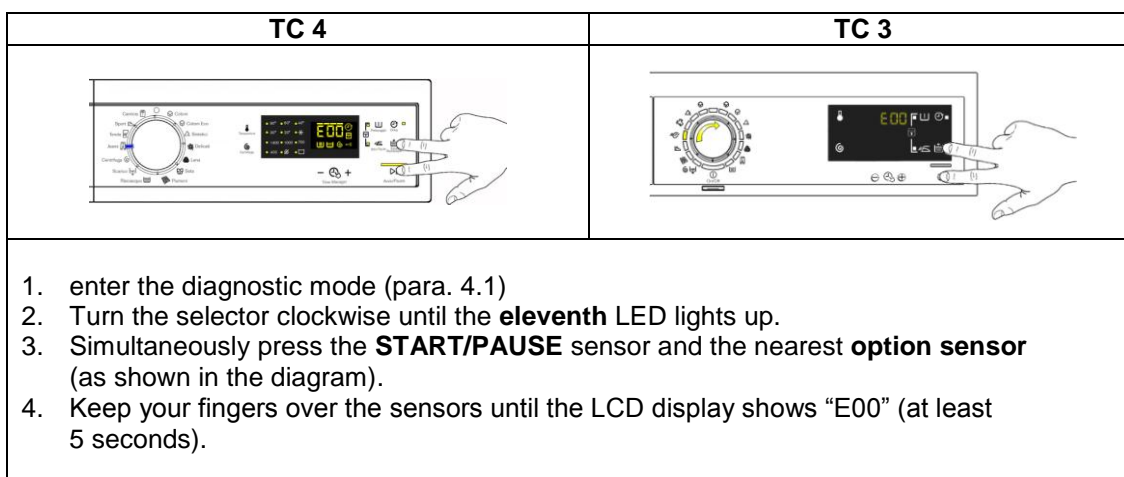
The last alarm can be displayed even if the programme selector is not in the eleventh position (diagnostics) or if the appliance is in normal operating mode (e.g. during the execution of the washing programme):

- Touch the **START/PAUSE** sensor and the nearest **option sensor** simultaneously (as if you were entering DIAGNOSTIC mode) and hold for at least 2 seconds: the LCD display shows the last alarm.
- The alarm will continue to be displayed until a sensor is touched.
- While the alarm is being displayed, the appliance continues to perform the cycle or, if in the programme selection phase, it stores the previously selected options.

### 4.4.4 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



N.B. With this operation all the alarms stored are deleted.

#### 4.5 ALARM SUMMARY TABLE

alarm	Description	Possible fault	Machine status/action	Reset	Page
<b>E00</b>					
<b>E11</b>	<b>Water fill difficulty during washing</b>	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	20
<b>E13</b>	<b>Water leaks</b>	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	22
<b>E21</b>	<b>Drain difficulty during washing</b>	Drain pipe kinked/clogged/improperly positioned; drain filter clogged/dirty; wiring faulty; pressure switch faulty; drain pump rotor blocked; drain pump faulty; main PCB faulty.	Cycle is paused (after 2 attempts)	START ON/OFF RESET	24
<b>E23</b>	<b>Faulty triac for drain pump</b>	Wiring faulty; drain pump faulty; main PCB faulty.	Safety drain cycle - Cycle stops with door open.	RESET	26
<b>E24</b>	<b>Drain pump triac "sensing" circuit faulty.</b>	Main circuit board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET	28
<b>E31</b>	<b>Malfunction in electronic pressure switch circuit</b>	Wiring; Electronic pressure switch; Main PCB;	Cycle stops with door locked	RESET	28
<b>E32</b>	<b>Calibration error of the electronic pressure switch</b>	Drain pipe kinked/clogged/improperly positioned; solenoid valve faulty; drain filter clogged/dirty; drain pump faulty; leaks from pressure switch hydraulic circuit; pressure switch faulty; Wiring; main PCB;	Cycle is paused	START/RESET	29
<b>E35</b>	<b>Overflow</b>	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	30
<b>E38</b>	<b>Internal pressure chamber is clogged (water level does not change for at least 30 sec. of drum rotation)</b>	Motor belt broken; water circuit on pressure switch clogged.	Heating phase is skipped	RESET	31
<b>E41</b>	<b>Door open</b>	Check whether the door is closed properly; Wiring faulty; door safety interlock faulty; Main circuit board faulty.	Cycle is paused	START/RESET	32
<b>E42</b>	<b>Problems with door lock</b>	Wiring faulty; door safety interlock faulty; Electrical current leak between heating element and ground; main PCB faulty.	Cycle is paused	START/RESET	34
<b>E43</b>	<b>Faulty triac supplying power to door delay system</b>	Wiring faulty; door safety interlock faulty; Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	36
<b>E44</b>	<b>Faulty sensing by door delay system</b>	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	37
<b>E45</b>	<b>Faulty sensing by door delay system triac</b>	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	E45	

alarm	Description	Possible fault	Machine status/action	Reset	Page
E52	No signal from motor tachometric generator	Wiring faulty; Motor faulty; Inverter board faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	38/40
E57	Inverter is drawing too much current (>15A)	Wiring faulty on inverter for motor; inverter PCB faulty; motor faulty.	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	42
E58	Inverter is drawing too much current (>4.5A)	Motor malfunction (overload); Wiring faulty on inverter faulty; motor faulty; inverter PCB faulty	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	44
E59	No signal from tachometric generator for 3 seconds	Wiring faulty on inverter for motor; inverter PCB faulty; motor faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	46
E5A	Overheating on heat dissipator for Inverter	Overheating caused by continuous operation or ambient conditions (let appliance cool down); Inverter PCB faulty. NTC open (on the Inverter PCB)	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	48
E5C	Input voltage is too high	Input voltage is too high (measure the grid voltage); inverter PCB faulty	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	49
E5d	Data transfer error between Inverter and main PCB	Line interference; wiring faulty; faulty main PCB or inverter PCB.	-----	ON/OFF RESET	50
E5E	Communication error between Inverter and main PCB	Faulty wiring between main PCB and inverter PCB; Inverter PCB faulty; Main PCB faulty;	Cycle blocked (after 5 attempts)	ON/OFF RESET	51
E5F	Inverter PCB fails to start the motor	Wiring faulty; Inverter PCB faulty; Main PCB faulty;	Cycle stops with door open (after 5 attempts)	ON/OFF RESET	
E5H	Input voltage is lower than 175V	Wiring faulty; Inverter PCB faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	52
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	53
E66	Heating element power relay faulty (inconsistency between sensing and K2 relay status)	Current leakage between heating element and ground. Main PCB faulty;	Safety water fill Cycle stops with door closed.	ON/OFF RESET	54
E68	Current leak to the ground	Current leakage between heating element and ground.	The heating phase is skipped	START/RESET	55
E69	Heating element interrupted	Wiring faulty; Heating element for washing interrupted (thermal fuse open); Main PCB faulty.	-----	START ON/OFF RESET	56
E6A	Heating relay sensing faulty	Main circuit board faulty.	Cycle stops with door locked	RESET	57
E6H	Heating element power relay faulty (inconsistency between sensing and K1 relay status)	Wiring faulty; Earth-leakage between heating element and earth; Main PCB faulty.	Safety water fill Cycle stops with door closed.	ON/OFF RESET	
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	58
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	RESET	59
E83	Error in reading selector	Main PCB faulty (Incorrect configuration data).	Cycle cancelled	START/RESET	60
E86	Selector configuration error	Display board	-----	START ON/OFF RESET	

alarm	Description	Possible fault	Machine status/action	Reset	Page
E87	Display board microprocessor faulty	If this continues, replace the display board	No action to be taken	START ON/OFF RESET	
E91	Communication error between main PCB and display	Wiring faulty; control/display circuit board faulty, Inverter Board faulty, Main circuit board faulty.	-----	RESET	61/62
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	63
E93	Appliance configuration error	Main PCB faulty (incorrect configuration data)	Cycle blocked	ON/OFF	
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data)	Cycle blocked	ON/OFF	
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked	RESET	
E98	Communication error between main PCB - Inverter	Incompatibility between main PCB and Inverter	Cycle blocked	ON/OFF	
E9C	Display board configuration error	Display board faulty	-----	START ON/OFF RESET	64
E9E	Display board sensor/touch key faulty	Display board faulty	-----	ON/OFF	
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	65
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	66
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	
EF3	Aqua control system intervention	Water leaks onto base frame; Aqua control system faulty; Drain pump winding interruption/overheating.	Appliance drains	ON/OFF RESET	
EF4	Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open	Tap closed, water fill pressure too low	-----	RESET	66
EF5	Unbalanced load	Final spin phases skipped.	-----	START/RESET	
EF6	Reset	If it continues, replace the main board.	No action to be taken	-----	67
EH1	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	67
EH2	Supply voltage too high	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	
EH3	Supply voltage too low	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	68
EH4	0Watt relay malfunction	Main circuit board faulty.	-----	ON/OFF RESET	



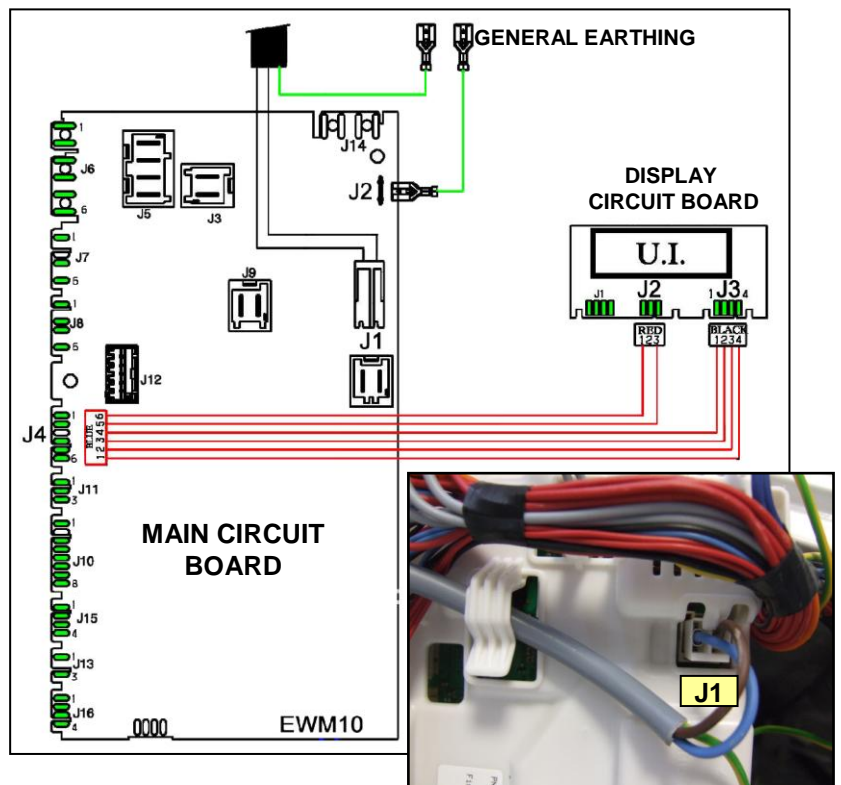
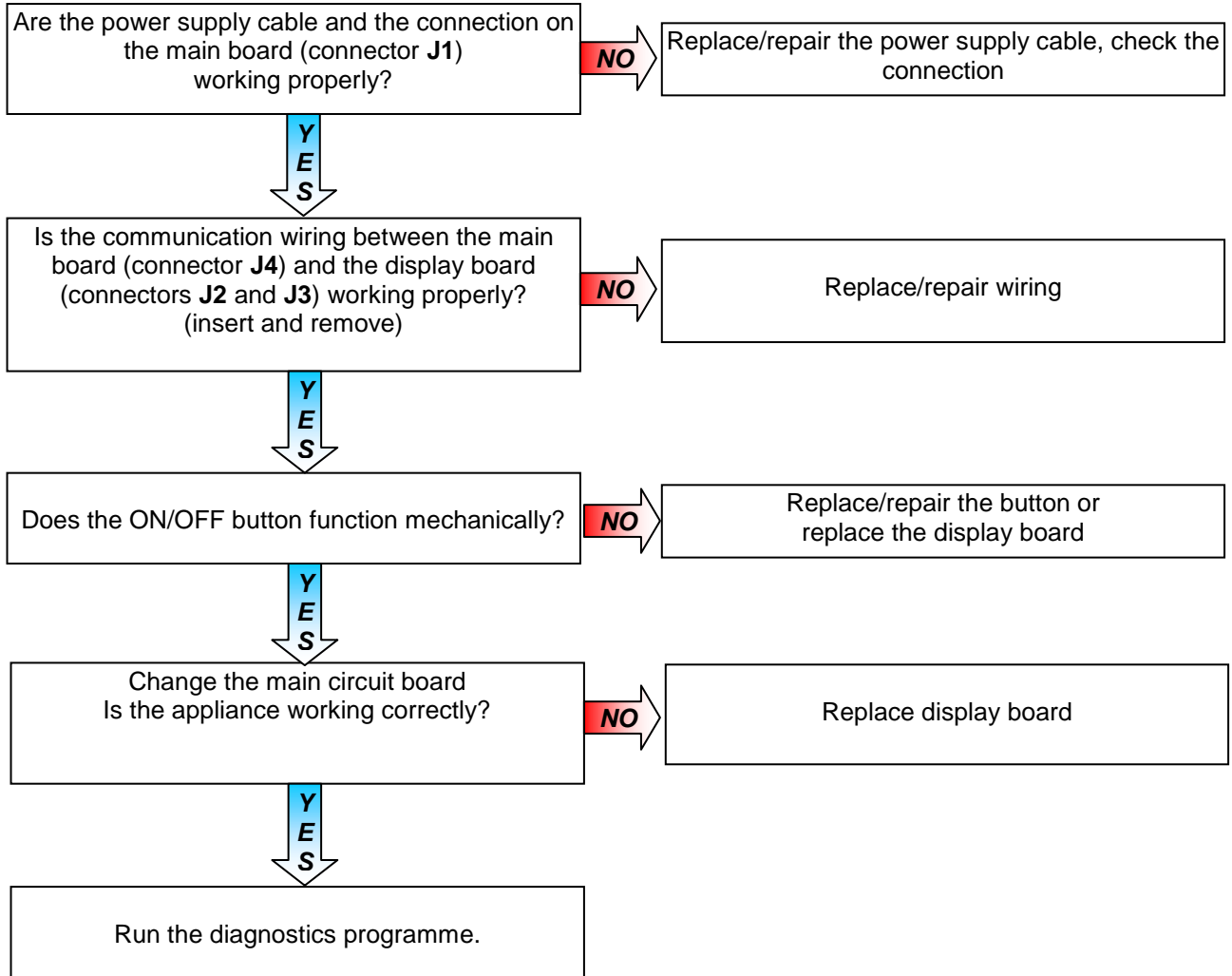
alarm	Description	Possible fault	Machine status/action	Reset	Page
EHE	Inconsistency between FCV relay (in the main board) and safety "sensing" circuit	Faulty wiring; Main circuit board faulty	Safety drain cycle Cycle stops with door open	RESET	
EHF	Safety sensing circuit faulty (wrong input voltage to microprocessor)	Main circuit board faulty.	Safety drain cycle Cycle stops with door open	RESET	

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

- **Configuration alarm E93:** when this alarm rings (when turned on) the machine blocks and the alarm code appears on the display 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 code can be viewed from 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. The display shows the “H”. alarm family.
- **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 motor tachometric generator): the only possibility to get out of the alarm situation is to turn off the appliance then turn it on again with the ON/OFF button or disconnect the plug from the socket.

## 5 CANNOT ACCESS THE DIAGNOSTICS PROGRAMME

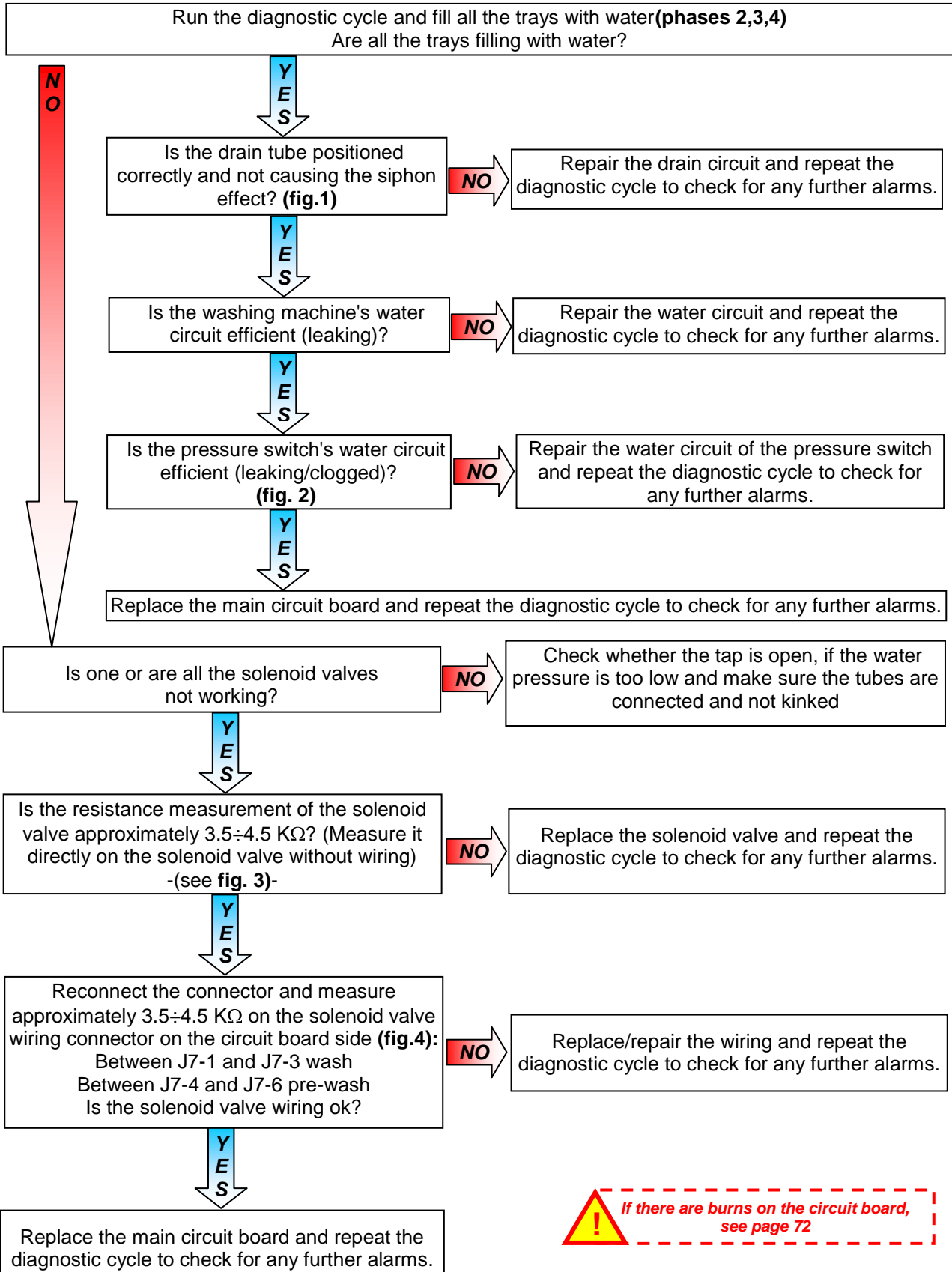
### 5.1 None of the LEDs on the circuit board light up



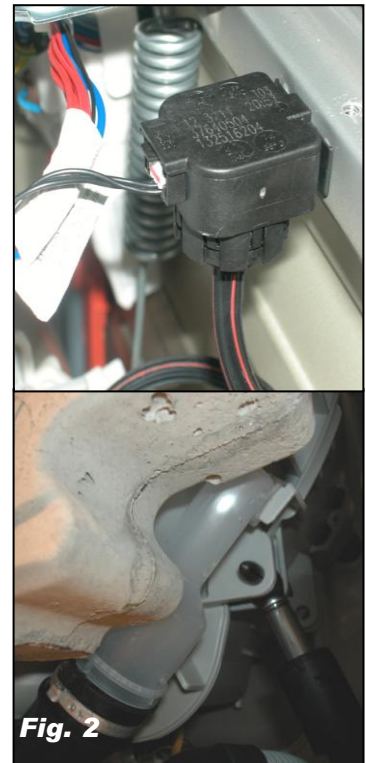
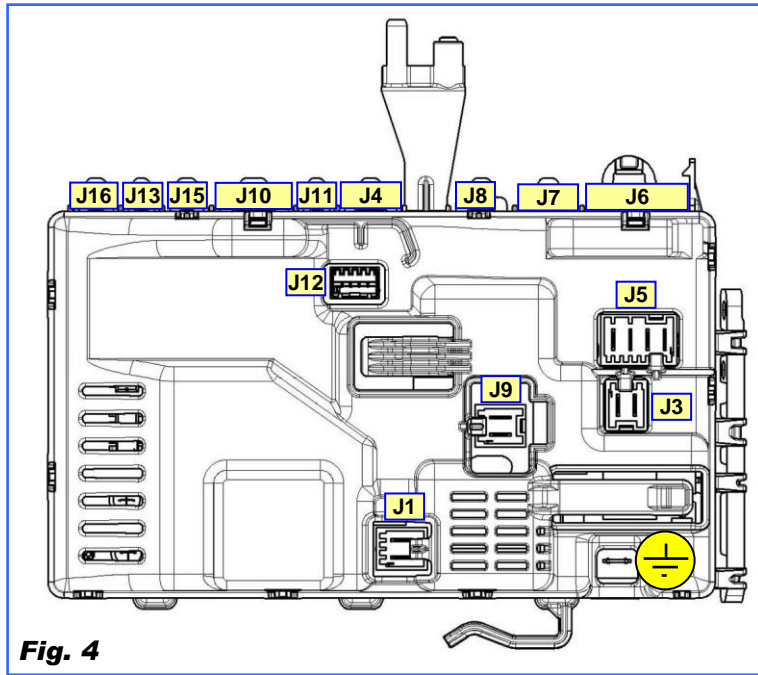
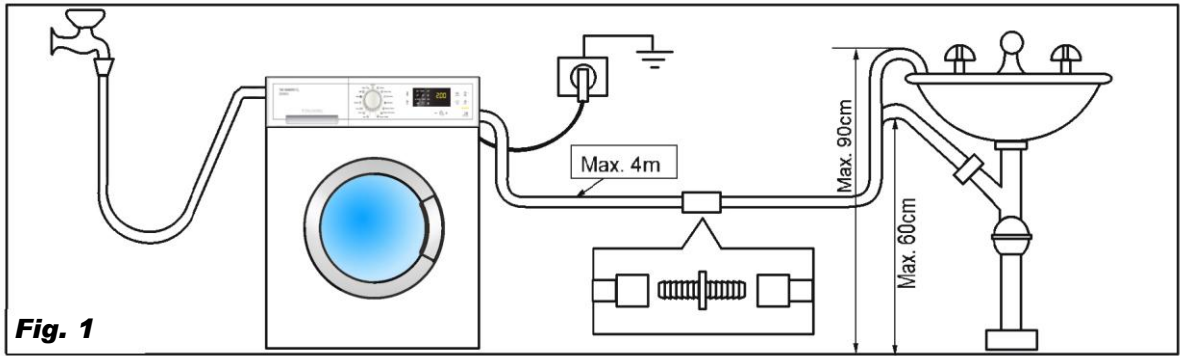
## 6 TROUBLESHOOTING BASED ON ALARM CODES

<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)	

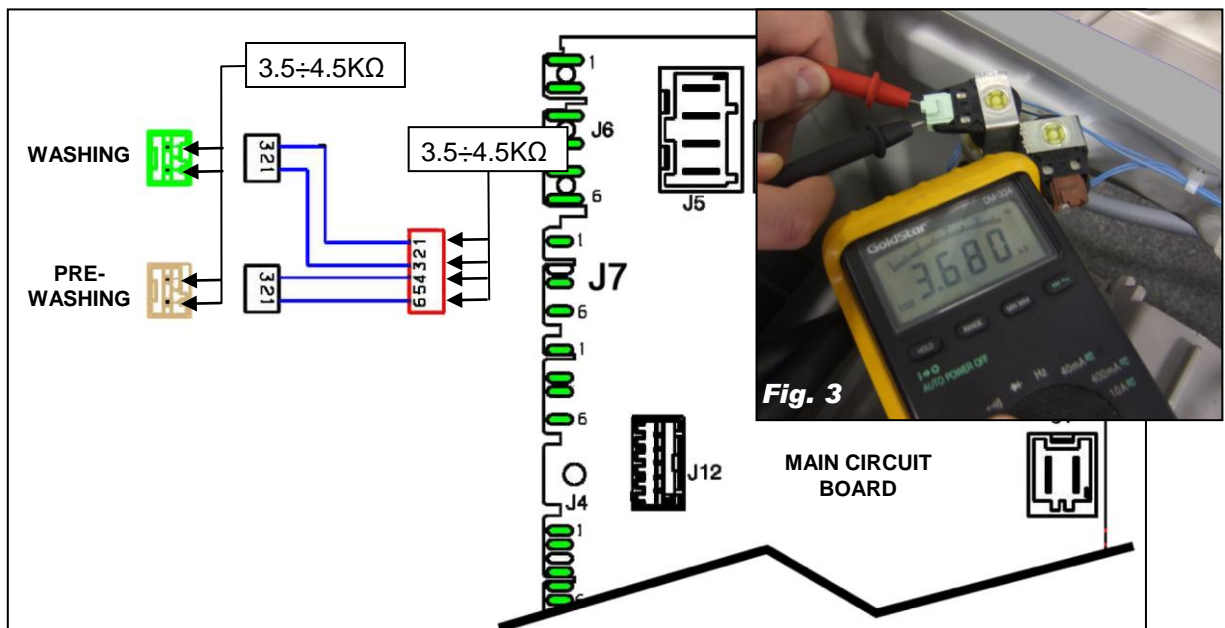
Checks to perform:



E11

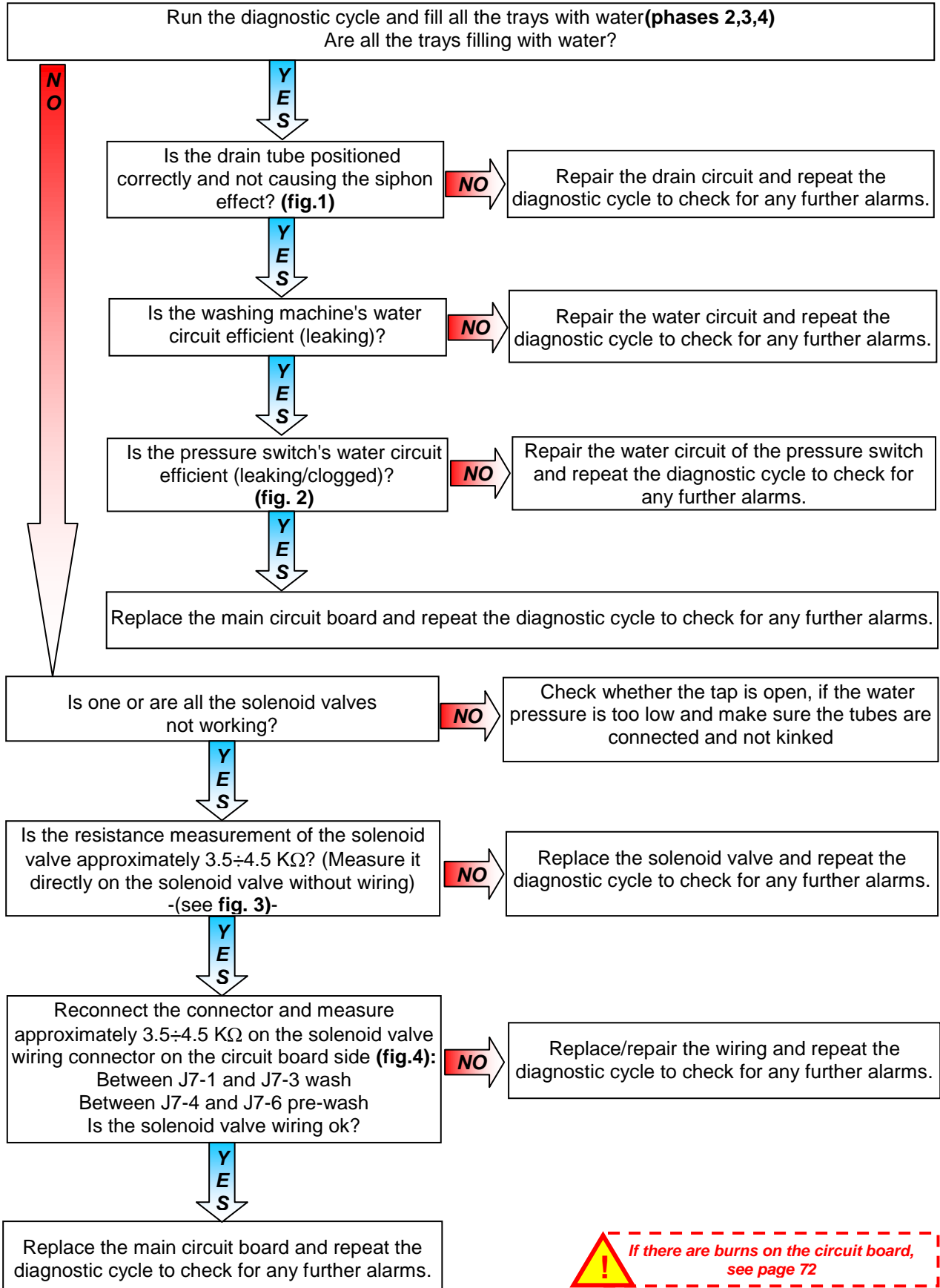


**!** If there are burns on the circuit board, see page 72

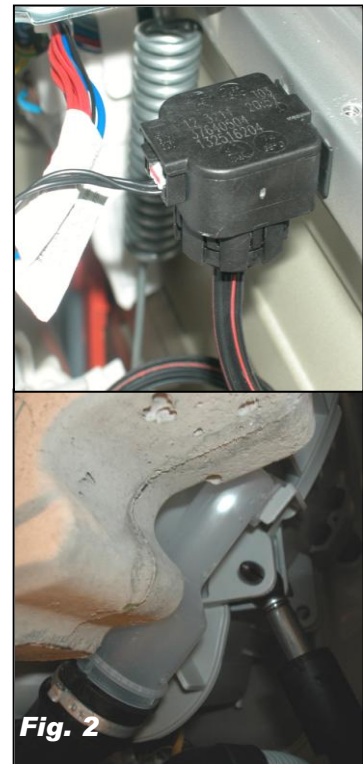
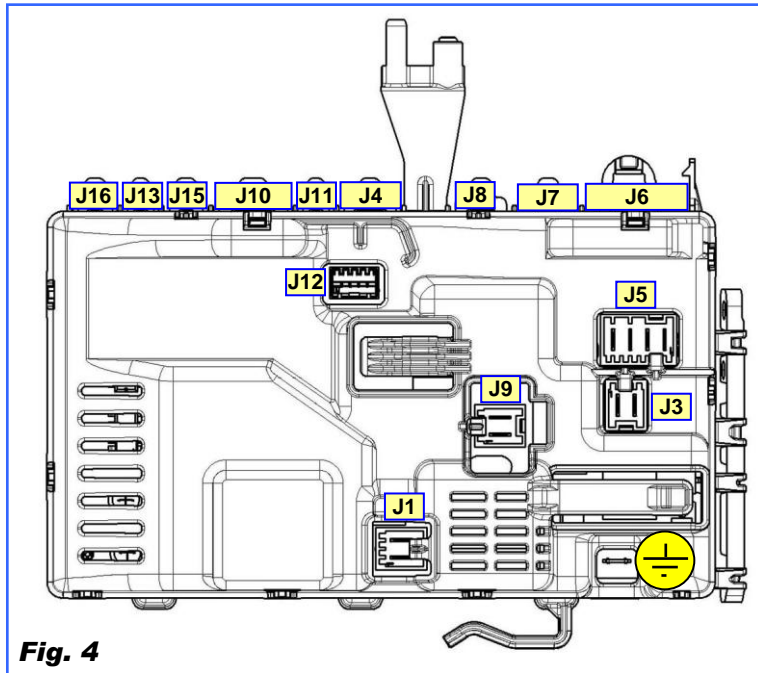
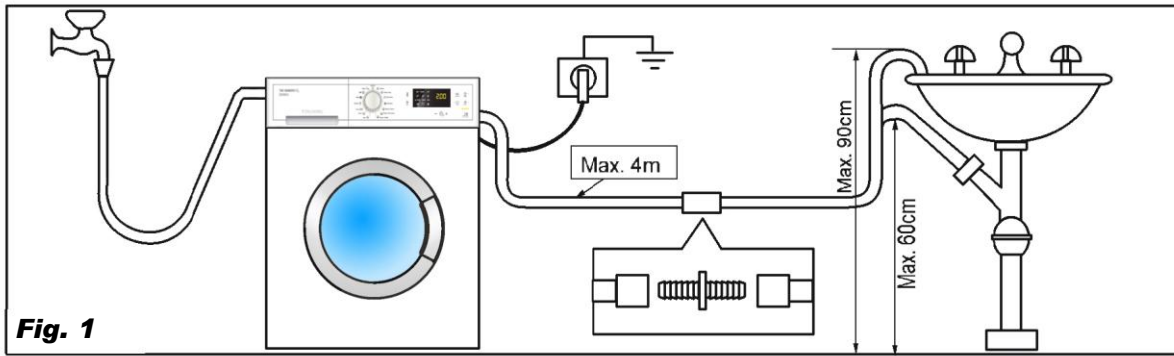


<b>E13</b>	<b>E13: Water leaks</b>	<b>E13</b>
	Maximum overall water fill time exceeded (sum of all water fills between one drain phase and the next to avoid exceeding the maximum volume)	

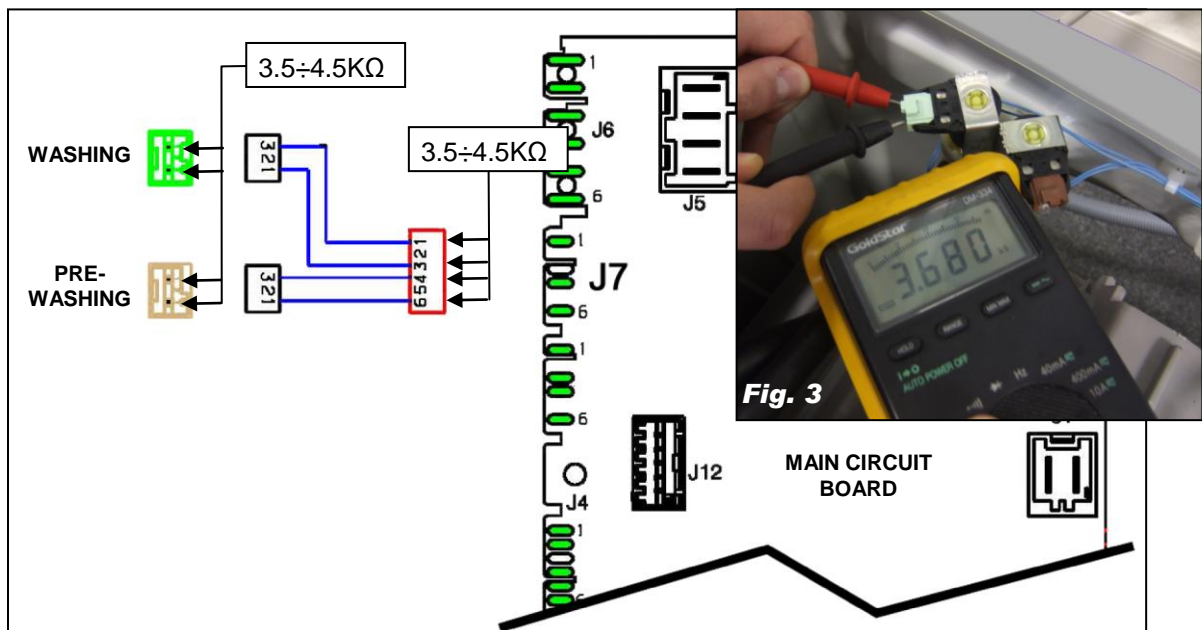
Checks to perform:



**E13**

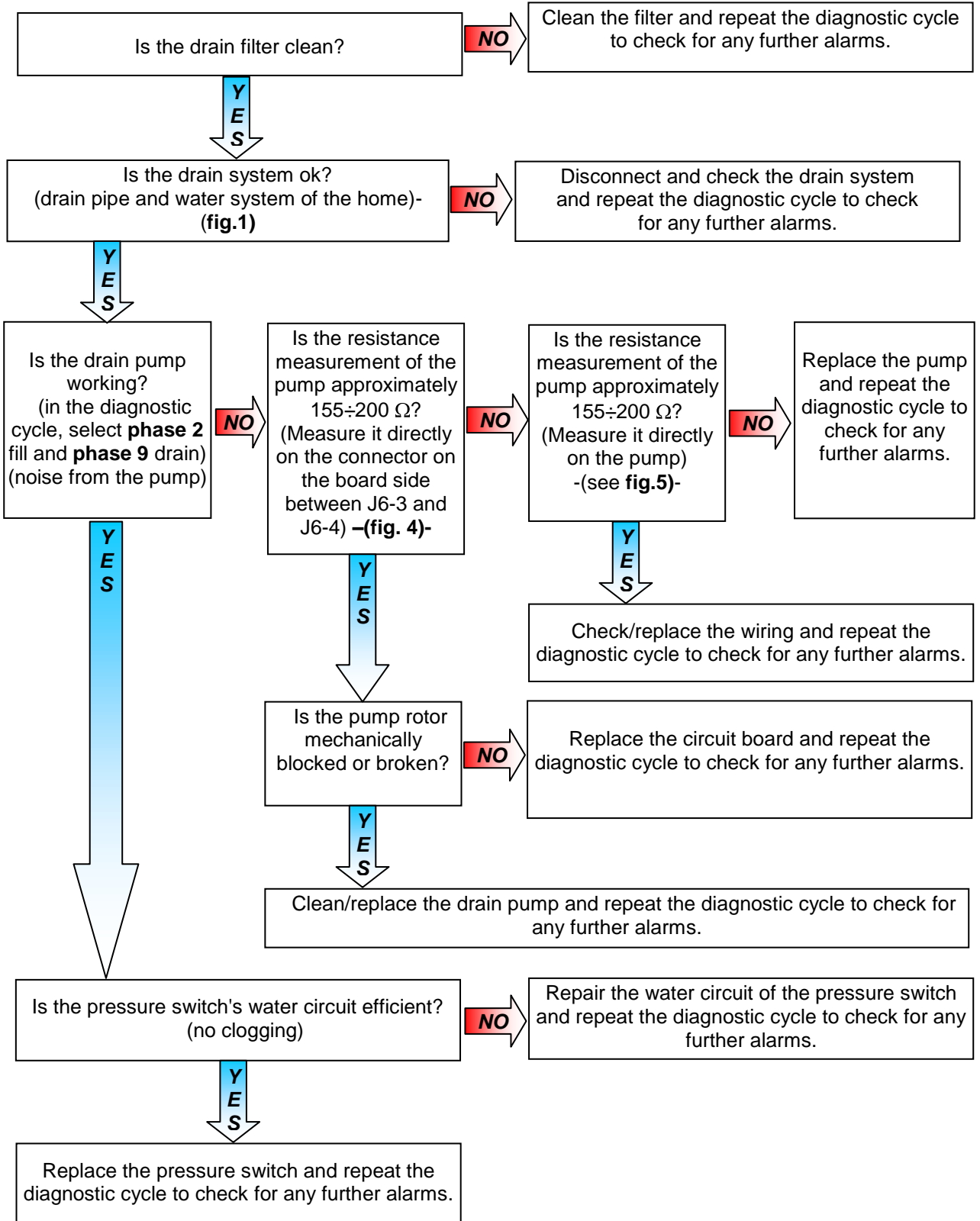


**!** If there are burns on the circuit board, see page 72



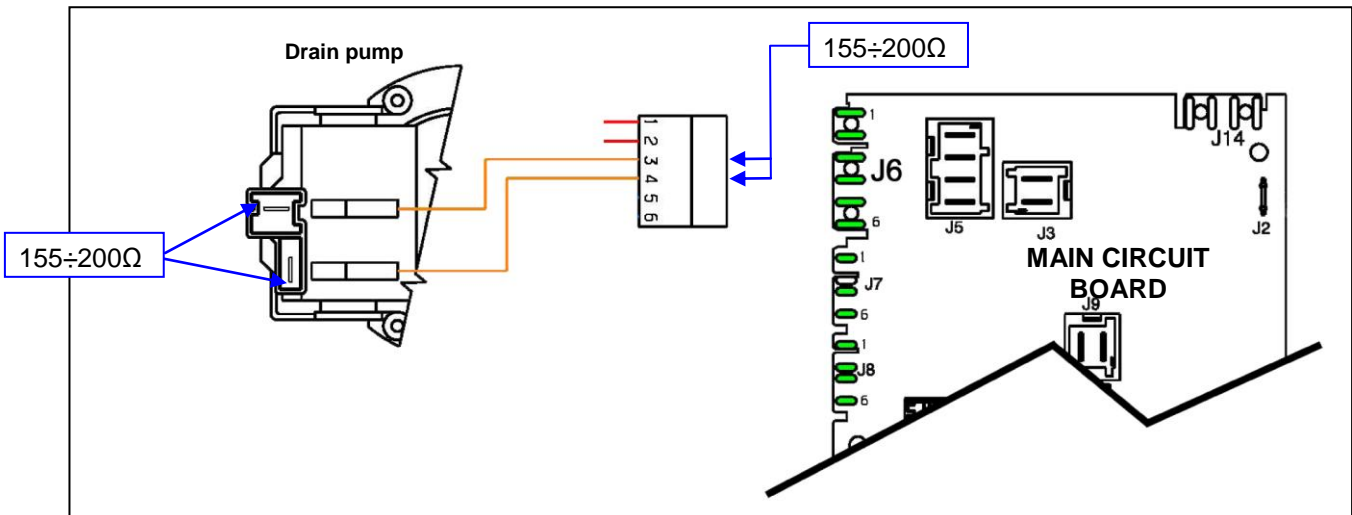
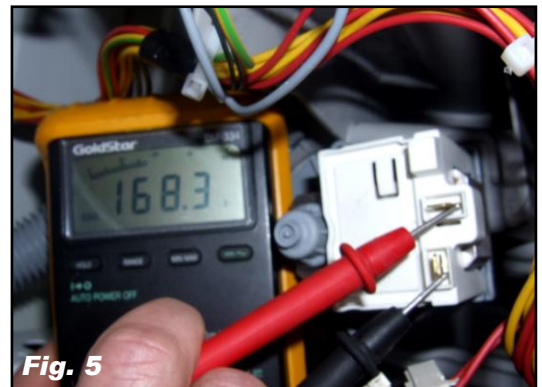
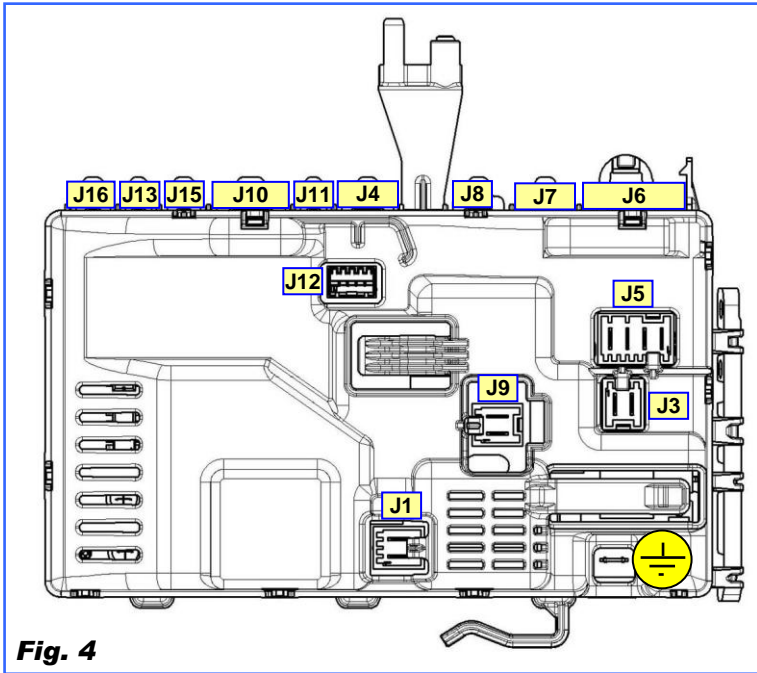
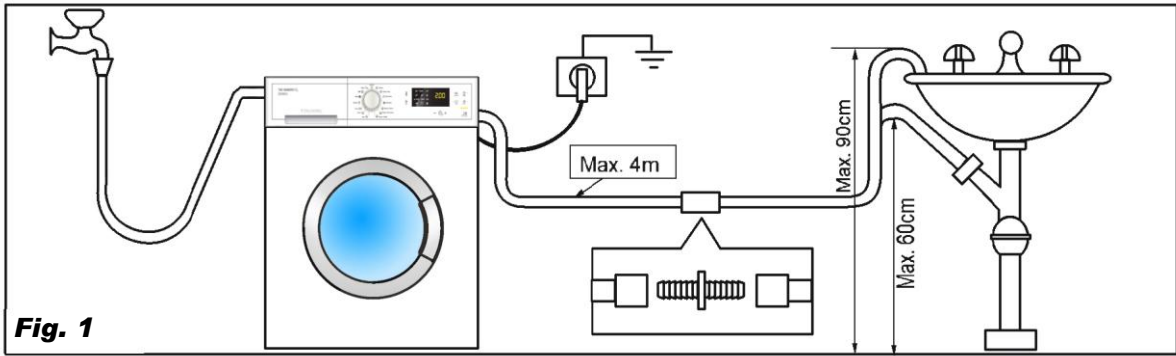
<b>E21</b>	<b>E21: Drain difficulty</b>	<b>E21</b>
Maximum drain time exceeded (measured for every cycle phase)		

Checks to perform:





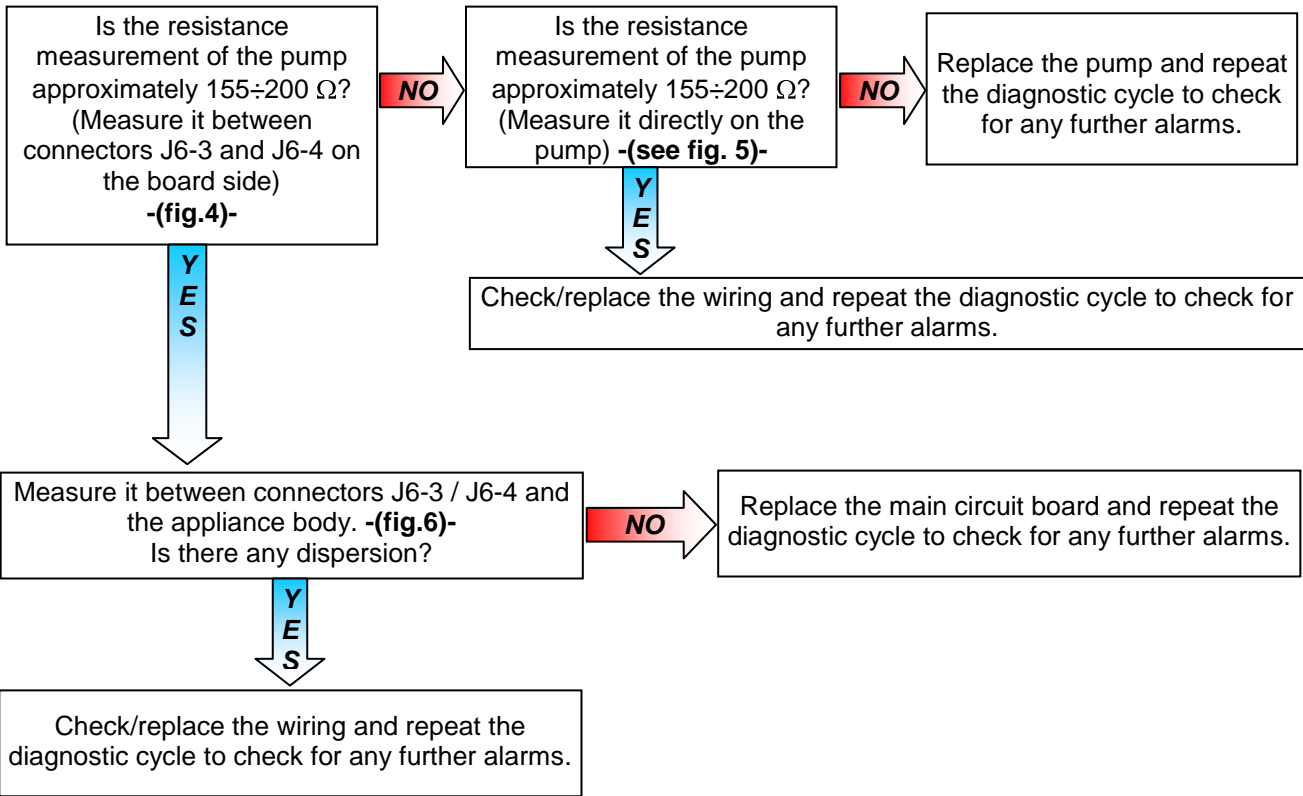
**E21**



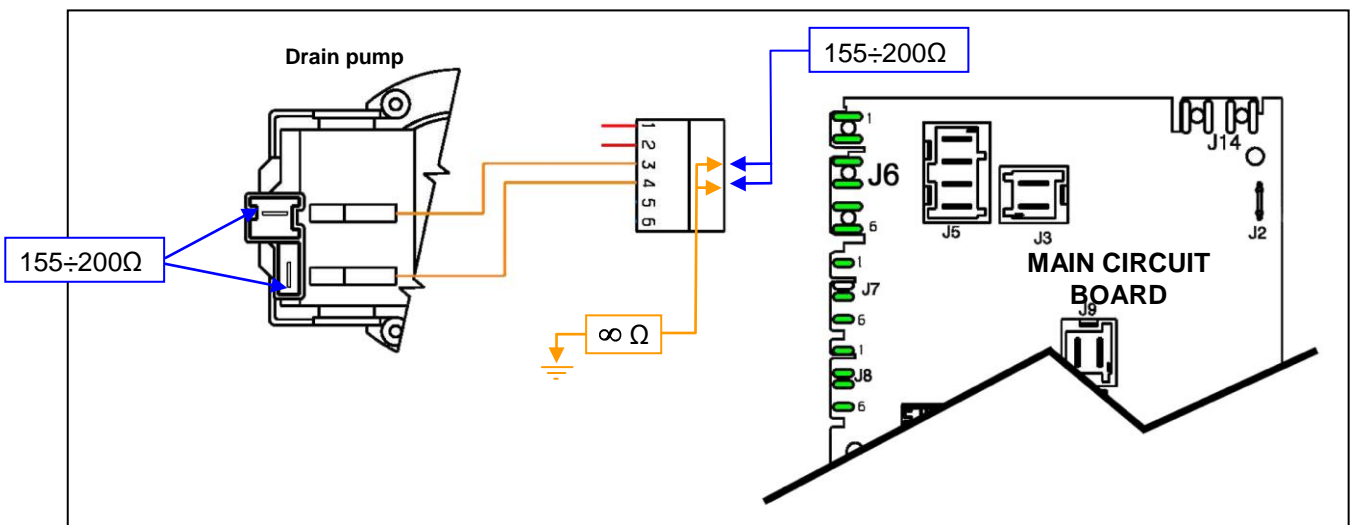
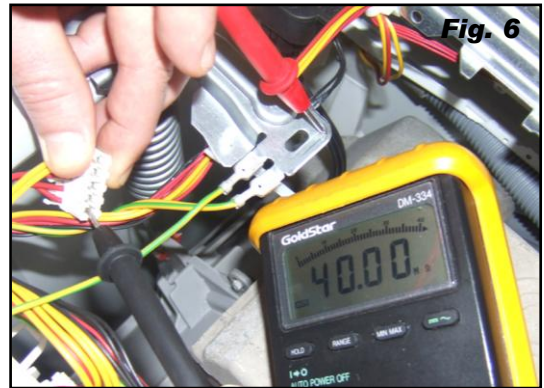
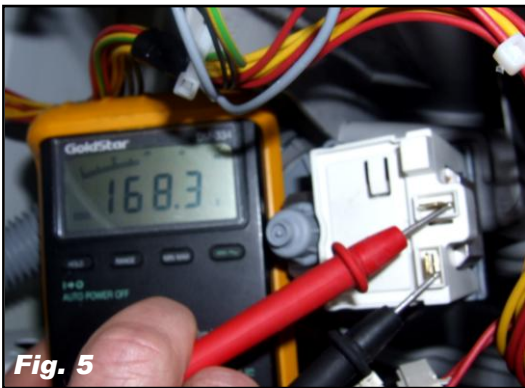
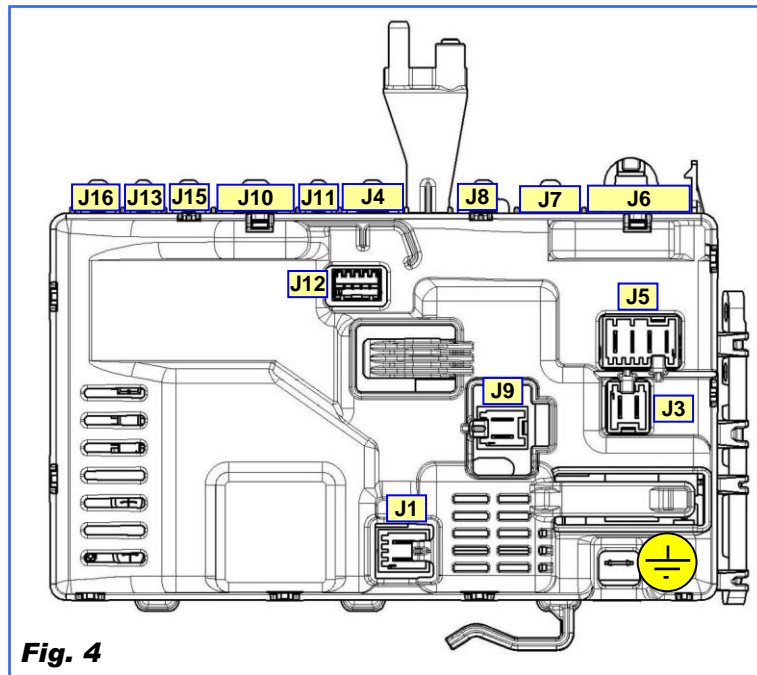
**!** If there are burns on the circuit board, see page 72

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

Checks to perform:



E23



**!** If there are burns on the circuit board, see page 72

<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:*



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



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



Measure that the circuit is closed between J10-1, J10-2, J10-3 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** →

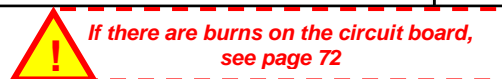
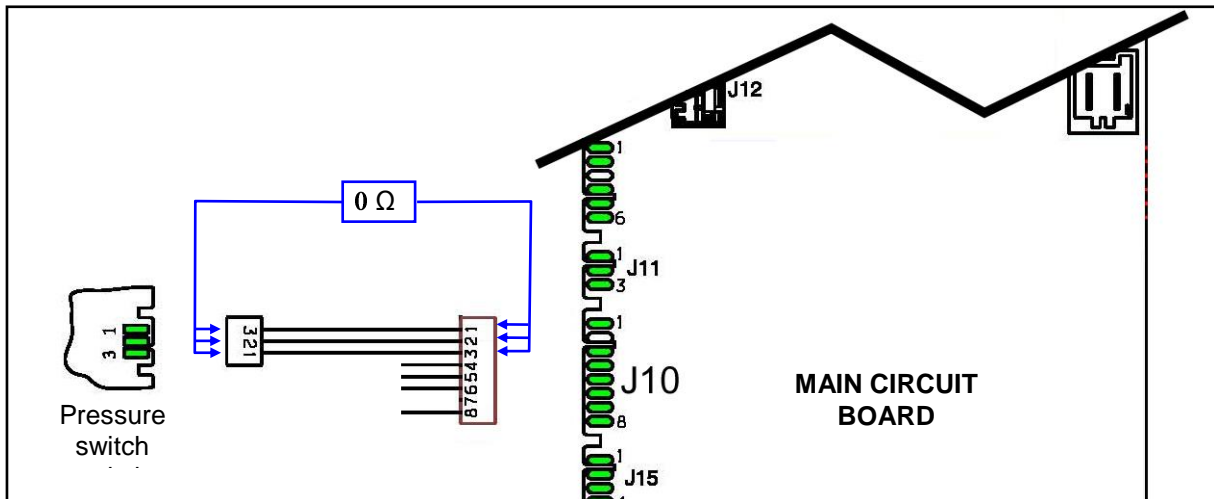
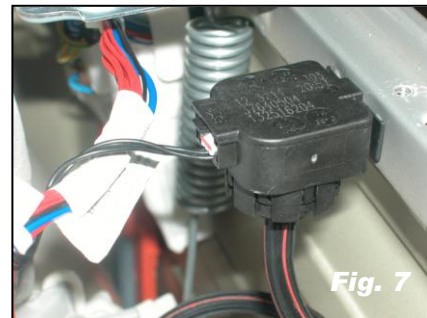
Reconnect and/or replace the wiring and repeat the diagnostic cycle to check for any further alarms.

**YES**  
↓

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

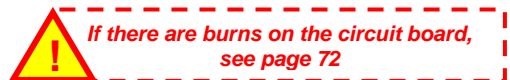
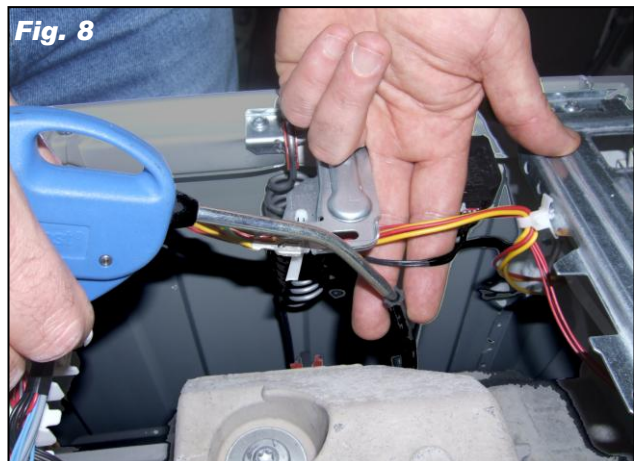
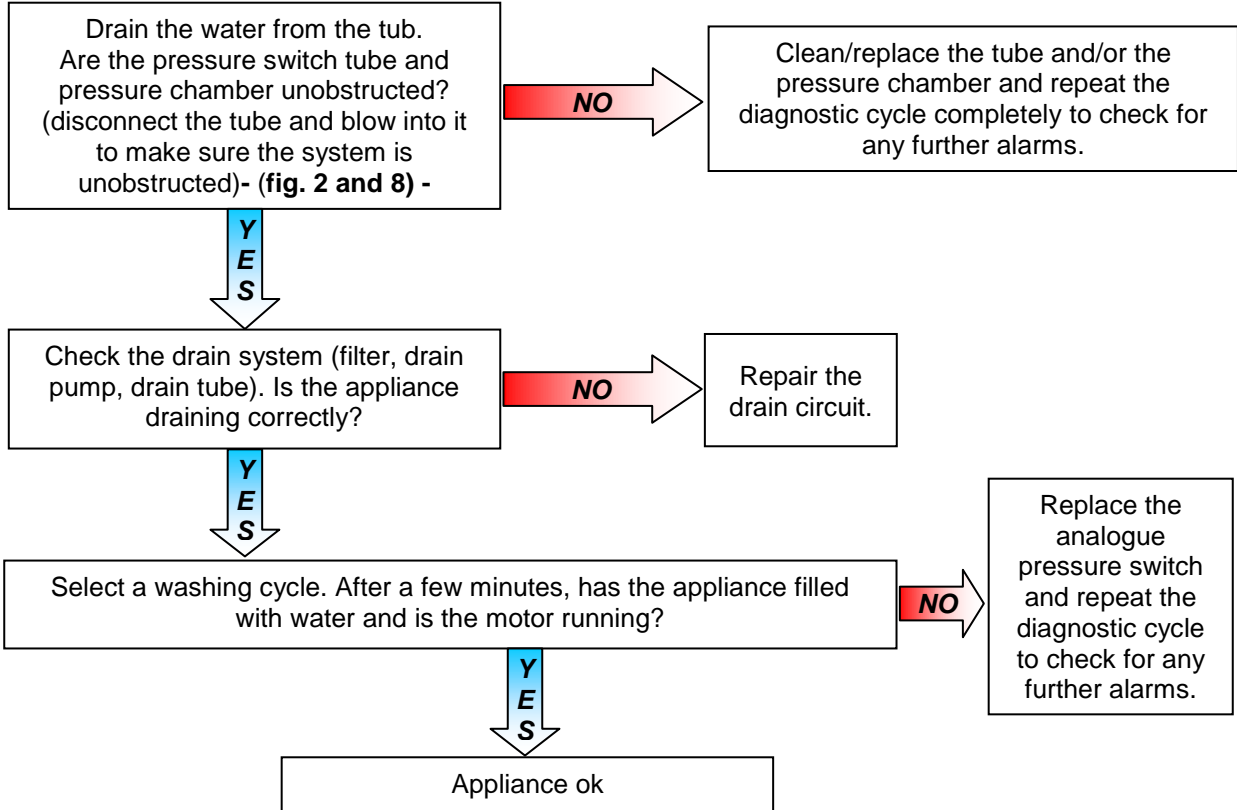
**YES**  
↓

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



<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>
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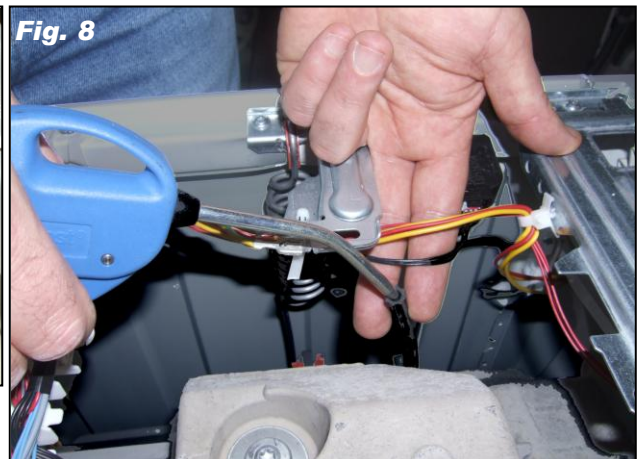
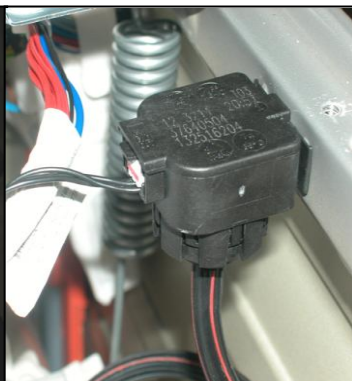
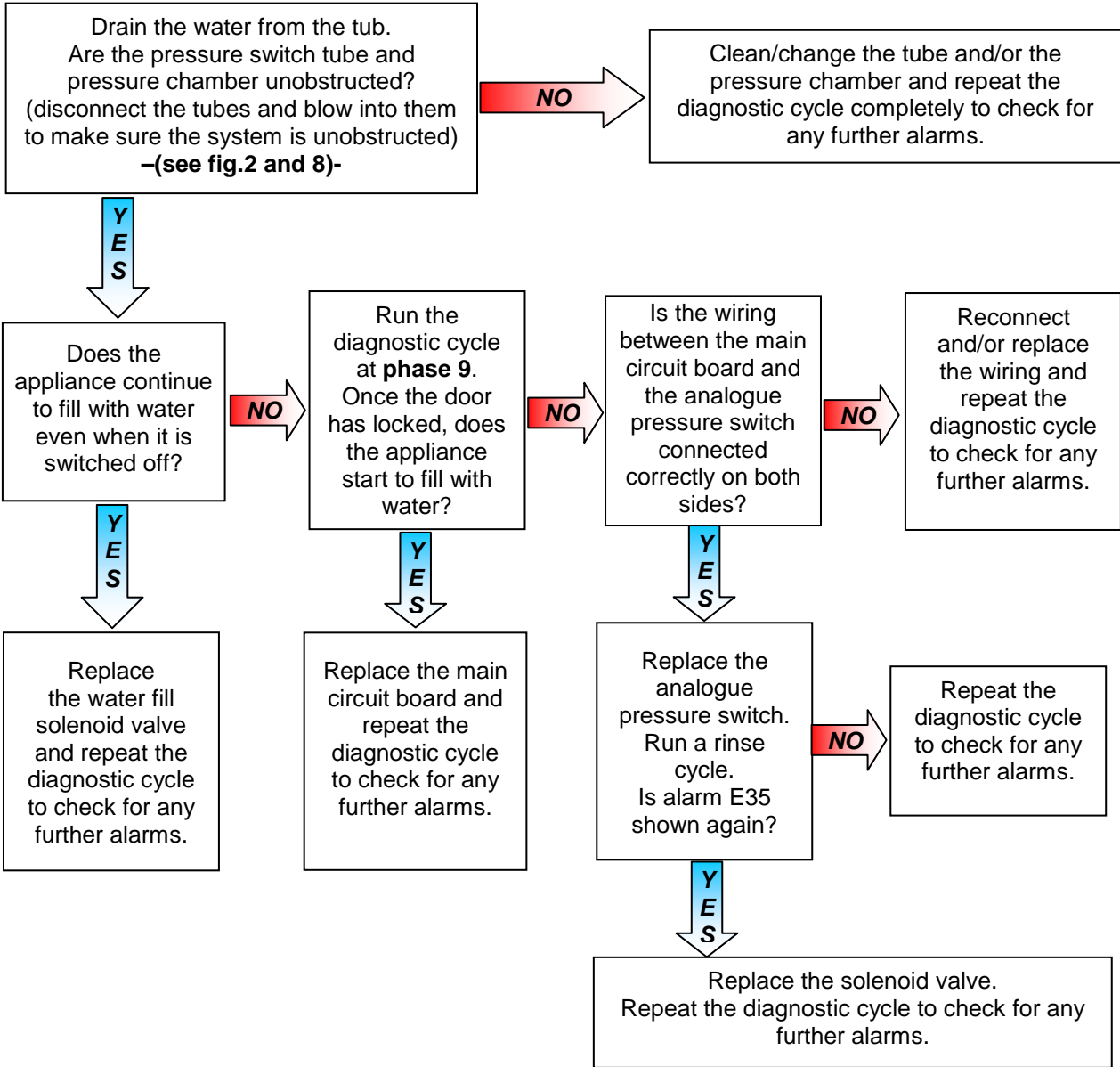
Checks to perform:



<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:*

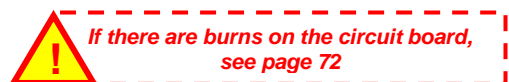
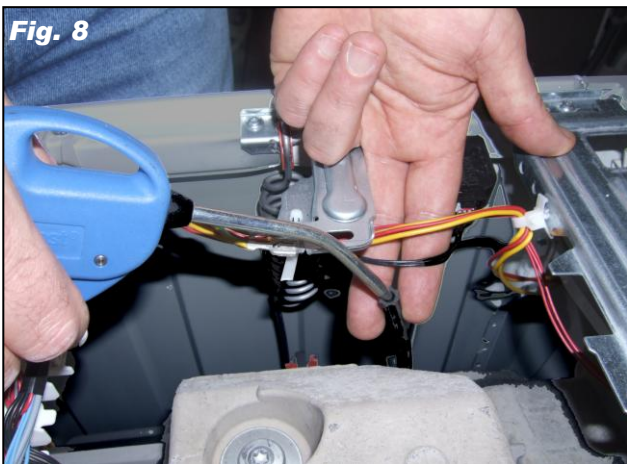
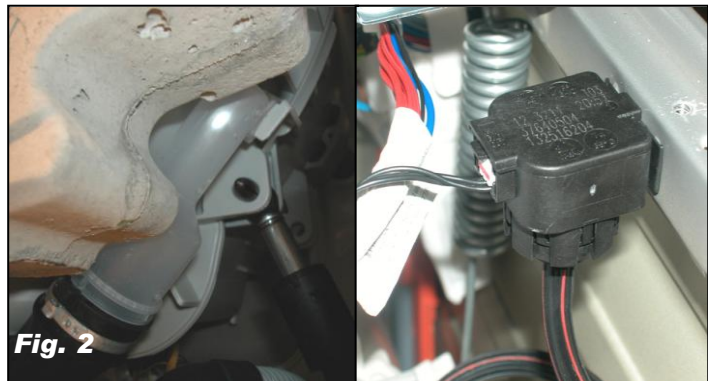
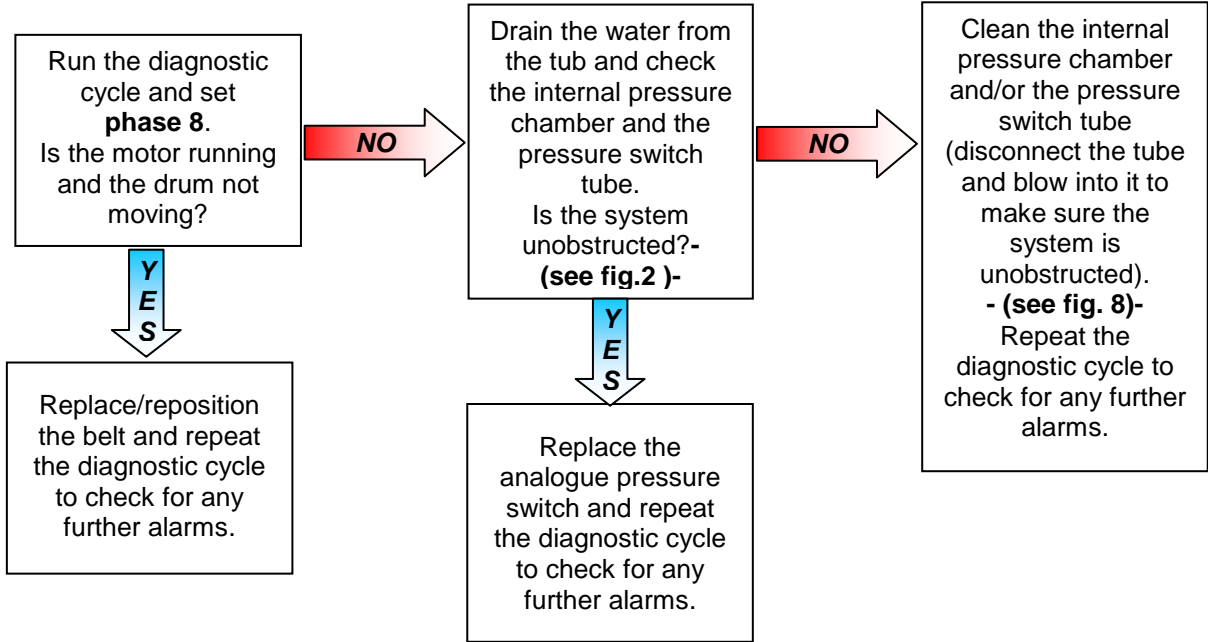
check that all the connectors are correctly inserted



If there are burns on the circuit board, see page 72

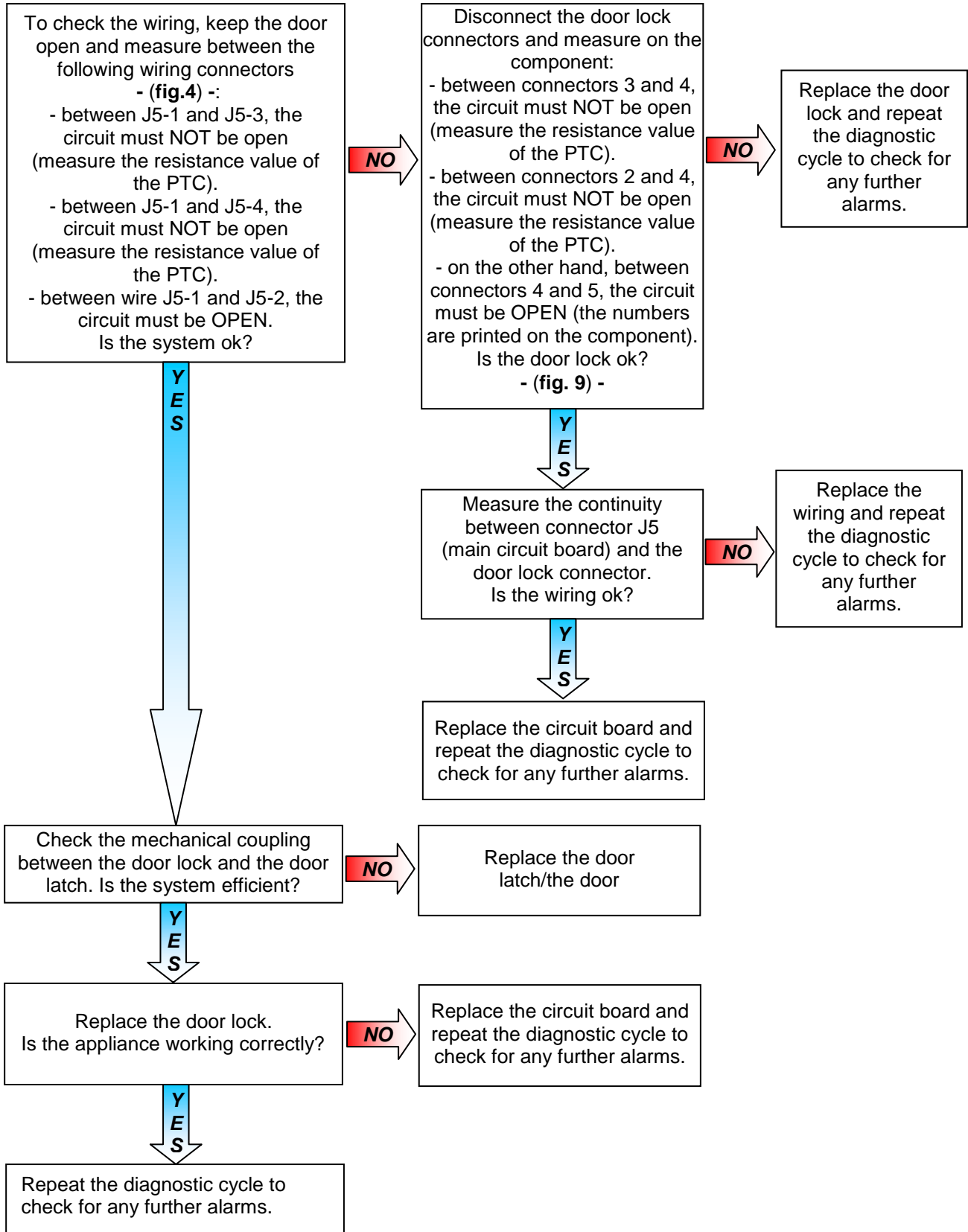
<b>E38</b>	<b>E38: Internal pressure chamber is clogged</b>	<b>E38</b>
	The analogue pressure switch is not able to measure any variation in the water level for at least 30 secs during drum rotation.	

Checks to perform:



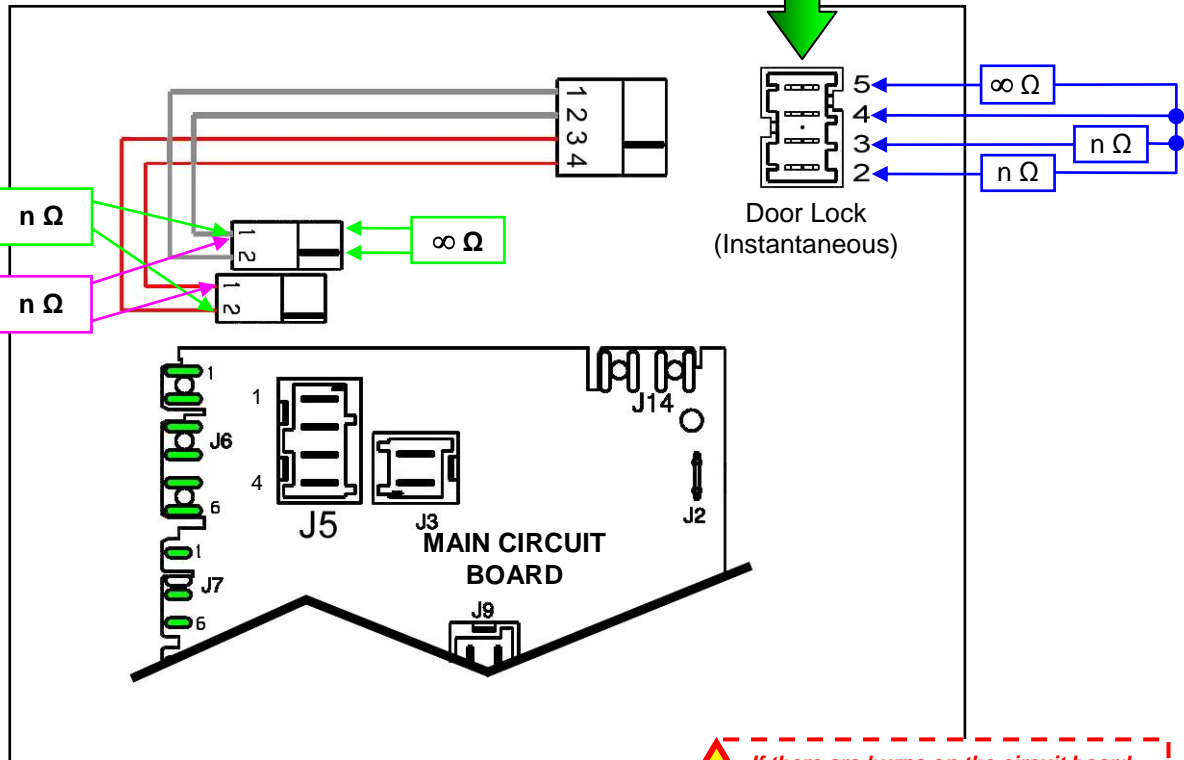
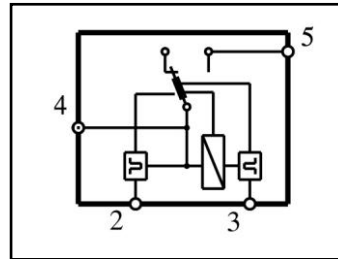
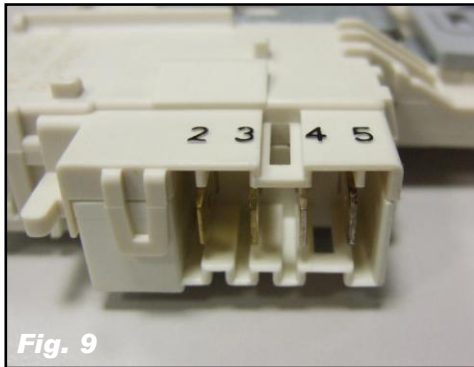
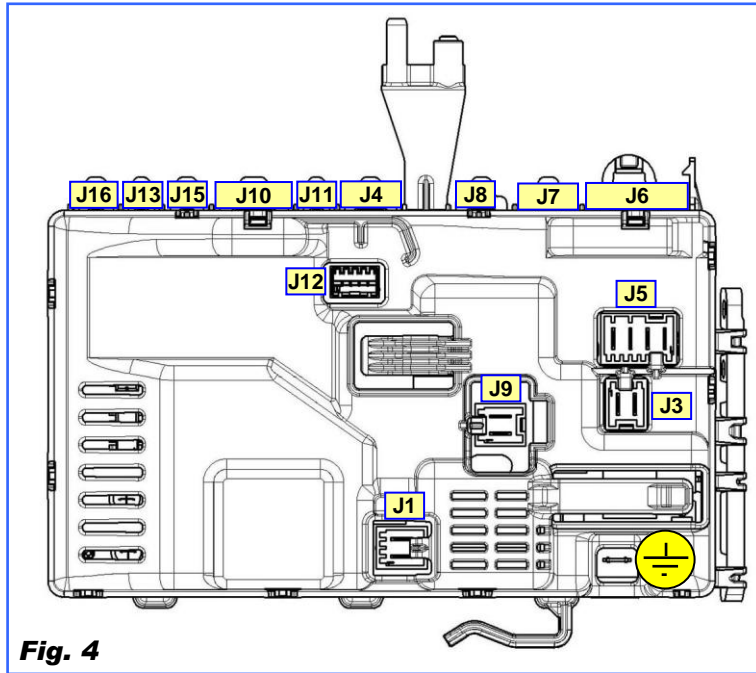
<b>E41</b>	<b>E41: Door open (device with 4 connections)</b>	<b>E41</b>
	Maximum time exceeded (5 pulses per instant)	

Checks to perform:





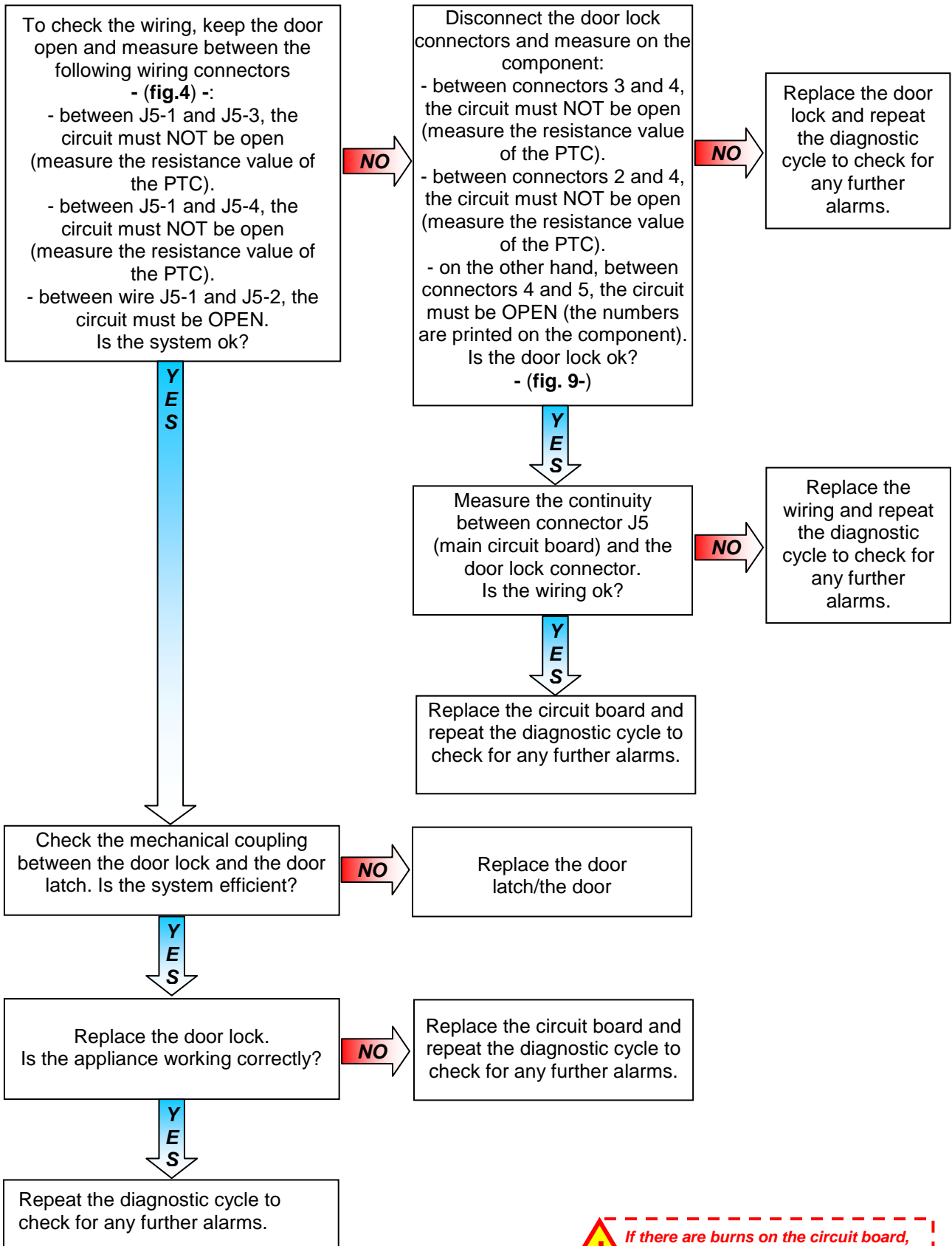
**E41 (device with 4 connections)**



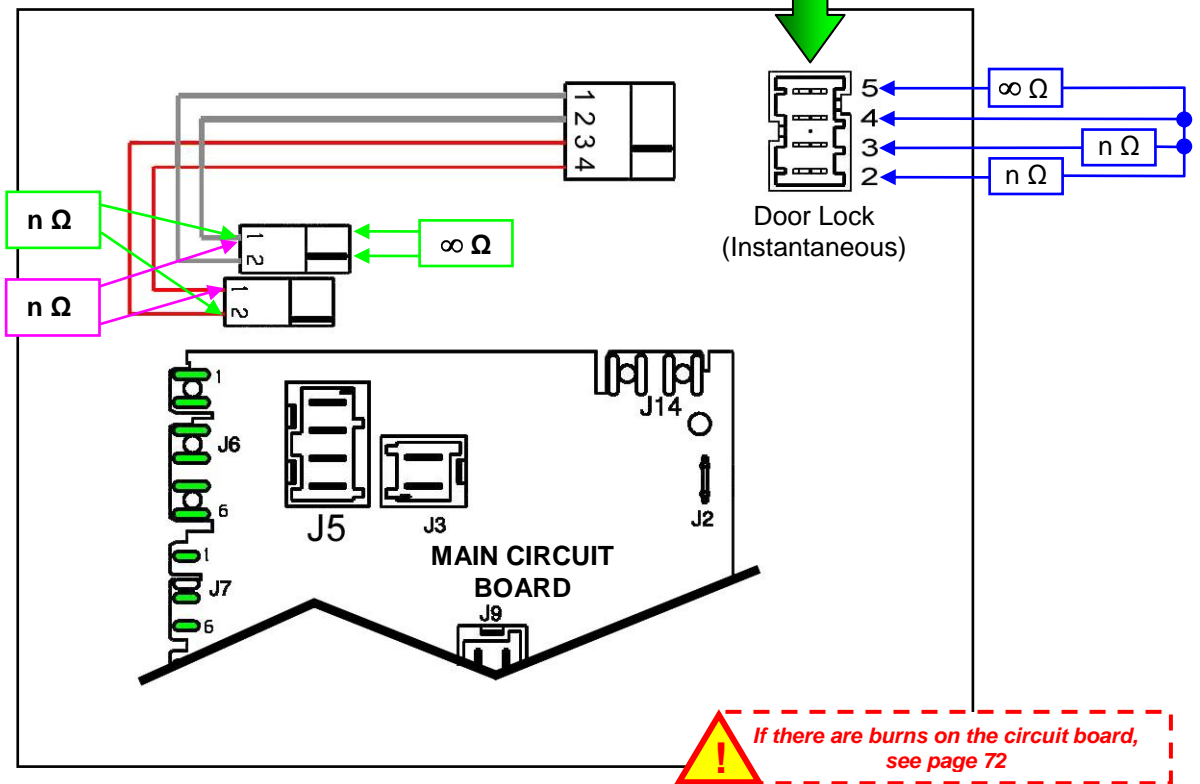
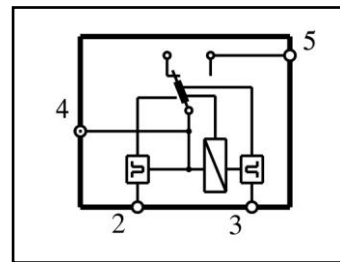
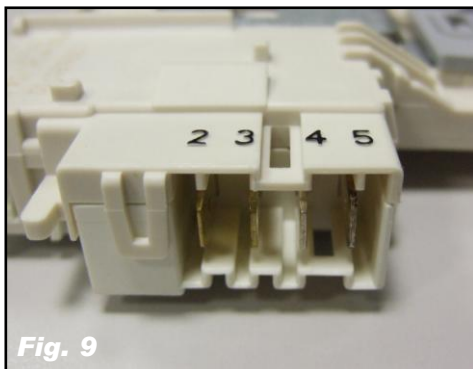
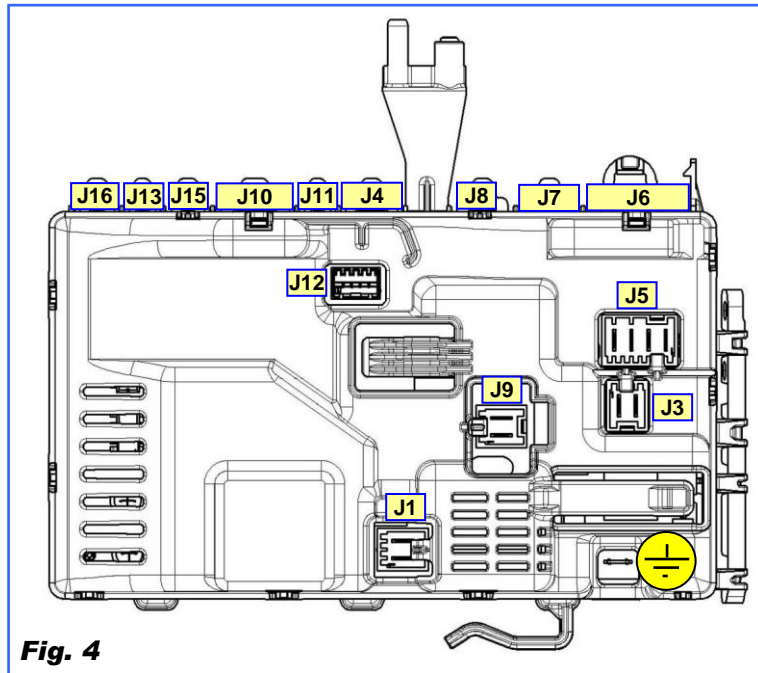
**!** If there are burns on the circuit board, see page 72

<b>E42</b>	<b>E42: Problems opening door (device with 4 connections)</b>	<b>E42</b>
	Maximum time exceeded (5 pulses per instant)	

Checks to perform:



**E42 (device with 4 connections)**



**E43** **E43: Problems with the component (triac) controlling the door delay system (device with 4 connections)** **E43**

*Checks to perform:*

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

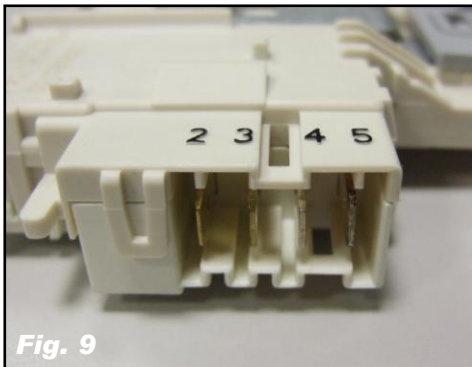
To check the wiring, keep the door open and measure between the following wiring connectors - (fig.4) -:

- between J5-1 and J5-3, the circuit must NOT be open (measure the resistance value of the PTC).
- between J5-1 and J5-4, 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?

**YES**

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



Disconnect the door lock connectors and measure on the component:

- between connectors 3 and 4, the circuit must NOT be open (measure the resistance value of the PTC).
- between connectors 2 and 4, the circuit must NOT be open (measure the resistance value of the PTC).
- on the other hand, between connectors 4 and 5, the circuit must be OPEN (the numbers are printed on the component).

Is the door lock ok?

- (fig. 9) -

**YES**

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

**YES**

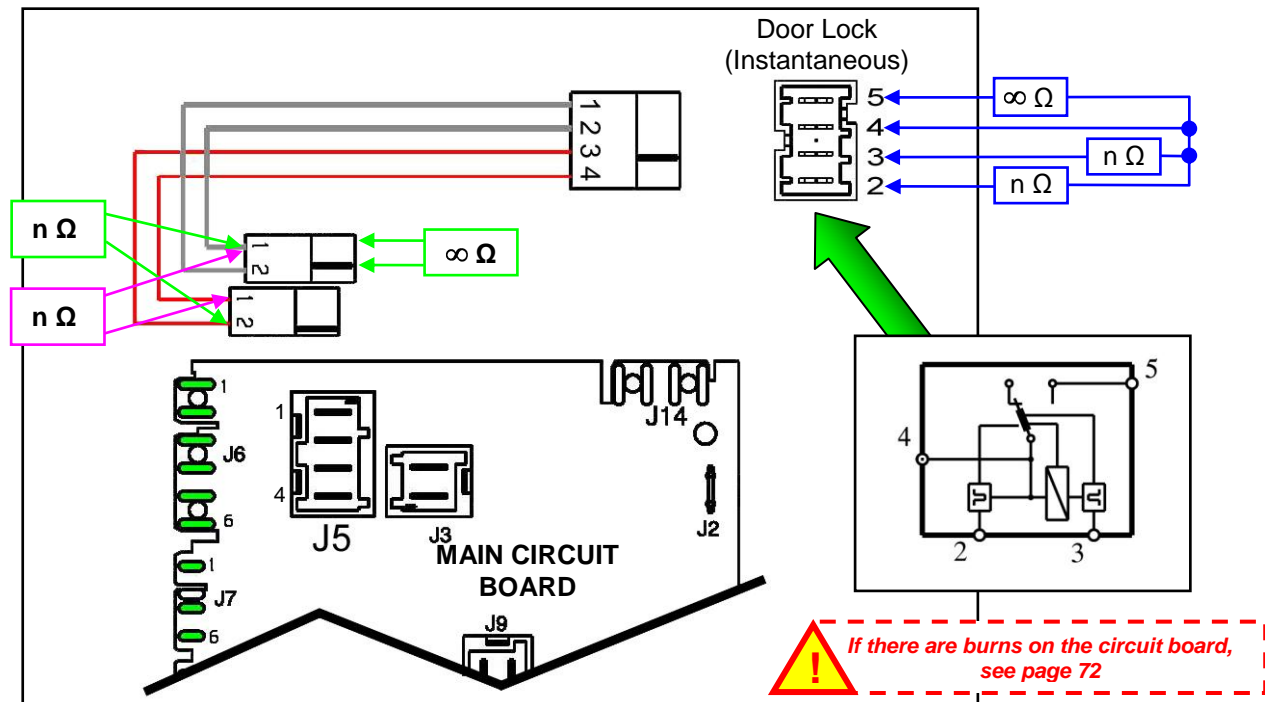
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**NO**

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

**NO**

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



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

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

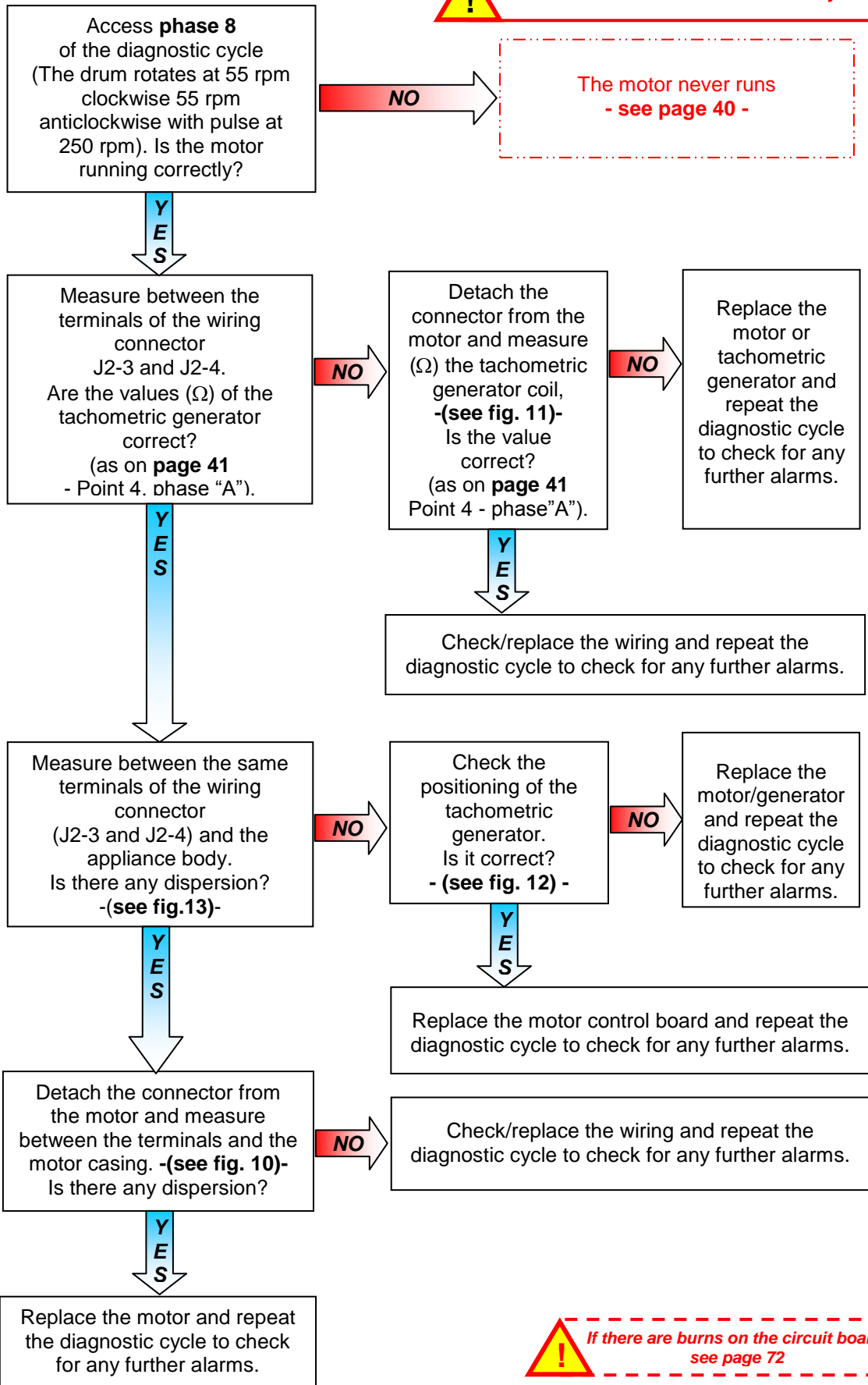


*If there are burns on the circuit board, see page 72*

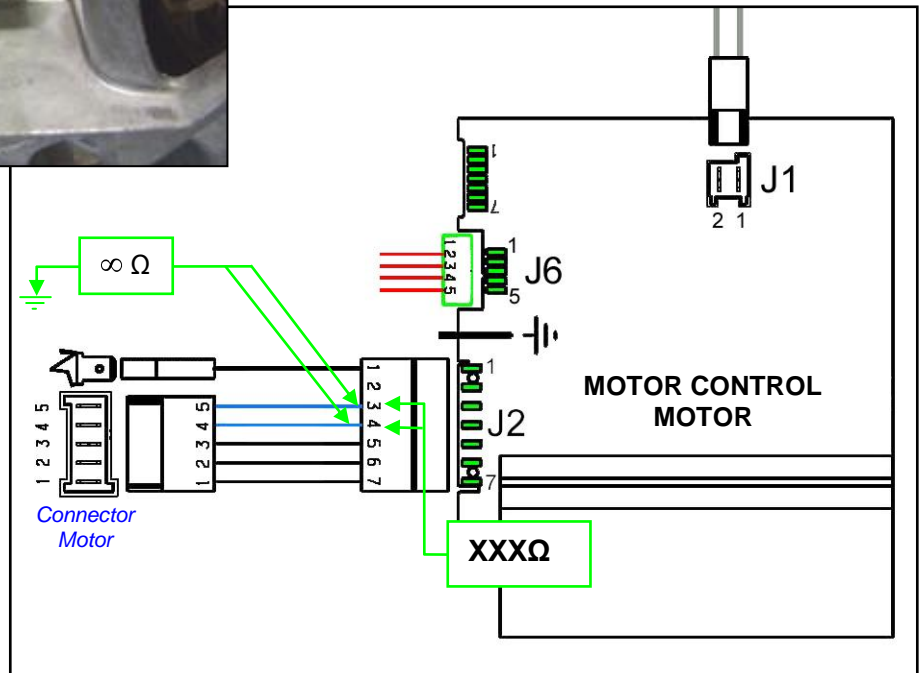
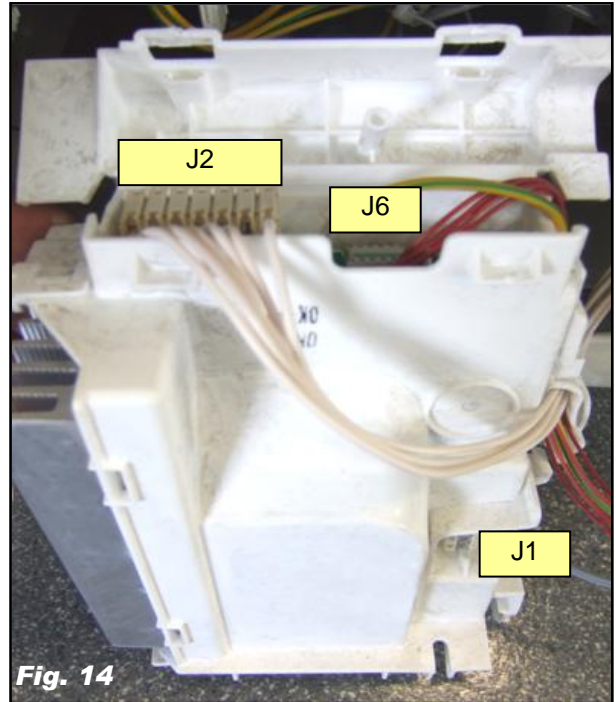
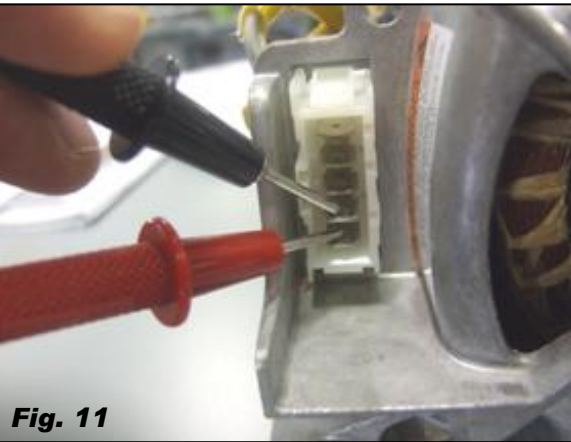
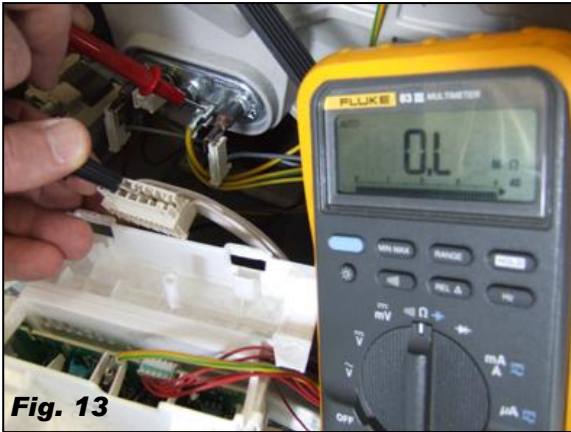
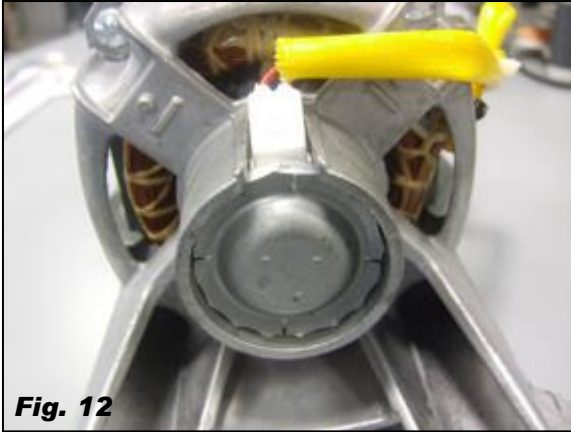
<b>E52</b>	<b>E52: No signal from motor tachometric generator (1<sup>st</sup> part)</b>	<b>E52</b>
	Cycle interrupted after 5 attempts during the cycle, immediately if recognised at the start of the cycle or during diagnostics.	

*Checks to perform:*

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



**E52**



**!** If there are burns on the circuit board, see page 72

<b>E52</b>	<b>E52: No signal from motor tachometric generator (2<sup>st</sup> 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:*

**!** *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 motor control board (**fig.14**) and compare the values with the correct values (see page 41: point 4 - motor parameters)

- between J2-6 and J2-7, a value as in point 4 - **B** (Stator) must be found
- between J2-5 and J2-6, a value as in point 4 - **C** (Stator) must be found
- between J2-5 and J2-7, a value as in point 4 - **D** (Stator) must be found

Are the values correct?

**NO**

Check the motor as on **page 41**. Is the motor ok?

**NO**

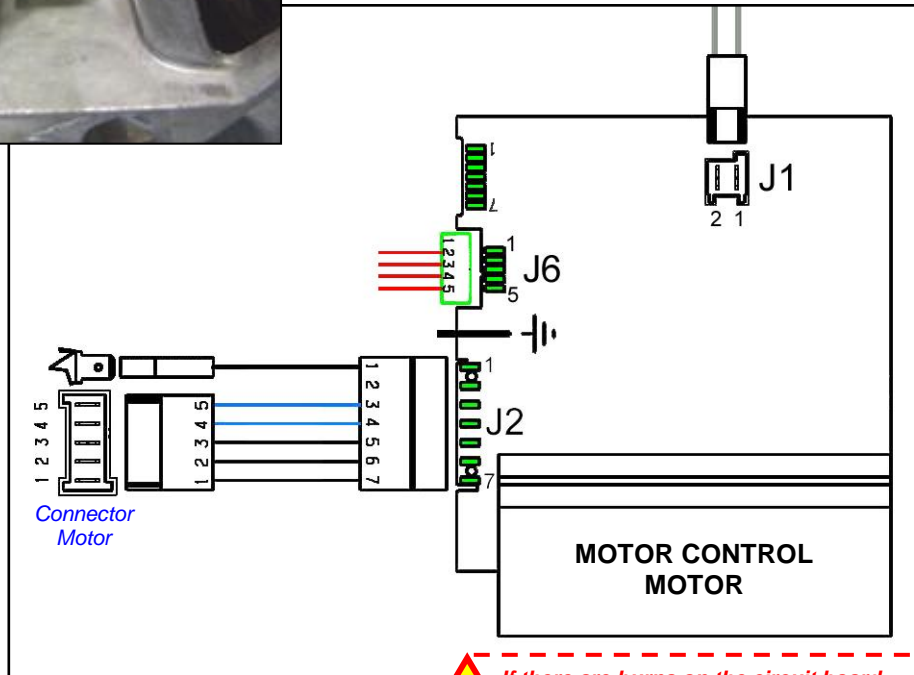
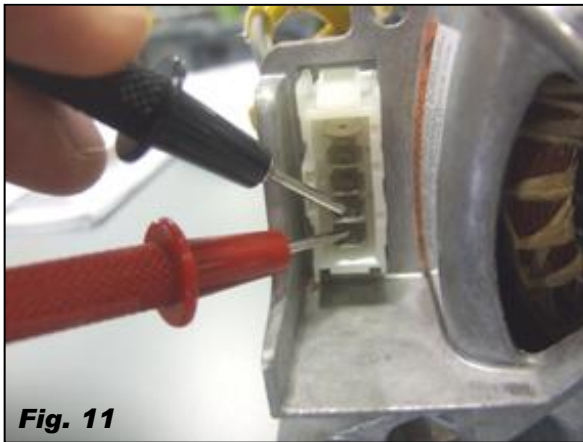
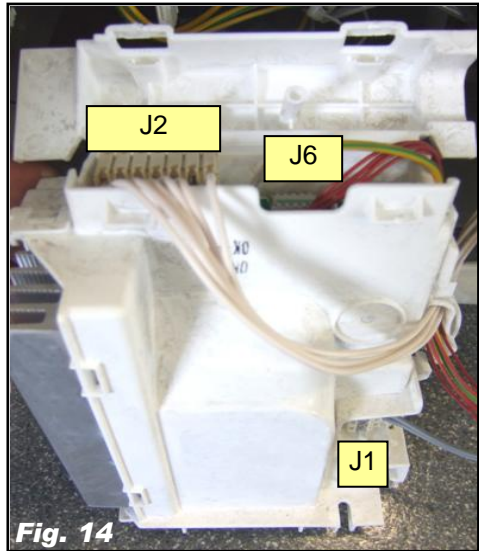
Replace the motor and repeat the diagnostic cycle to check for any further alarms.

**YES**

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

**YES**

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

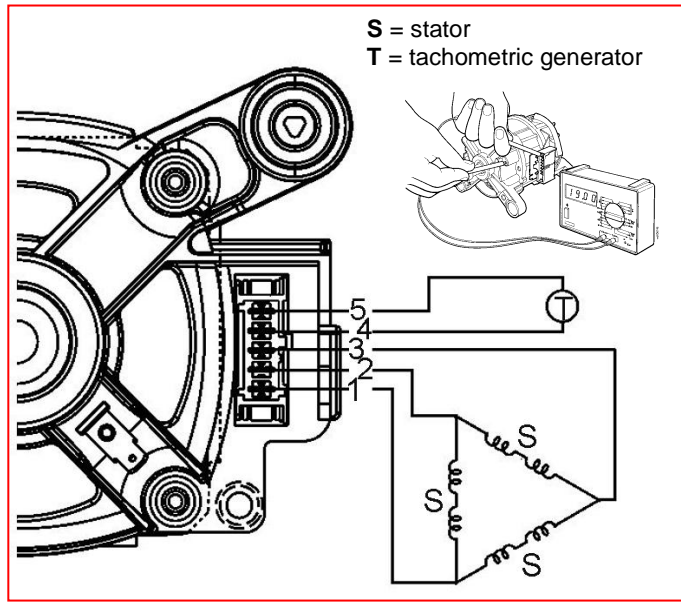


**!** *If there are burns on the circuit board, see page 72*

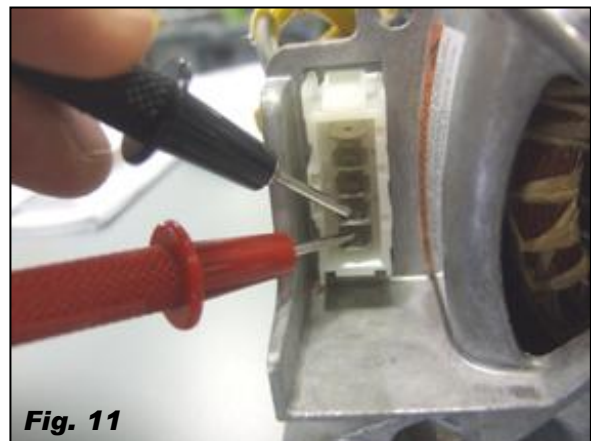


### How to check three-phase motors

- 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).



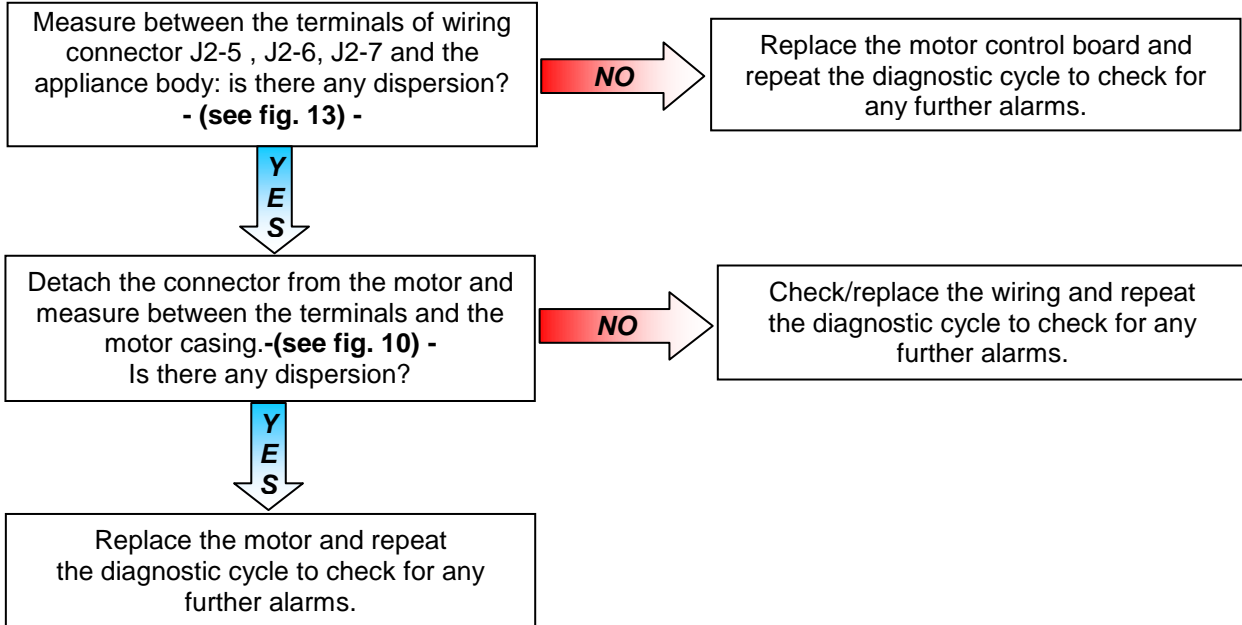
	TERMINALI MORSETTIERA MOTORE	CONTROLLO DI:	MOTORI		
			C.E.SET.	ACC (SOLE) NIDEC	ECM
<b>A</b>	<b>4-5</b>	Avvolgimento generatore tachimetrico	108÷133	169÷207	85÷98
<b>B</b>	<b>1-2</b>	Avvolgimento statore	5.0÷5.8	5.0÷5.8	5.0÷5.8
<b>C</b>	<b>2-3</b>	Avvolgimento statore	5.0÷5.8	5.0÷5.8	5.0÷5.8
<b>D</b>	<b>3-1</b>	Avvolgimento statore	5.0÷5.8	5.0÷5.8	5.0÷5.8



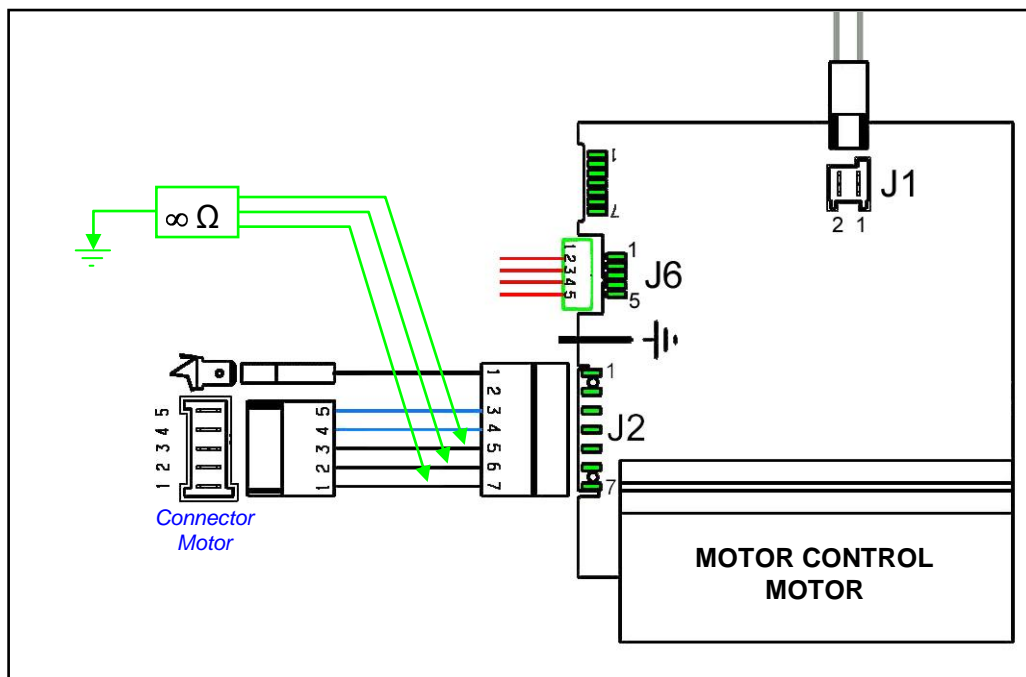
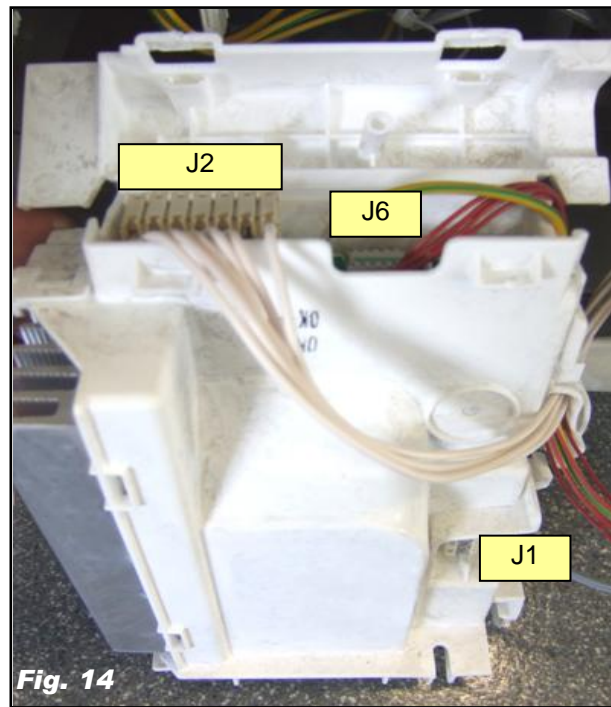
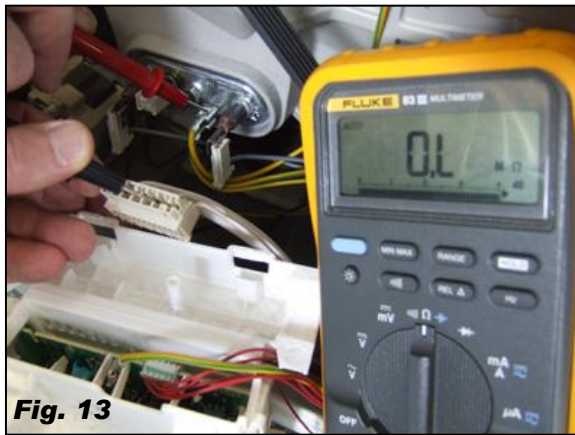
**!** If there are burns on the circuit board, see page 72

<b>E57</b>	<b>E57: Inverter is drawing more than 16A current</b>	<b>E57</b>
	Abnormal current absorption by Motor	

Checks to perform:



**E57**



**!** If there are burns on the circuit board, see page 72

<b>E58</b>	<b>E58: Inverter is drawing more than 4A current</b>	<b>E58</b>
	Abnormal current absorption by Motor	

*Checks to perform:*

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

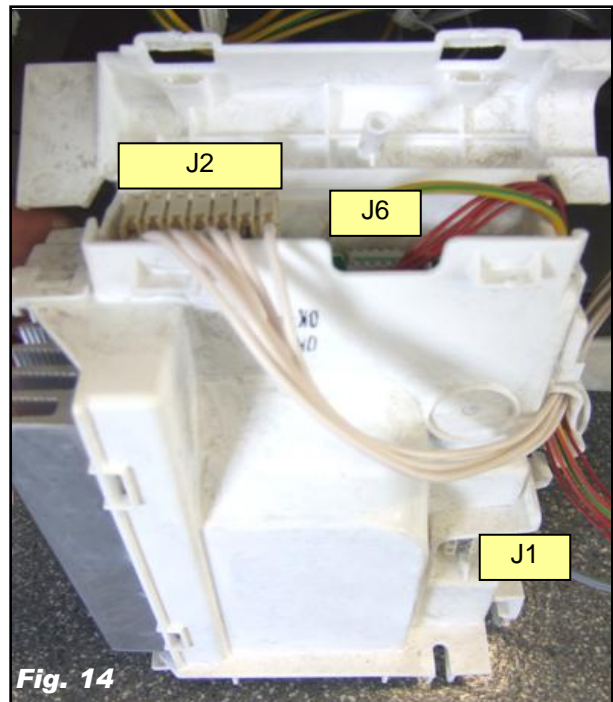
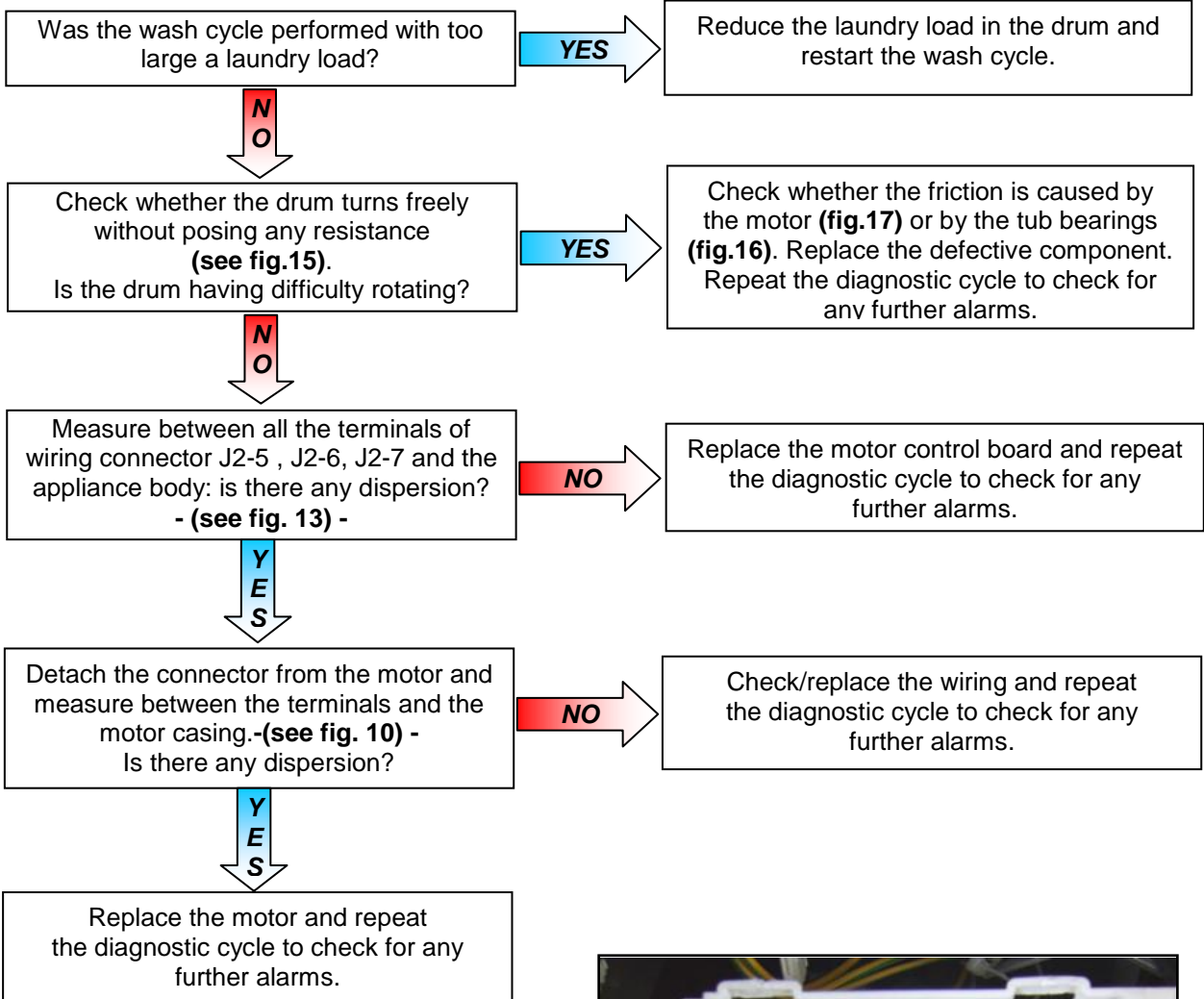


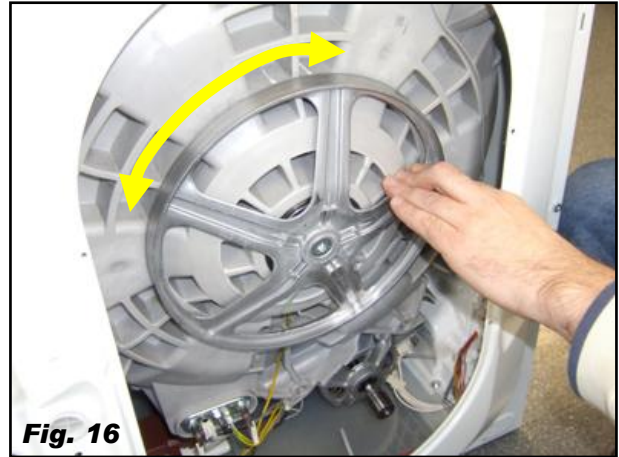
Fig. 14

**!** *If there are burns on the circuit board, see page 72*

**E58**



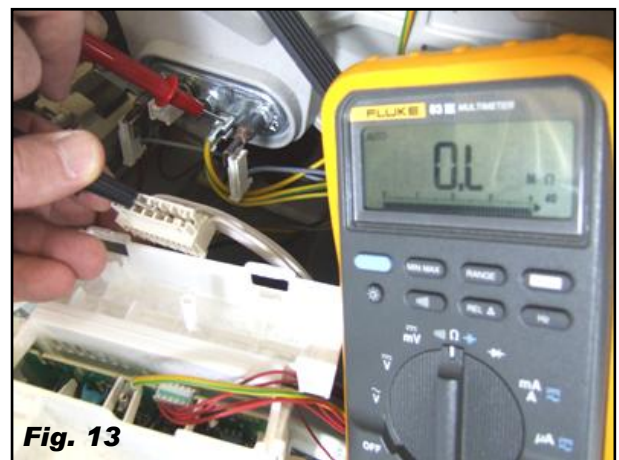
**Fig. 15**



**Fig. 16**



**Fig. 17**

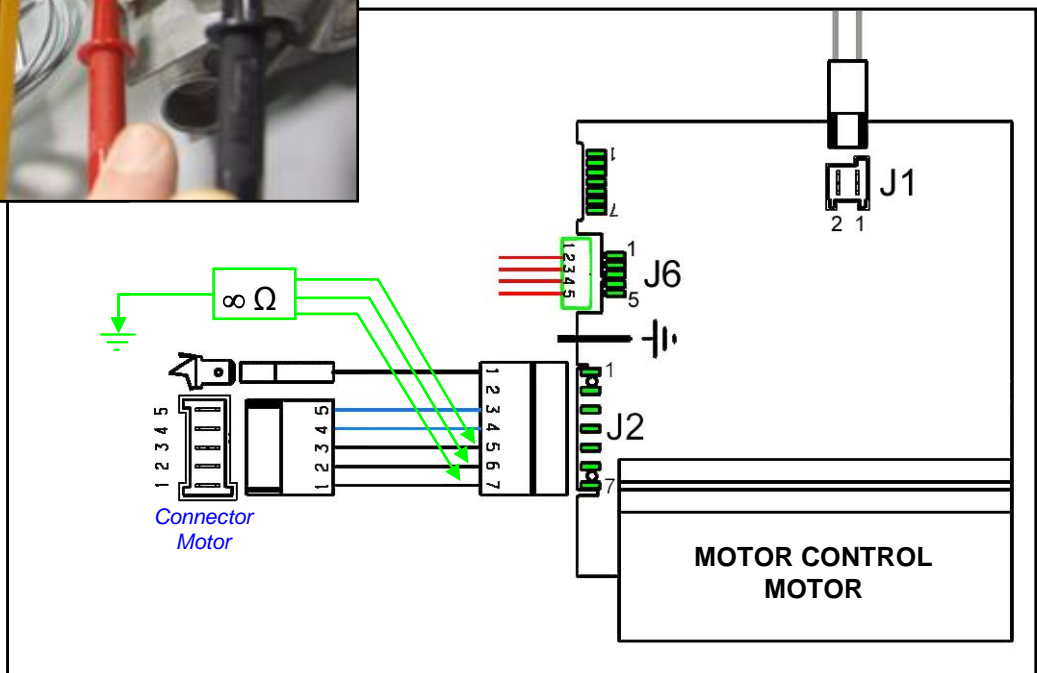


**Fig. 13**



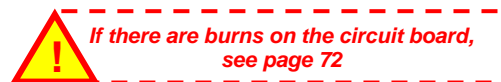
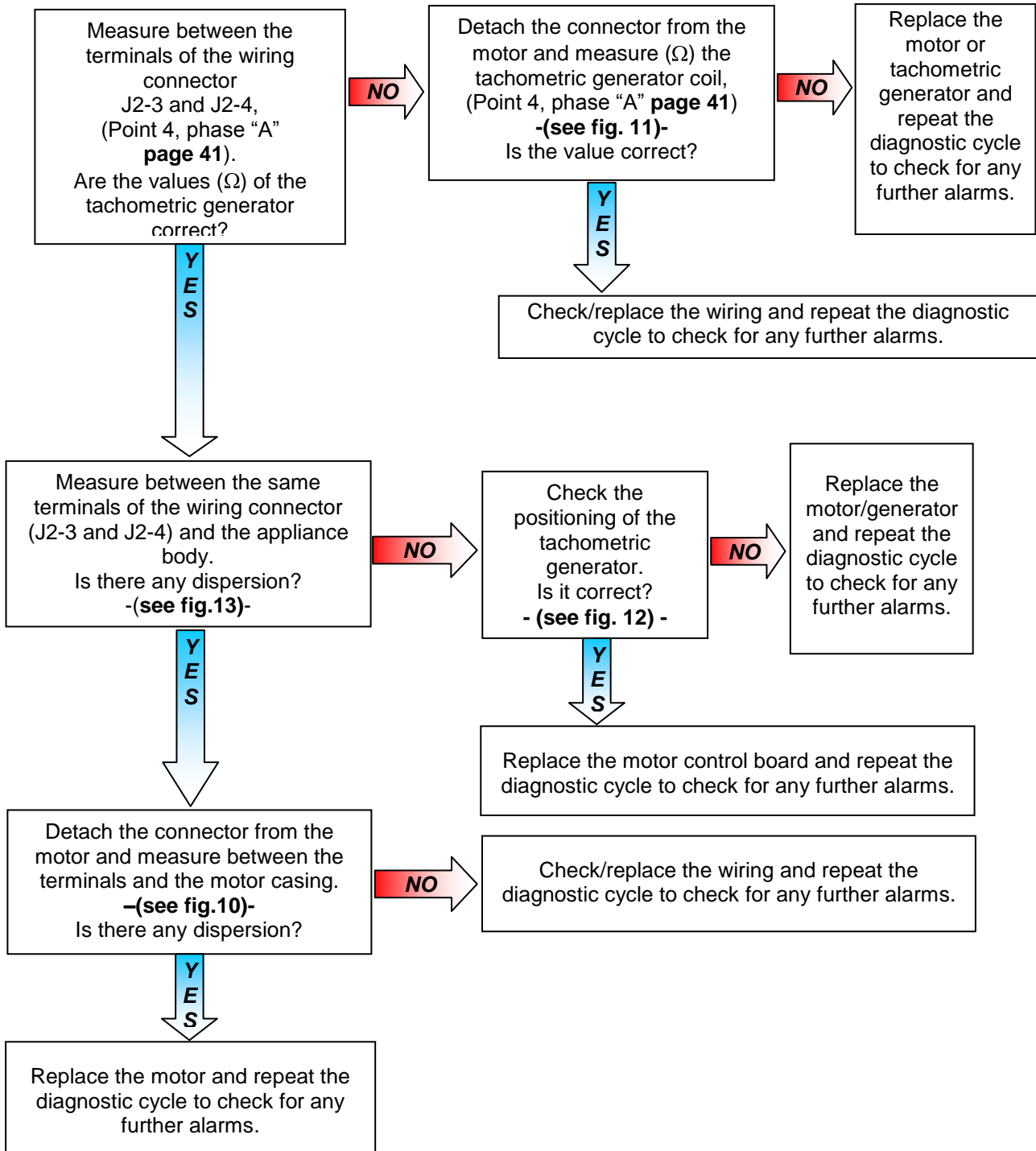
**Fig. 10**

**!** If there are burns on the circuit board, see page 72



<b>E59</b>	<b>E59: No signal from the tachometric generator</b>	<b>E59</b>
	The lack of signal should last at least 3 seconds	

*Checks to perform:*





<b>E5A</b>	<b>E5A: Overheating on Inverter board heat dissipator</b>	<b>E5A</b>
	The dissipator exceeds a temperature of 88°C	

*Checks to perform:*

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

Have continuous wash cycles been performed, or has the wash cycle been performed with too heavy a laundry load?

**YES**

Leave pauses between one cycle and the next or reduce the laundry load inside the drum.

**NO**

Check whether the drum turns freely without posing any resistance (see fig.15).  
Is the drum having difficulty rotating?

**YES**

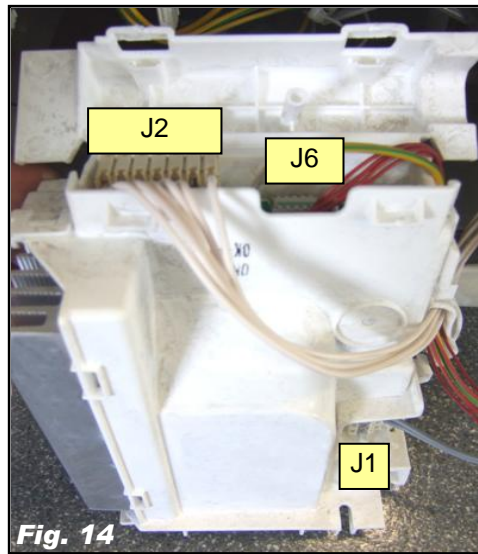
Check whether the friction is caused by the motor (fig.17) or by the tub bearings (fig.16). Replace the defective component. Repeat the diagnostic cycle to check for any further alarms.

**NO**

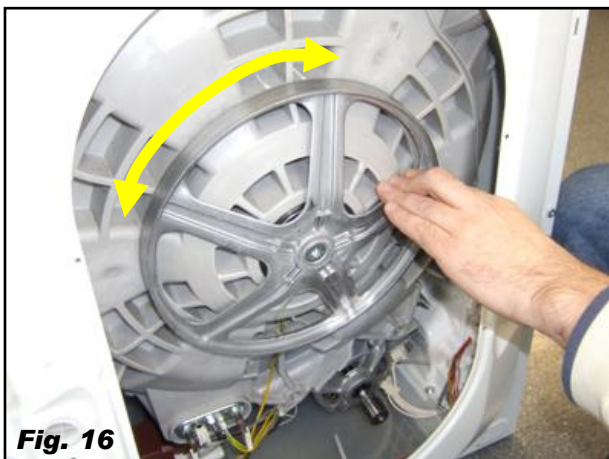
Replace the motor control board and repeat the diagnostic cycle to check for any further alarms.



**Fig. 15**



**Fig. 14**



**Fig. 16**



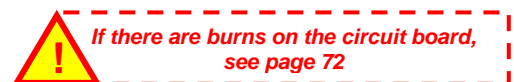
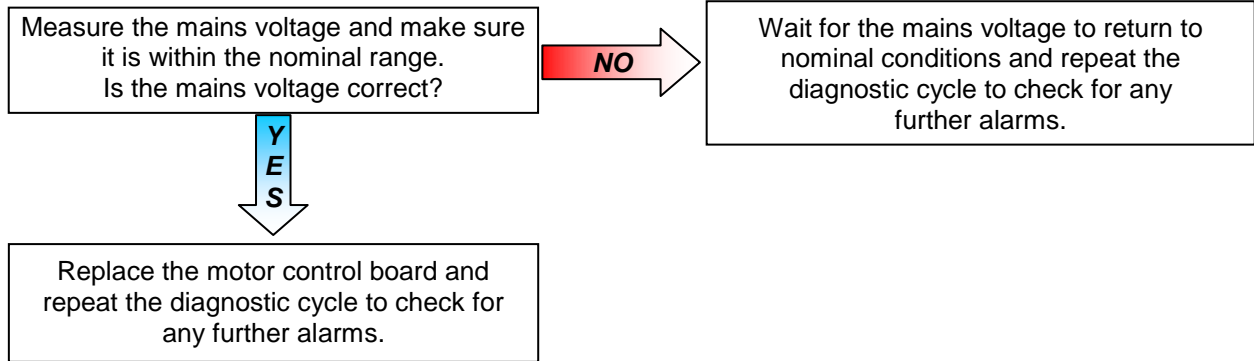
**Fig. 17**

**!** *If there are burns on the circuit board, see page 72*



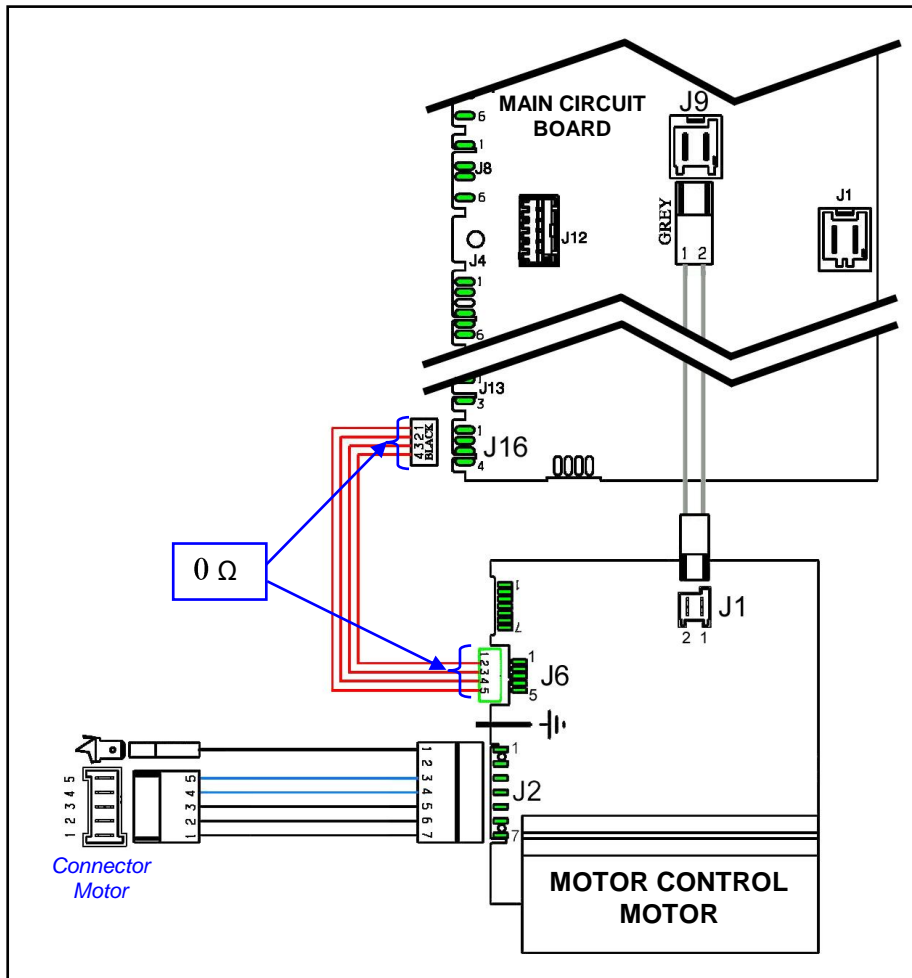
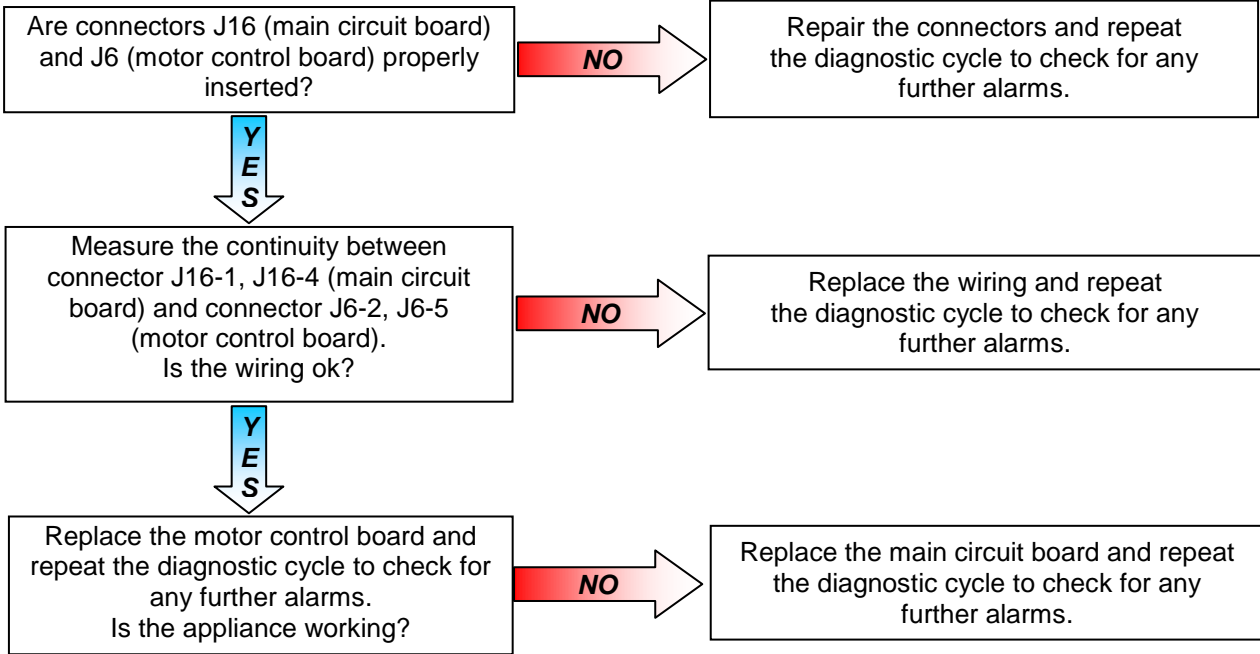
<b>E5C</b>	<b>E5C: The Inverter board input voltage is too high (beyond 430V)</b>	<b>E5C</b>
	The voltage should stay above 430V for at least 5 seconds	

*Checks to perform:*



<b>E5d</b>	<b>E5d: Data transfer error between Inverter board and main circuit board</b>	<b>E5d</b>
The lack of communication must last at least 2 sec.		

*Checks to perform:*



<b>E5E</b>	<b>E5E: Communication error between Inverter board and main circuit board</b>	<b>E5E</b>
	Communication protocol between the two boards not aligned	

*Checks to perform:*



*check that all the connectors are correctly inserted*

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

<b>E5F</b>	<b>E5F: Inverter board fails to start the motor</b>	<b>E5F</b>
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*Checks to perform:*



*check that all the connectors are correctly inserted*

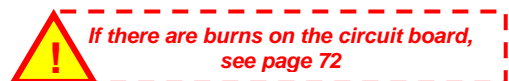
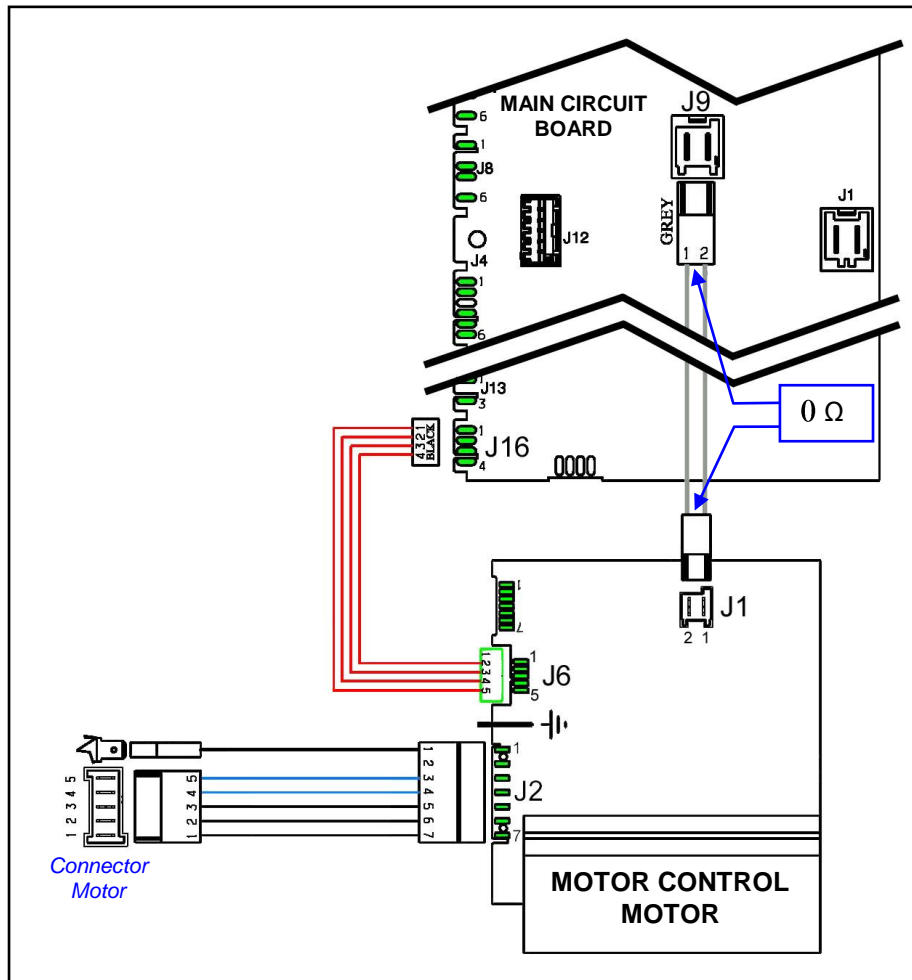
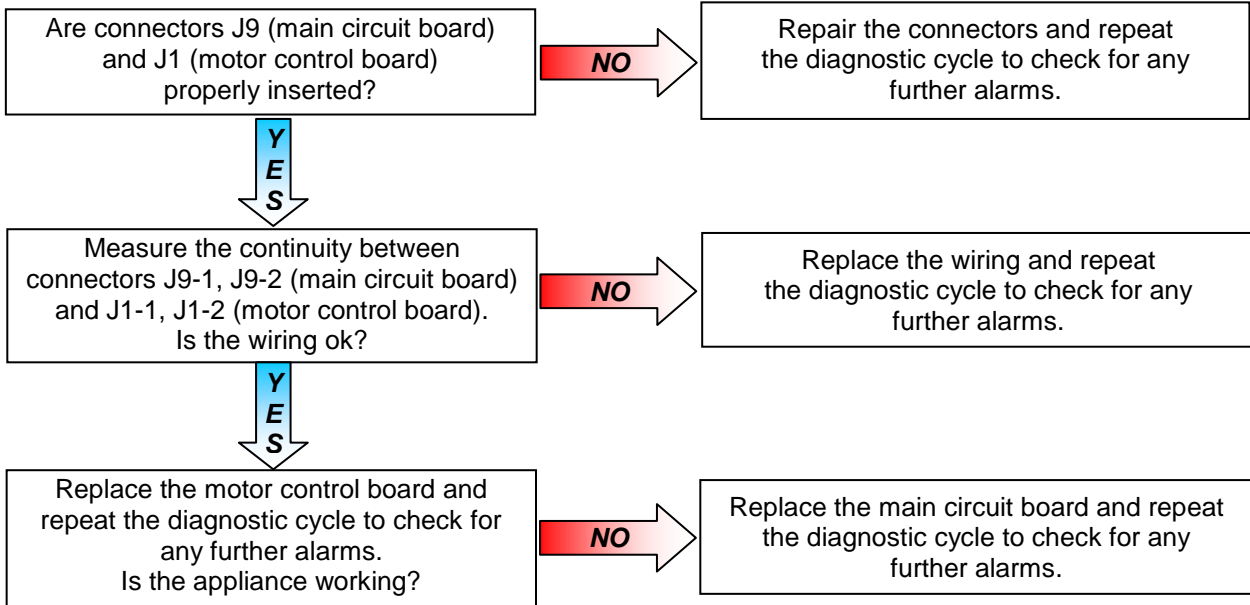
Replace the motor control board and repeat the diagnostic cycle to check for any further alarms.



*If there are burns on the circuit board, see page 72*

<b>E5H</b>	<b>E5H: The Inverter board input voltage is too low (less than 175V)</b>	<b>E5H</b>
	The voltage should stay below 175V for at least 5 seconds	

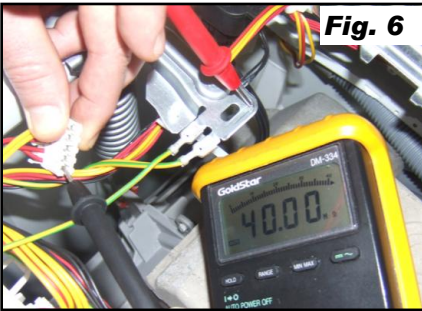
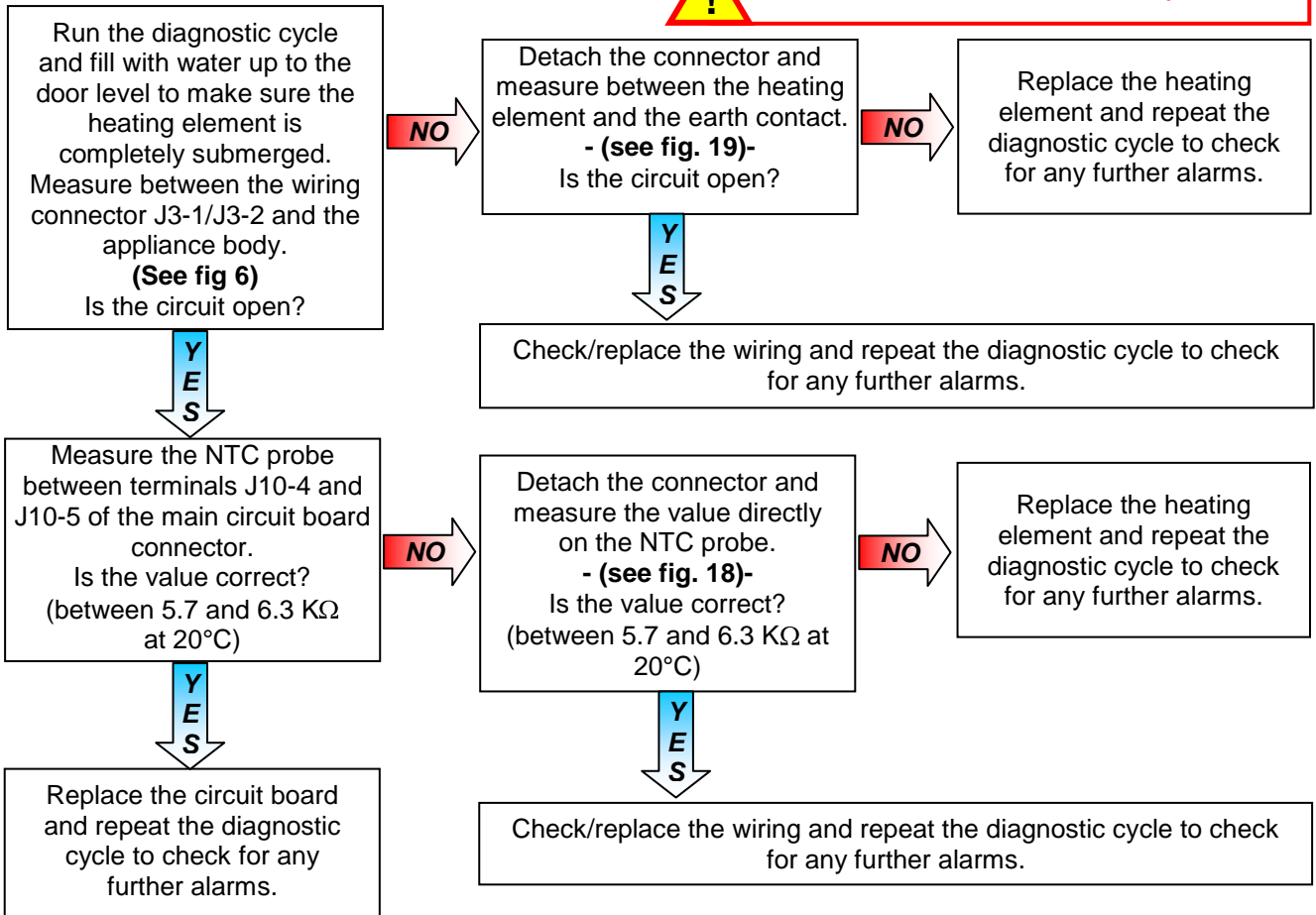
Checks to perform:



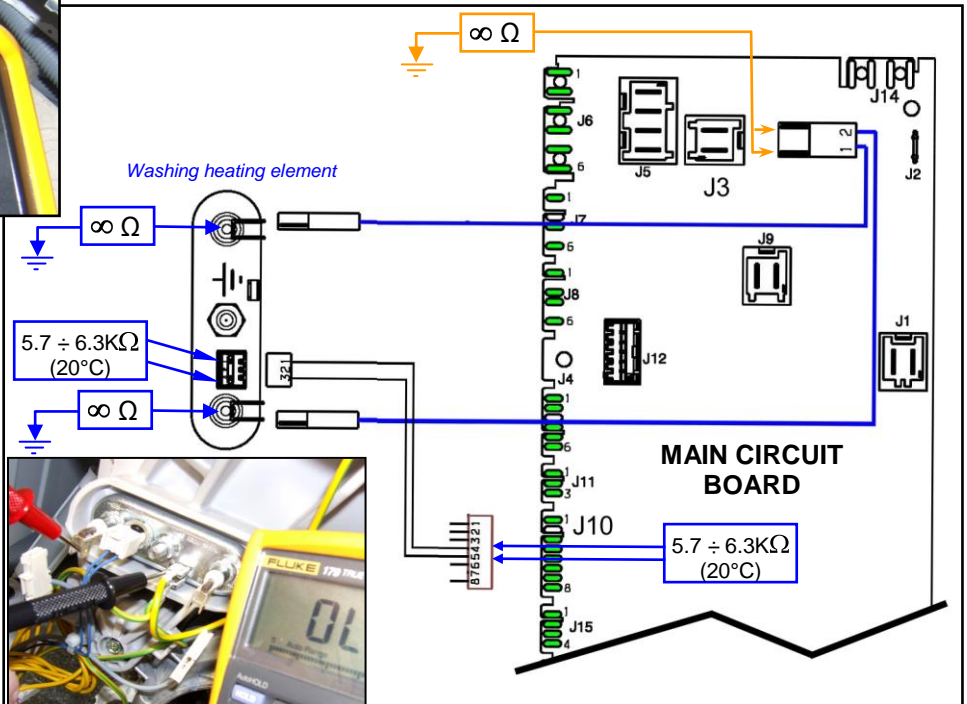
<b>E62</b>	<b>E62: Overheating during washing</b>	<b>E62</b>
The temperature of the NTC probe exceeds 88°C for more than 5 mins.		

**Checks to perform:**

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



**Fig. 6**



**Fig. 18**



**Fig. 19**

**!** *If there are burns on the circuit board, see page 72*

<b>E66</b>	<b>E66: Heating element power supply relay faulty</b> (inconsistency between the sensing and the status of the K2 Relay)	<b>E66</b>
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*Checks to perform:*

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

Measure between the connector J3-1/J3-2 of the main circuit board and the appliance body.  
- (Fig. 6) - Are there any dispersions?

**NO**

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

**YES**

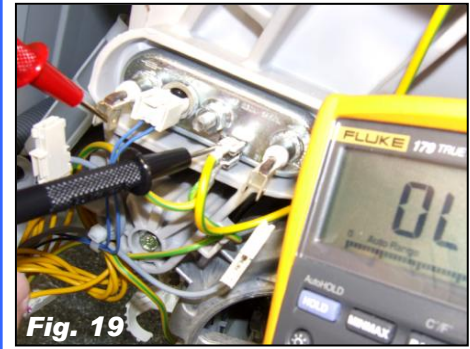
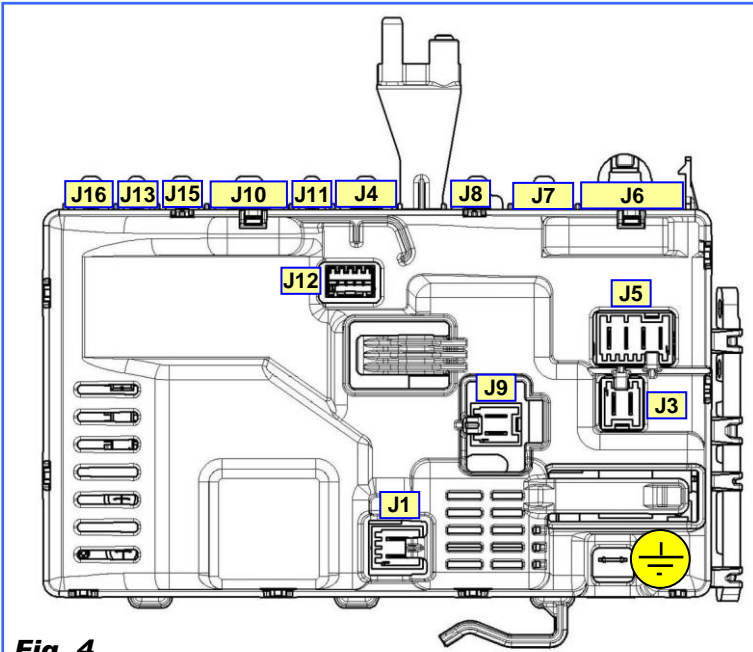
Detach the connectors and measure between the heating element and the earth contact.  
- (fig. 19) - Is the circuit open?

**NO**

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

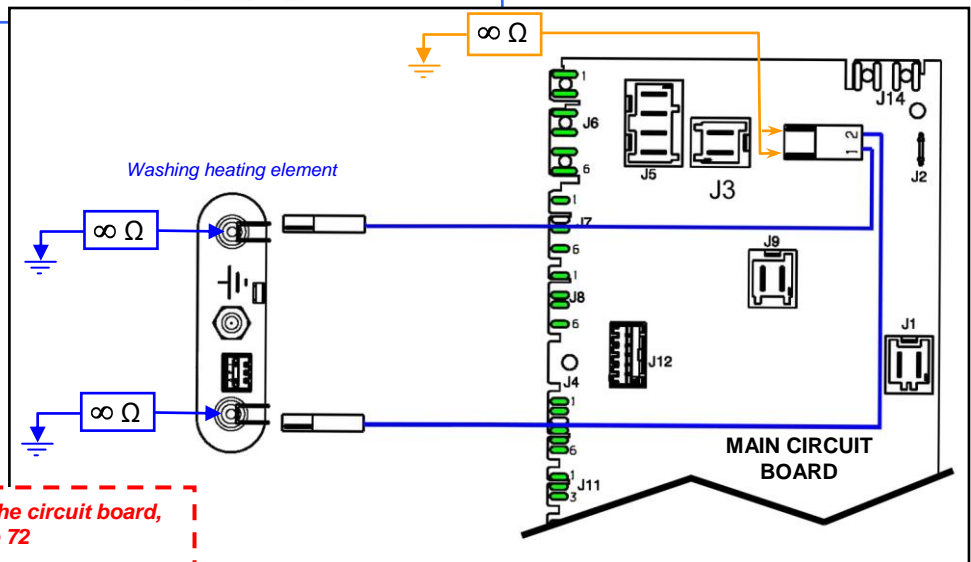
**YES**

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



**Fig. 4**

**Fig. 19**



**!** *If there are burns on the circuit board, see page 72*

**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 J3-1/J3-2 and the appliance body. **-(see fig. 6)-** Is the circuit open?

**NO**

Detach the connectors and measure between the heating element and the earth contact. **-(see fig. 19)-** Is the circuit open?

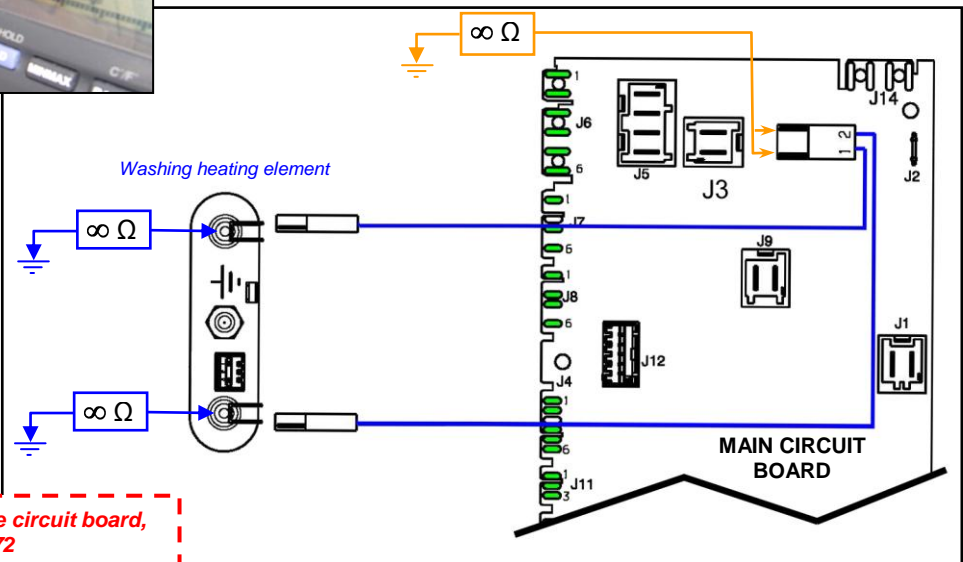
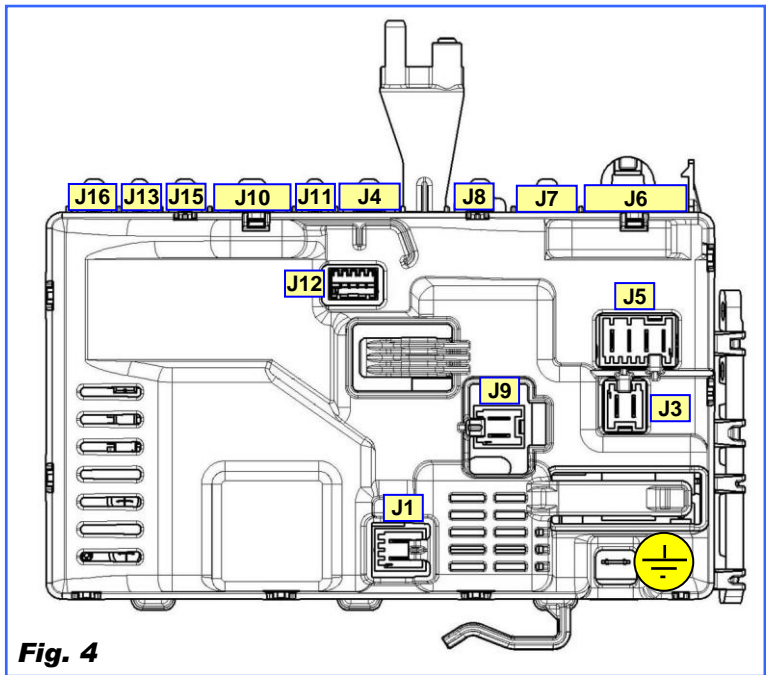
**NO**

Run phase 9 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 72

**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 J3-1 ÷ J3-2 of the wiring connector  
**-(see fig. 4)-**  
 Is the value correct?  
 ( $28 \div 31 \Omega$  for 230V/1750W)

**NO**

Measure the resistance value directly on the terminals of the heating element (detach the connectors)  
**(See fig 20)**  
 Is the value correct?  
 ( $28 \div 31 \Omega$  for 230V/1750W)

**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. 20

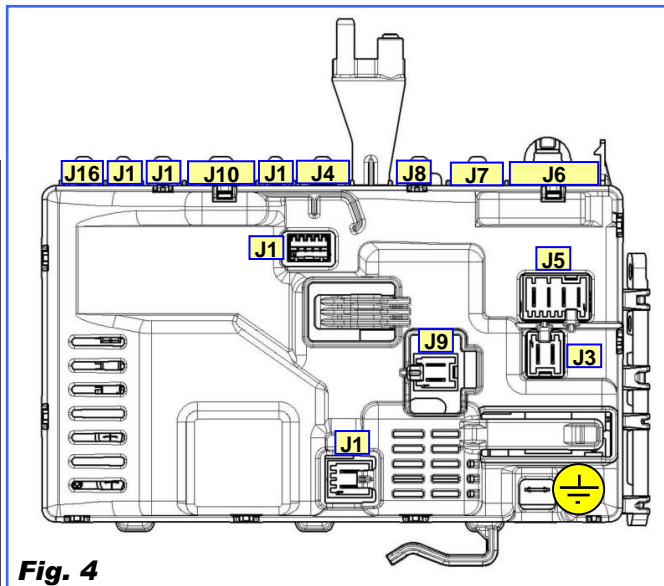
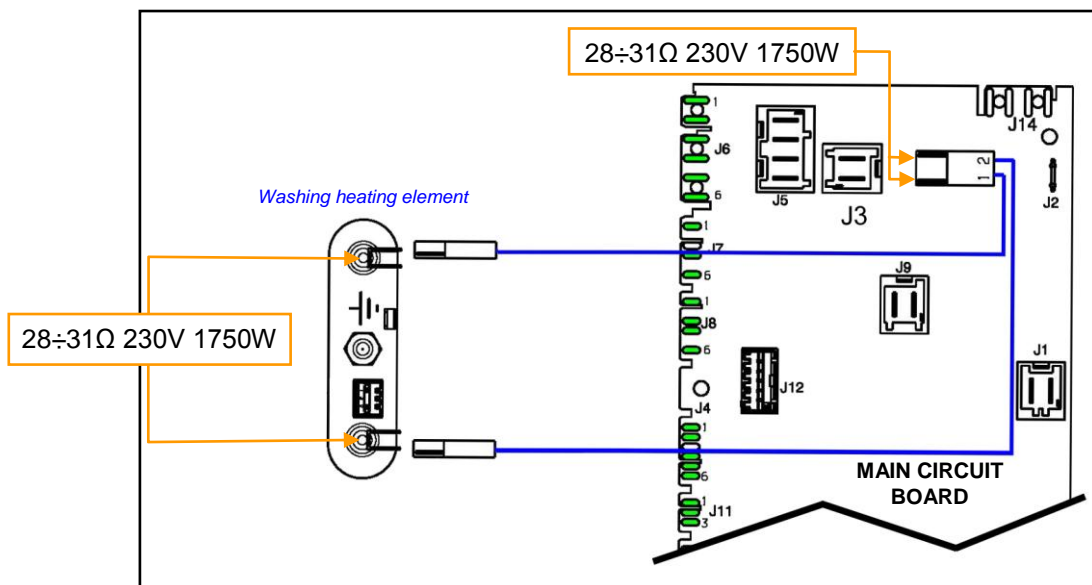


Fig. 4



**!** If there are burns on the circuit board, see page 72



<b>E6A</b>	<b>E6A: Heating relay sensing faulty</b>	<b>E6A</b>
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*Checks to perform:*

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

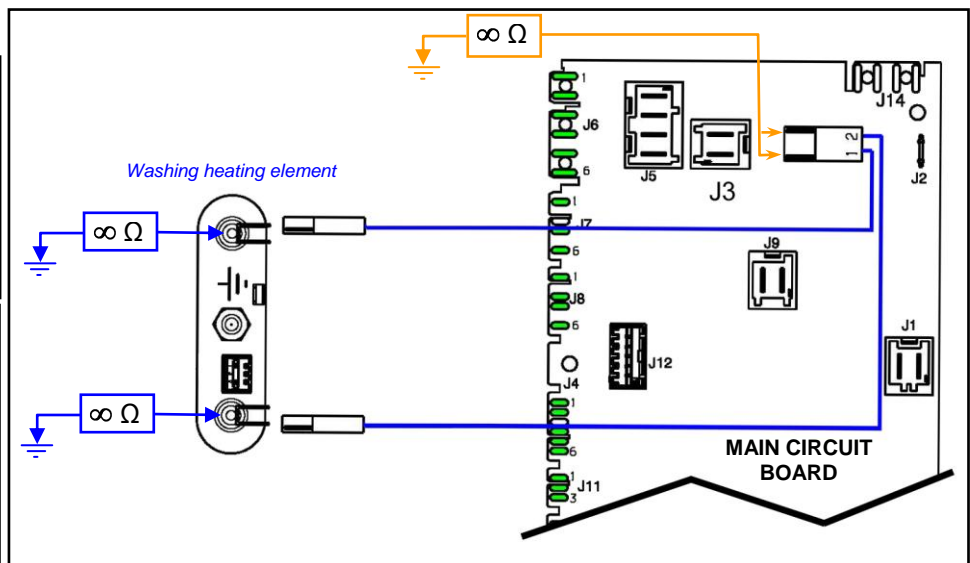
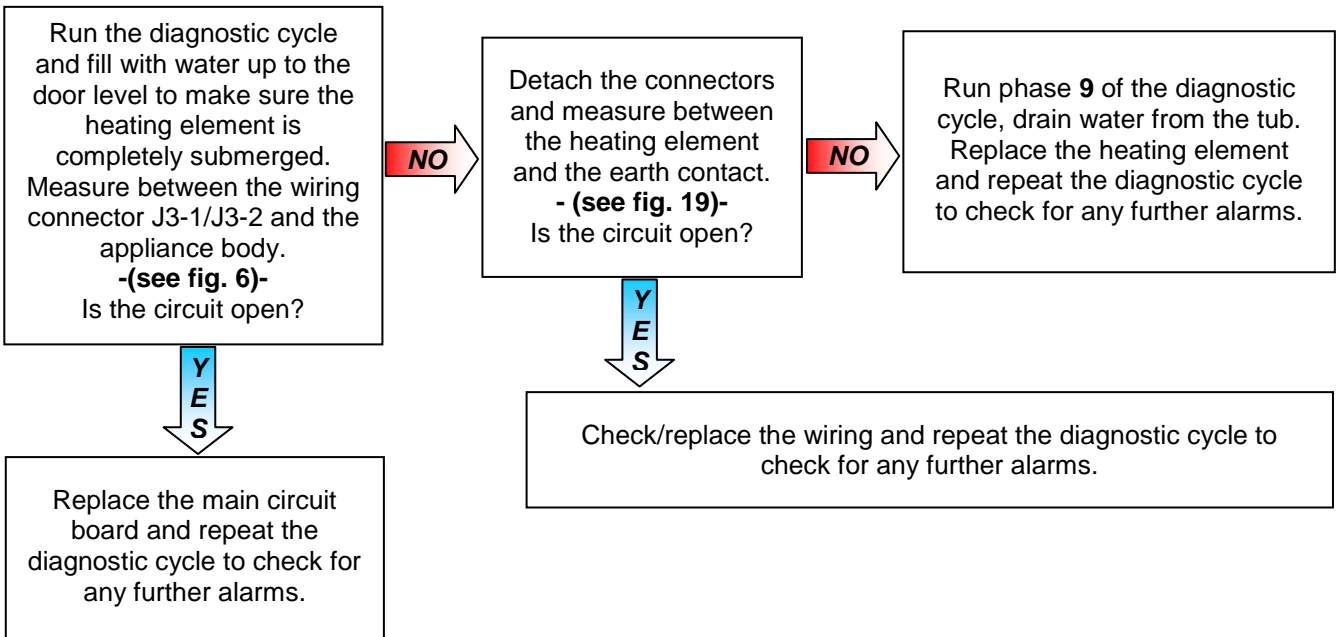
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**If there are burns on the circuit board, see page 72**

<b>E6H</b>	<b>E6H: Heating element power supply relay faulty</b> (inconsistency between the sensing and the status of the K1 Relay)	<b>E6H</b>
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*Checks to perform:*

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



**If there are burns on the circuit board, see page 72**

<b>E71</b>	<b>E71: Washing NTC probe faulty</b>	<b>E71</b>
	Voltage value out of range (short-circuit or open circuit)	

*Checks to perform:*



Run **phase 7** of the diagnostic cycle and wait for the water to fill. Switch the appliance off and measure the value of the NTC probe between contacts J10-4 and J10-5 of the wiring connector  
**-see fig. 4-**  
 Is the value correct?  
 (between 5.7 and 6.3 KΩ at 20°C)

**NO**

Detach the connector and measure directly on the NTC probe.  
**- (see fig. 18)-**  
 Is the value correct?  
 (5.7÷6.3 KΩ at 20°C)

**NO**

Run **phase 9** of the diagnostic cycle, drain water from the tub. Replace the washing heating element and repeat the diagnostic cycle to check for any further alarms.

**YES**

**YES**

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

Measure between terminals J10-4, J10-5 of the NTC connector and the appliance body - **(see fig. 6)-**  
 Is there any dispersion?

**NO**

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

**YES**

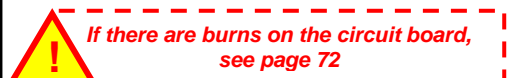
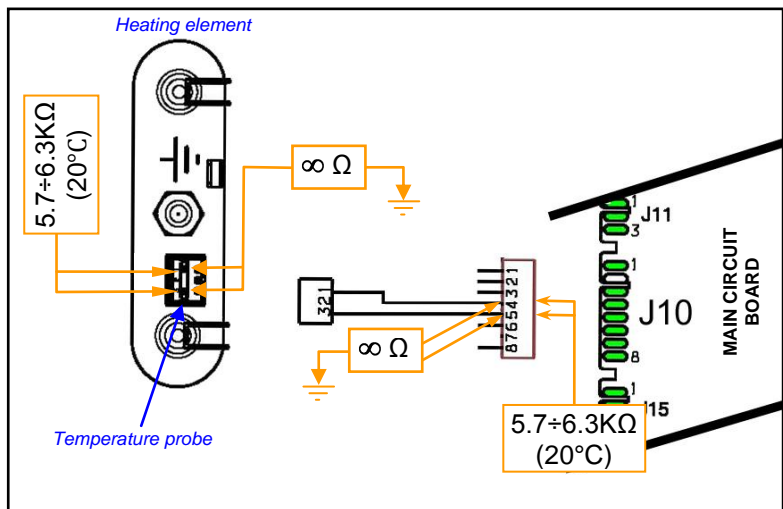
Detach the connector and measure directly between the terminals of the NTC probe and the appliance body.  
**There must be water in the tub.**  
 Has the dispersion been measured?

**NO**

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

**YES**

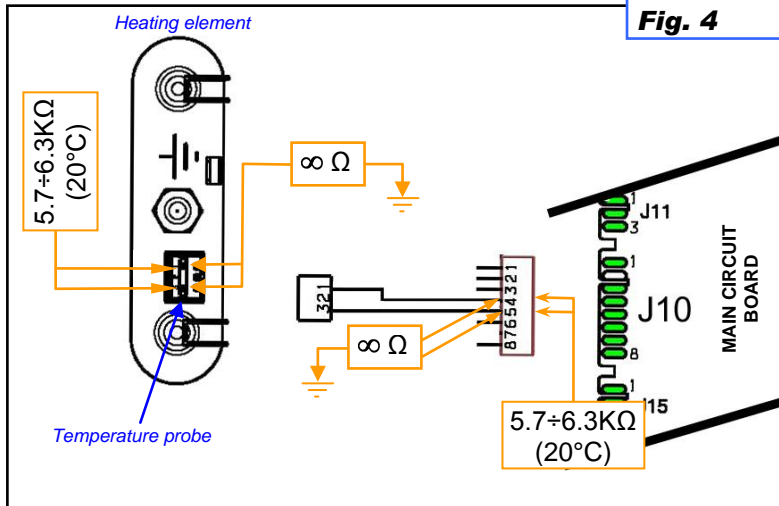
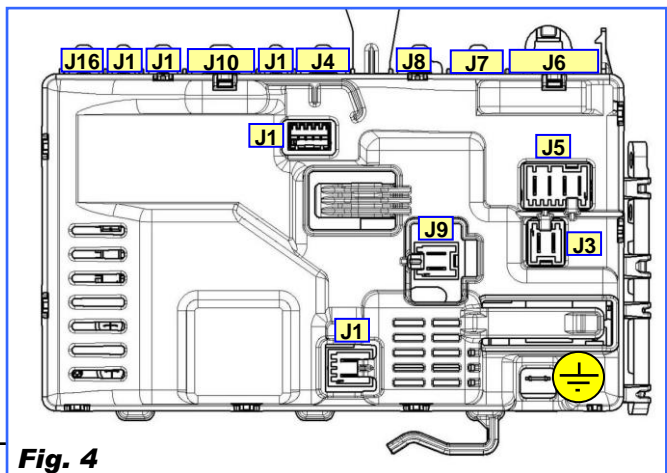
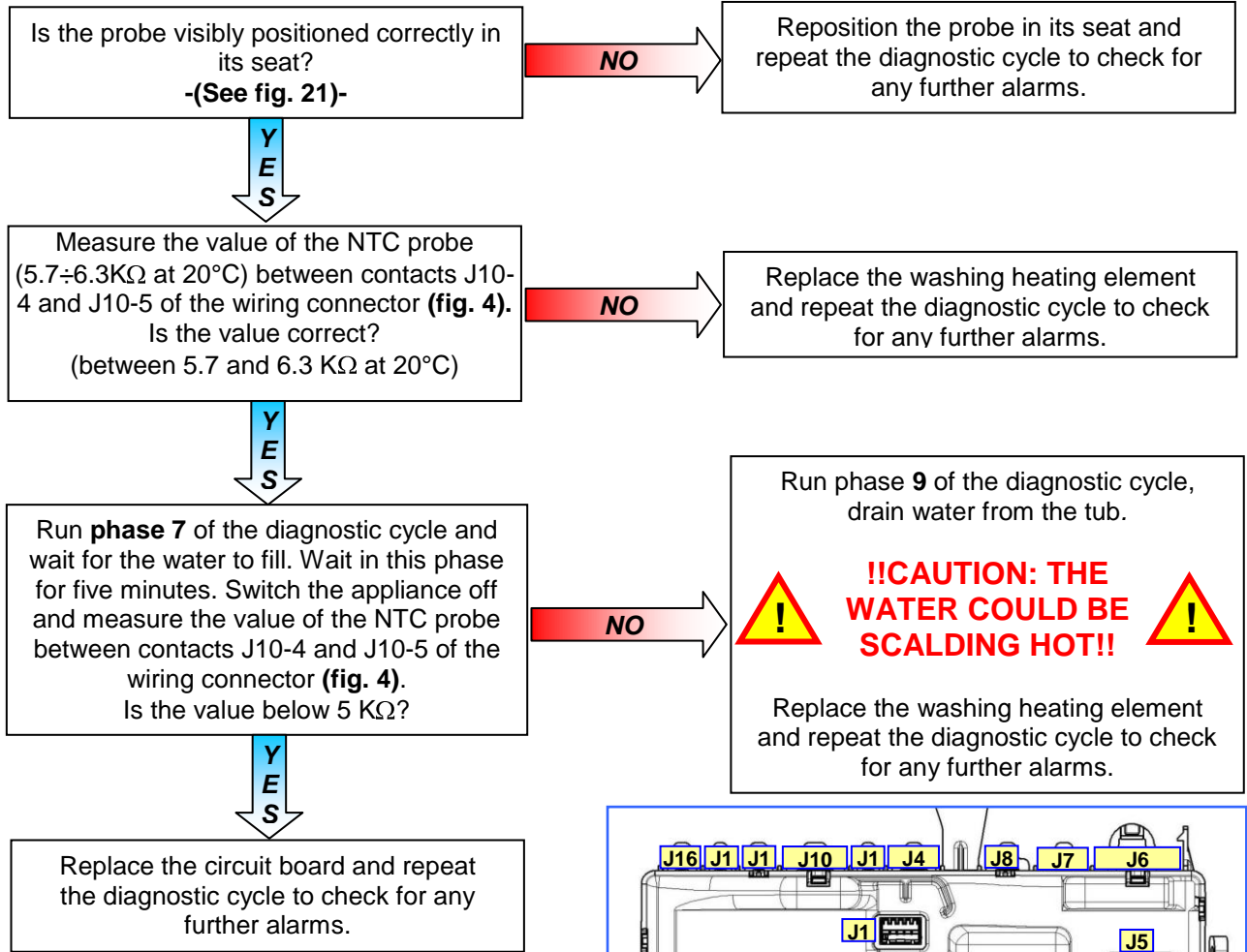
Run **phase 9** of the diagnostic cycle, drain water from the tub. Replace the washing heating element and repeat the diagnostic cycle to check for any further alarms.



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

Checks to perform:

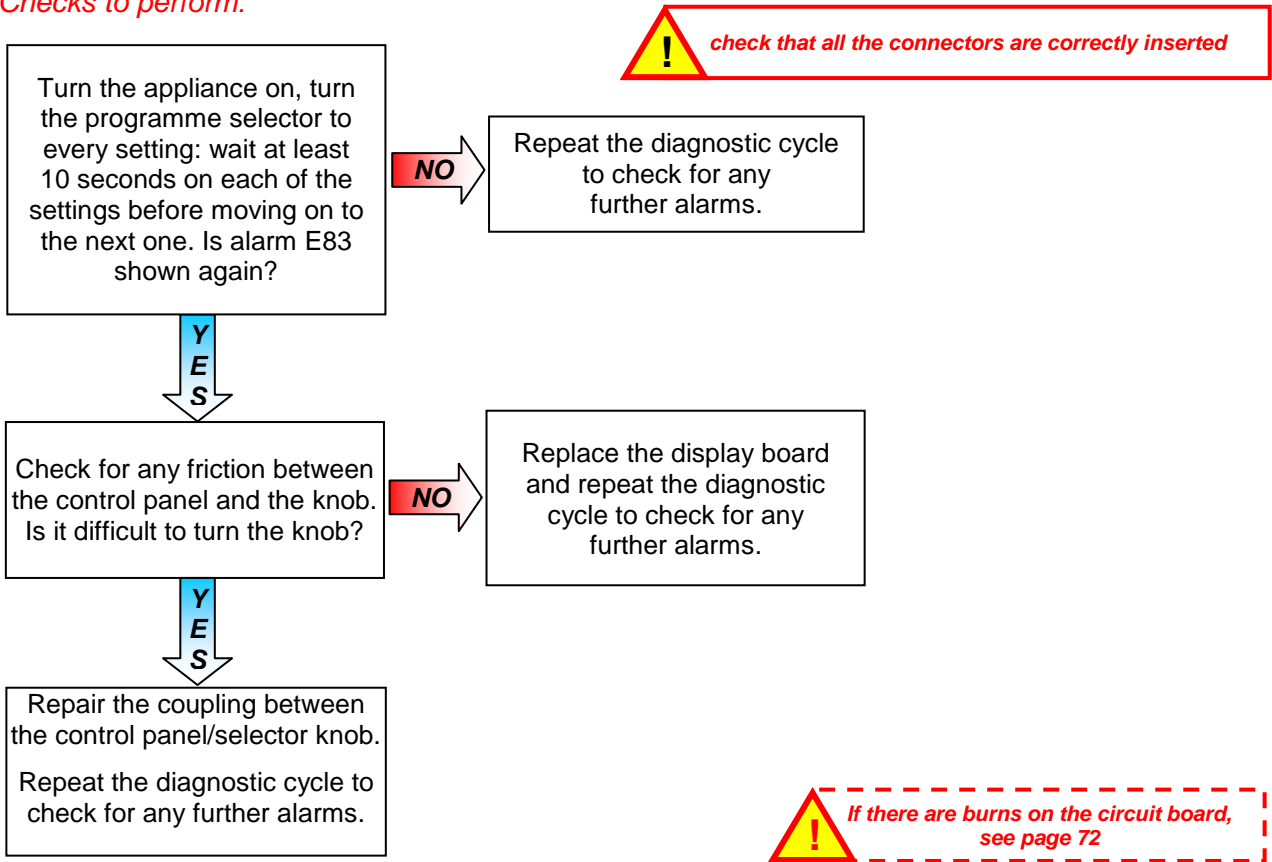
**!** check that all the connectors are correctly inserted



**!** If there are burns on the circuit board, see page 72

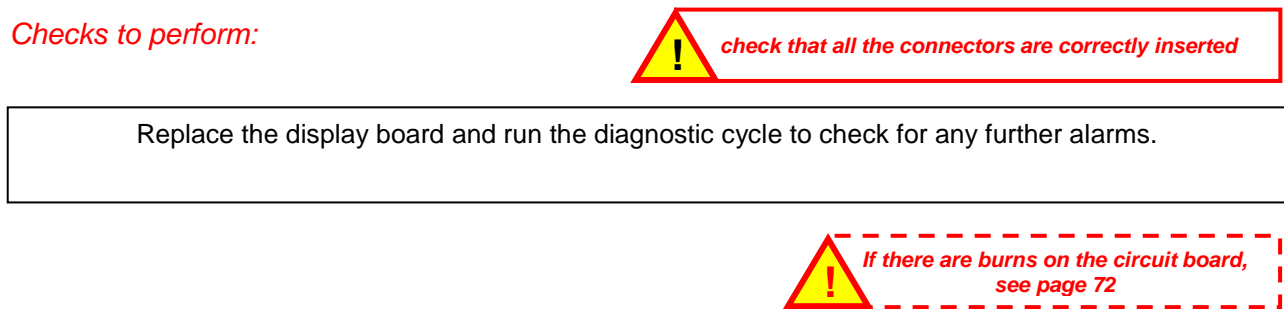
<b>E83</b>	<b>E83: Error reading the programme selector code</b>	<b>E83</b>
Selector position code not envisaged by the configuration data or configuration error		

*Checks to perform:*



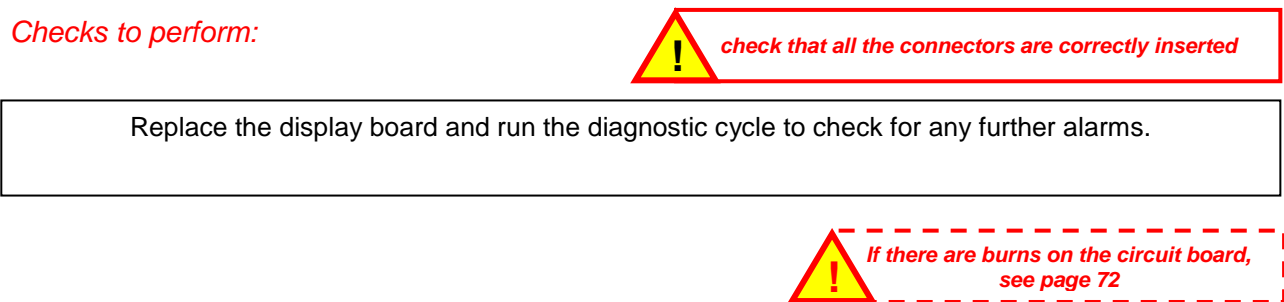
<b>E86</b>	<b>E86: Programme selector configuration error</b>	<b>E86</b>
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*Checks to perform:*



<b>E87</b>	<b>E87: Display board microprocessor faulty</b>	<b>E87</b>
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*Checks to perform:*



<b>E91</b>	<b>E91: Communication error between the display board and the main circuit board (1<sup>st</sup> part)</b>	<b>E91</b>
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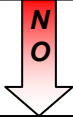
*Checks to perform:*



Disconnect the connector:  
J16 from the main board that connects the motor control board  
Does the E91 alarm appear again?



See page 62



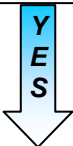
Check the wiring between the main circuit board and the Inverter board.

- ▶ Connect and disconnect the connector on both boards several times.
- ▶ Measure the continuity between connector J16 (main circuit board) and J6 (motor control board).

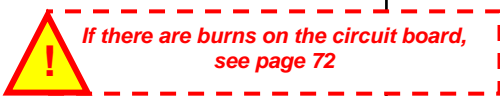
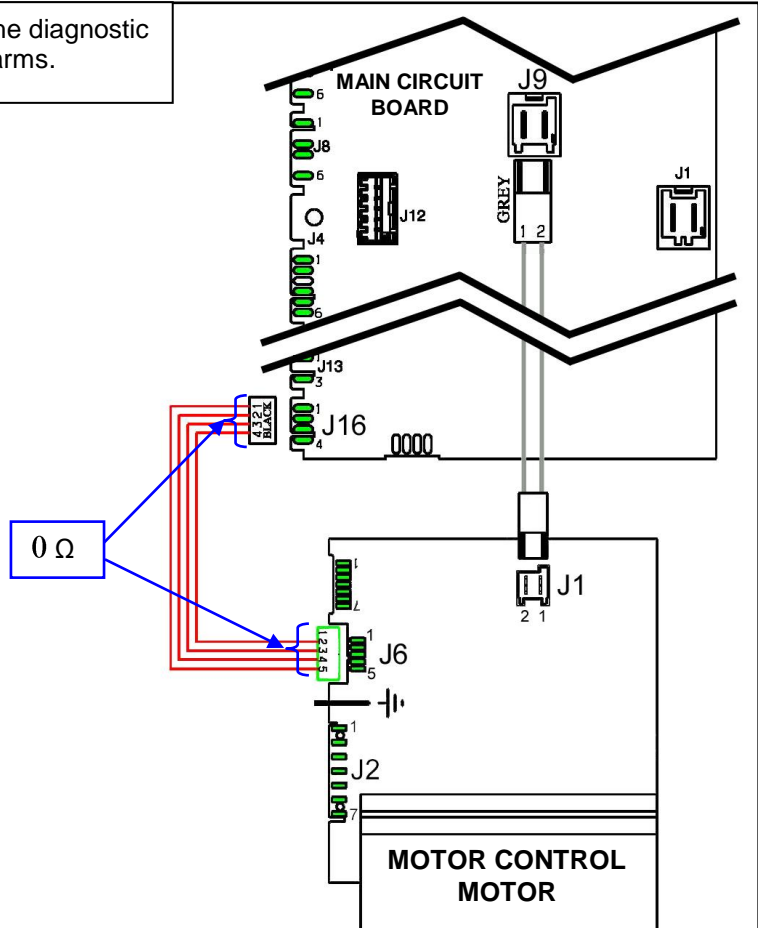
Is the wiring ok?



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



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

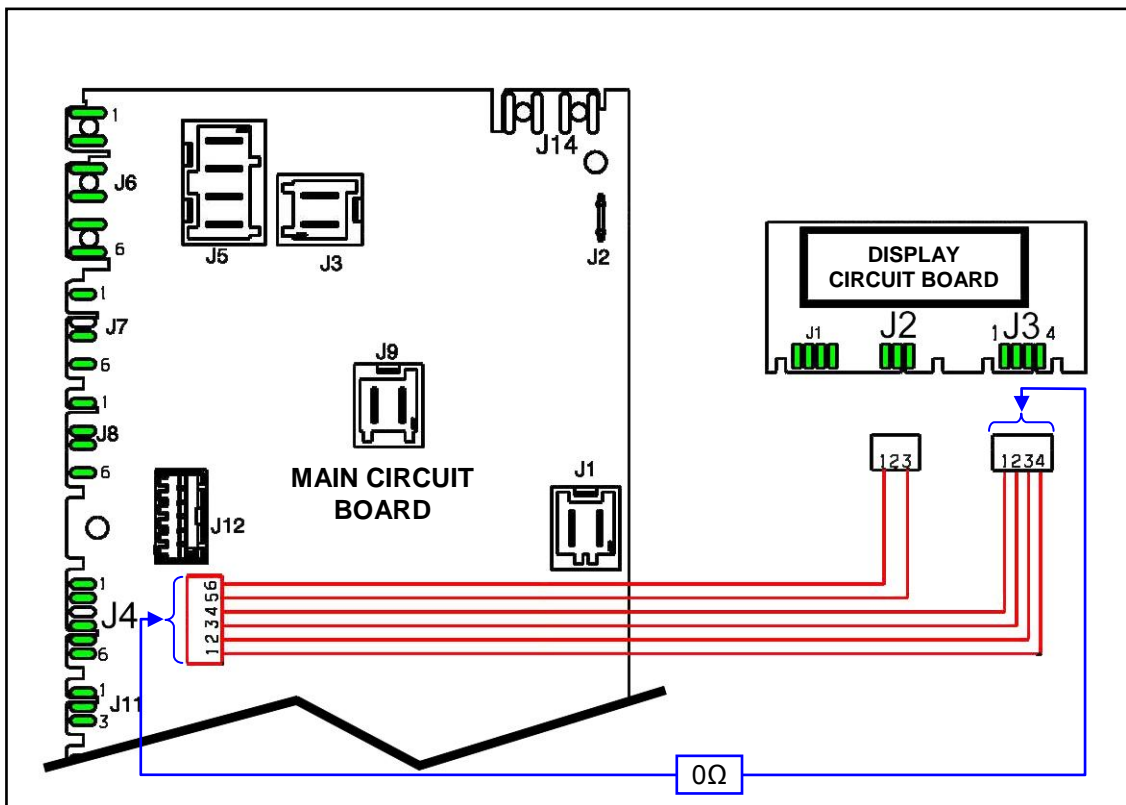
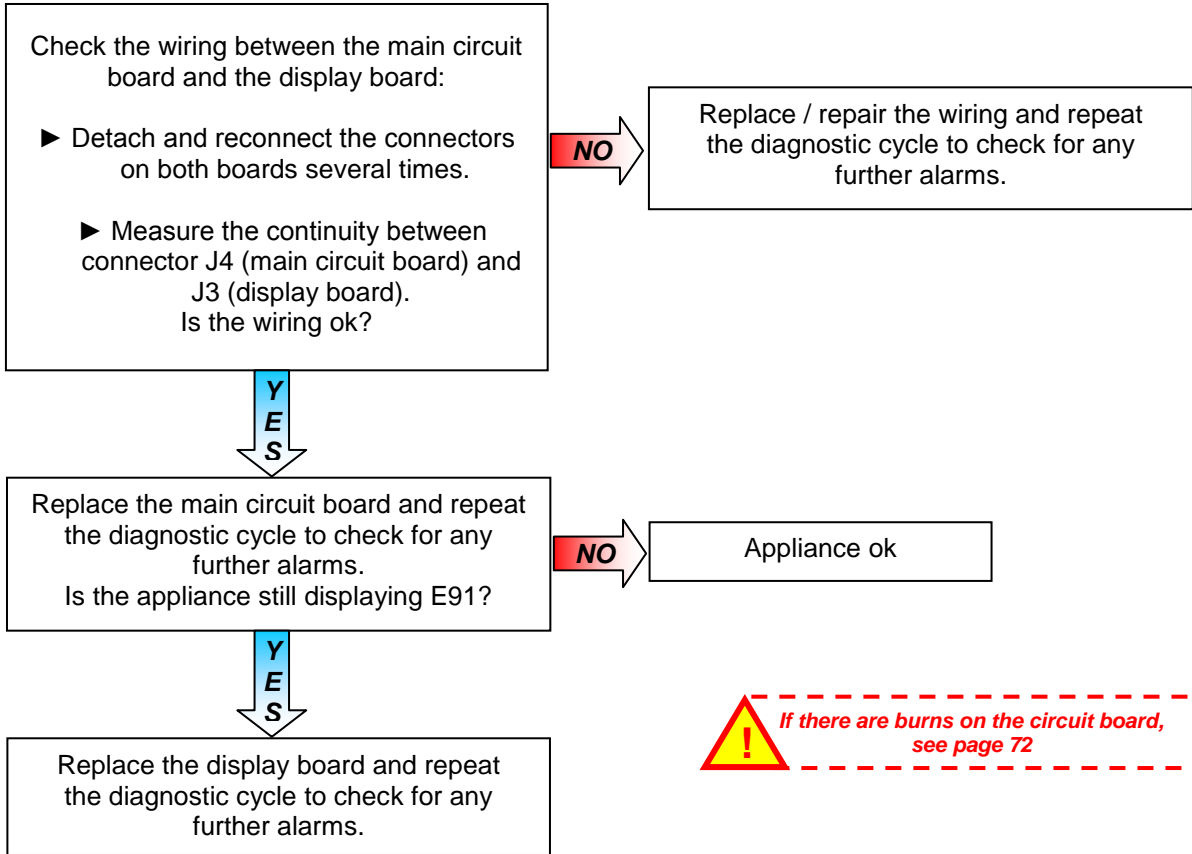


**E91** **E91: Communication error between the display board and the main circuit board (2<sup>st</sup> part)** **E91**

Checks to perform:

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

Follow from pag. 61



<b>E92</b>	<b>E92: protocol inconsistency</b>	<b>E92</b>
	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.

<b>E93</b>	<b>E93: Appliance configuration error</b>	<b>E93</b>
	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.

<b>E94</b>	<b>E94: Incorrect configuration of washing cycle</b>	<b>E94</b>
	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.

<b>E97</b>	<b>E97: Inconsistency between control selector version and configuration data</b>	<b>E97</b>
	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.

<b>E98</b>	<b>E98: Communication error between main PCB and Inverter board</b>	<b>E98</b>
	Incompatibility between the main circuit board and the Inverter board	

Checks to perform:



check that all the connectors are correctly inserted

*Incorrect configuration possible.*  
Replace the main circuit board / Inverter board and repeat the diagnostic cycle to check for any further alarms.



If there are burns on the circuit board, see page 72

<b>E9C</b>	<b>E9C: Display board configuration error</b>	<b>E9C</b>
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*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.

<b>E9E</b>	<b>E9E: Display board sensor/touch key faulty</b>	<b>E9E</b>
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*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



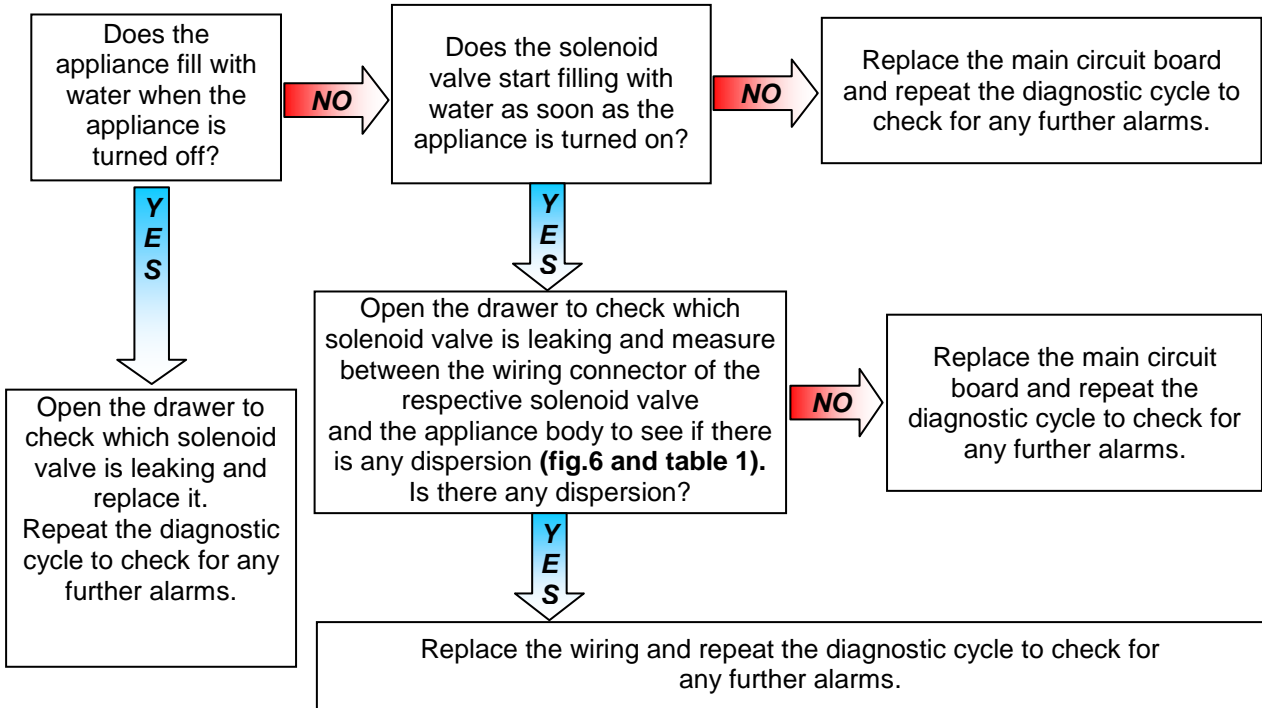
*If there are burns on the circuit board,  
see page 72*



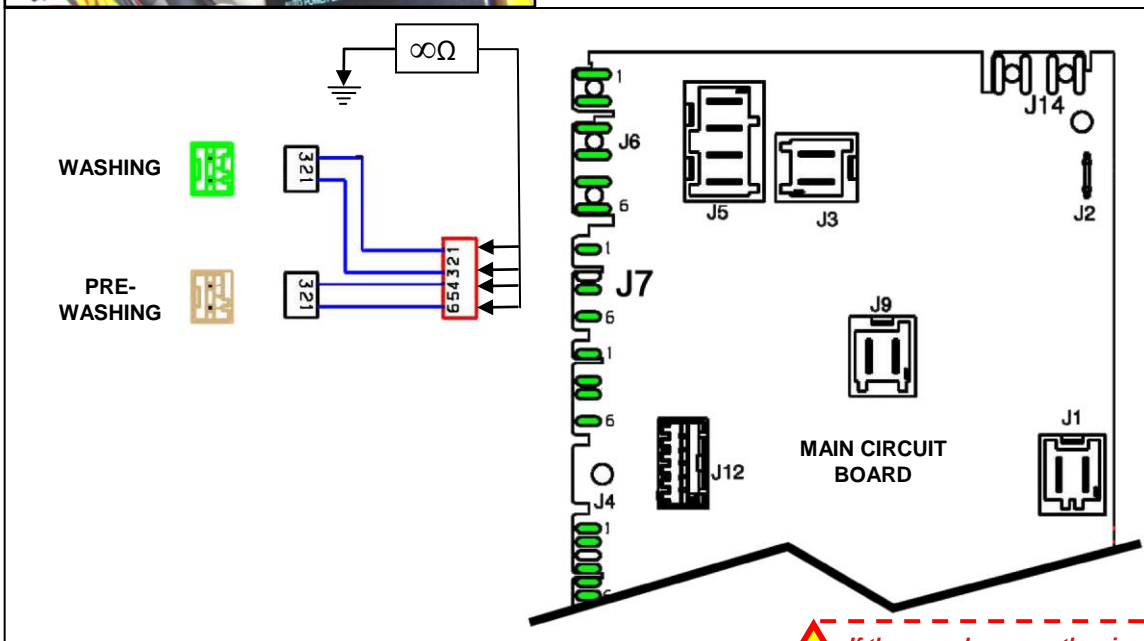
<b>EC1</b>	<b>EC1: Water fill solenoid valves blocked</b>	<b>EC1</b>
	The flowmeter has to fill water even with the solenoid valve not piloted	

*Checks to perform:*

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



<b>Tab. 1</b>
Between J7-1 and J7-3 wash solenoid valve
Between J7-4 and J7-6 pre-wash solenoid valve



**!** *If there are burns on the circuit board, see page 72*

<b>EF1</b>	<b>EF1: Drain hose blocked/kinked/too high; drain filter clogged/dirty</b>	<b>EF1</b>
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*Checks to perform:*



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 dirty/clogged</b>	<b>EF2</b>
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*Checks to perform:*



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:*



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>
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*Checks to perform:*



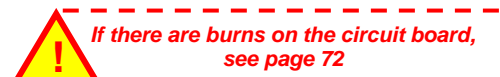
It is a warning that the water pressure is too low. If the water pressure is connect, check: the wiring of the flowmeter and the Flowmeter.

<b>EF5</b>	<b>EF5: Unbalanced load, spin phases skipped.</b>	<b>EF5</b>
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*Checks to perform:*



This is an unbalanced load warning. The appliance detected an extremely unbalanced load during the spin phases. Advise the customer to load more washing into the drum and not just individual garments.



<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

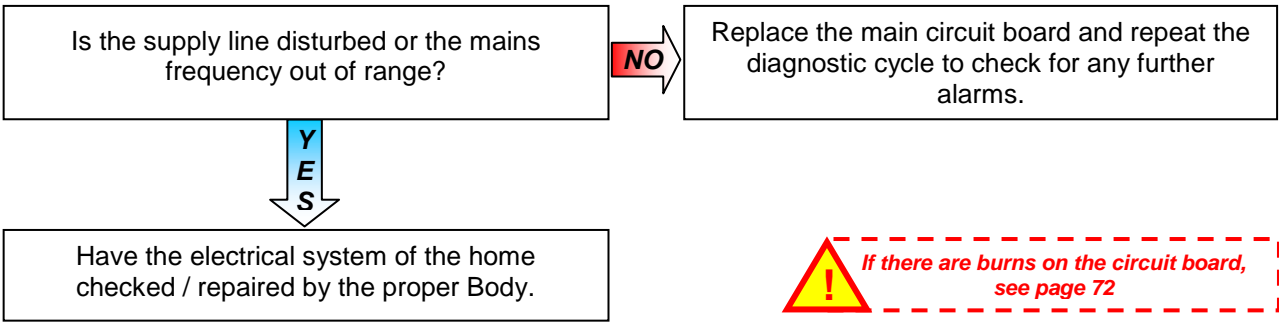
<b>EH1</b>	<b>EH1: Mains frequency incorrect</b>	<b>EH1</b>
Power supply frequency out of configured range		

*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.



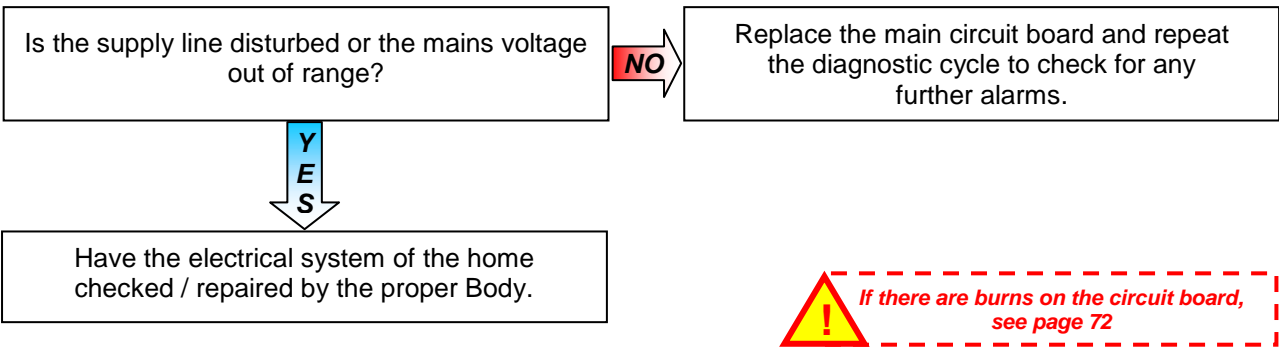
<b>EH2</b>	<b>EH2: Supply voltage too high</b>	<b>EH2</b>
Supply voltage value higher than the one configured (for more than 10 seconds)		

*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.





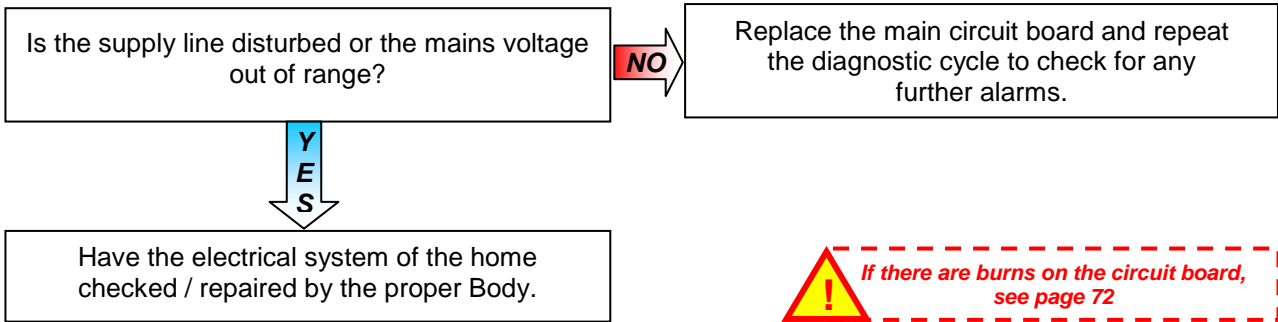
<b>EH3</b>	<b>EH3: Supply voltage too low</b>	<b>EH3</b>
	Supply voltage value higher than the one configured	

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. 




<b>EH4</b>	<b>EH4: "Zero watt" relay not functioning</b>	<b>EH4</b>

Checks to perform:

 check that all the connectors are correctly inserted

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 72

<b>EHE</b>	<b>EHE: Inconsistency between safety relay (main circuit board) and safety "sensing" circuit</b>	<b>EHE</b>

Checks to perform:

 check that all the connectors are correctly inserted

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 72

<b>EHF</b>	<b>EHF: Safety sensing circuit faulty</b>	<b>EHF</b>
	Input voltage microprocessor wrong	

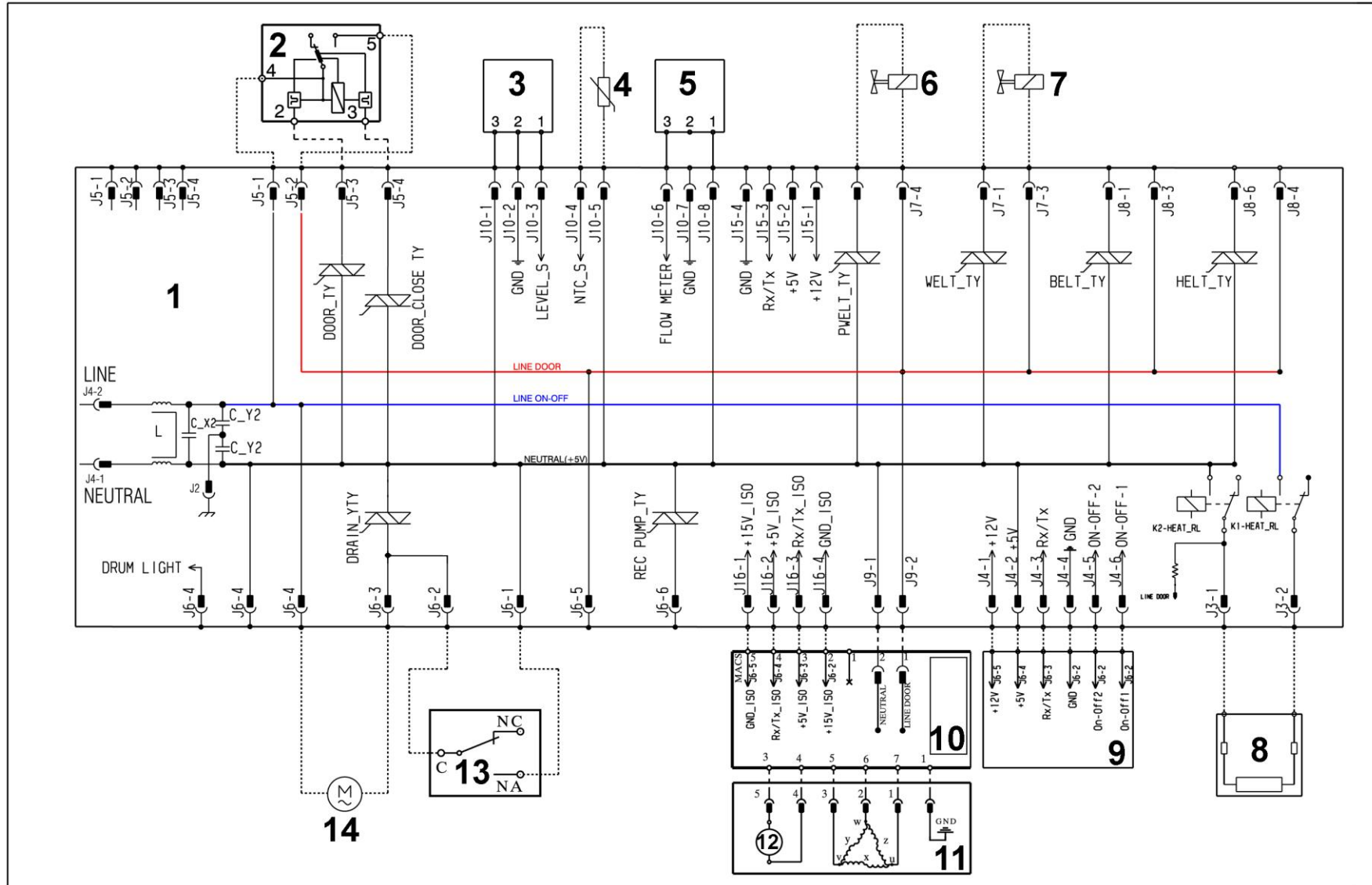
Checks to perform:

 check that all the connectors are correctly inserted

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 72

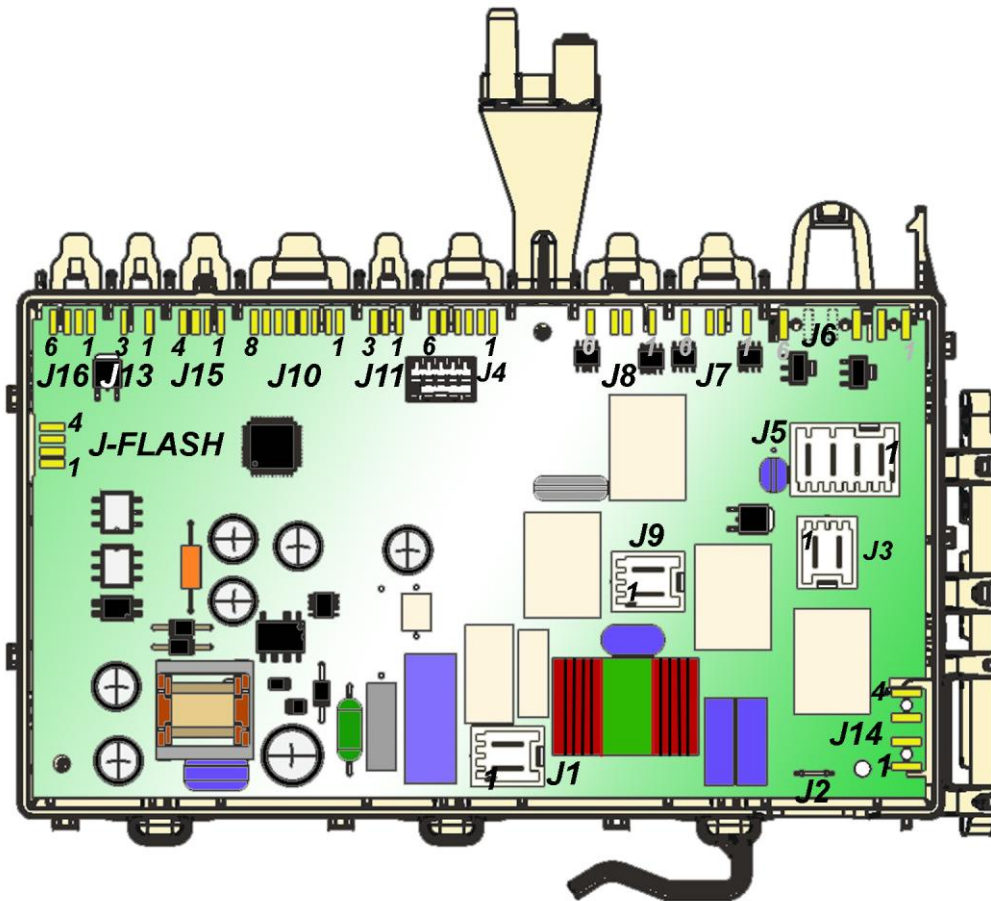
## 7 WM OPERATING CIRCUIT DIAGRAM



## 7.1 Key to circuit diagram WM

Appliance electrical components	PCB components		
<ol style="list-style-type: none"> <li>1. Main circuit board</li> <li>2. Door safety interlock</li> <li>3. Electronic pressure switch</li> <li>4. NTC (washing)</li> <li>5. Flow sensor</li> <li>6. Pre-wash solenoid valve</li> <li>7. Wash solenoid valve</li> <li>8. Heating element</li> <li>9. Display board</li> <li>10. Motor control board (Inverter)</li> <li>11. Triple-phase motor</li> <li>12. Tachometric generator (motor)</li> <li>13. Aqua control sensor</li> <li>14. Drain pump</li> </ol>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                     DRAIN_YTY                      DOOR_TY                      DOOR_CLOSE_TY                      PWELT_TY                      WELV_TY                      K1                      K2                 </td> <td style="width: 50%; vertical-align: top;">                     Drain pump Triac                      Door interlock Triac                      Door interlock Triac                      Pre-wash solenoid Triac                      Wash solenoid Triac                      Heating element relay                      Heating element relay                 </td> </tr> </table>	DRAIN_YTY DOOR_TY DOOR_CLOSE_TY PWELT_TY WELV_TY K1 K2	Drain pump Triac Door interlock Triac Door interlock Triac Pre-wash solenoid Triac Wash solenoid Triac Heating element relay Heating element relay
DRAIN_YTY DOOR_TY DOOR_CLOSE_TY PWELT_TY WELV_TY K1 K2	Drain pump Triac Door interlock Triac Door interlock Triac Pre-wash solenoid Triac Wash solenoid Triac Heating element relay Heating element relay		

## 7.2 Main circuit board connectors

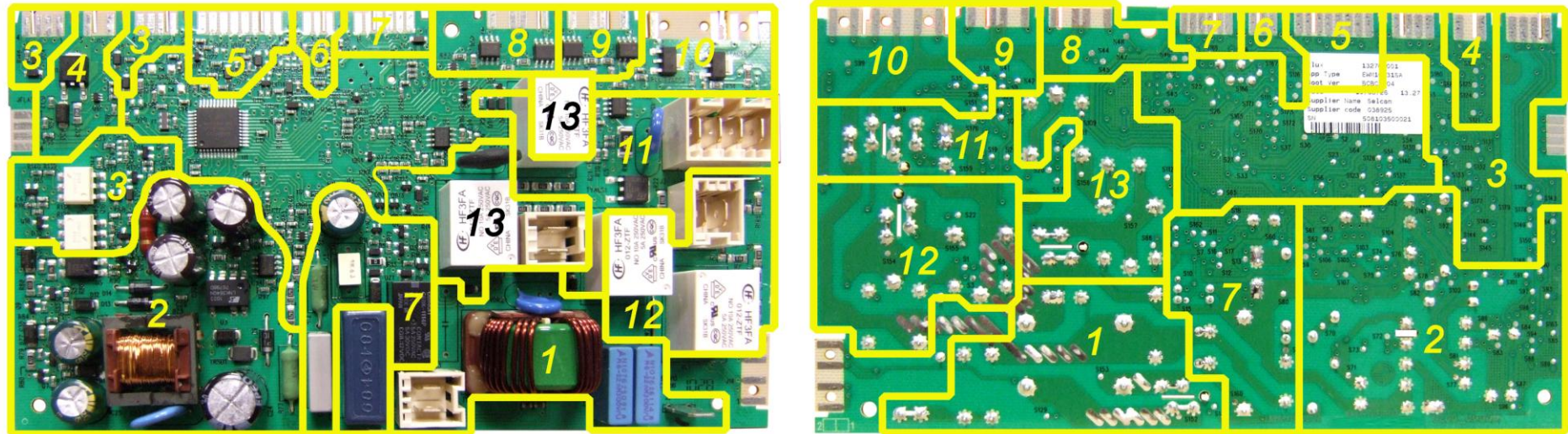


<b>J15</b>	<b>J10</b>
MACS communication J15-1 Vee 12V J15-2 5V J15-3 Rx/Tx J15-4 GND	J10-1 Analogue pressure switch (+5V) J10-2 Analogue pressure switch (GND) J10-3 Analogue pressure switch (signal) J10-4 NTC temperature probe (signal) J10-5 NTC temperature probe (+5V) J10-6 Flowmeter (signal) J10-7 Flowmeter (GND) J10-8 Flowmeter (+5V)
<b>J16</b>	<b>J7</b>
MACS communication J15-1 Vee 12V J15-2 5V J15-3 Rx/Tx J15-4 GND	J7-1 Wash solenoid valve (Triac) J7-3 Wash solenoid valve (Line) J7-4 Pre-wash solenoid valve (Line) J7-6 Pre-wash solenoid valve (Triac)
<b>J4</b>	<b>J1</b>
J4-1 Vee 12V0 J4-2 5V J4-3 Rx/Tx J4-4 GND J4-5 ON/OFF 2 J4-6 ON/OFF 1	J1-1 line (neutral) J1-2 line
<b>J8</b>	<b>J5</b>
J8-1 J8-3 J8-4 J8-6	J5-1 Door lock (Line) J5-2 Door lock (Door line) J5-3 Door lock (PTC Triac) J5-4 Door lock (Triac)
<b>J2</b>	<b>J14</b>
J2 Ground	Serial interface: J9-1 ASY_IN J9-2 ASY_OUT J9-3 +5V J9-4 GND
<b>J6</b>	<b>J13</b>
J6-1 Aqua control device (Neutral) J6-2 Aqua control device (Line) J6-3 Drain pump (Triac) J6-4 Drain pump (Line) J6-5 J6-6	J13-1 J13-3
<b>J3</b>	<b>J12</b>
J3-1 heating element (Neutral Relay) J3-2 heating element (Line Relay)	J11-1 J11-2 J11-1
<b>J9</b>	<b>J11</b>
J9-1 FCV power supply (Neutral) J9-1 FCV power supply (Relay)	J11-1 J11-2 J11-1

### 7.3 Burns on the main circuit board EWM10931

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.*



- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Anti-disturbance filter area</li> <li>2. Power supply area</li> <li>3. Satellite board communication area</li> <li>4. Drum light circuit area</li> <li>5. Analogue level sensor, wash NTC temperature probe, flowmeter and weight sensor area</li> <li>6. Drum positioning sensor area (Top loading)</li> </ol> | <ol style="list-style-type: none"> <li>7. Zero watt circuit area</li> <li>8. Unused area</li> <li>9. Water fill solenoid valves area (wash and pre-wash)</li> <li>10. Drain pump area</li> <li>11. Door lock area</li> <li>12. Heating element area</li> <li>13. FCV relay area (motor)</li> </ol> |
|---|--|





**REVISION:**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>Author</b>	<b>Approved by</b>
00	05/2012	Document Creation	DMM	XX – 0X/201X