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**Washing machines**

**Guide to diagnostics of  
electronic controls**

**EWM10931**

**G29**



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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 must take when faced with the problems indicated by the various alarm codes on appliances with electronic control in the EWM10931 NEW COLLECTION 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 Warnings



- **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.**  
**On completing operations, check that the appliance has been restored to the same state of safety as when it came off the assembly line.**
- **If the circuit board has to be handled / replaced, use kit ESD (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.**
- **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".**

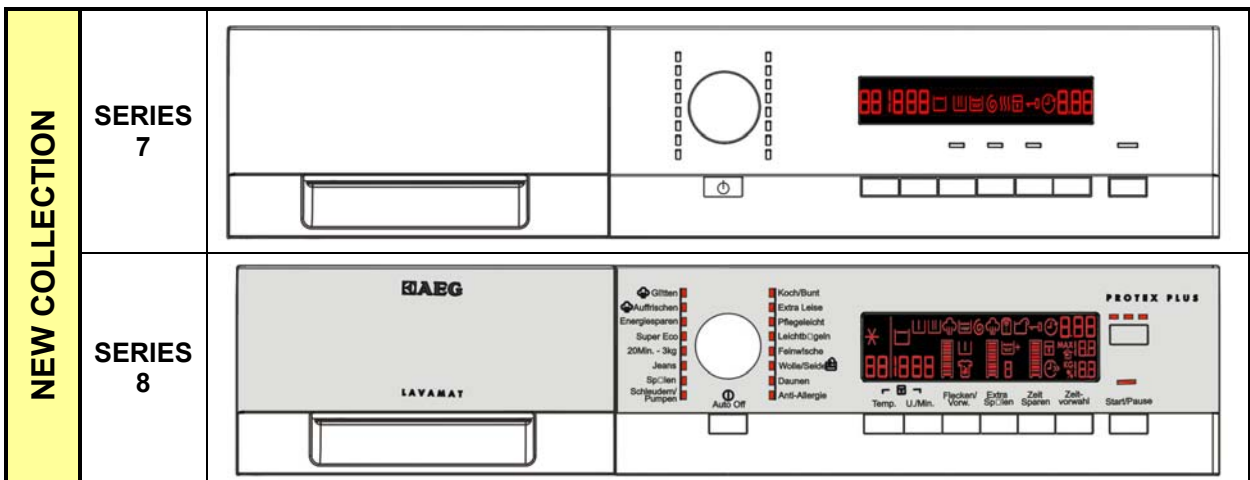


### 1.3 How to proceed

1. Identify the type of control in question (**page 7**) and access the diagnostic cycle. (**See page 7**)
2. Read the alarm stored (**page 11**) and consult the instructions regarding the “alarm codes”, **page 14÷17**.
3. Delete the alarms stored. (**Page 12**)
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 71**)
6. After all interventions, check the appliance is operating correctly using the diagnostic cycle. (**Page 8**)
7. Delete any alarm that may have been stored during the diagnostics operations. (**Page 12**)

## 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 DIAGNOSTICS SYSTEM

### 3.1 Accessing diagnostics

All versions

SERIES 7	SERIES 8
<p style="text-align: center;"><b><u>Do not start the procedure with the combination buttons pressed</u></b></p> <ol style="list-style-type: none"> <li>1. Switch on the appliance using the ON / OFF button. The first LED in the right hand row will light up.</li> <li>2. Press the <b>START / PAUSE</b> button and the nearest <b>option button</b> simultaneously (as shown in the figure).</li> <li>3. Hold the buttons down until the LEDs and symbols begin to flash in sequence (approximately 3 seconds).</li> </ol> <p>In the first position, the operation of the buttons, of the related LEDs and of the groups of symbols shown on the LCD screen is checked; turn the programme selector dial <b>clockwise</b> to run the diagnostic cycle for the operation of the various components and to read any alarms (see diagnostic testing on the following page).</p> <p><b>During this phase, if any combination of keys (except the one for diagnosis) is pressed, all the option combinations stored will be deleted (extra rinse, buzzer disable, etc.).</b></p>	








### 3.2 Quitting the diagnostics system

→ In order to exit the diagnostic system turn the appliance off and on again using the ON / OFF push button.



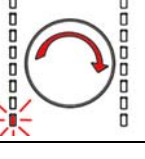

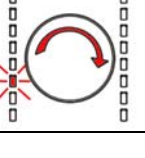



### 3.3 Diagnostic test phases

Irrespective of the type of electronic board and of the selector configuration, once the diagnostics system has been activated, turn the selector dial **clockwise** to run a check of the various components and read the 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).

TABLE 1				
Selector position	Components activated	Working conditions	Function tested	LCD display
1	<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>- Press a push button 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.	
2	<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.	 Water level in the tub (mm).
3	<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 directly to tub.	 Water level in the tub (mm).
4	<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).
5	<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.	 Water level in the tub is displayed (mm).
6	<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.	 Water level in the tub is displayed (mm).
7	<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 present, an extra litre of water is loaded).</li> <li>- Recirculation pump.</li> </ul>	Door closed. Water level above the heating element. Maximum time 10 mins up to 90°C. (*)	Heating.	 Temperature in °C measured using the NTC probe.



8		<ul style="list-style-type: none"> <li>- Door safety interlock.</li> <li>- Wash solenoid if the water level in the tub does not cover the heating element.</li> <li>- Motor (55 rpm clockwise, 55 rpm anti-clockwise, 250 rpm pulse).</li> </ul>	<p>Door closed. Water level above the heating element.</p>	<p>Check for leaks from the tub.</p>	 Drum speed in rpm/10.
9		<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>	<p>Door closed. Water level lower than anti-boiling level for spinning.</p>	<p>Drain, calibration of analogue pressure switch and spin.</p>	 Drum speed in rpm/10.
10	-----	-----	----	----	
11		<ul style="list-style-type: none"> <li>- Reading / Deleting the last alarm.</li> </ul>	-----	-----	
12 ÷ 16		<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>- Press a button / 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>	<p>Always active.</p>	<p>User interface functions.</p>	

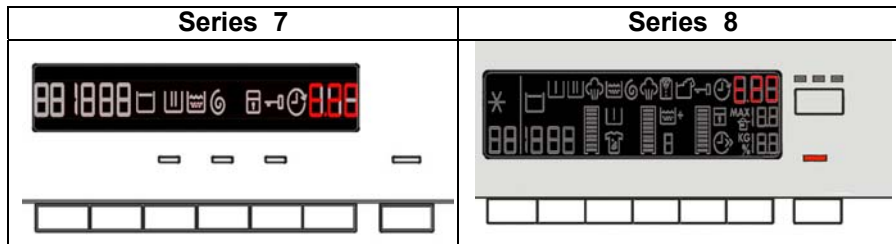
(\*) In most cases, this time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostic cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating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

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

## 4 ALARMS

### 4.1 Displaying the alarms to the user

When a problem arises in the appliance, a "WARNING" or an "ALARM" is displayed with three digits, where the time until the end of the cycle is represented.



The alarms displayed to the user are listed below:

- ↪ **E10 - Water fill difficulty (tap closed)**
- ↪ **E20 - Drain difficulty (filter dirty)**
- ↪ **E40 - Door open**

The alarms listed below:

- ↪ **EF0 - Water leakage (Aqua Control System)**

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.

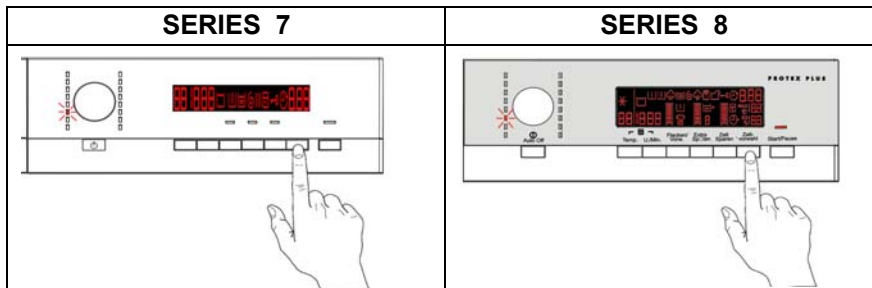
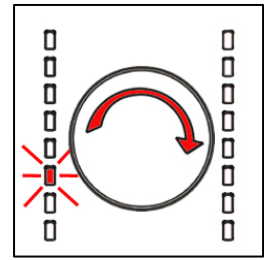
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

- 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** the last alarm is displayed.
- To display previous alarms, press the button to the left of the START / PAUSE button in sequence (as shown in the figure).
- To return to the last alarm, press the START / PAUSE button.



### 4.3 Rapid reading of alarms

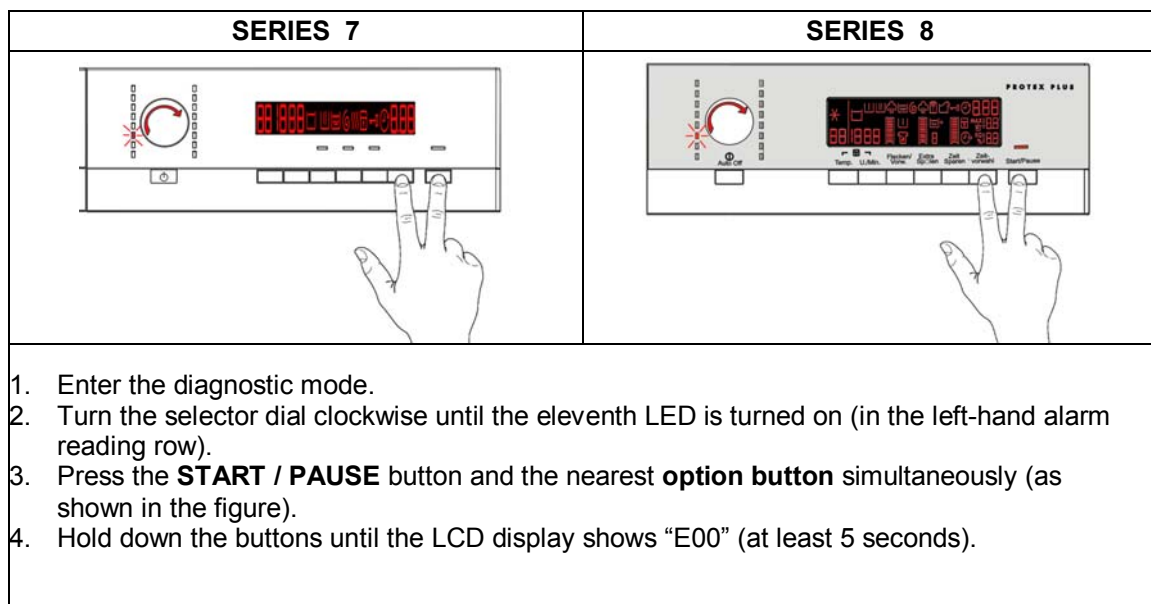
The last alarm can even be displayed if the selector is not in the tenth diagnostic position or if the appliance is in normal operating mode (for example when performing a wash programme):

- Press the **START / PAUSE** button and the nearest **option button** simultaneously (as if you were entering DIAGNOSTIC mode) for at least 2 seconds: the LCD display shows the last alarm.
- The alarm continues to be displayed until a button is pressed.
- During the time that the alarm is displayed, the appliance continues to perform the cycle or, if you are in the programme selection phase, it retains the options selected previously in memory.

### 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.

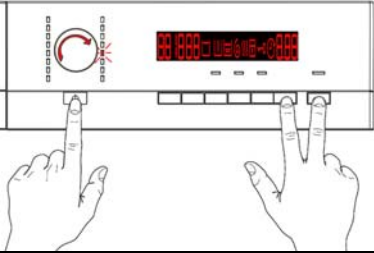
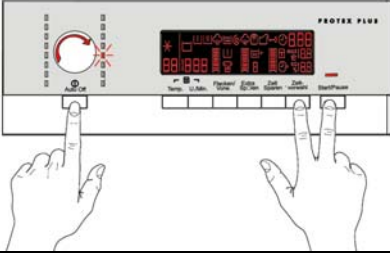
## 5 OPERATING TIME COUNTER

Using a specific procedure, the operator can display the total operating time for the appliance, which is counted from the moment it is first switched on.

The unit can count up to a maximum of **6,550** hours of operating time.

- Only the operating time of normal programmes (and not diagnostic cycles) is counted.
- The actual operating time for the cycle is counted (which does not include pauses, delayed start time, rinse hold time and soaking phases).
- The precision of the counter is 30 seconds per programme.
- Only whole hours of operation are counted (1 hr and 59 min = 1 hr).




### 5.1 Reading the operating time

SERIES 7	SERIES 8
	
<p><b><u>Do not start the procedure with the combination buttons pressed</u></b></p> <ol style="list-style-type: none"> <li>1. Switch on the appliance using the ON / OFF button.</li> <li>2. Turn the selector dial clockwise until the <b>fifth</b> LED in the right-hand row is on.</li> <li>3. Press the <b>START / PAUSE</b> button and the nearest <b>option button</b> simultaneously (as shown in the figure).</li> <li>4. Hold down the buttons until the hours of operation appear on the display (at least 5 seconds).</li> </ol>	

### 5.2 Display of total operating time

This time is displayed with a sequence of two digits at a time: the first two digits indicate thousands and hundreds, the second two digits indicate tens and units.

For example, if the operating time is **6,550** hours, the display will show the following sequence:

Phase 1	Phase 2	Phase 3
<p>For <u>two seconds</u>, the following is displayed: Hr</p>	<p>For <u>two seconds</u>, the following digits are displayed:</p> <ul style="list-style-type: none"> <li>↗ thousands (<b>6</b>)</li> <li>↗ hundreds (<b>5</b>)</li> </ul>	<p>For the next <u>two seconds</u> the following digits are displayed:</p> <ul style="list-style-type: none"> <li>↗ tens (<b>5</b>)</li> <li>↗ units (<b>0</b>).</li> </ul>
		

At the end of phase three (after the tens and units are displayed), the cycle is repeated.

To return to normal mode, either: switch the appliance off or press a button or turn the selector knob.

### 5.3 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 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>Malfunction in sensing circuit on triac for drain pump</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 faulty.	Cycle 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 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 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

Alarm	Description	Possible fault	Machine status / action	Reset	Page
E45	Faulty sensing by door delay system triac	Main circuit board faulty.	(Safety drain cycle) Cycle blocked.	E45	37
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 (>15 A)	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 (>4.5 A)	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	51
E5H	Input voltage is lower than 175 V	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 relay status)	Earth leakage between heating element and earth. Main PCB faulty.	Safety water fill. Cycle stops with door closed.	ON / OFF RESET	54
E68	Current leak to the ground	Earth leakage between heating element and earth.	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 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	57
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



Alarm	Description	Possible fault	Machine status / action	Reset	Page
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	60
E87	Display board microprocessor faulty	Display board.	No action to be taken.	START ON / OFF RESET	60
E91	Communication error between main PCB and display	Wiring faulty; Control / display PCB faulty; Main circuit board faulty.	-----	RESET	61
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	62
E93	Appliance configuration error	Main PCB faulty (incorrect configuration data).	Cycle blocked.	ON / OFF	62
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data).	Cycle blocked.	ON / OFF	62
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked.	RESET	62
E98	Communication error between main PCB - Inverter	Incompatibility between main PCB and Inverter.	Cycle blocked.	ON / OFF	62
E9C	Display board configuration error	Display board faulty.	-----	START ON / OFF RESET	63
E9E	Display board sensor / touch key faulty	Display board faulty.	-----	ON / OFF	63
EC1	Electronically controlled valve blocked with operating flowmeter	Faulty cabling; Faulty / blocked solenoid, PCB faulty.	Cycle stops with door locked. Drain pump continues to operate (5 mins., then 5 mins. off. for 5 mins. etc.).	RESET	64
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	65
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	65
EF3	Aqua control system intervention	Water leaks onto base frame; Aqua control system faulty; Drain pump winding interruption / overheating.	Appliance drains.	ON / OFF RESET	65
EF4	Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open	Tap closed, water fill pressure too low.	-----	RESET	65
EF5	Unbalanced load	Final spin phases skipped.	-----	START / RESET	65
EF6	Reset	If it continues, replace the main board.	No action to be taken.	-----	66



Alarm	Description	Possible fault	Machine status / action	Reset	Page
<b>EH1</b>	<b>Power supply frequency of appliance outside the limits</b>	Problem with the power supply network (incorrect / disturbed); Main PCB faulty.	Wait for nominal frequency conditions.	ON / OFF	66
<b>EH2</b>	<b>Supply voltage too high</b>	Problem with the power supply network (incorrect / disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON / OFF	66
<b>EH3</b>	<b>Supply voltage too low</b>	Problem with the power supply network (incorrect / disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON / OFF	67
<b>EH4</b>	<b>0Watt relay malfunction</b>	Main circuit board faulty.	-----	ON / OFF RESET	67
<b>EHE</b>	<b>Inconsistency between FCV relay (in the main board) and safety "sensing" circuit</b>	Faulty cabling; Main circuit board faulty.	Safety drain cycle. Cycle stops with door open.	RESET	67
<b>EHF</b>	<b>Safety sensing circuit faulty (wrong input voltage to microprocessor)</b>	Main circuit board faulty.	Safety drain cycle. Cycle stops with door open.	RESET	67

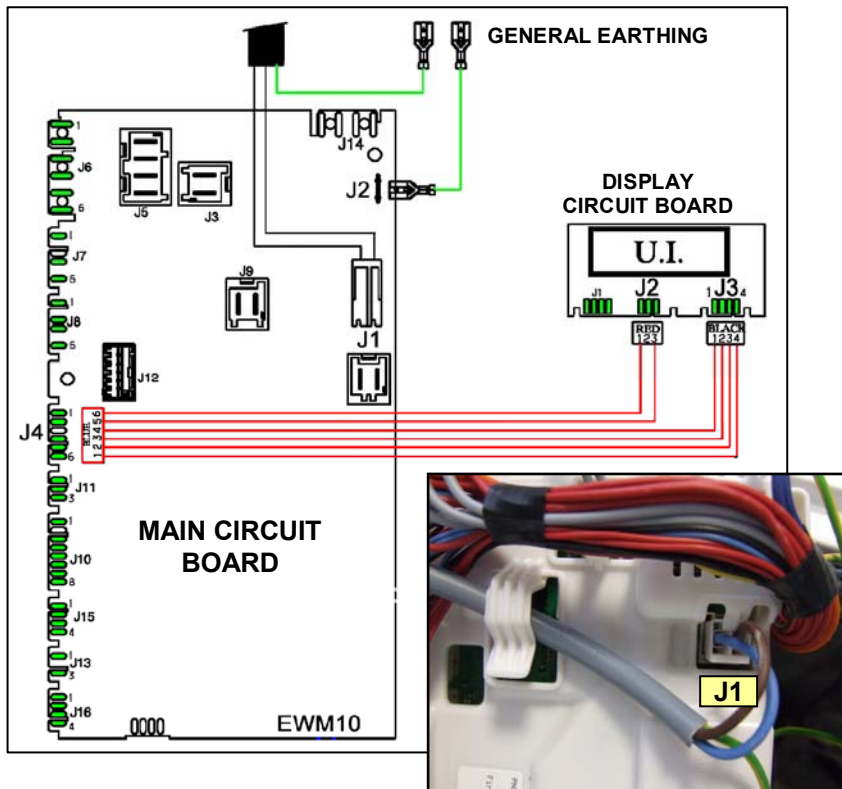
## 5.4 Notes on the behaviour of certain alarms

- **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 also 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.

## 6 CANNOT ACCESS THE DIAGNOSTICS PROGRAMME

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

Are the power supply cable and the connection on the main board (connector <b>J1</b> ) working properly?	No →	Replace / repair the power supply cable, check the connection.
Yes ↓		
Is the communication wiring between the main board (connector <b>J4</b> ) and the display board (connectors <b>J2</b> and <b>J3</b> ) working properly? (insert and remove)	No →	Replace / repair wiring.
Yes ↓		
Does the ON / OFF button function mechanically?	No →	Replace / repair the button or replace the display board.
Yes ↓		
Change the main circuit board. Is the appliance working correctly?	No →	Replace display board.
Yes ↓		
Run the diagnostics programme.		



### 6.2 Some LEDs light up on the display board

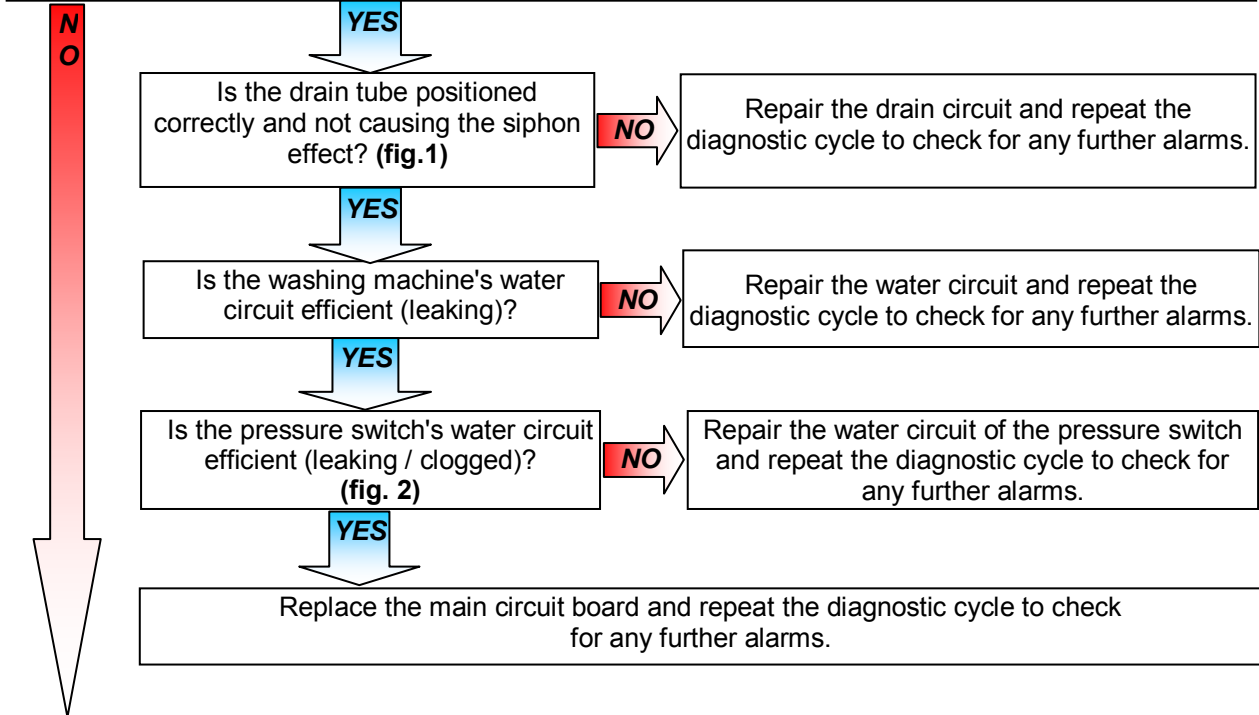
Are the keys unobstructed through the control panel slots and do they activate the various buttons correctly?	No →	Sort out any mechanical problems (control panel / buttons / pins).
Yes ↓		
Change the display board and run the diagnostics programme.		

## 7 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).	



Run the diagnostic cycle and fill all the trays with water (**phases 2,3,4**).  
Are all the trays filling with water?

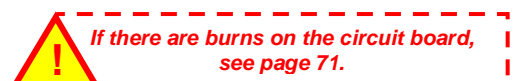


Is one or are all the solenoid valves not working? **NO** → Check whether the tap is open, if the water pressure is too low and make sure the tubes are connected and not kinked.

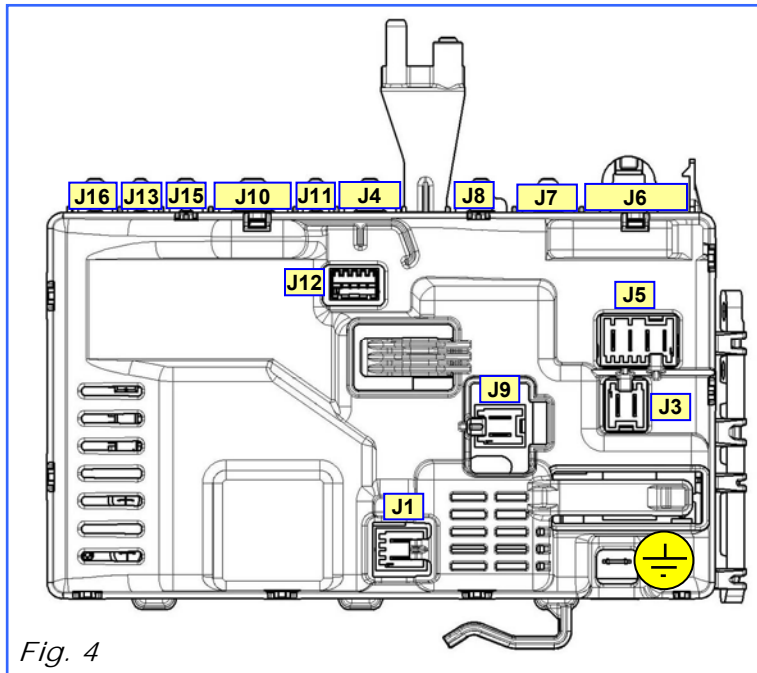
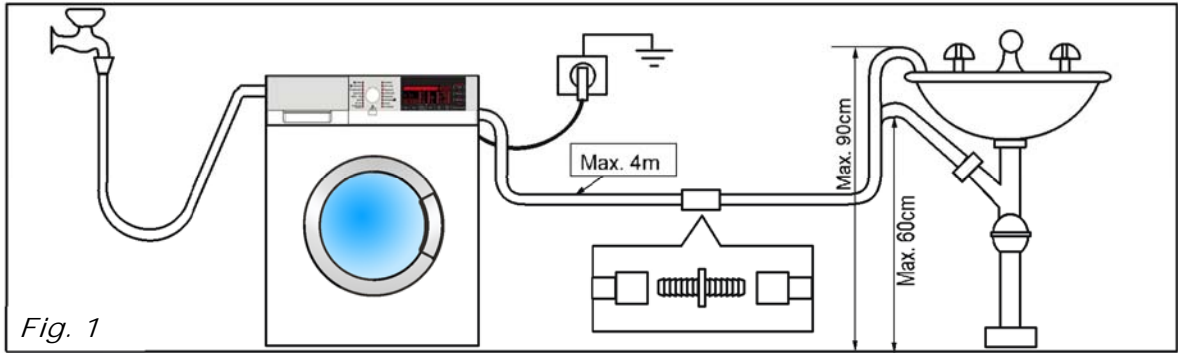
**YES** → Is the resistance measurement of the solenoid valve approximately 3.5÷4.5 KΩ? (Measure it directly on the solenoid valve without wiring) - (see fig. 3) - **NO** → Replace the solenoid valve and repeat the diagnostic cycle to check for any further alarms.

**YES** → Reconnect the connector and measure approximately 3.5÷4.5 KΩ on the solenoid valve wiring connector on the circuit board side (fig.4):  
Between J7-1 and J7-3 wash.  
Between J7-4 and J7-6 pre-wash.  
Is the solenoid valve wiring ok? **NO** → Replace / repair the wiring and repeat the diagnostic cycle to check for any further alarms.

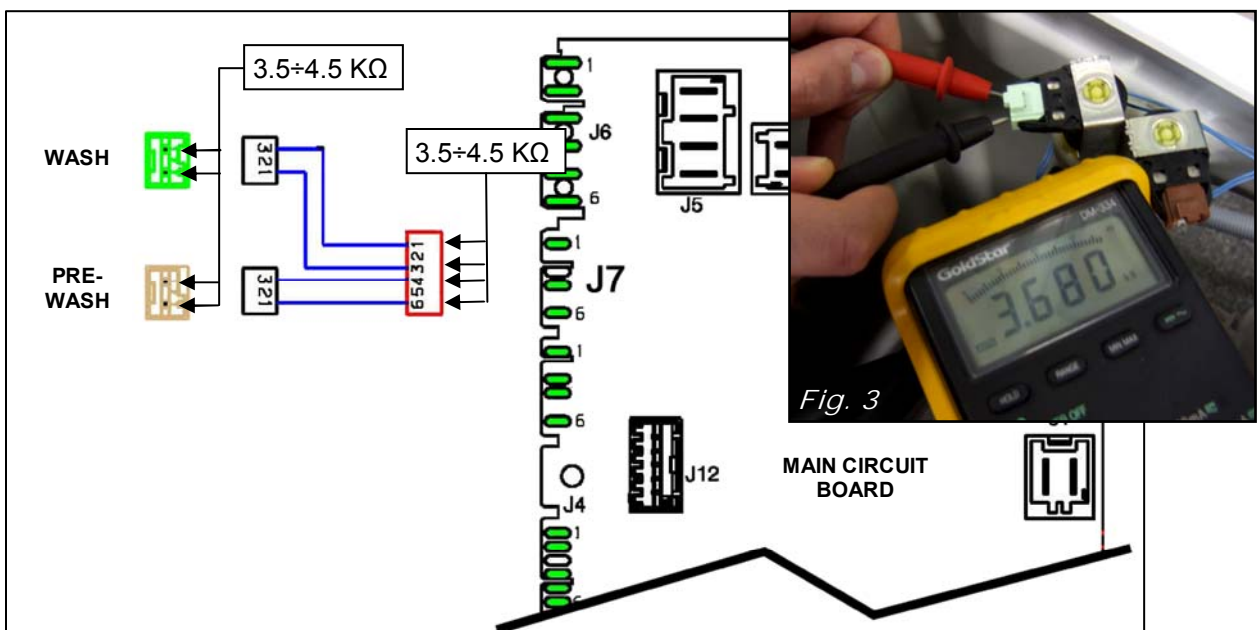
**YES** → Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.



E11



**!** If there are burns on the circuit board, see page 71.

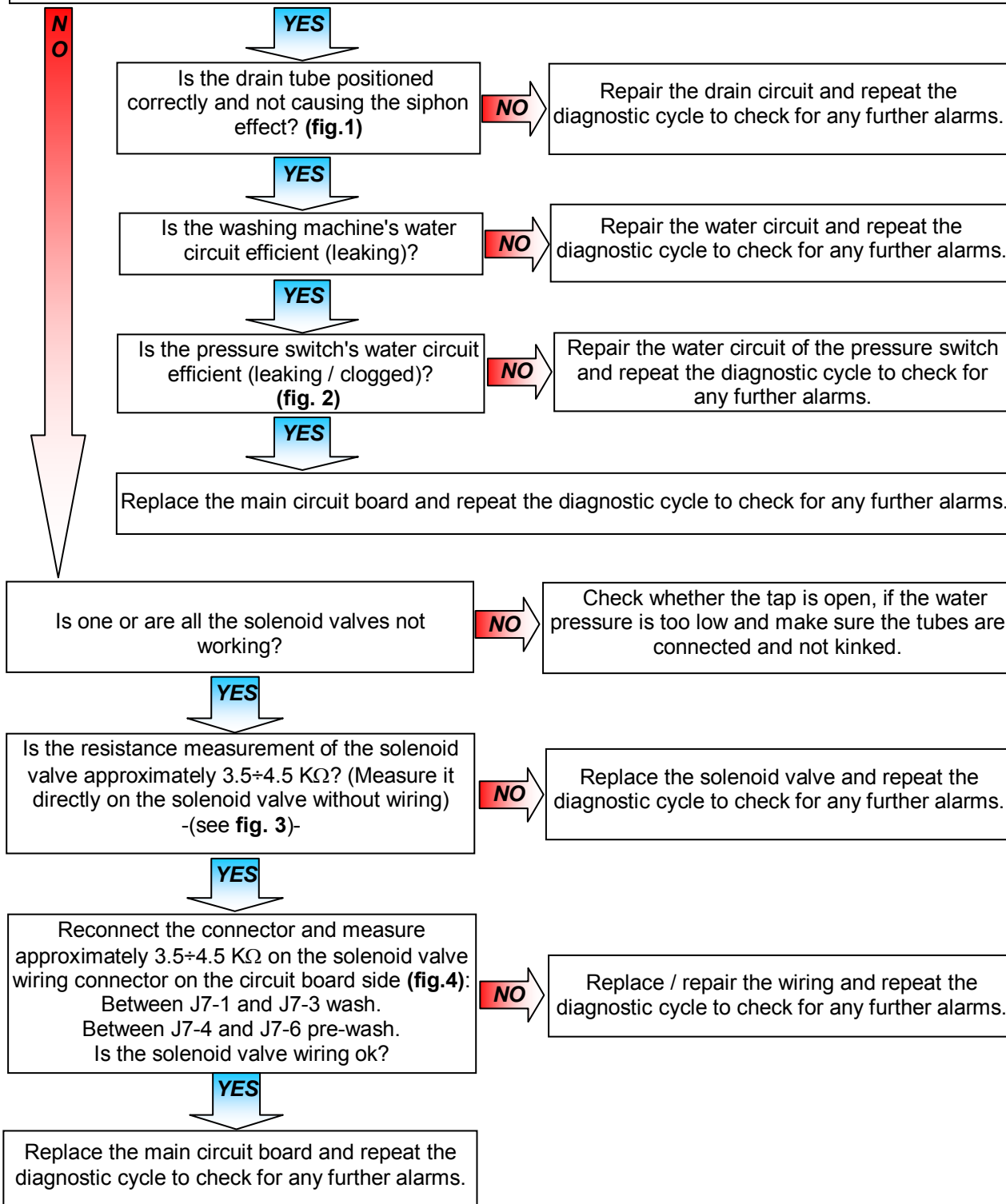


<b>E13</b>	<b>E13: Water leaks</b>	<b>E13</b>
	Maximum overall water fill time exceeded (sum of all water fills between one drain phase and the next to avoid exceeding the maximum volume).	

Checks to perform:



Run the diagnostic cycle and fill all the trays with water (**phases 2,3,4**).  
Are all the trays filling with water?



E13

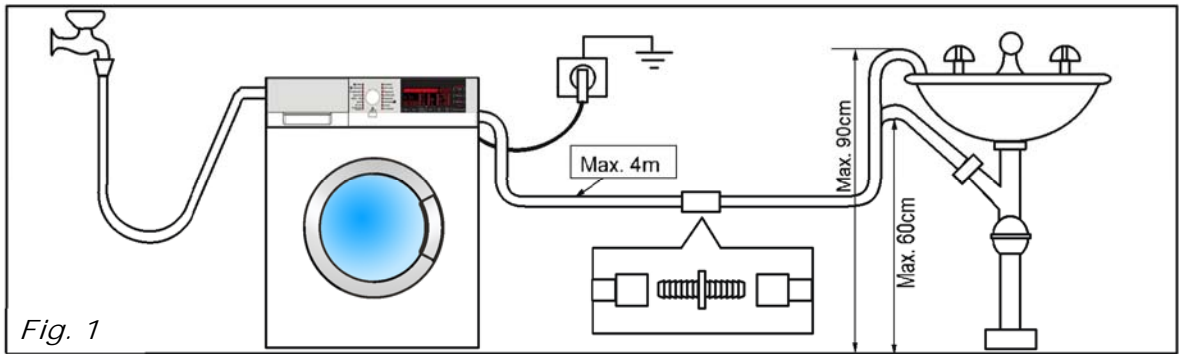


Fig. 1

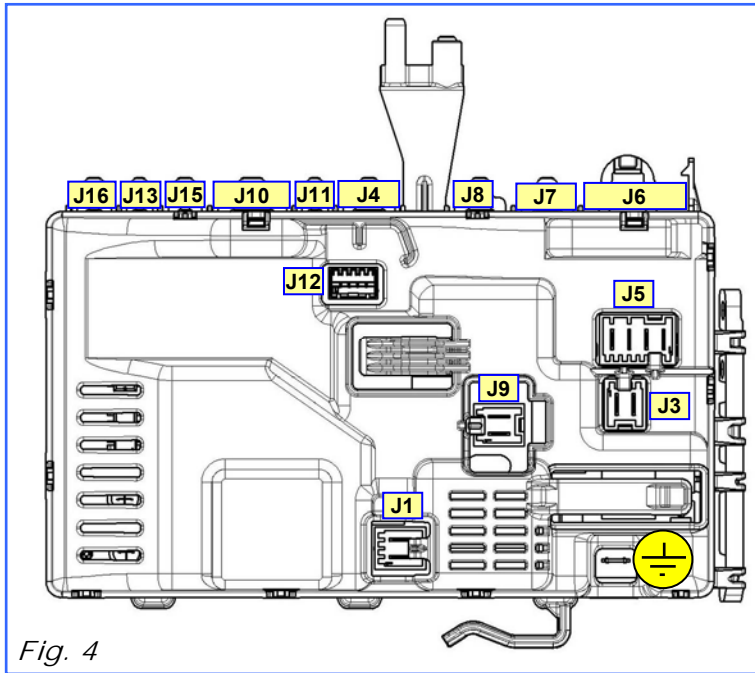


Fig. 4



Fig. 2

**!** If there are burns on the circuit board, see page 71.

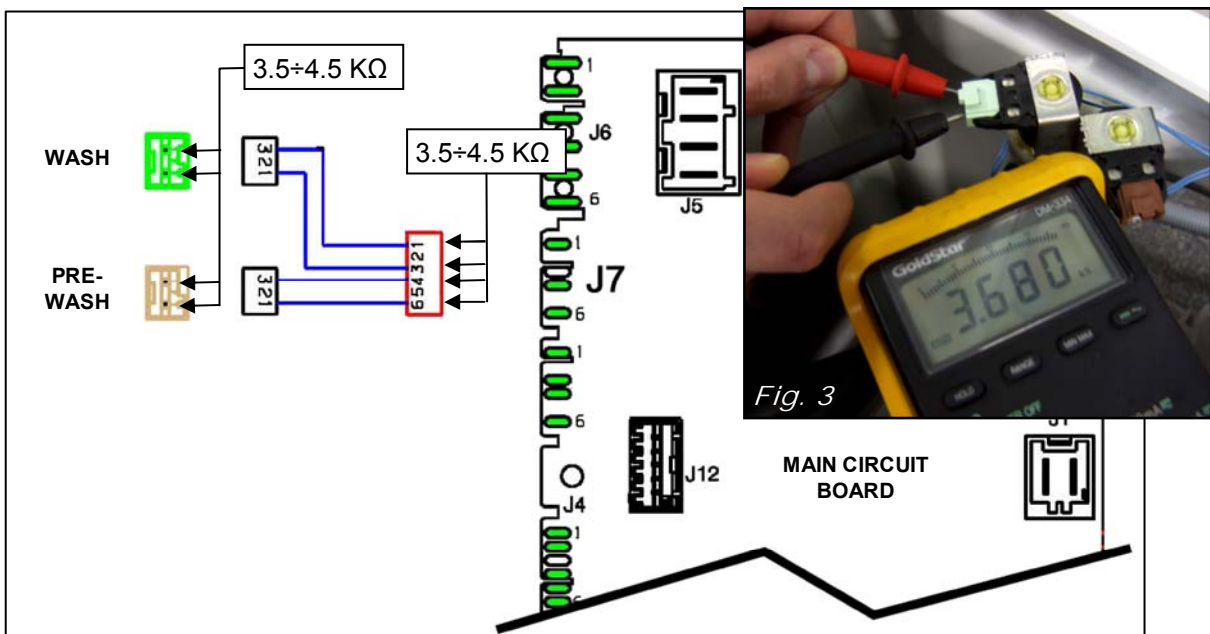
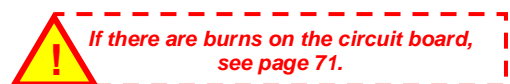
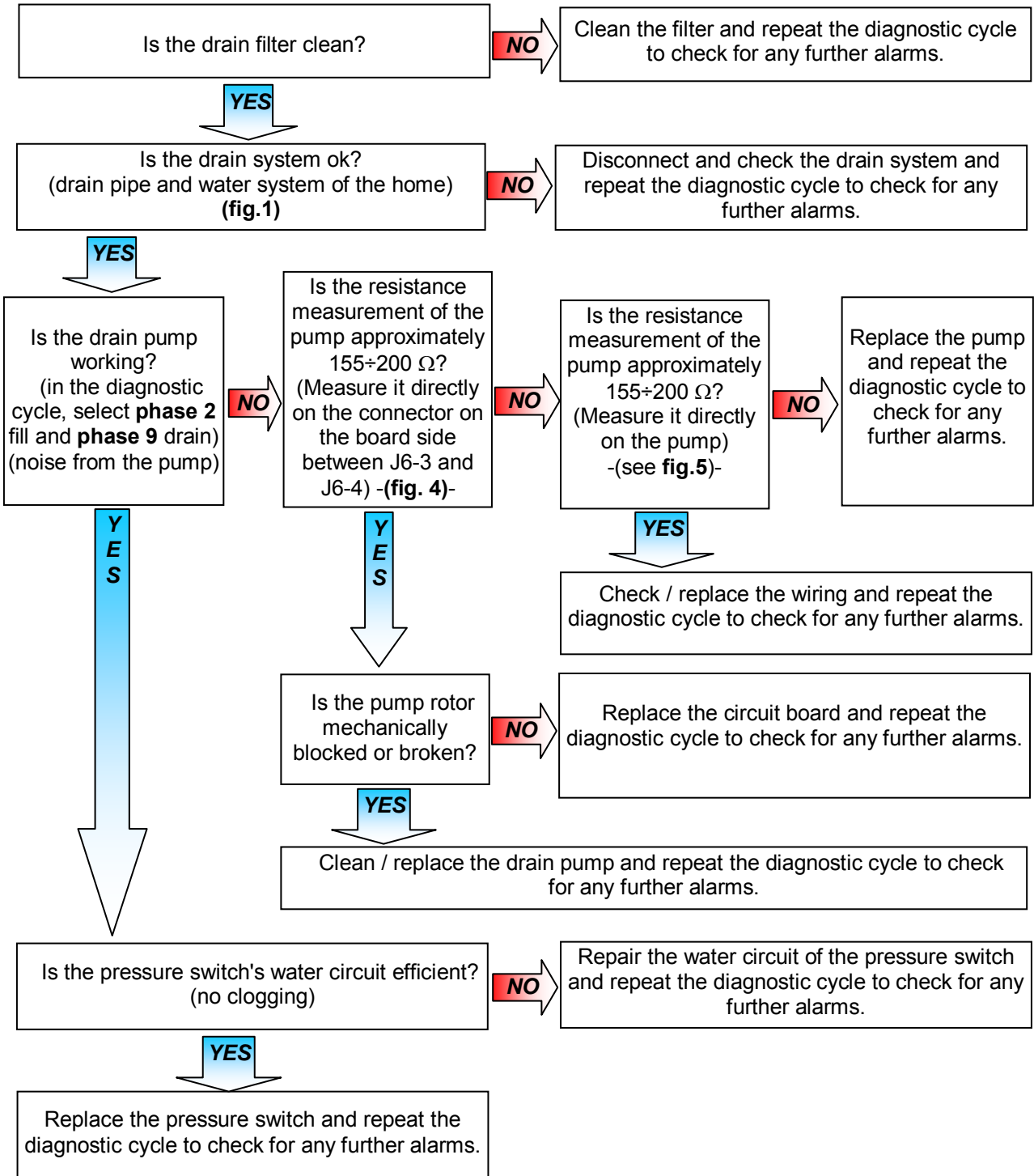


Fig. 3



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

Checks to perform:





**E21**

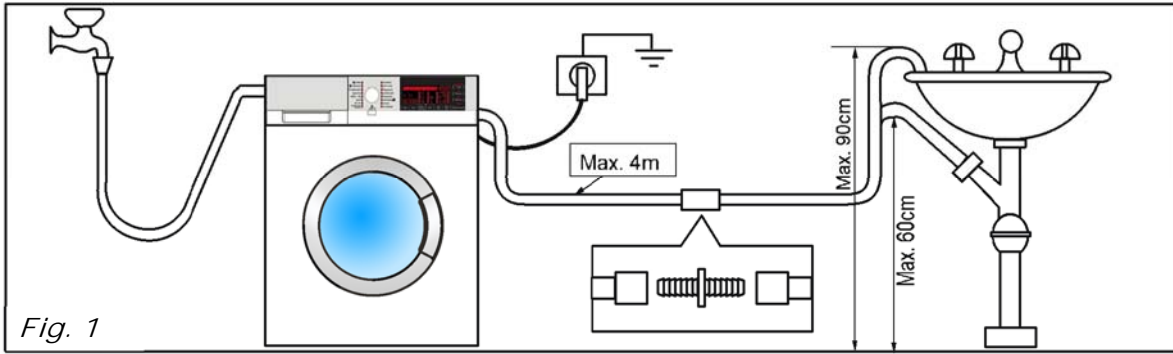


Fig. 1

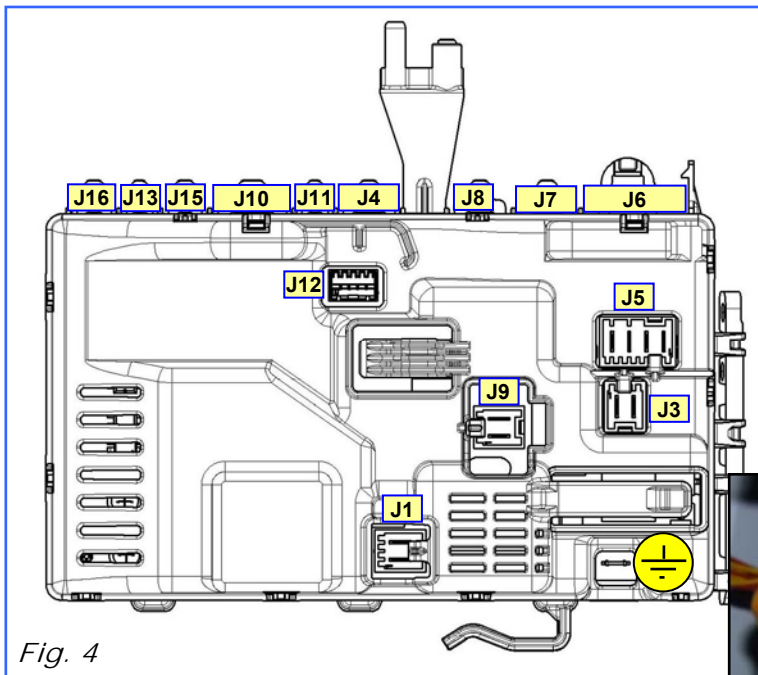


Fig. 4

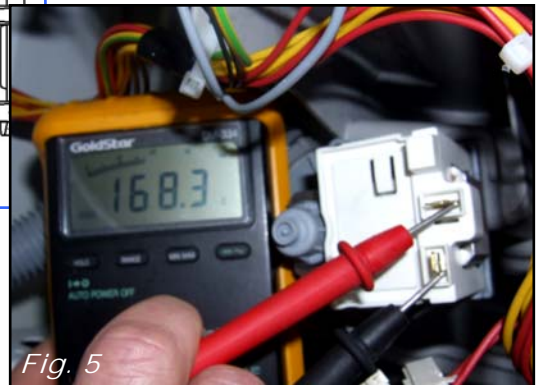
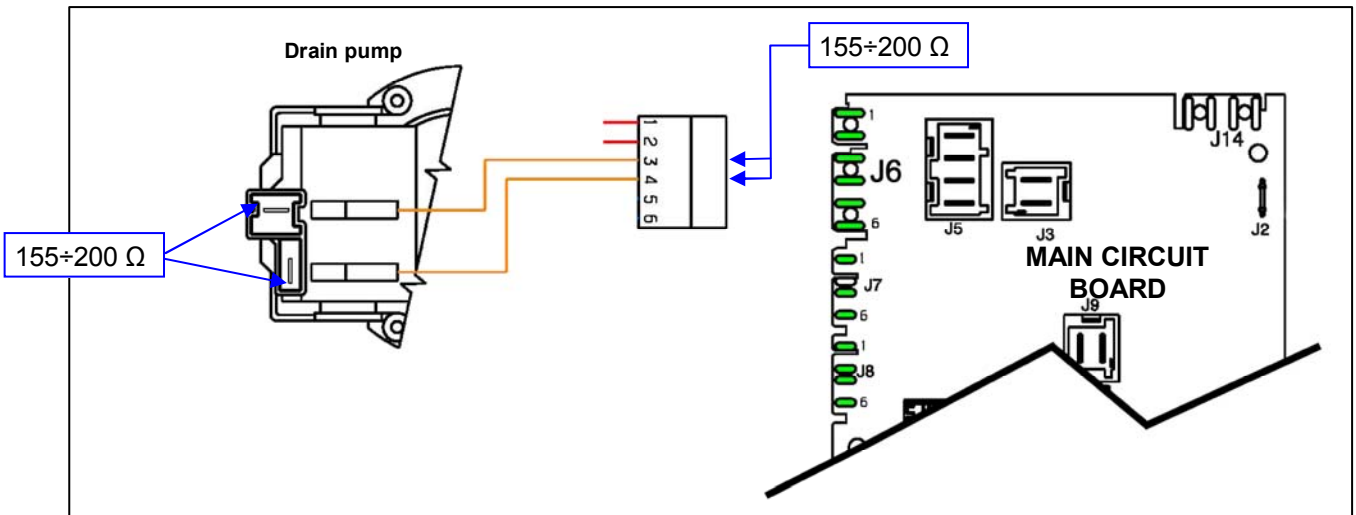


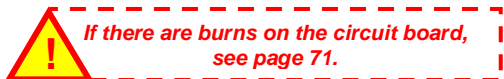
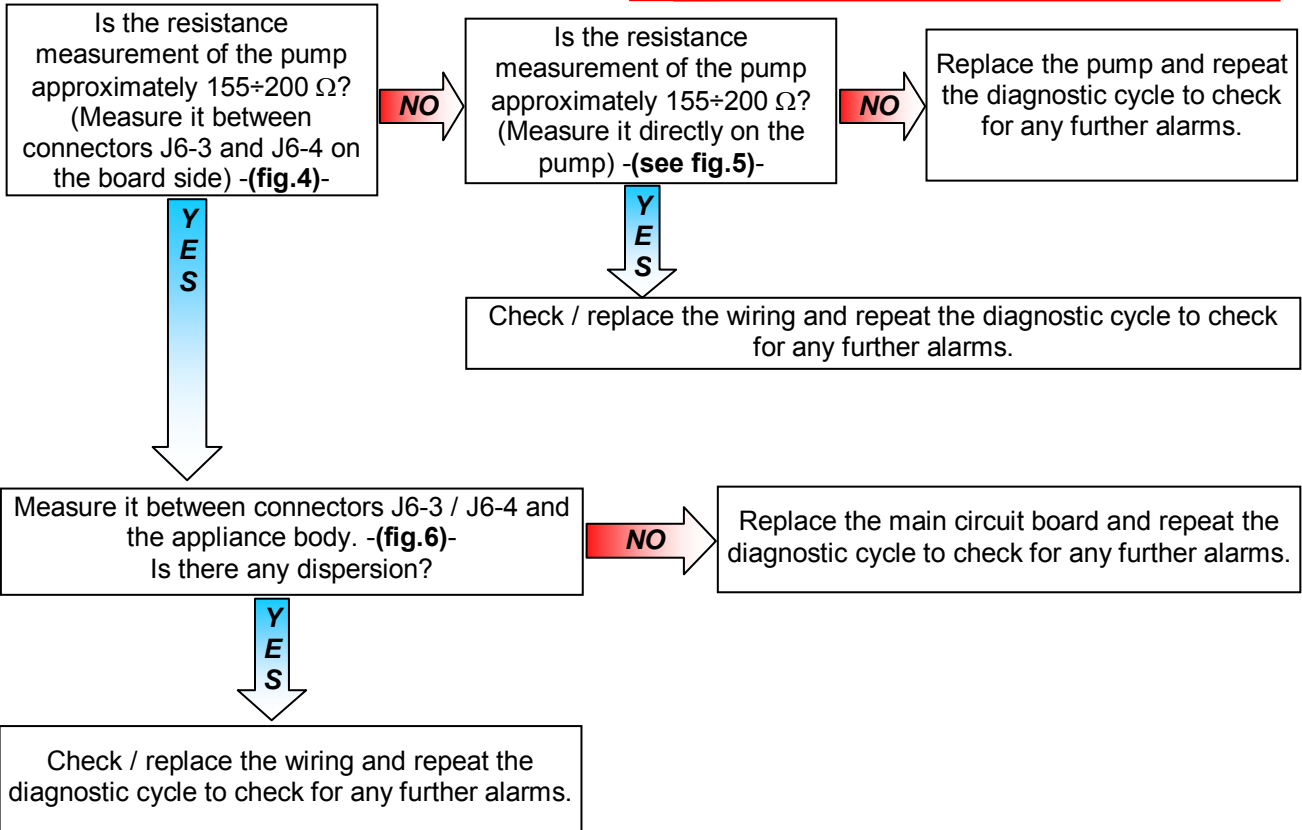
Fig. 5



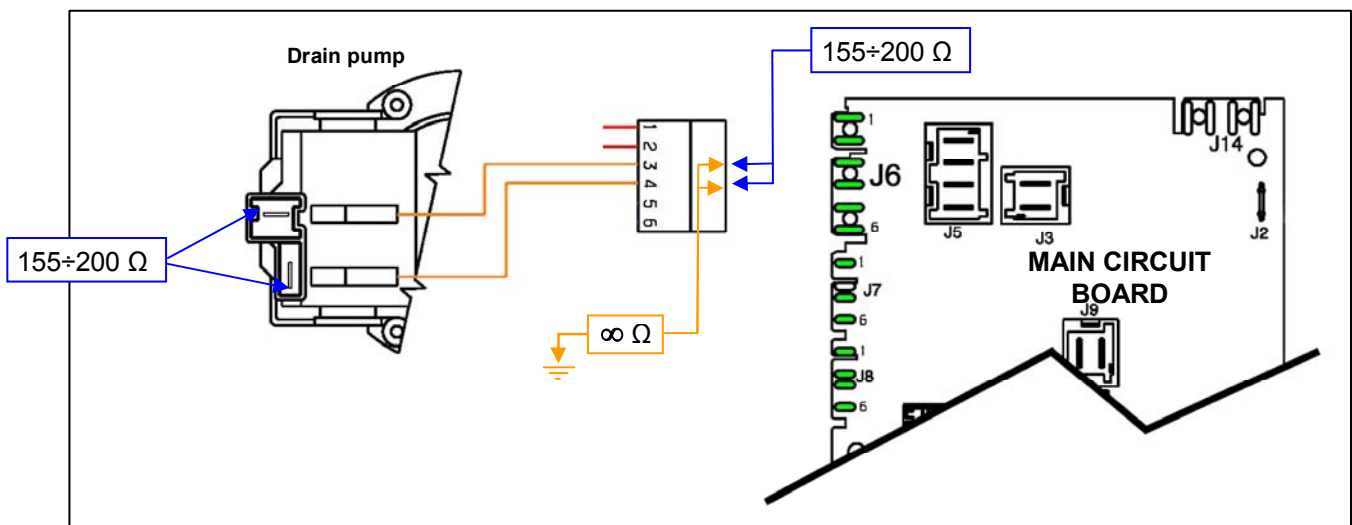
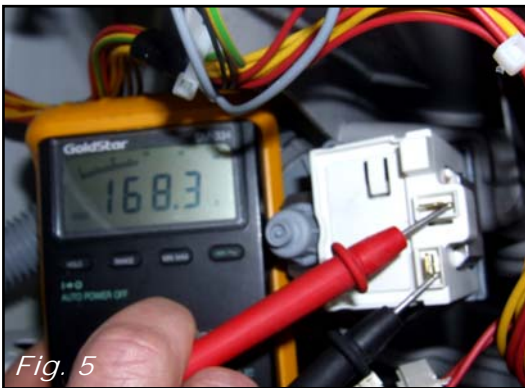
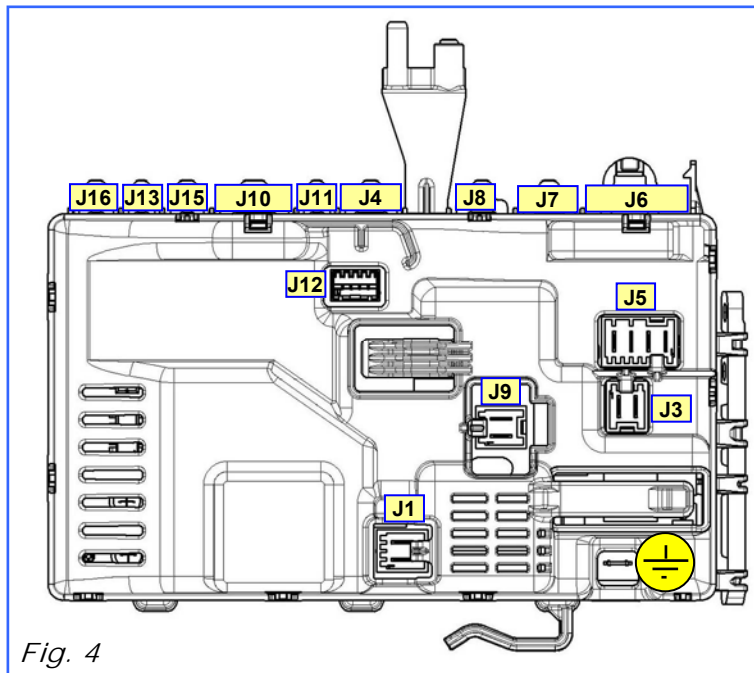
**!** If there are burns on the circuit board, see page 71.

**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 71.

<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 71.*

<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:*



*Check that all the connectors are correctly inserted.*

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**

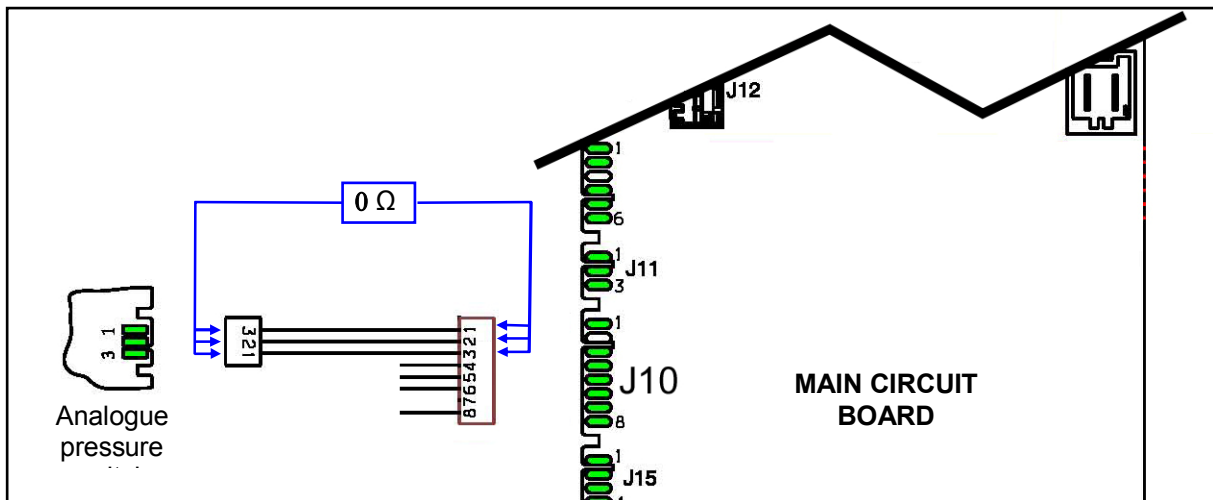
Replace the analogue pressure switch and repeat the diagnostic cycle to check for any further alarms codes.  
 Is the appliance displaying the same alarm code again?

**YES**

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



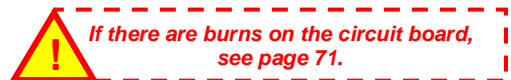
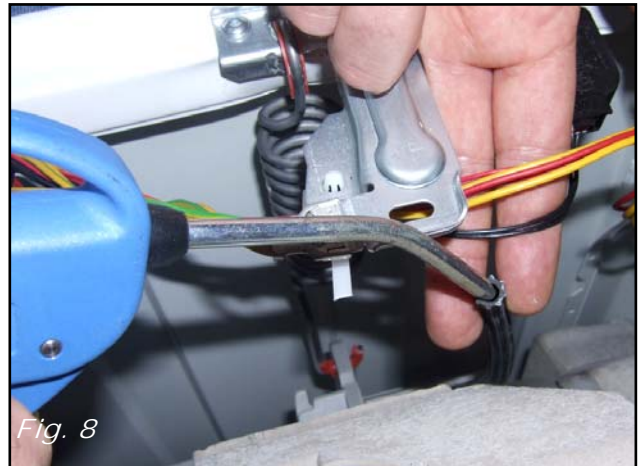
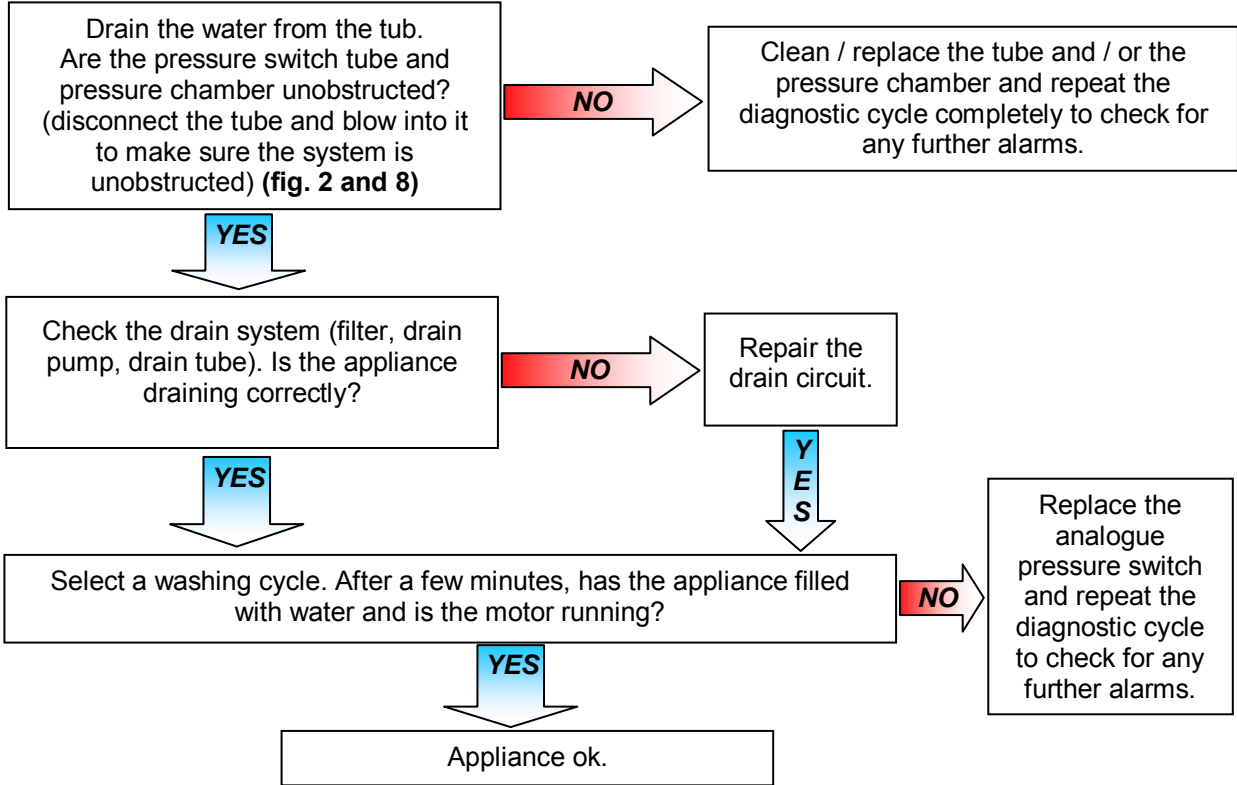
Fig. 7



*If there are burns on the circuit board, see page 71.*

<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:*

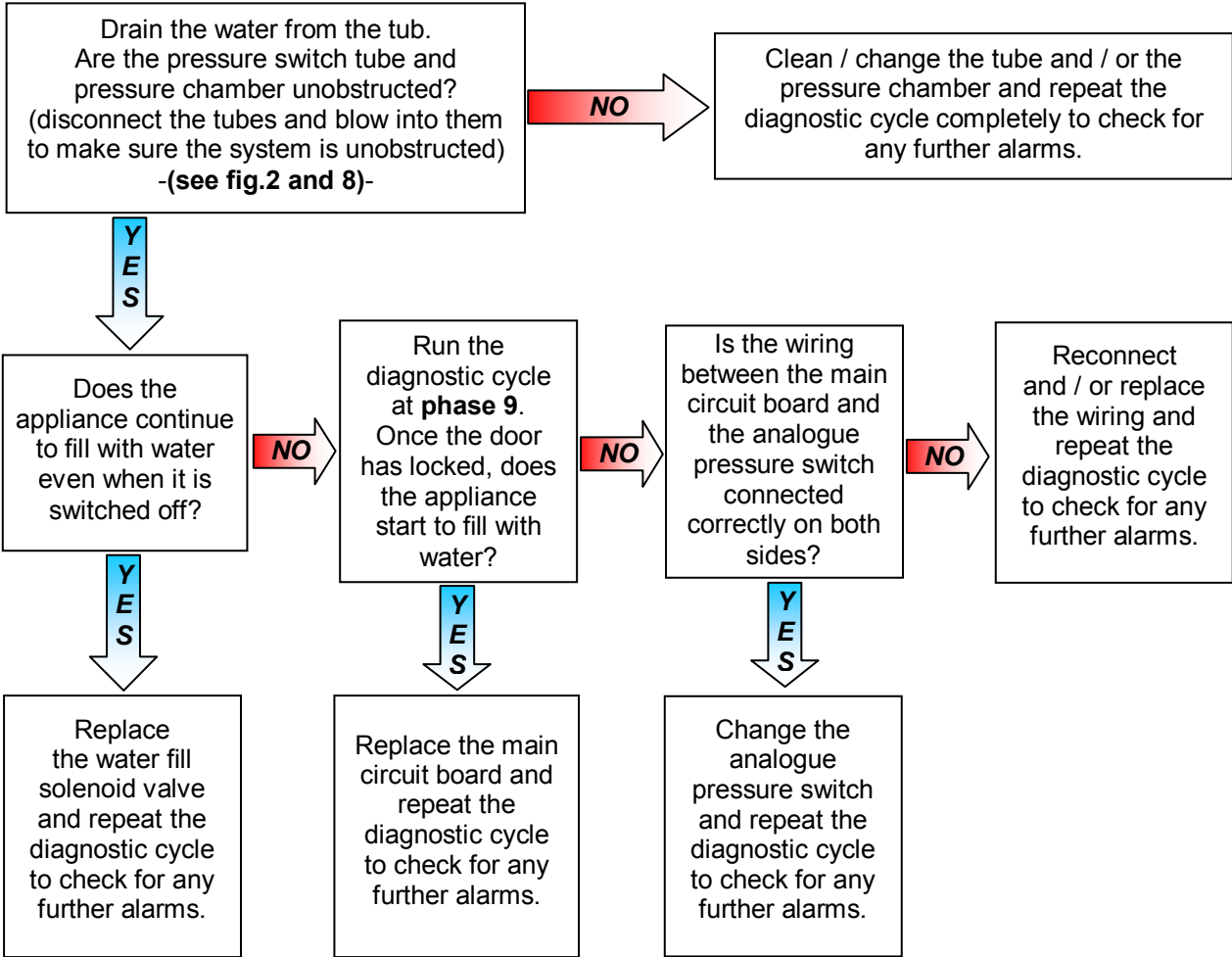


Fig. 2

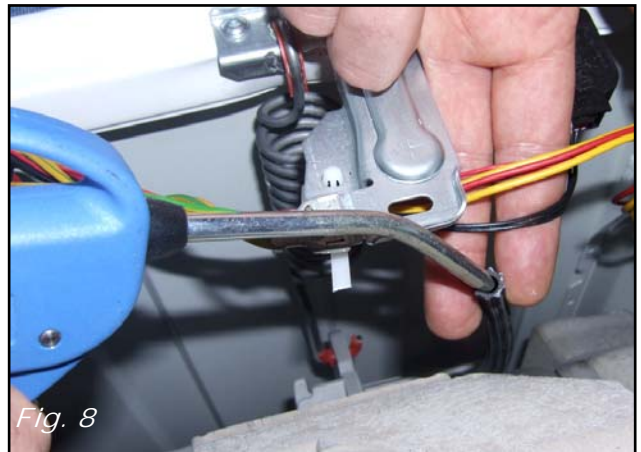
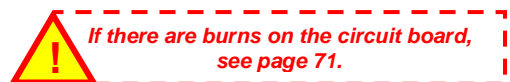
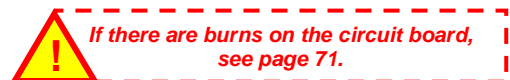
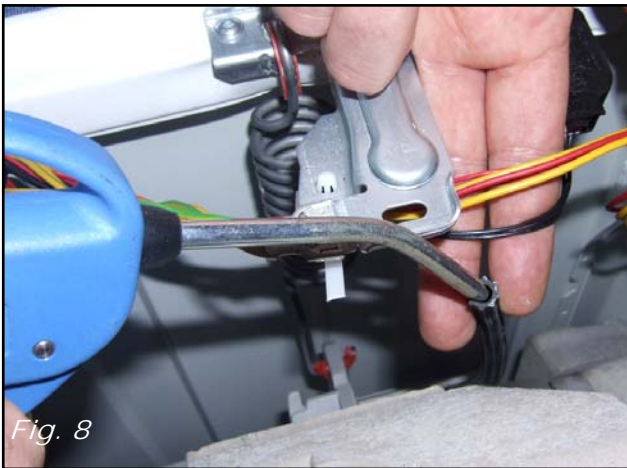
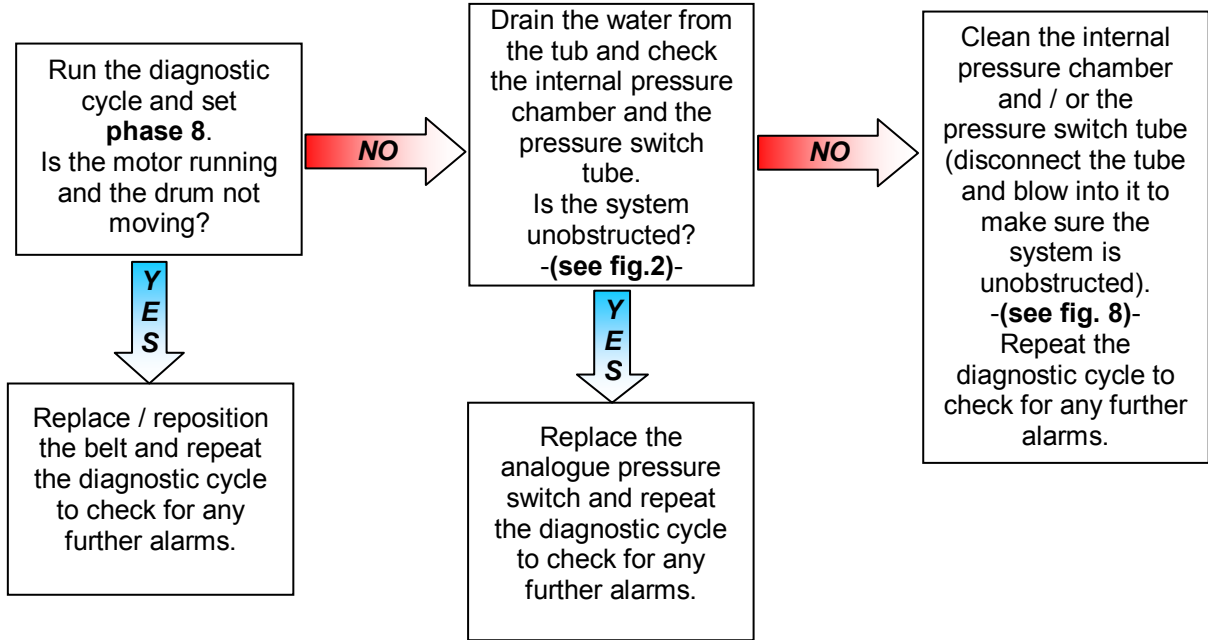


Fig. 8



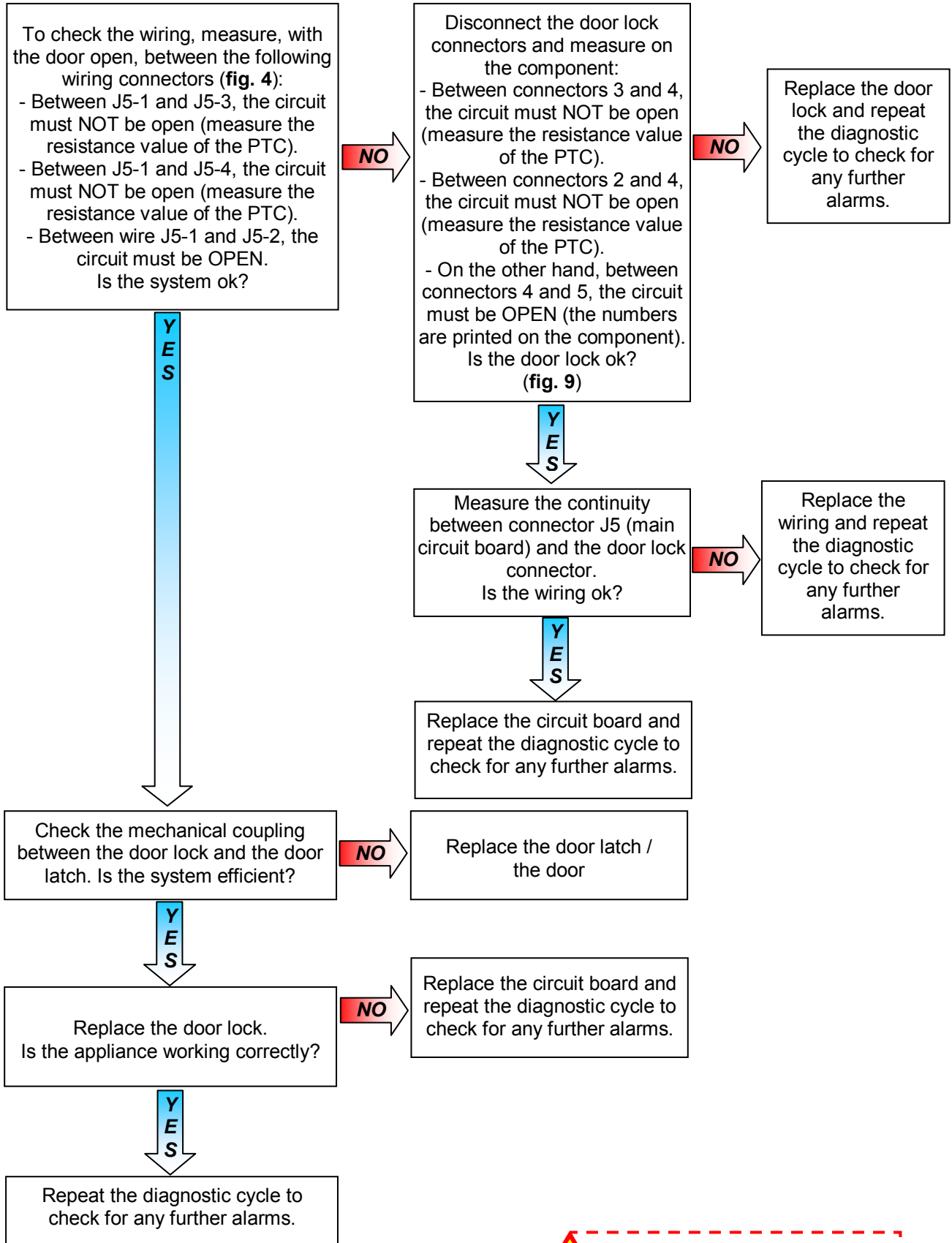
<b>E38</b>	<b>E38: Internal pressure chamber is clogged</b>	<b>E38</b>
	The analogue pressure switch is not able to measure any variation in the water level for at least 30 secs during drum rotation.	

Checks to perform:



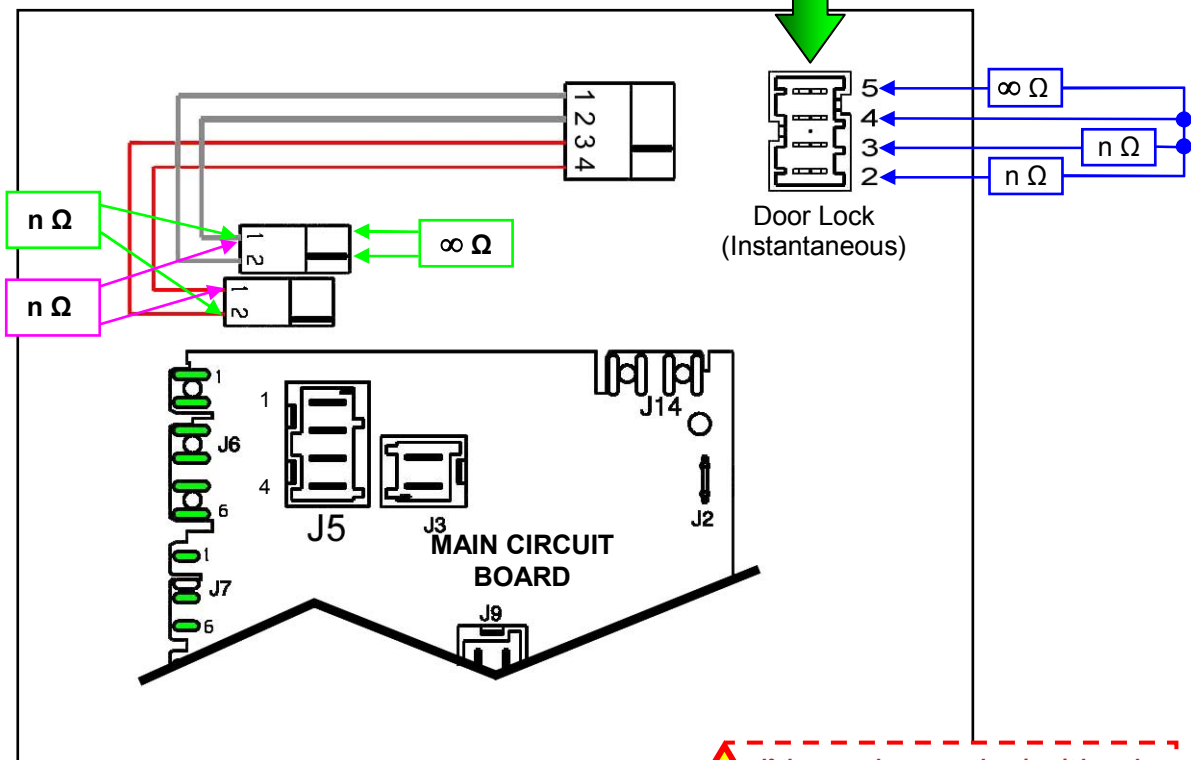
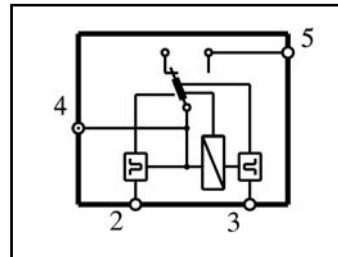
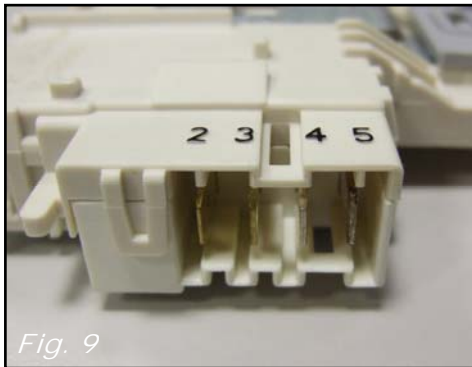
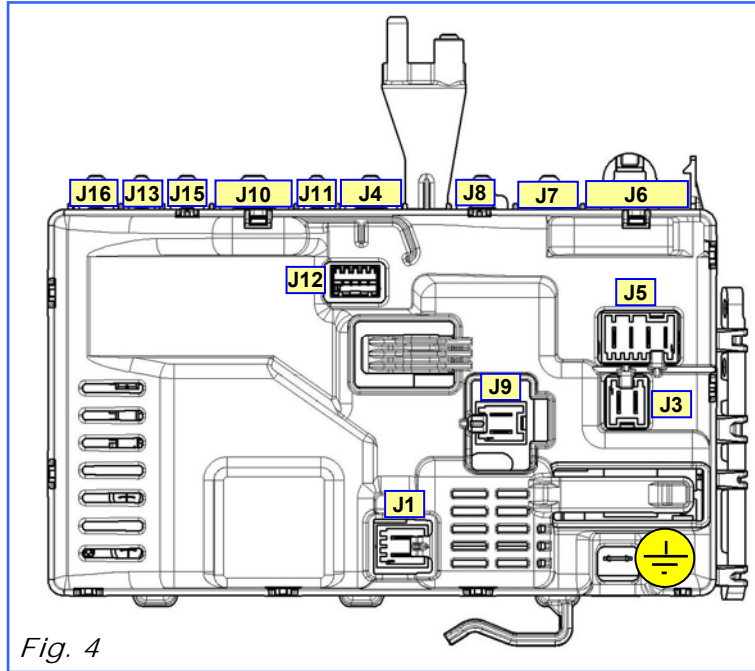
<b>E41</b>	<b>E41: Door open (device with 4 connections)</b>	<b>E41</b>
	Maximum time exceeded (5 pulses per instant).	

Checks to perform:





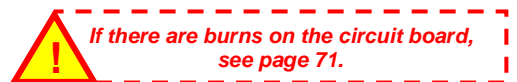
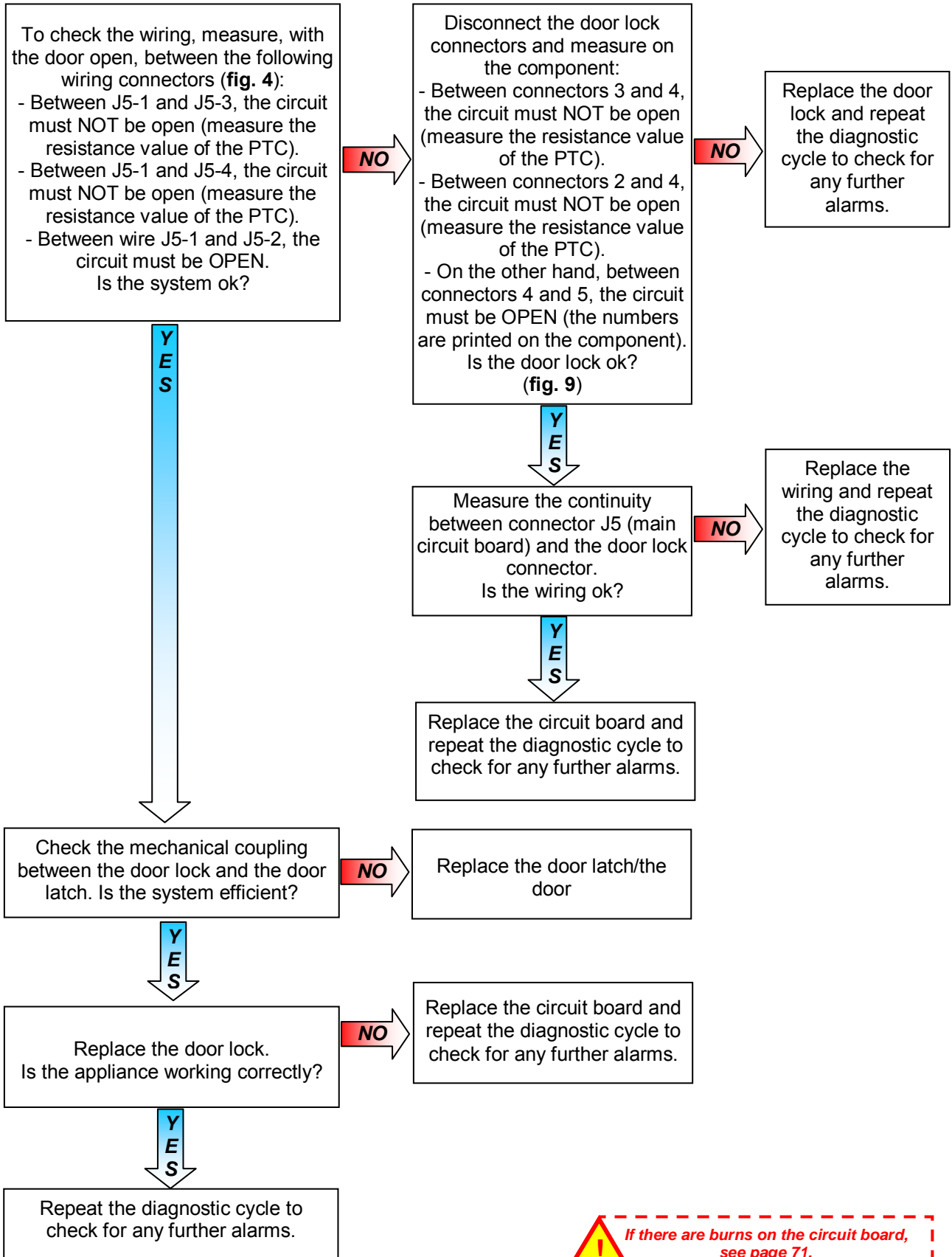
**E41 (device with 4 connections)**



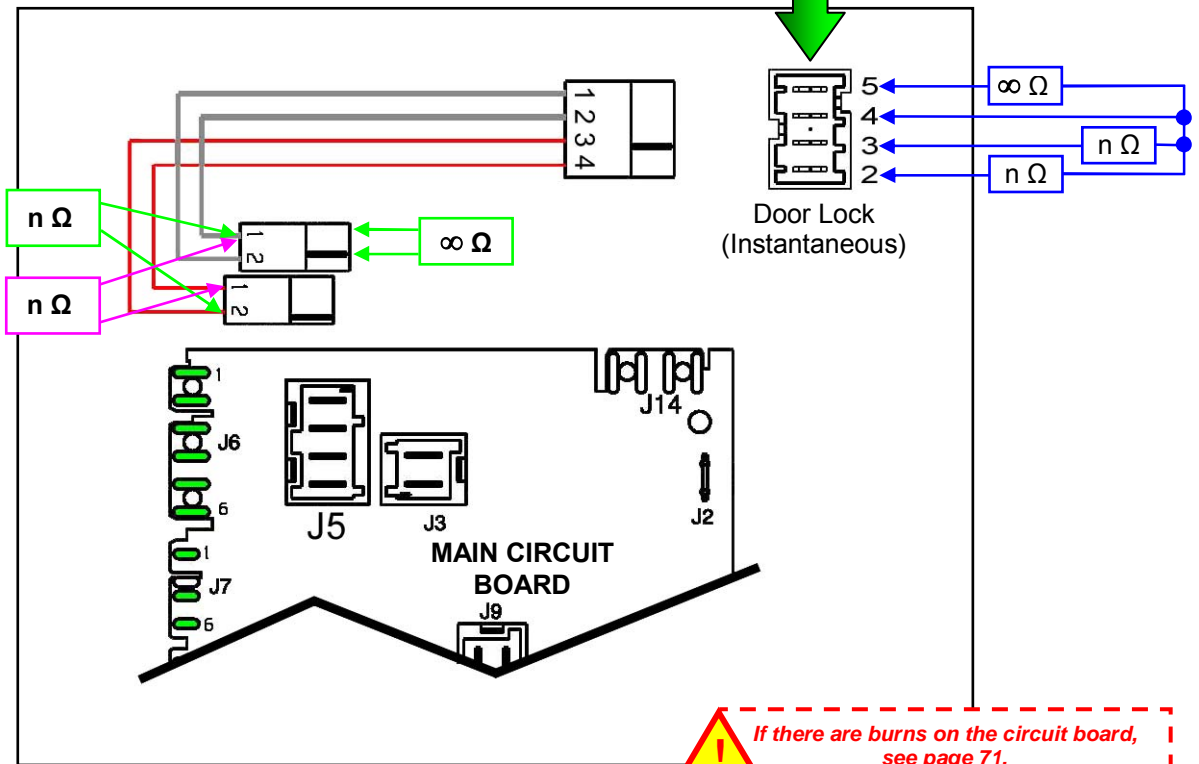
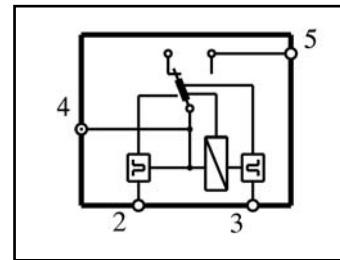
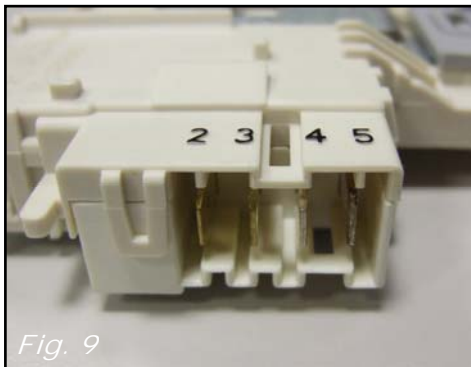
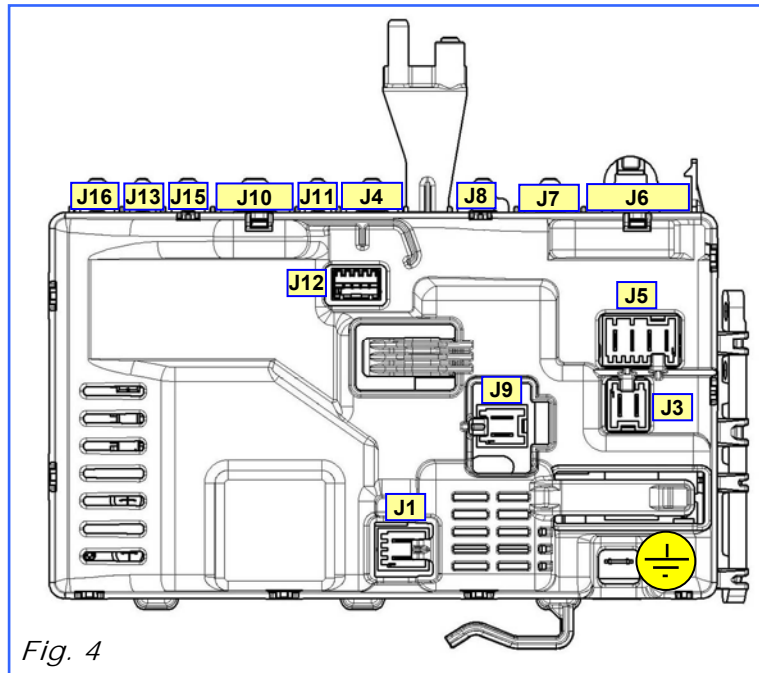
**!** If there are burns on the circuit board, see page 71.

<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.

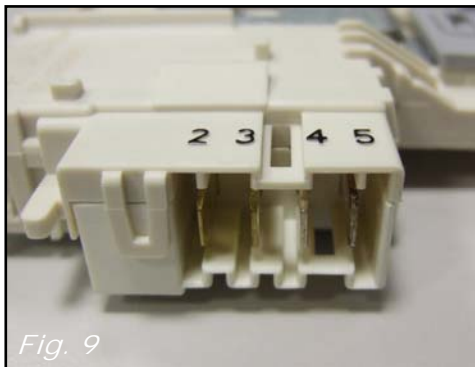
To check the wiring, measure, with the door open, between the following wiring connectors (**fig. 4**):

- 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**

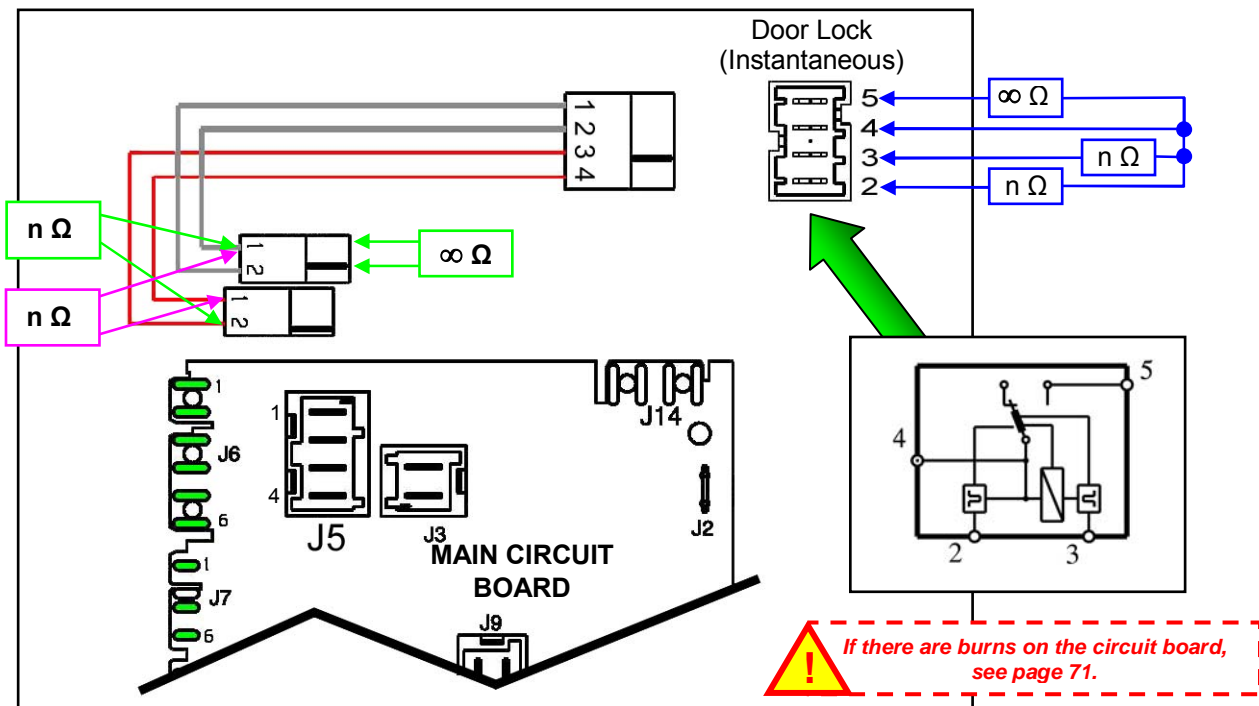
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

**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>
------------	--	------------

*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.*

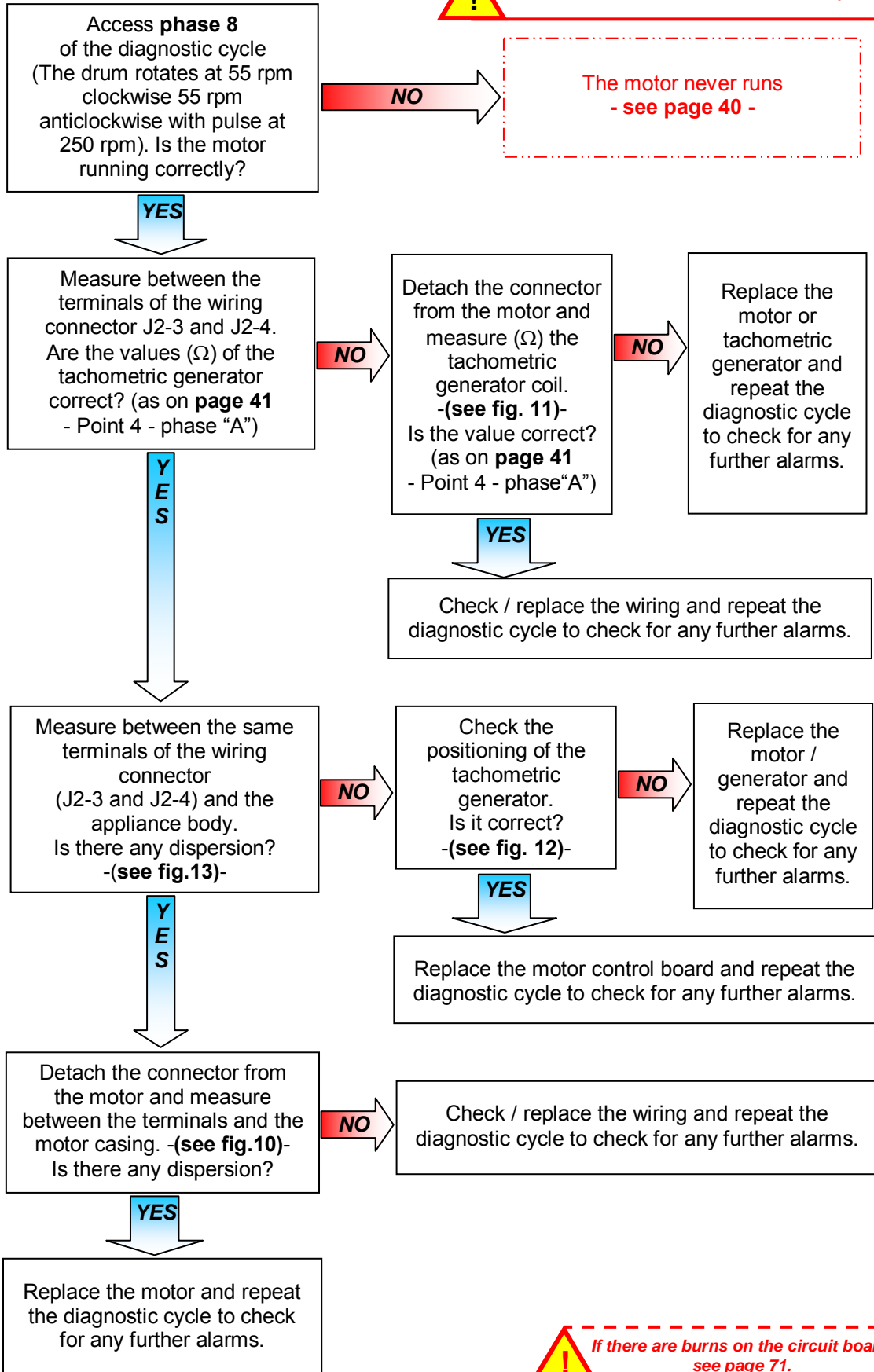
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



*If there are burns on the circuit board, see page 71.*

<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**

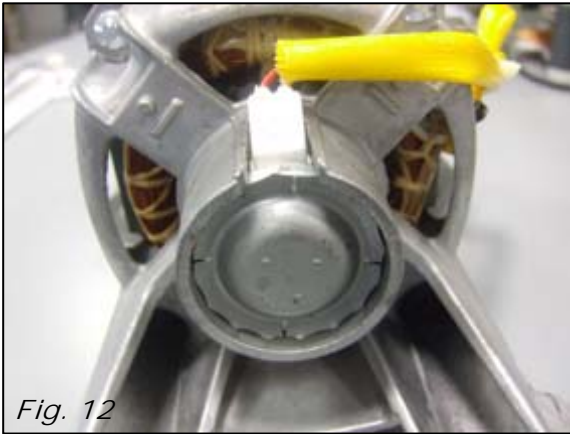


Fig. 12

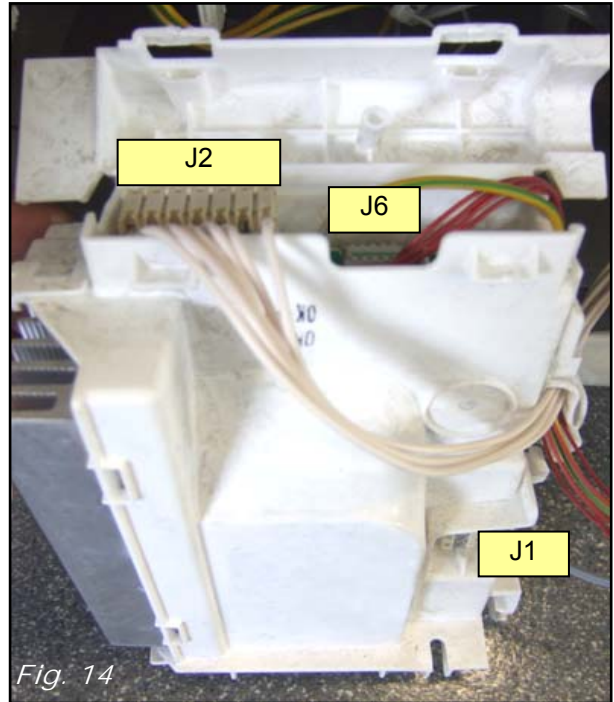


Fig. 14

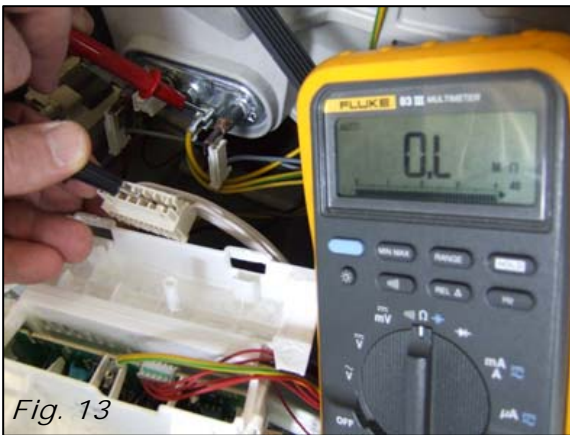


Fig. 13



Fig. 10

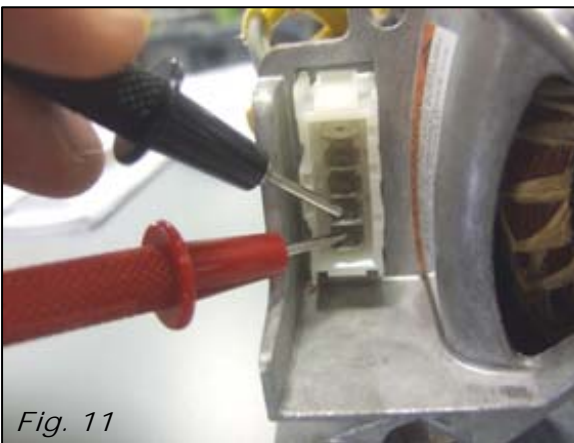
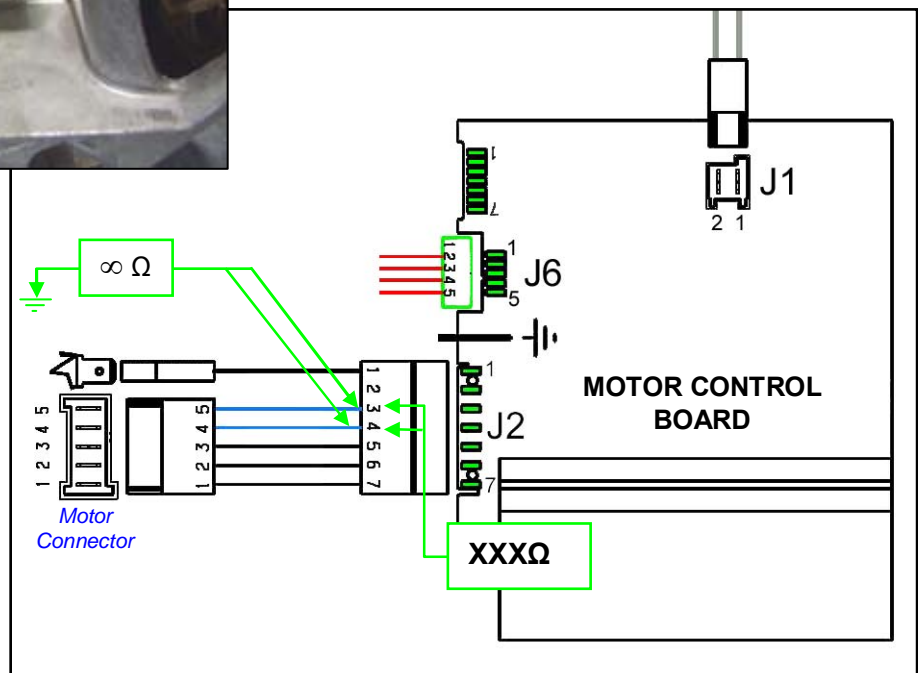


Fig. 11



**!** If there are burns on the circuit board, see page 71.

<b>E52</b>	<b>E52: No signal from motor tachometric generator (second 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**

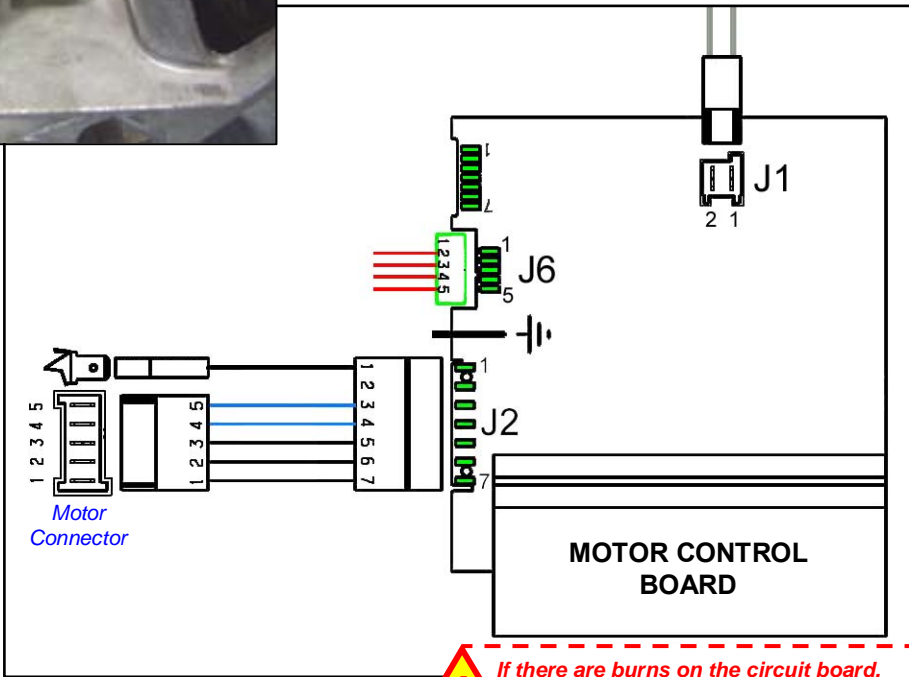
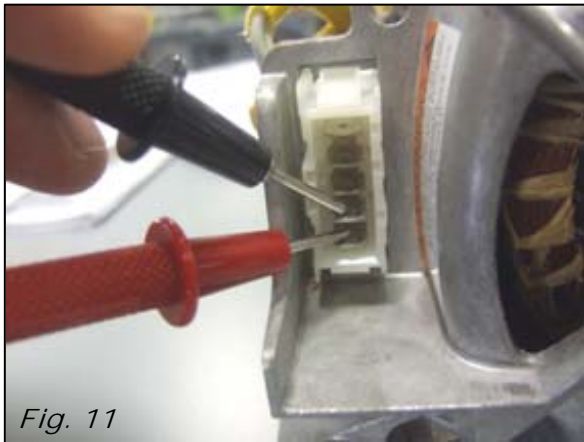
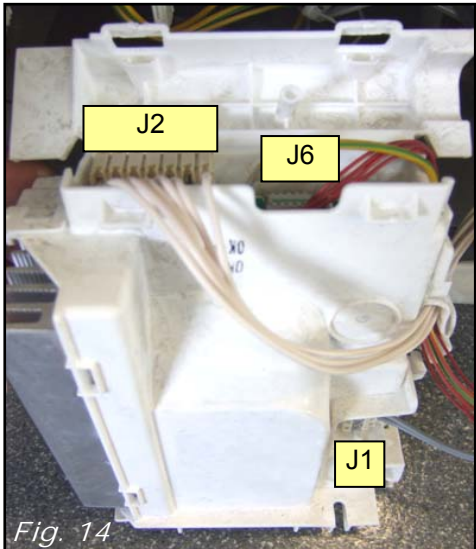
Replace the motor and repeat the diagnostic cycle to check for any further alarms.

**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.

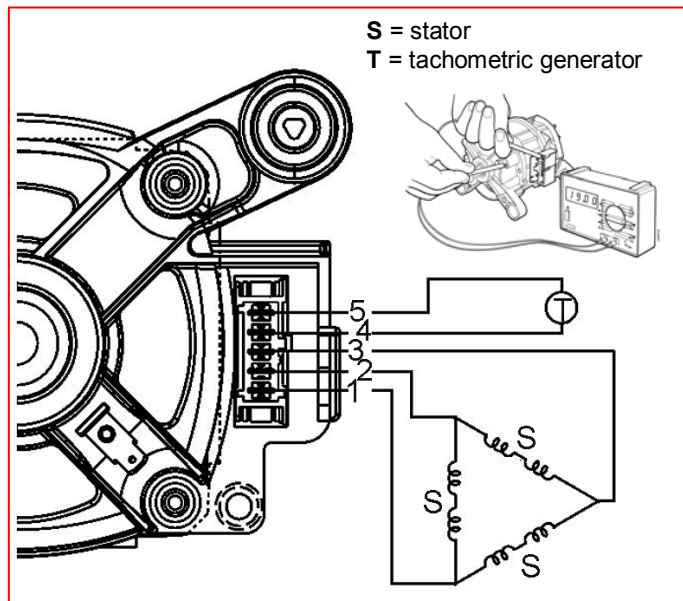


**!** If there are burns on the circuit board, see page 71.



### 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).



	MOTOR TERMINAL BOARD TERMINALS	CHECK:	MOTORS		
			C.E.SET.	ACC (SOLE) NIDEC	ECM
<b>A</b>	<b>4-5</b>	Tachometric generator winding	108÷133	169÷207	85÷98
<b>B</b>	<b>1-2</b>	Stator winding	5.0÷5.8	5.0÷5.8	5.0÷5.8
<b>C</b>	<b>2-3</b>	Stator winding	5.0÷5.8	5.0÷5.8	5.0÷5.8
<b>D</b>	<b>3-1</b>	Stator winding	5.0÷5.8	5.0÷5.8	5.0÷5.8



Fig. 10

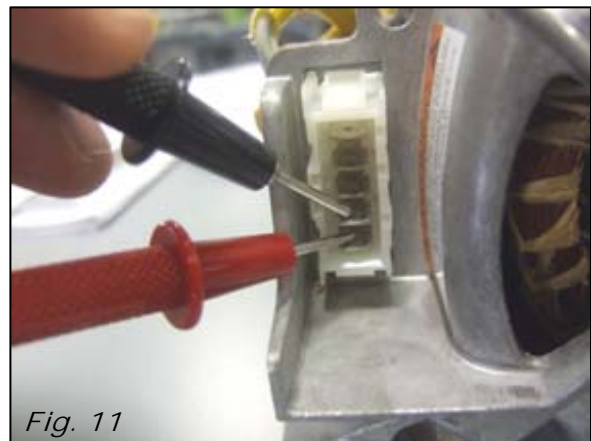
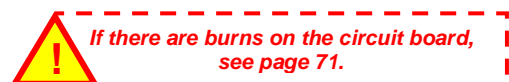


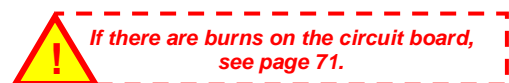
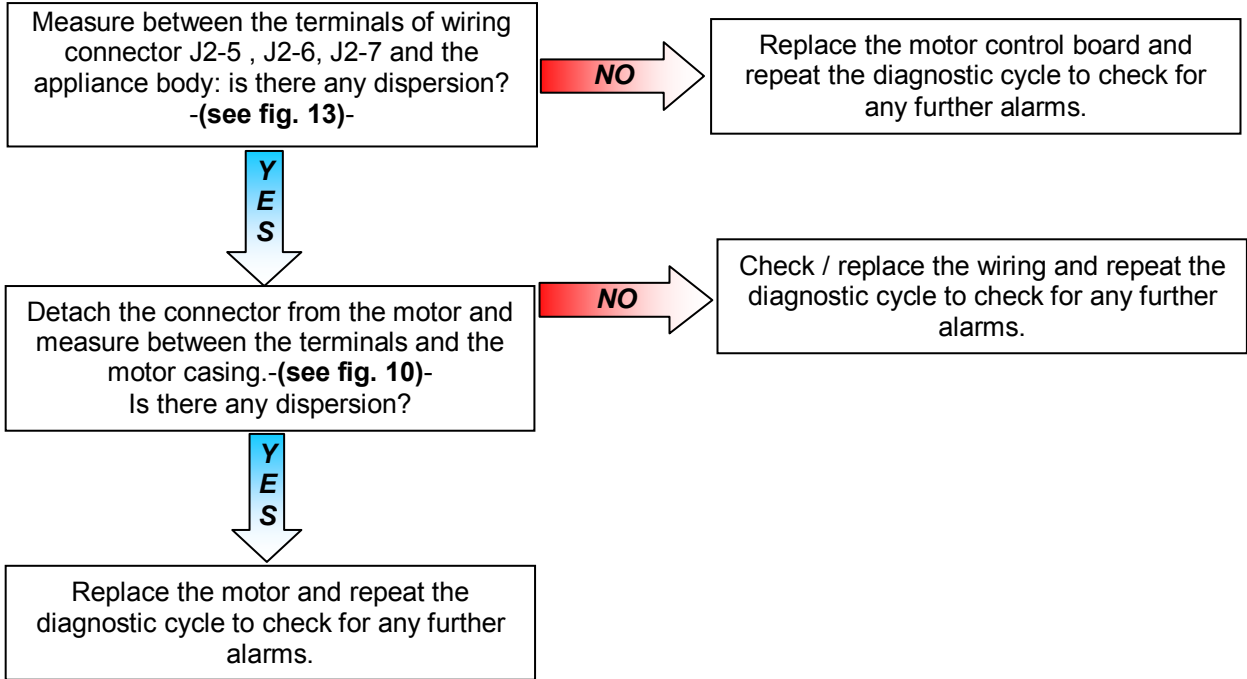
Fig. 11



If there are burns on the circuit board, see page 71.

<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**

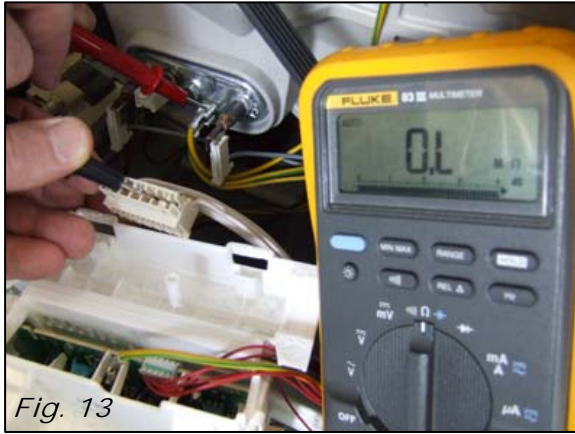


Fig. 13

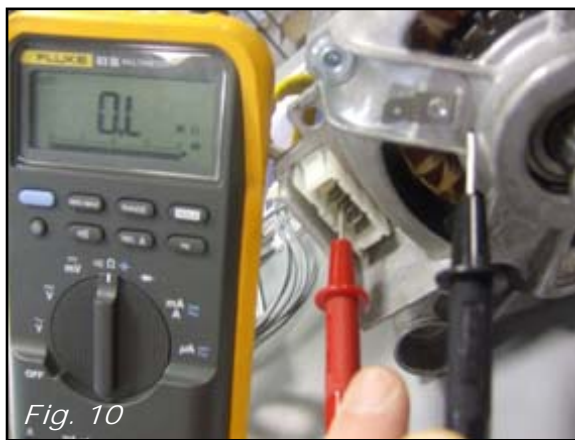


Fig. 10

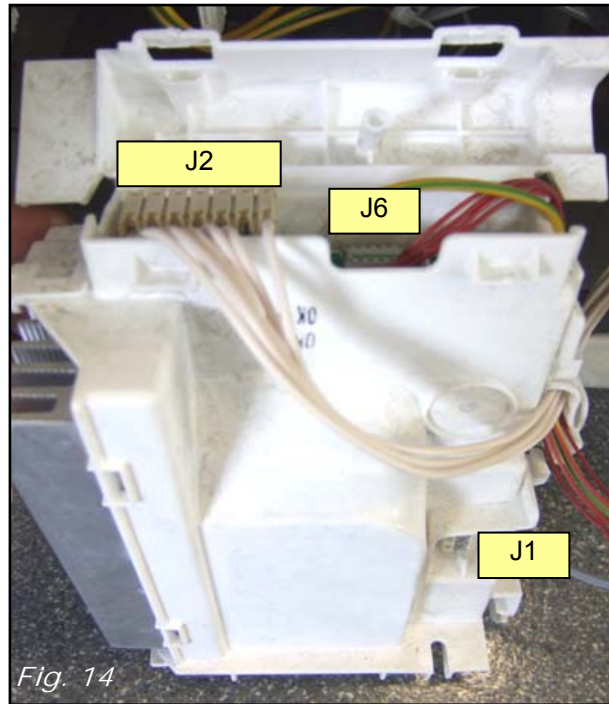
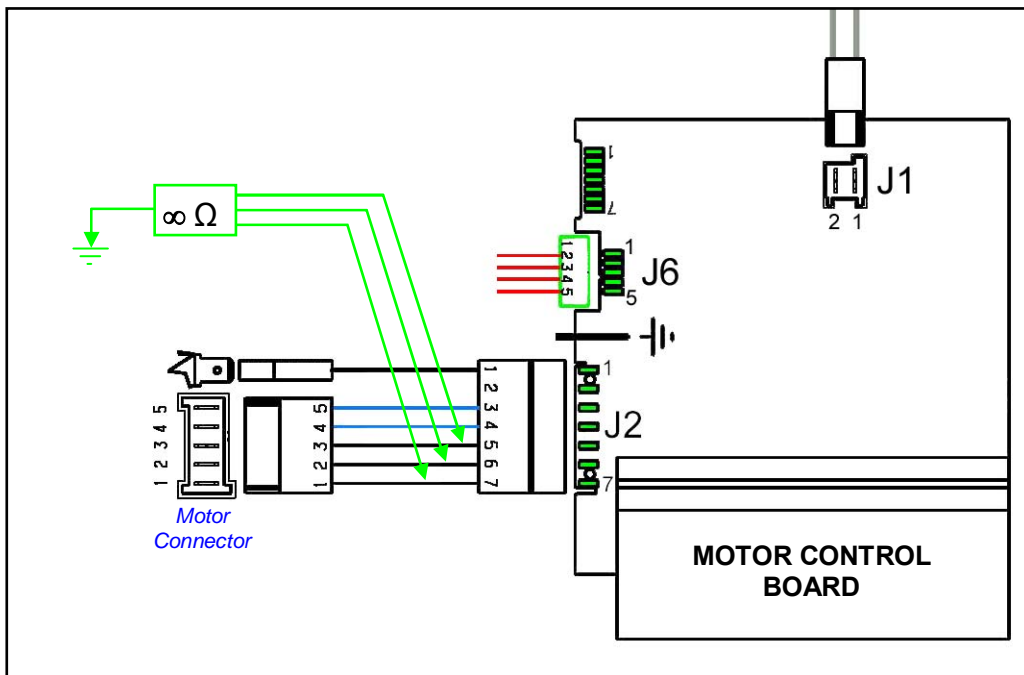


Fig. 14



**!** If there are burns on the circuit board, see page 71.

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

*Checks to perform:*

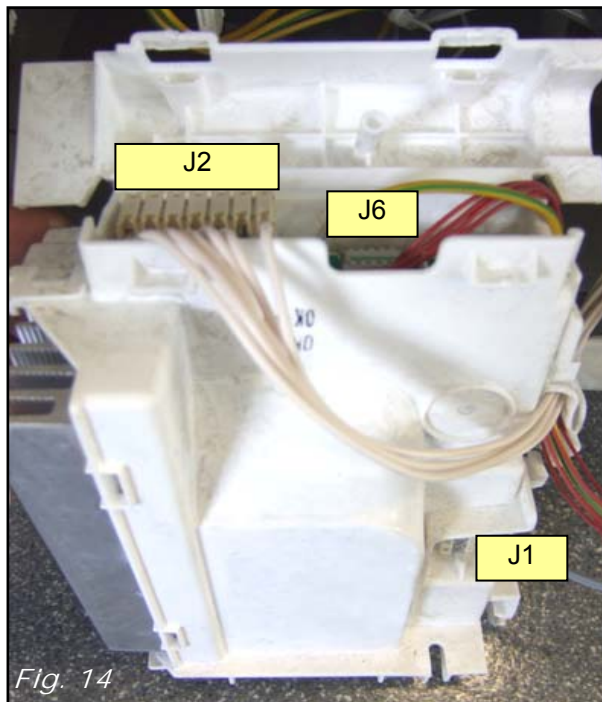
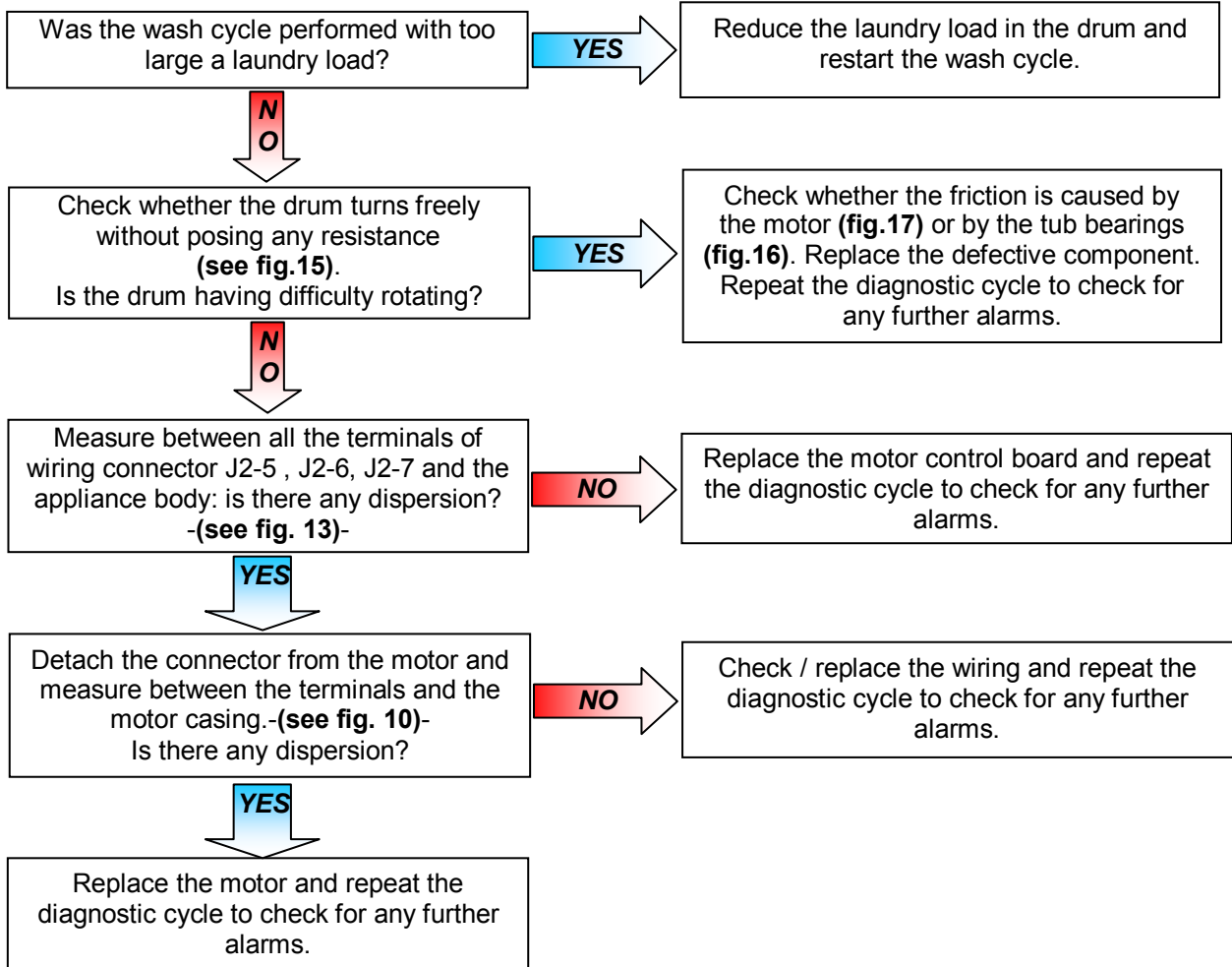
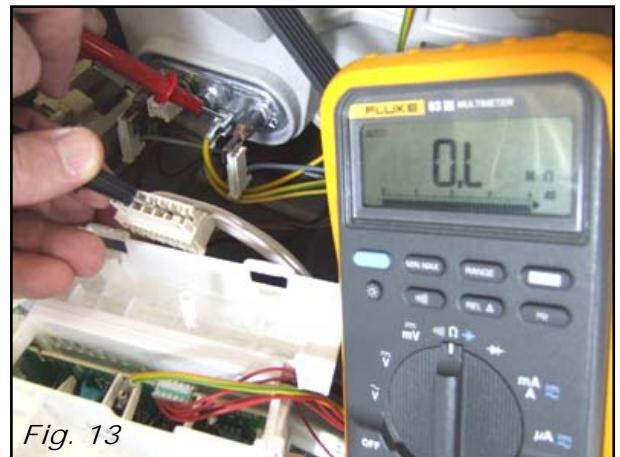
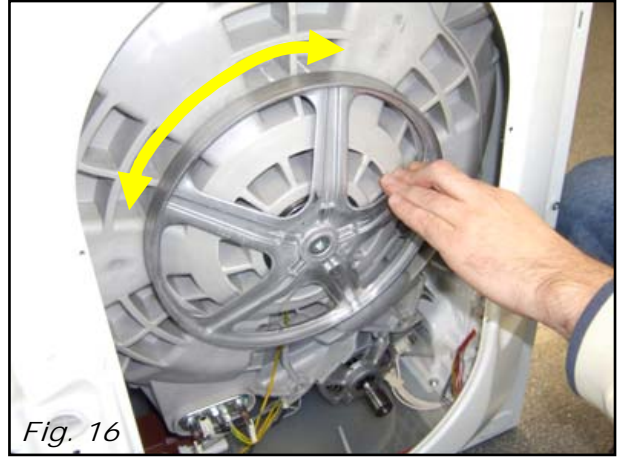


Fig. 14

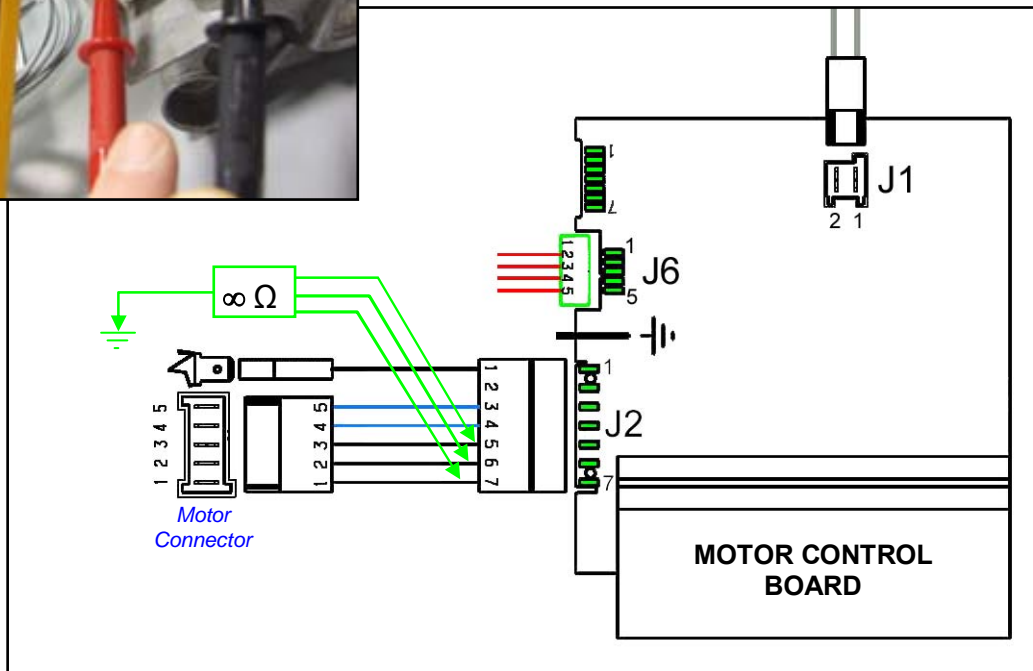




**E58**

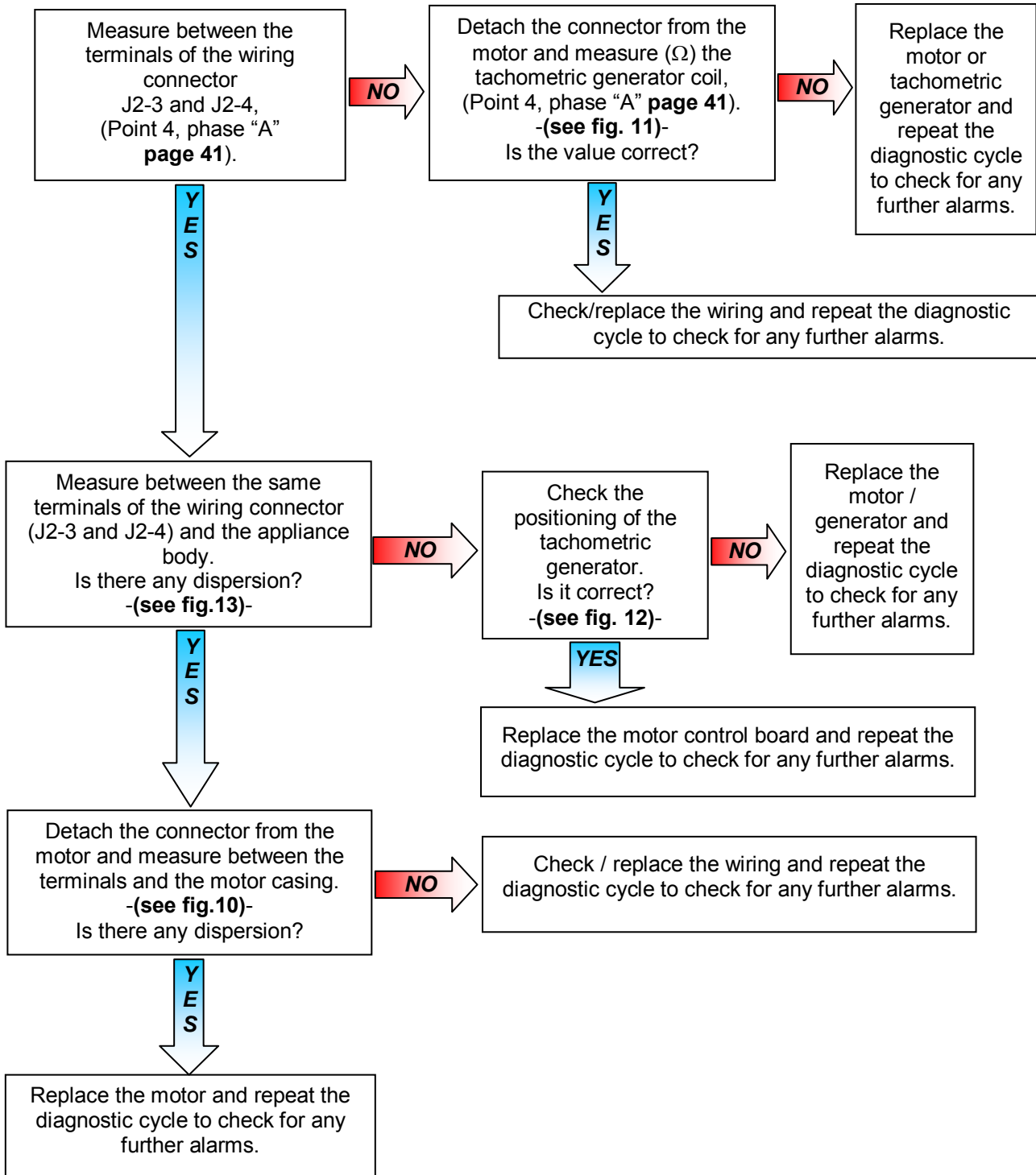


**!** If there are burns on the circuit board, see page 71.



<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:





**E59**



Fig. 12

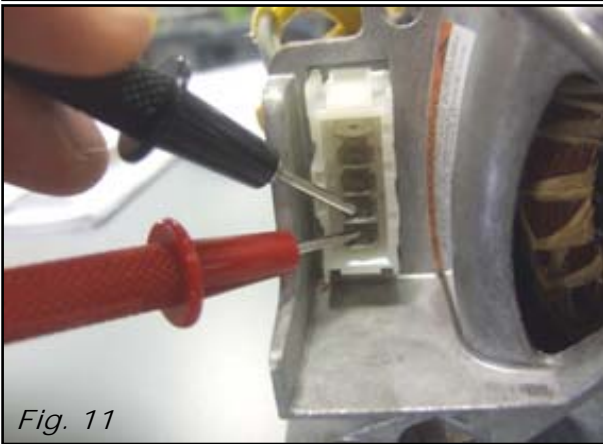


Fig. 11

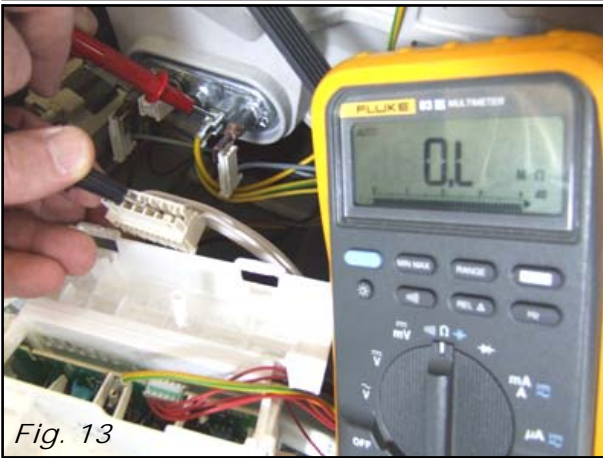


Fig. 13

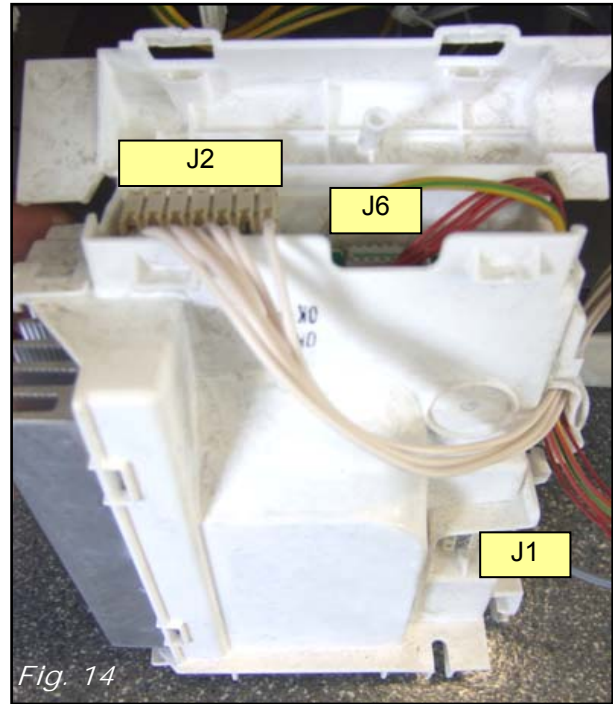
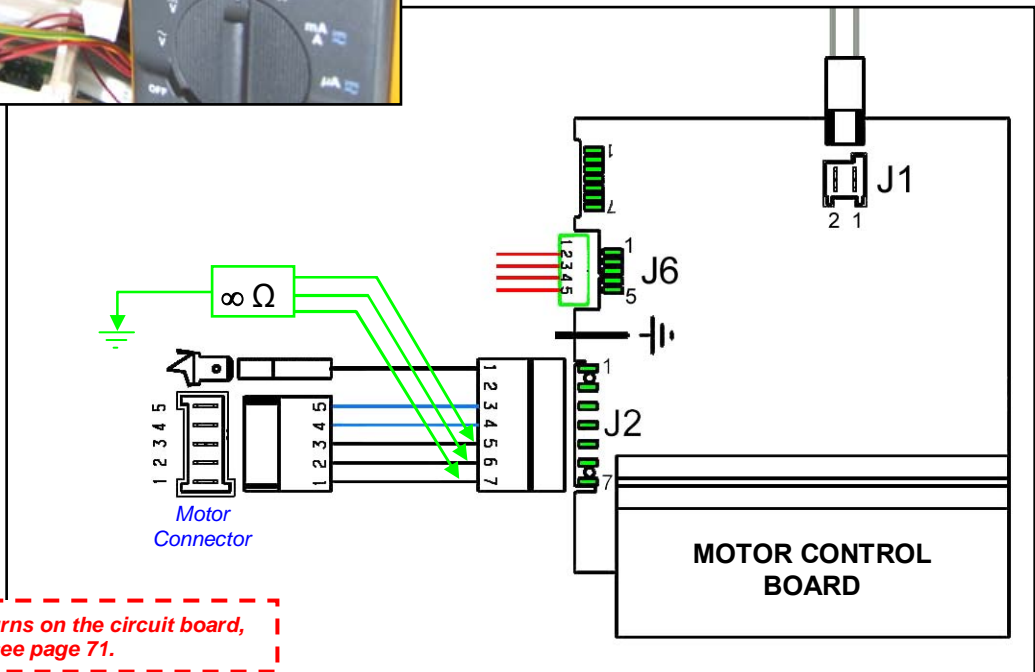


Fig. 14



Fig. 10



**!** If there are burns on the circuit board, see page 71.

<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**

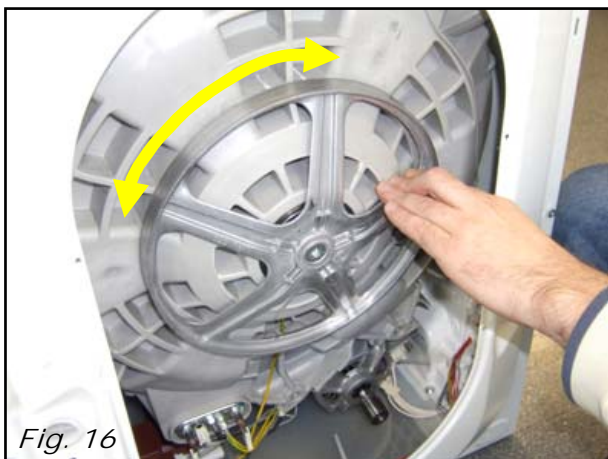
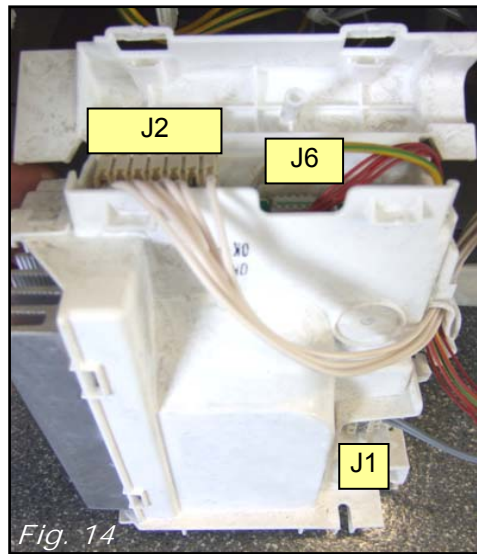
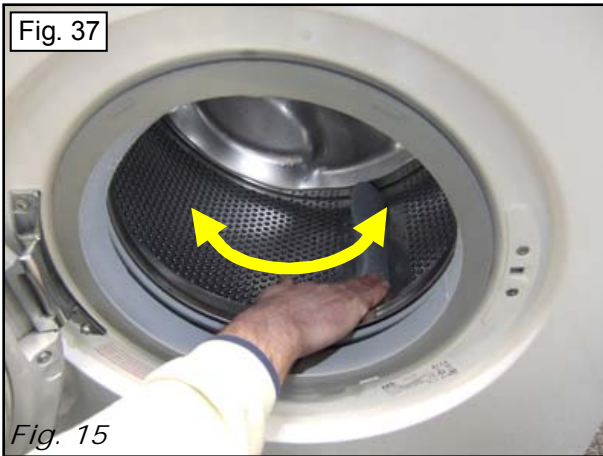
Check whether the drum turns freely without posing any resistance (see fig.15).  
Is the drum having difficulty rotating?

**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**

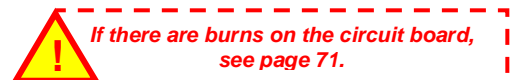
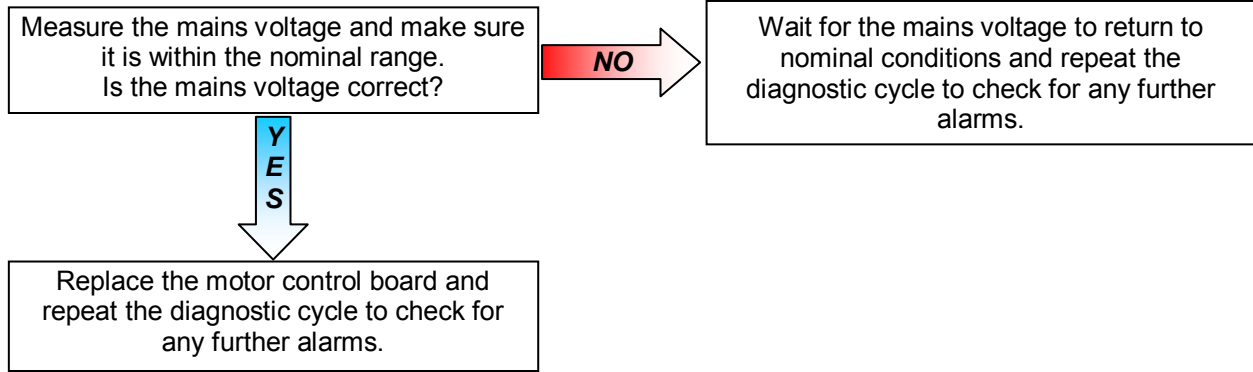
Replace the motor control board and repeat the diagnostic cycle to check for any further alarms.



**!** If there are burns on the circuit board, see page 71.

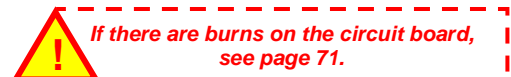
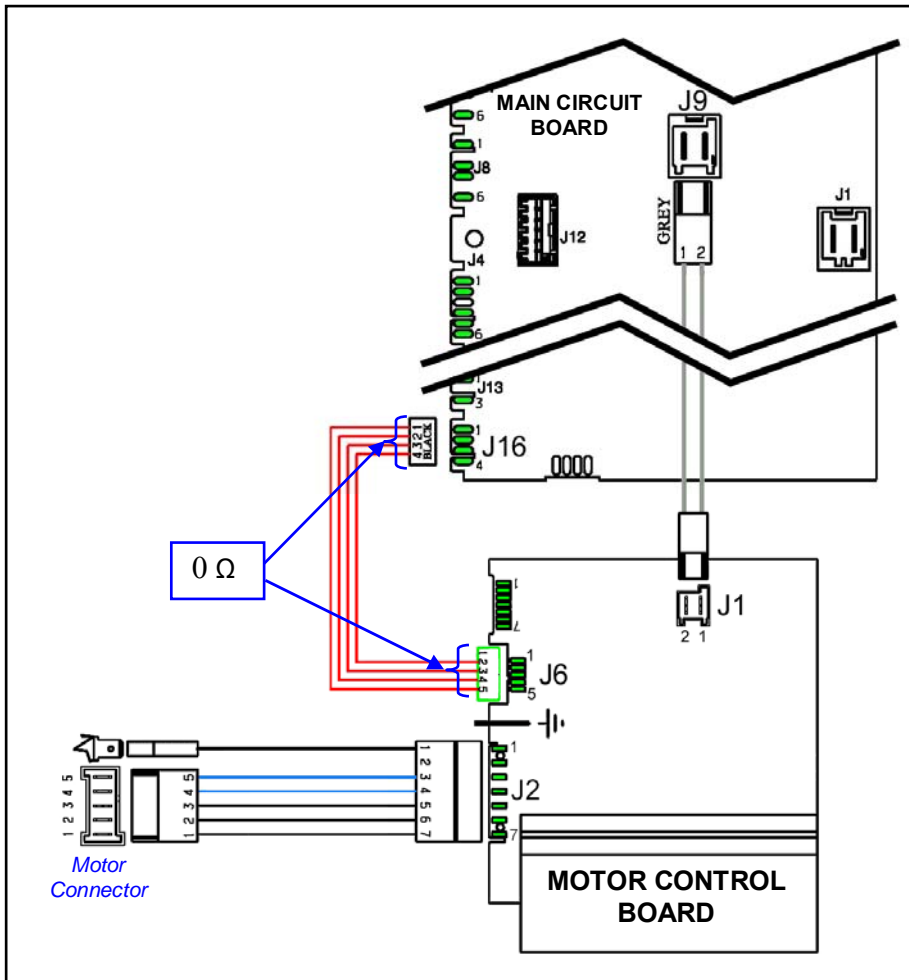
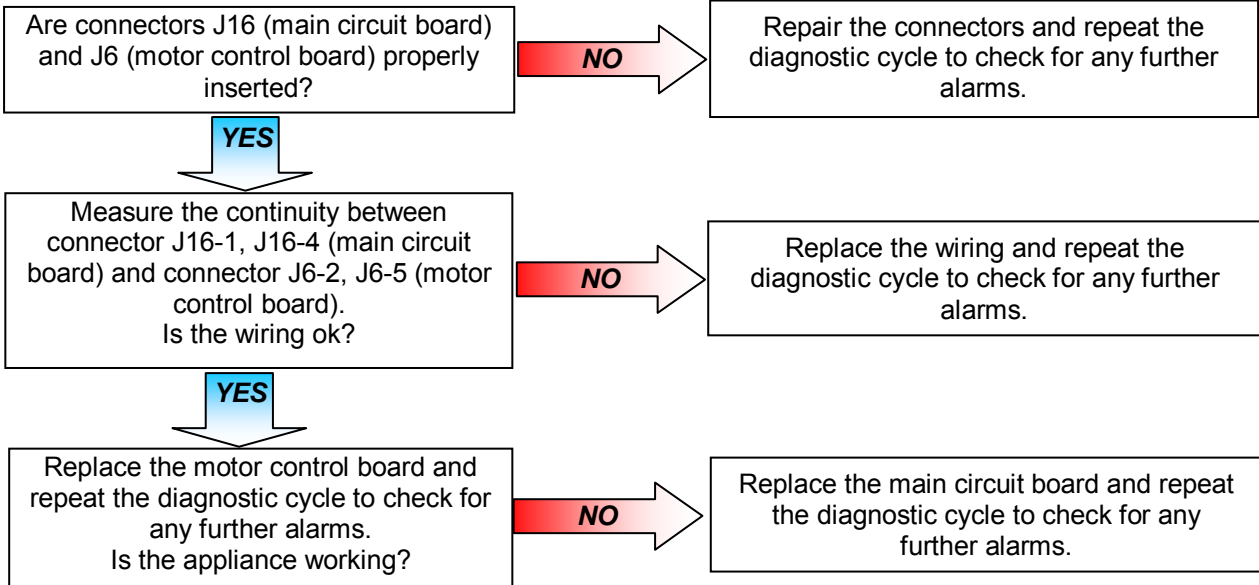
<b>E5C</b>	<b>E5C: The Inverter board input voltage is too high (beyond 430 V)</b>	<b>E5C</b>
	The voltage should stay above 430 V for at least 5 seconds.	

*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>

*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.

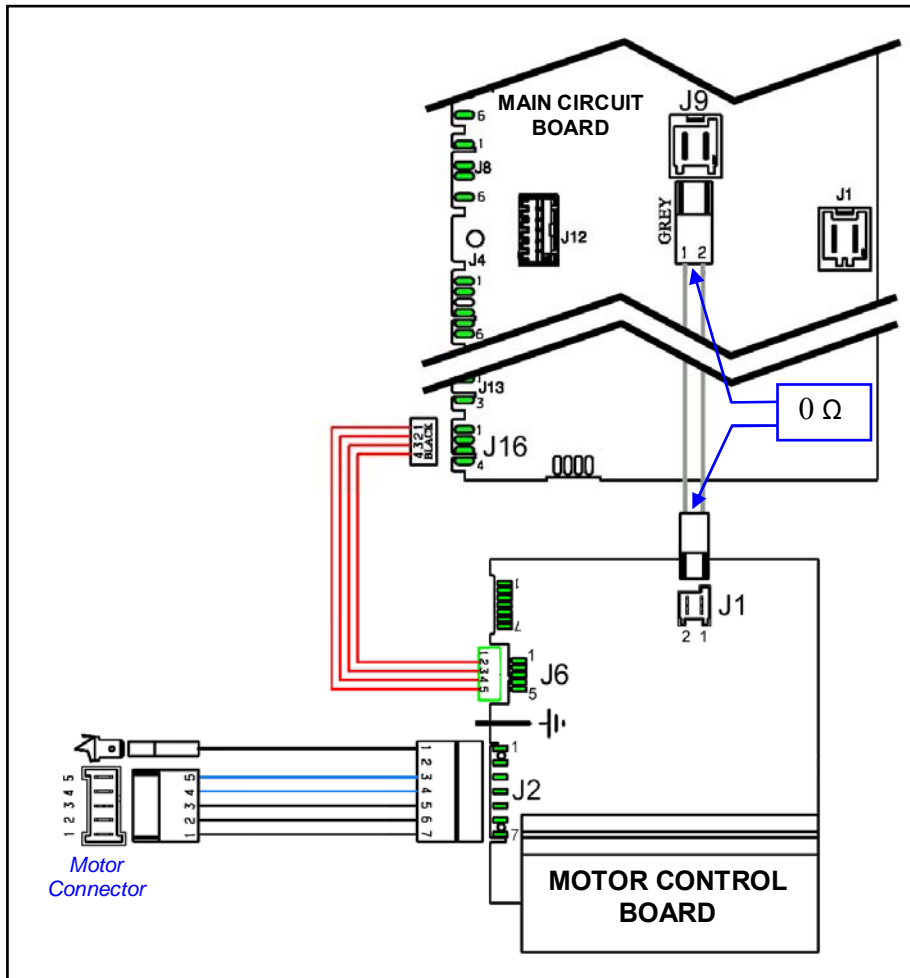
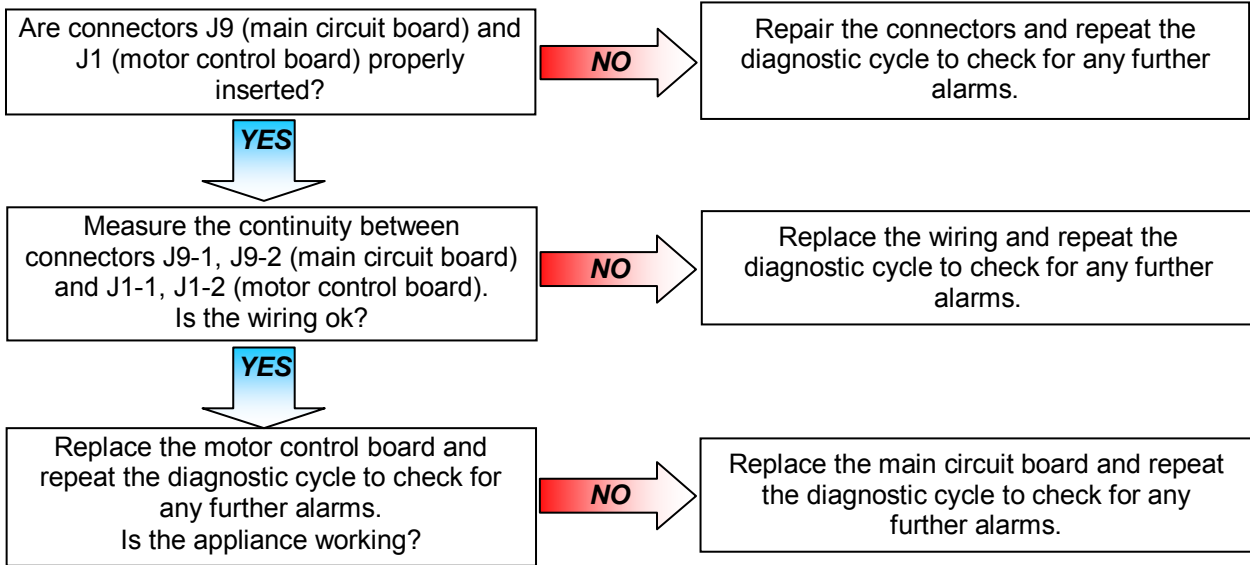


*If there are burns on the circuit board, see page 71.*



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

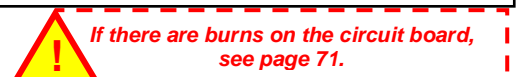
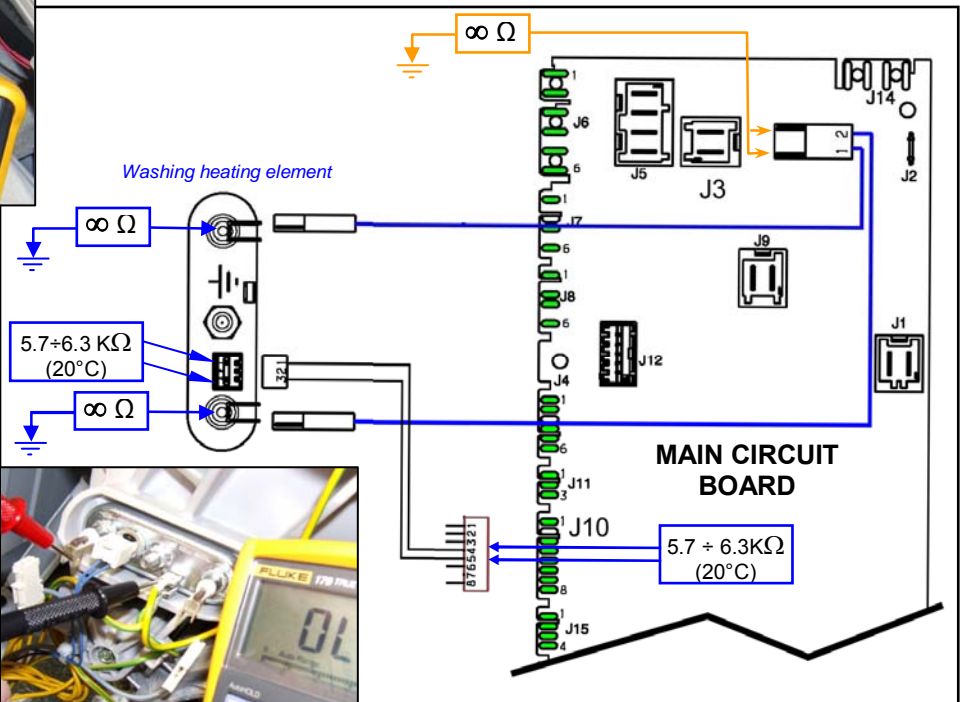
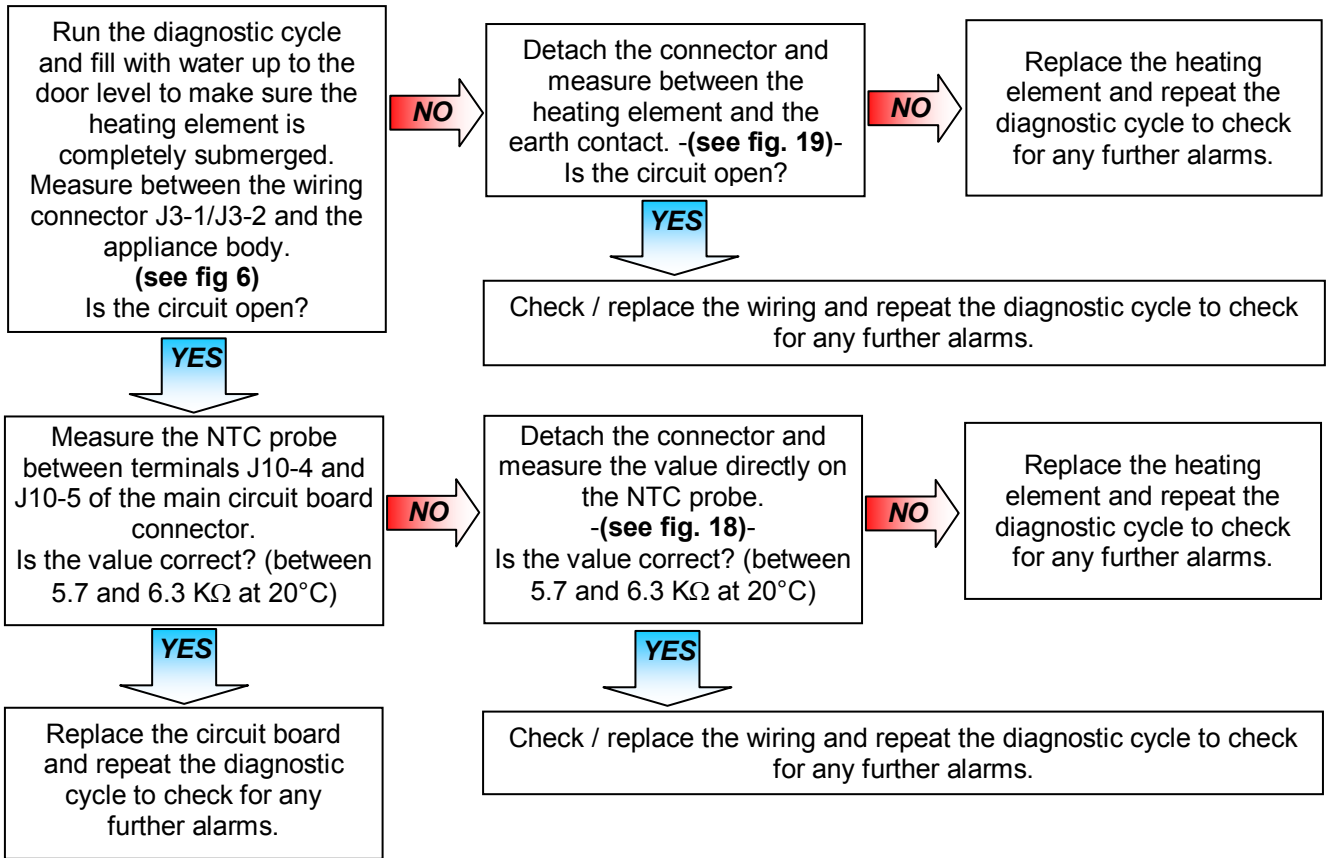
Checks to perform:





<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:*



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

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- Is there any dispersion?

**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.

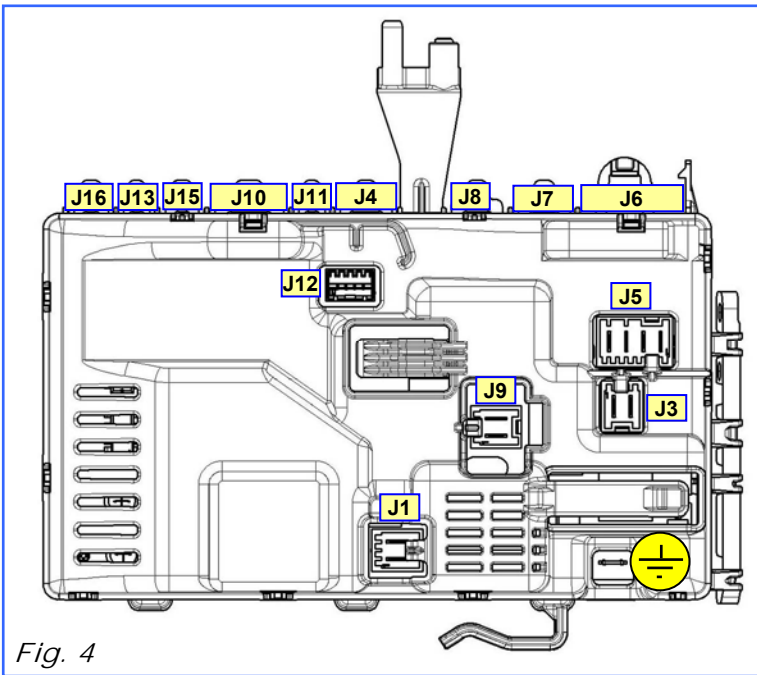


Fig. 4



Fig. 6

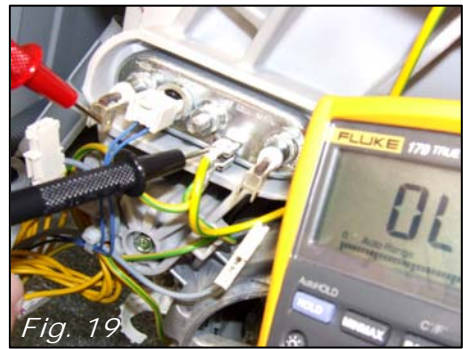
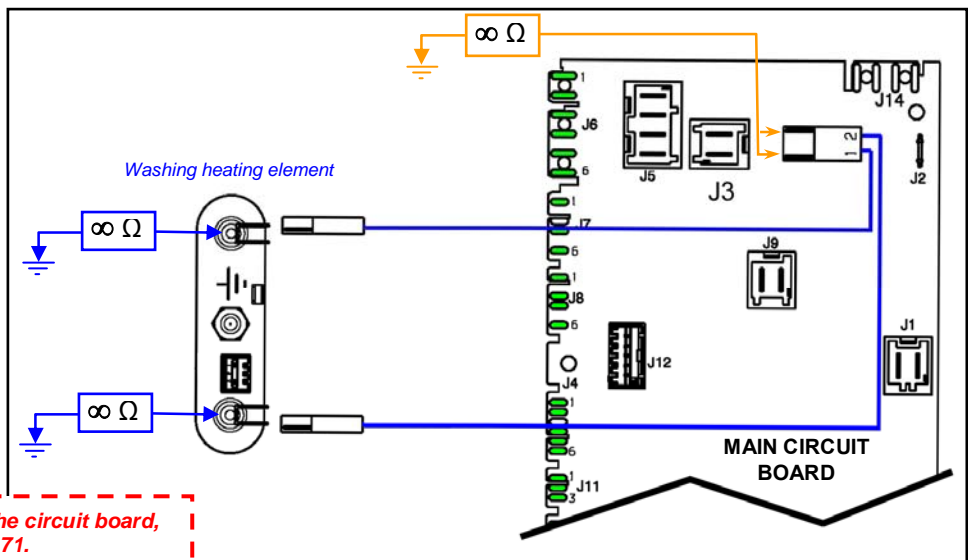


Fig. 19



**!** If there are burns on the circuit board, see page 71.

**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.

**YES**

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



Fig. 6

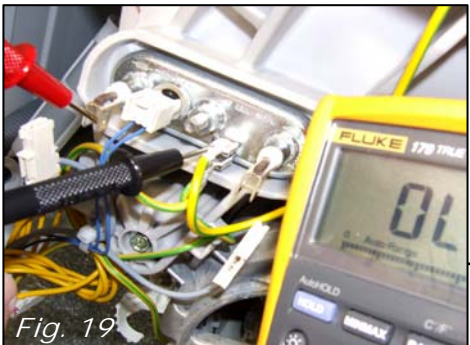


Fig. 19

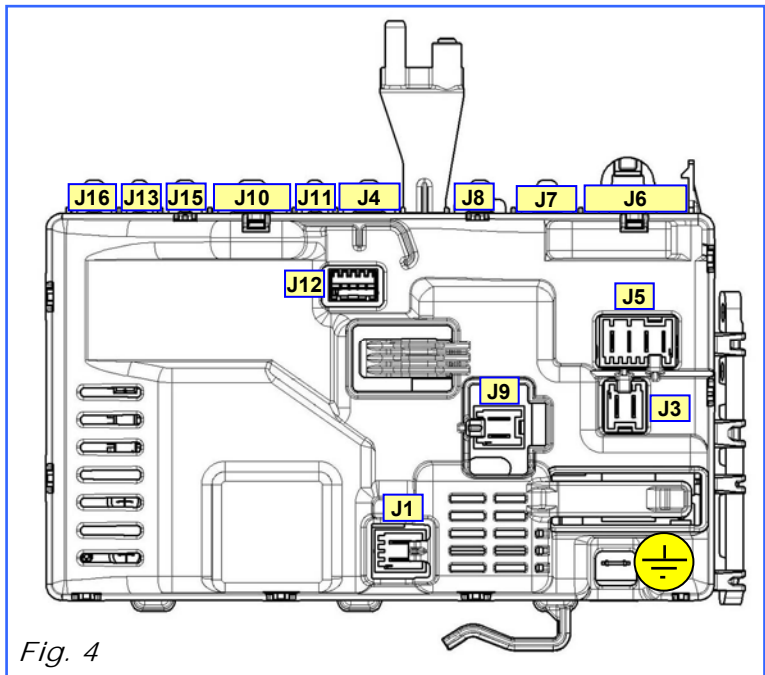
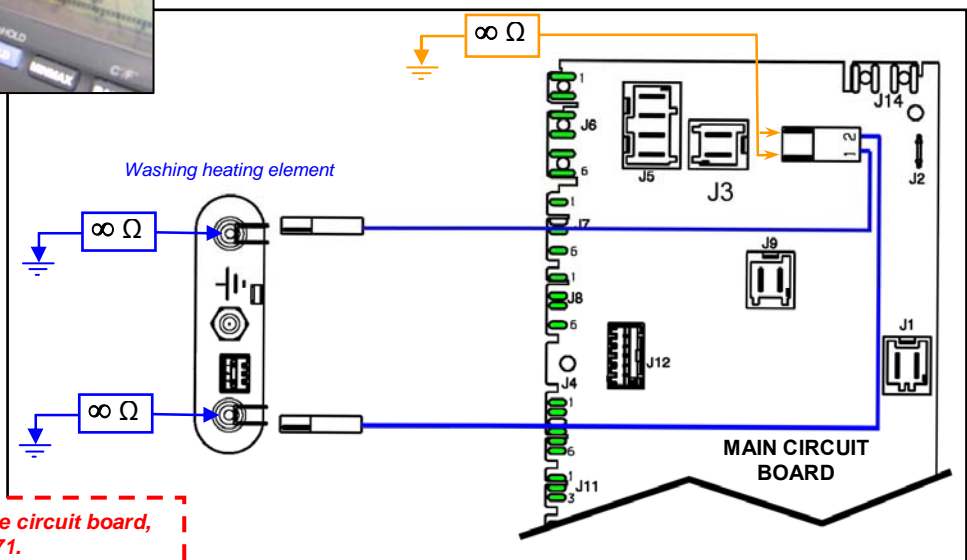


Fig. 4



**!** If there are burns on the circuit board, see page 71.



**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?  
 ( $28 \pm 31 \Omega$  for 230 V/1750 W)

**NO**

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

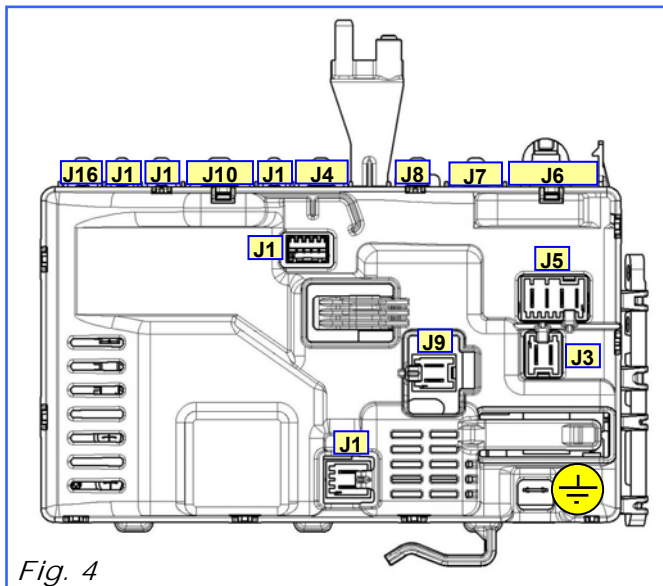
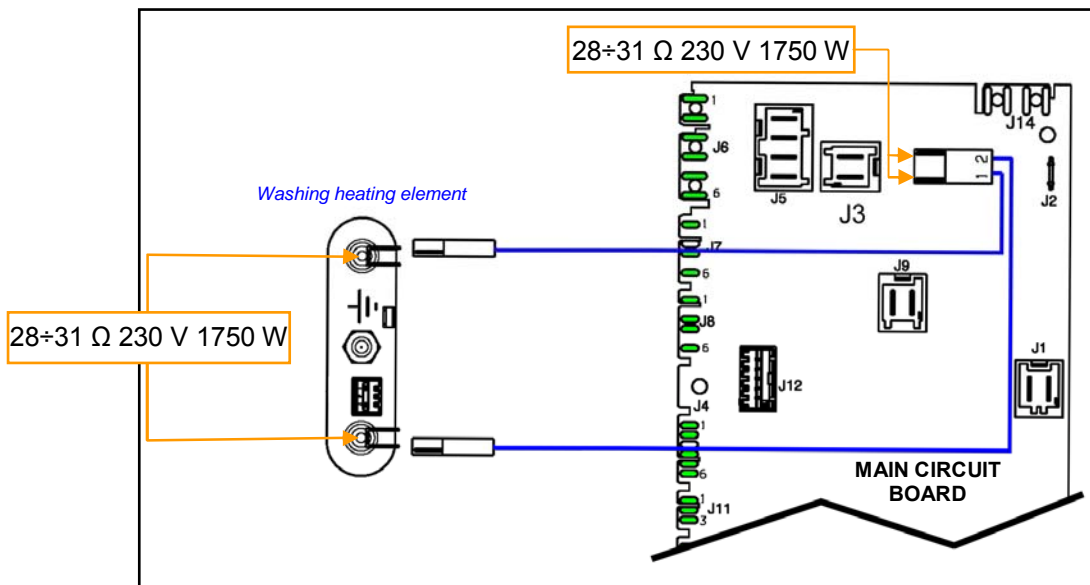


Fig. 4



**!** If there are burns on the circuit board, see page 71.

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

Checks to perform:

 Check that all the connectors are correctly inserted.

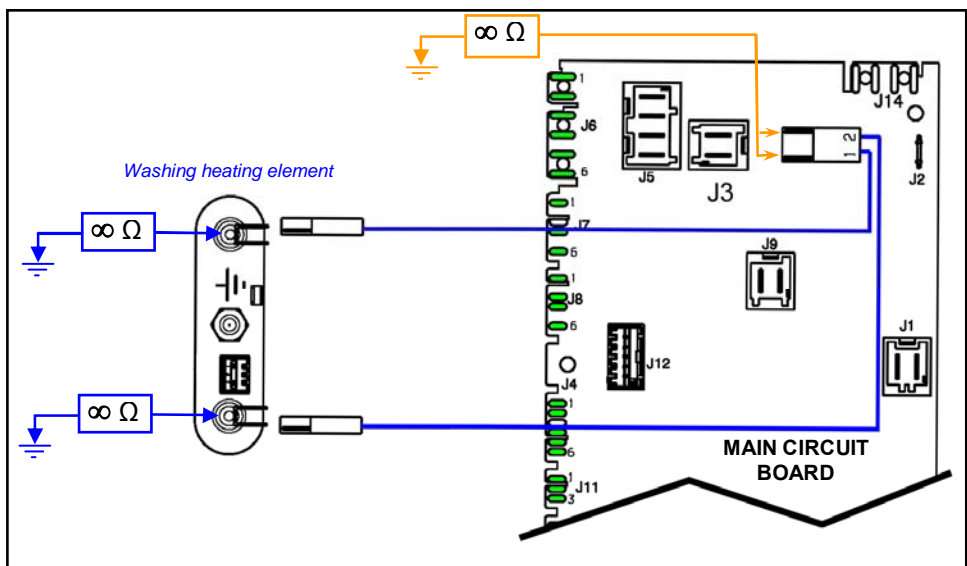
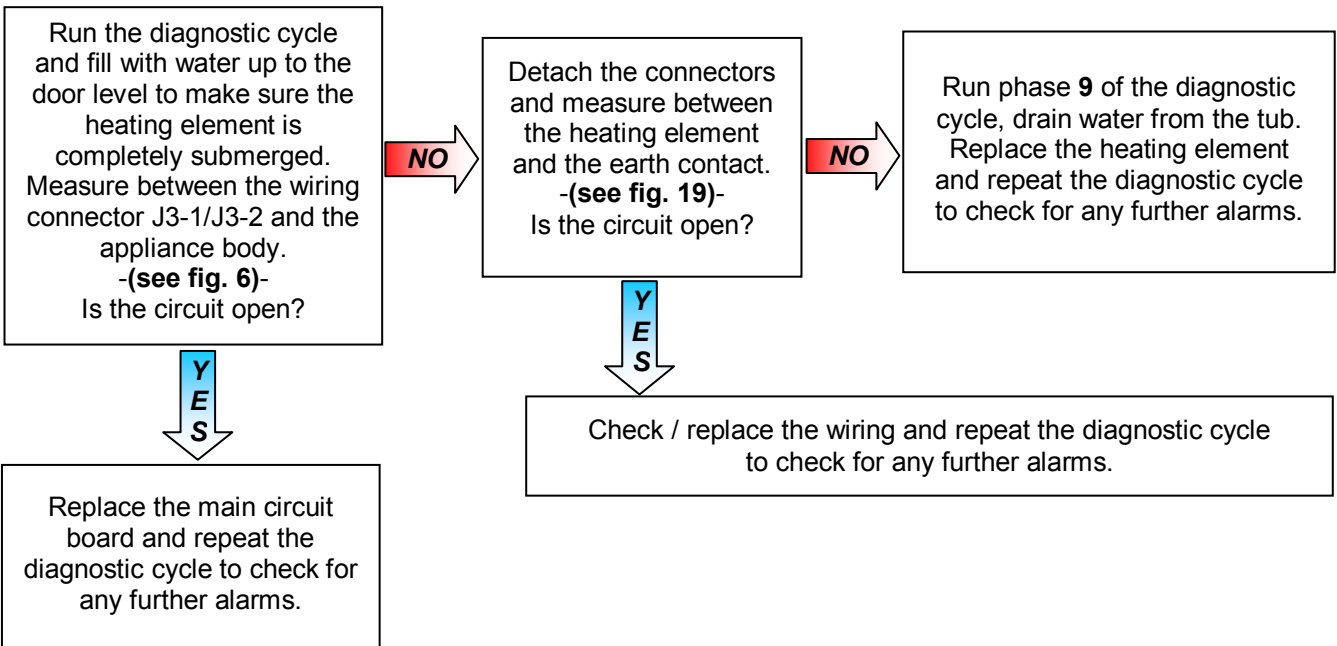
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.


 If there are burns on the circuit board, see page 71.

**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.



 If there are burns on the circuit board, see page 71.

<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**

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

**YES**

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**

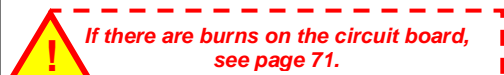
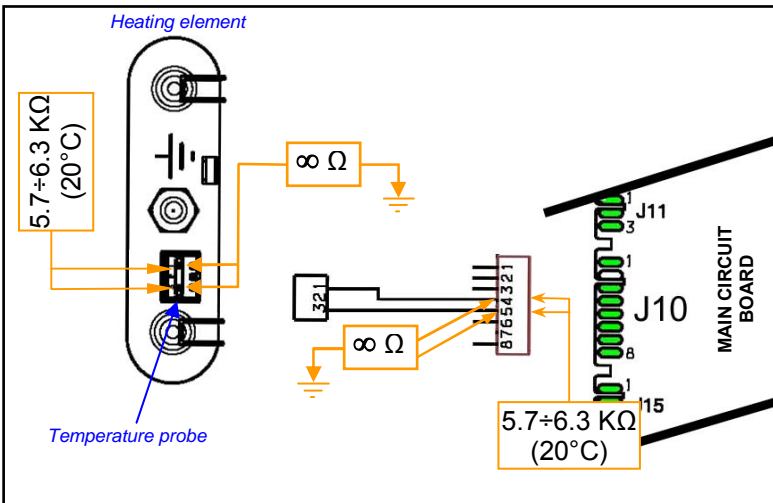
Detach the connector and measure directly between the terminals of the NTC probe and the appliance body. **! There must be water in the tub.**  
Has the dispersion been measured?

**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.

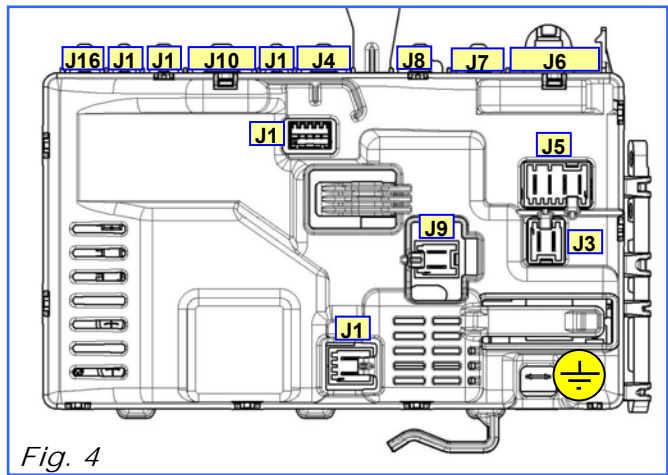
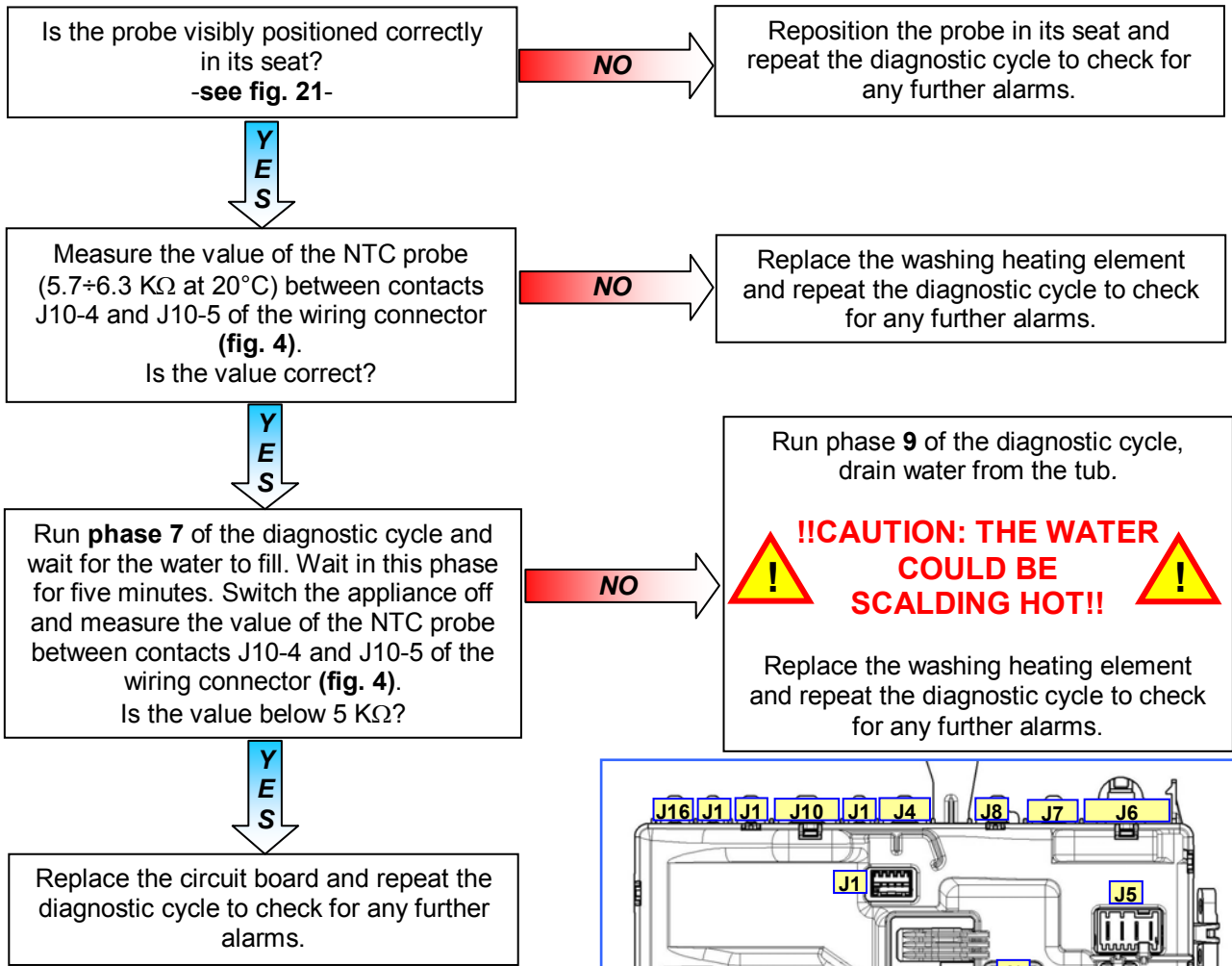


Fig. 4

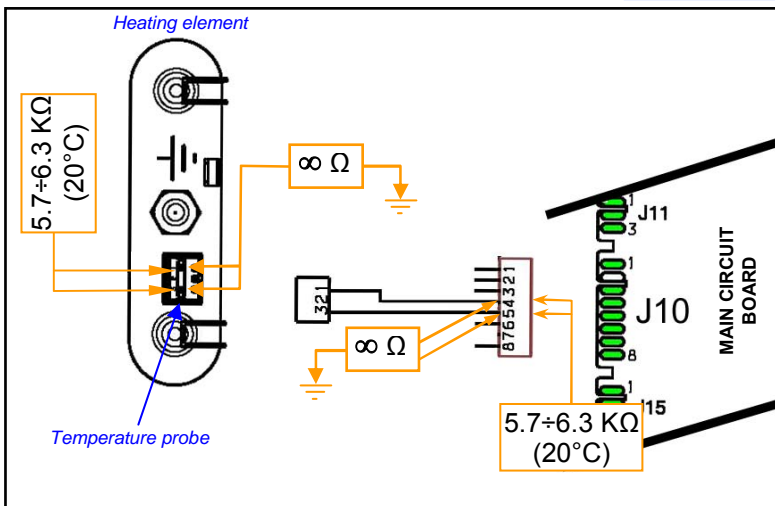


Fig. 21

**!** If there are burns on the circuit board, see page 71.

<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:*



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?

**NO**

Repeat the diagnostic cycle to check for any further alarms.

**YES**

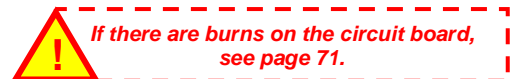
Check for any friction between the control panel and the knob. Is it difficult to turn the knob?

**NO**

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

**YES**

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



<b>E86</b>	<b>E86: Programme selector configuration error</b>	<b>E86</b>
------------	--	------------

*Checks to perform:*



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

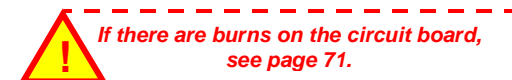


<b>E87</b>	<b>E87: Display board microprocessor faulty</b>	<b>E87</b>
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*Checks to perform:*



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



<b>E91</b>	<b>E91: Communication error between the display board and the main circuit board</b>	<b>E91</b>
	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 J4 (main circuit board) and J3 (display board). Is the wiring ok?



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



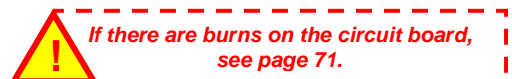
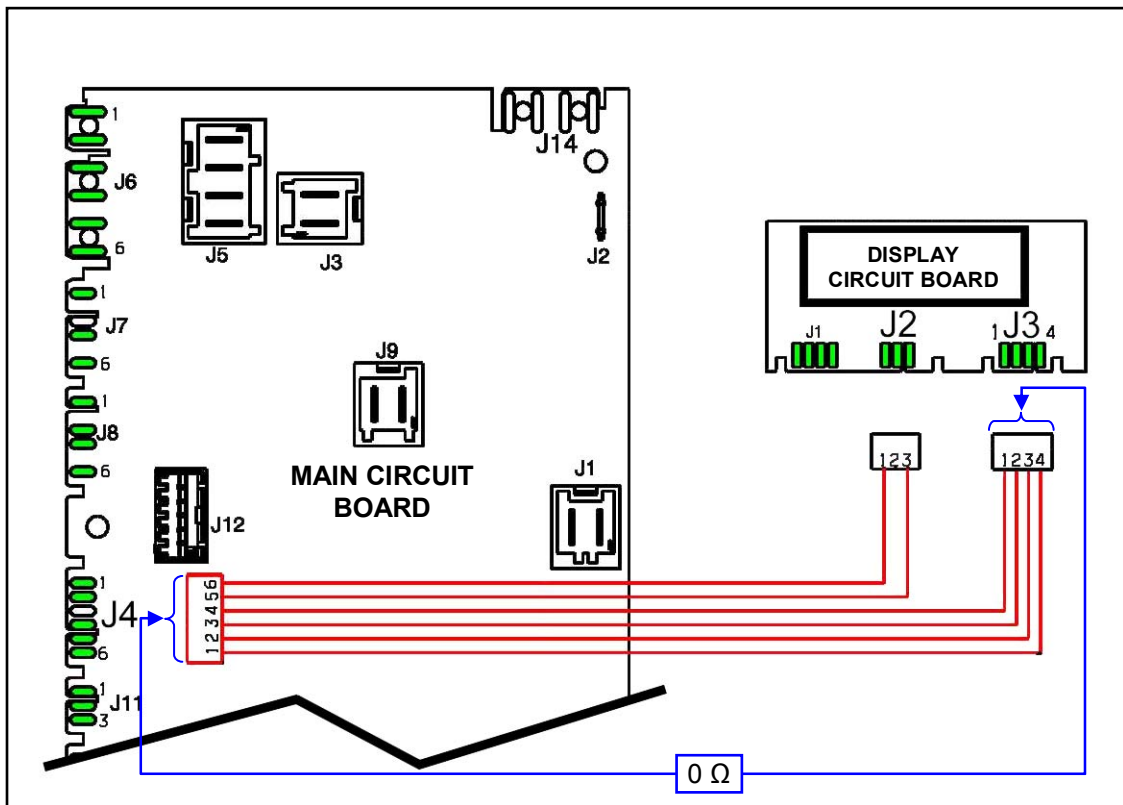
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms. Is the appliance still displaying E91?



Appliance ok.



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



<b>E92</b>	<b>E92: protocol incongruence</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 71.

<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.

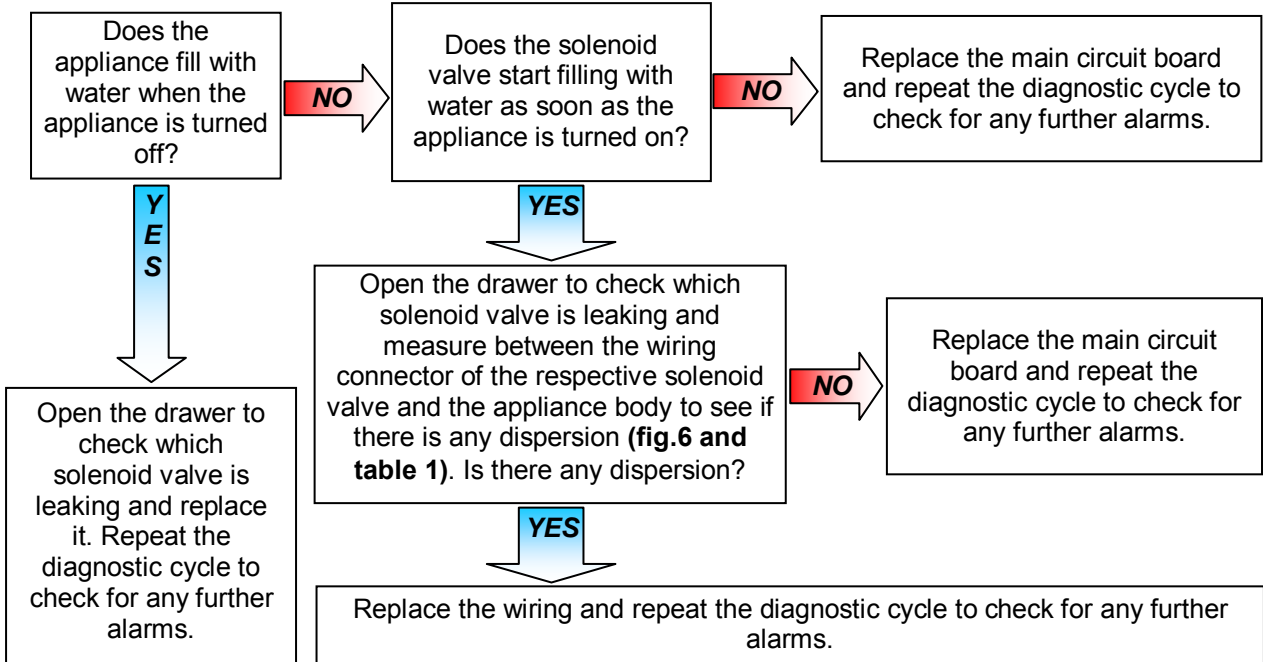


*If there are burns on the circuit board,  
see page 71.*

<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.	

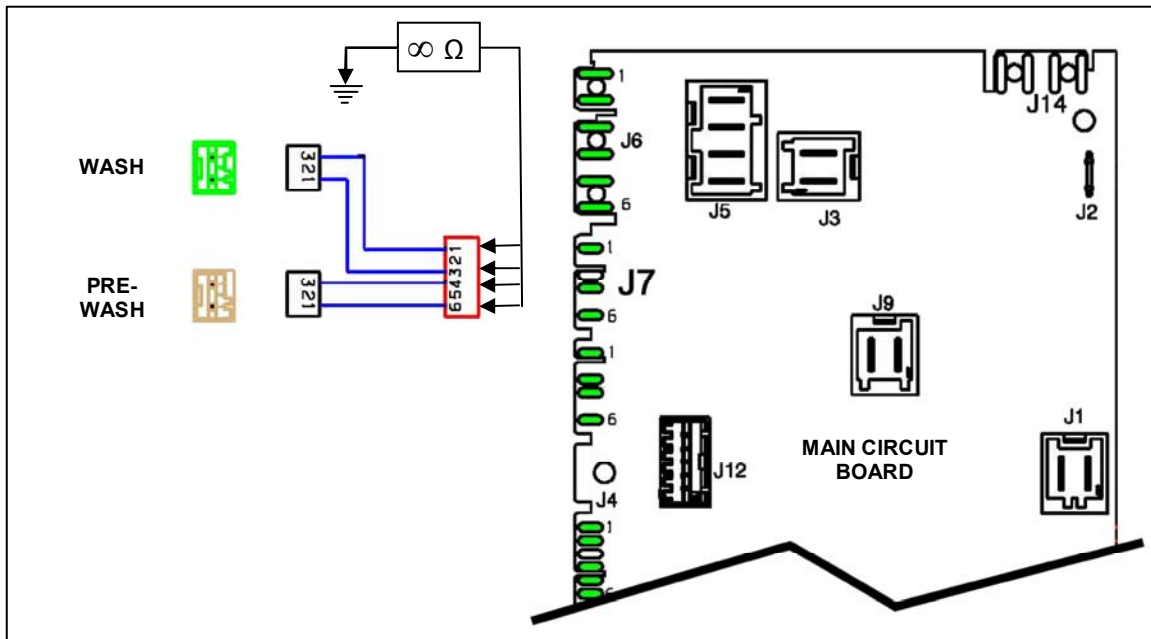
*Checks to perform:*

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



*Tab. 1*

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 71.



<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:*



*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 dirty / clogged</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>
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*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 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:*



*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. Advise the customer to load more washing into the drum and not just individual garments.



*If there are burns on the circuit board, see page 71.*

<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.

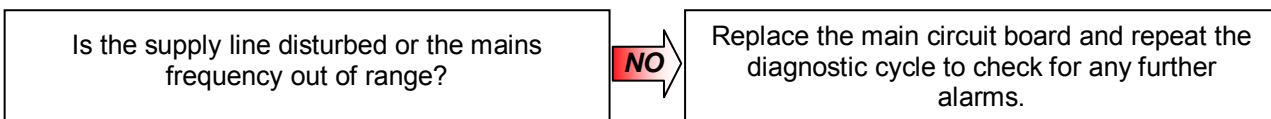
<b>EH1</b>	<b>EH1: Mains frequency incorrect</b>	<b>EH1</b>
Power supply frequency out of configured range.		

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.



Have the electrical system of the home checked / repaired by the proper Body.

**If there are burns on the circuit board, see page 71.**

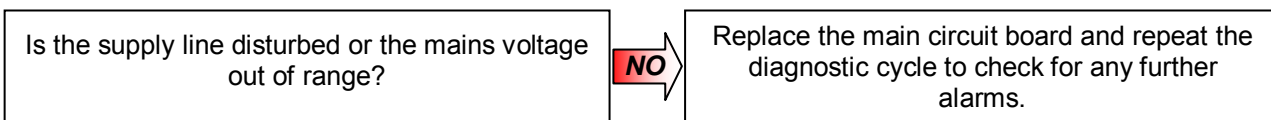
<b>EH2</b>	<b>EH2: Supply voltage too high</b>	<b>EH2</b>
Supply voltage value higher than the one configured (for more than 10 seconds).		

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.



Have the electrical system of the home checked / repaired by the proper Body.



**If there are burns on the circuit board, see page 71.**

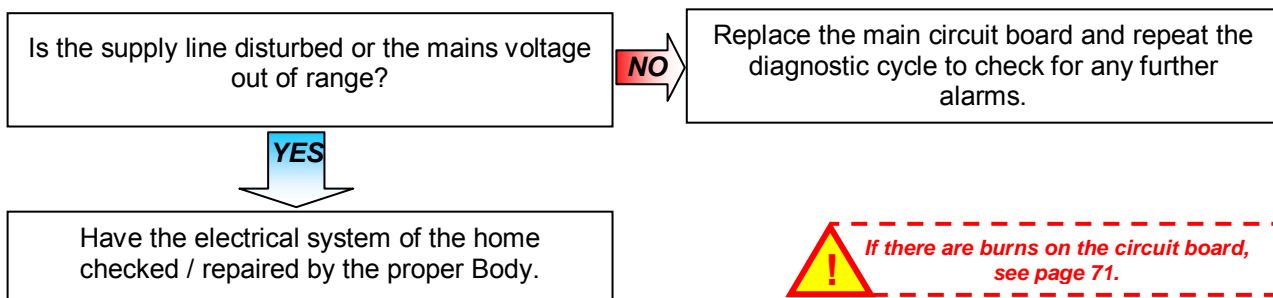
<b>EH3</b>	<b>EH3: Supply voltage too low</b>	<b>EH3</b>
	Supply voltage value higher than the one configured.	

Checks to perform:

 Check that all the connectors are correctly inserted.

**Important**

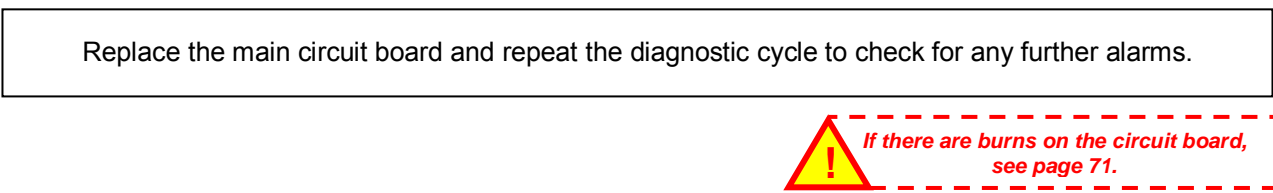
 The appliance remains in alarm status until the mains frequency returns to the correct values or the appliance is switched off (programme selector set to "0"). Only the family of the alarm is displayed and the diagnostics mode cannot be accessed. The complete alarm can only be read when the situation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



<b>EH4</b>	<b>EH4: "zero watt" relay not functioning</b>	<b>EH4</b>
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Checks to perform:

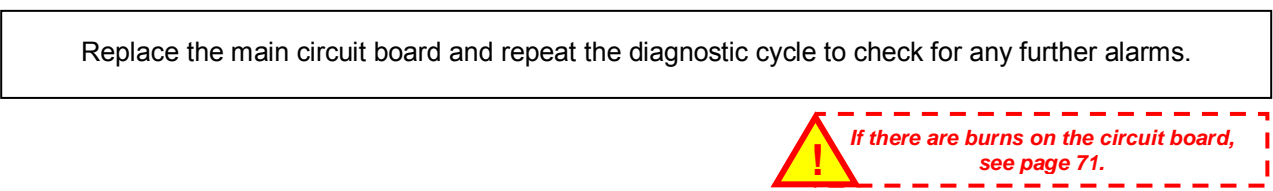
 Check that all the connectors are correctly inserted.



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

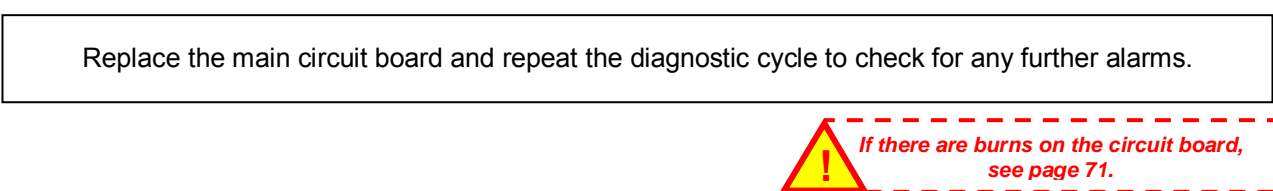
 Check that all the connectors are correctly inserted.



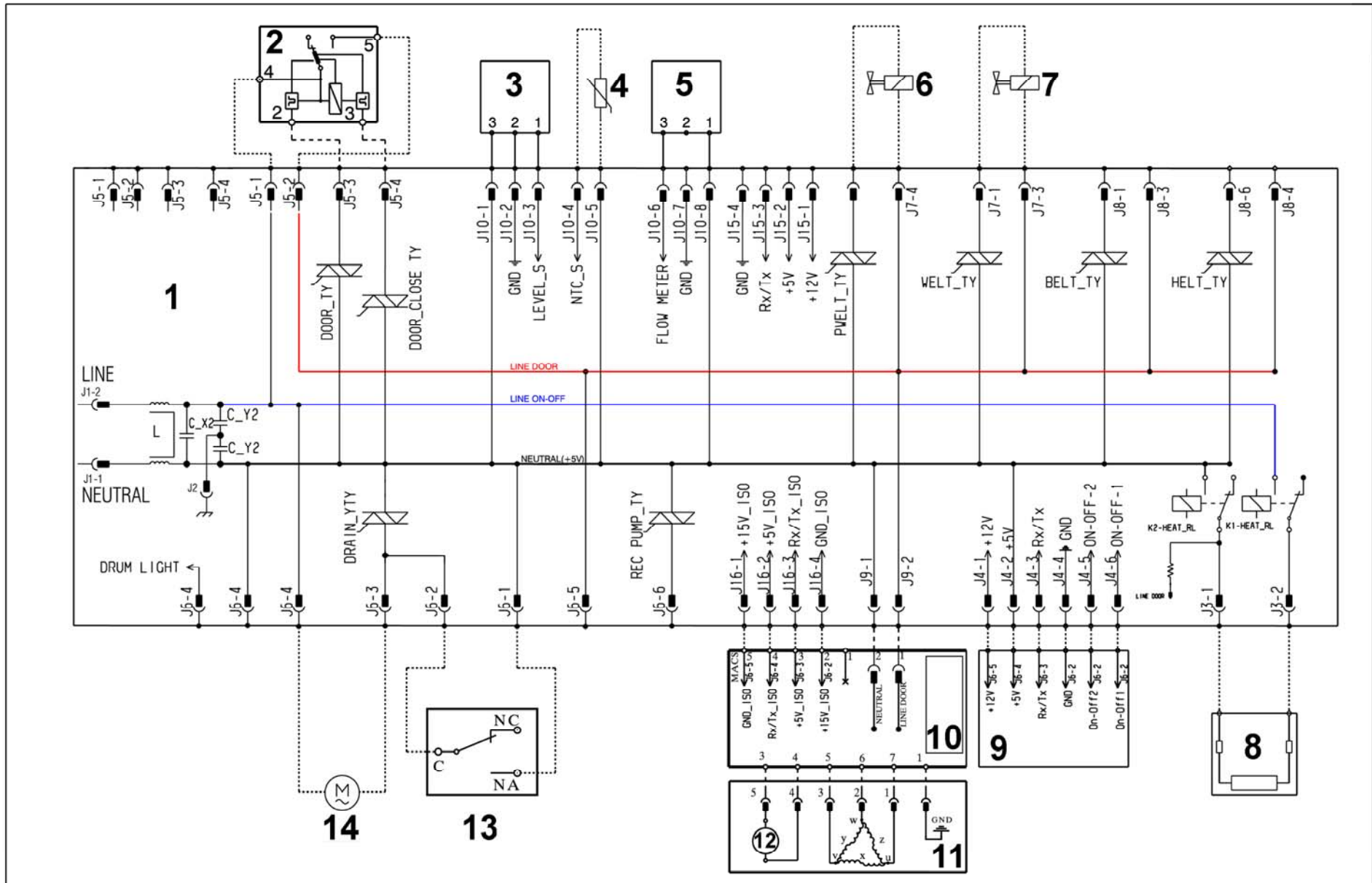
<b>EHF</b>	<b>EHF: Safety sensing circuit faulty</b>	<b>EHF</b>
	Input voltage microprocessor wrong.	

Checks to perform:

 Check that all the connectors are correctly inserted.



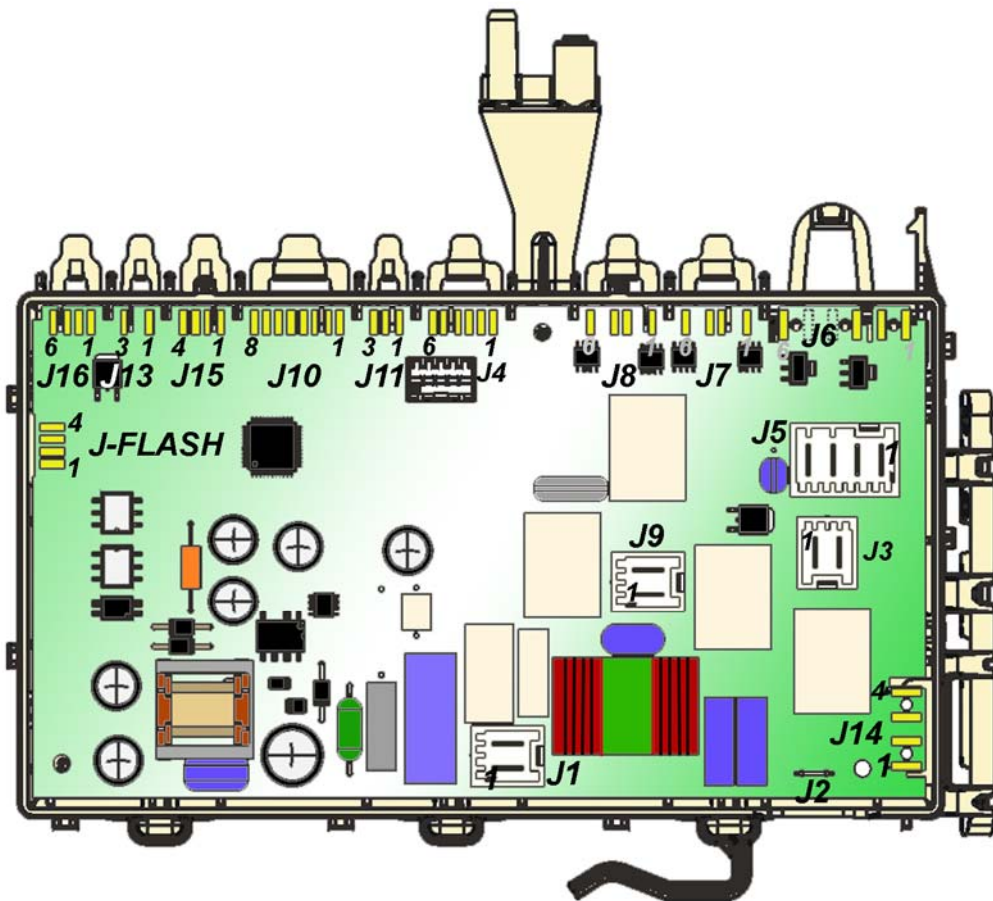
## 8 WM OPERATING CIRCUIT DIAGRAM



### 8.1 Key to circuit diagram WM

Appliance electrical components	PCB components		
<ol style="list-style-type: none"> <li>1. Main electronic 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</li> <li>7. Wash solenoid</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		

## 8.2 Main circuit board connectors



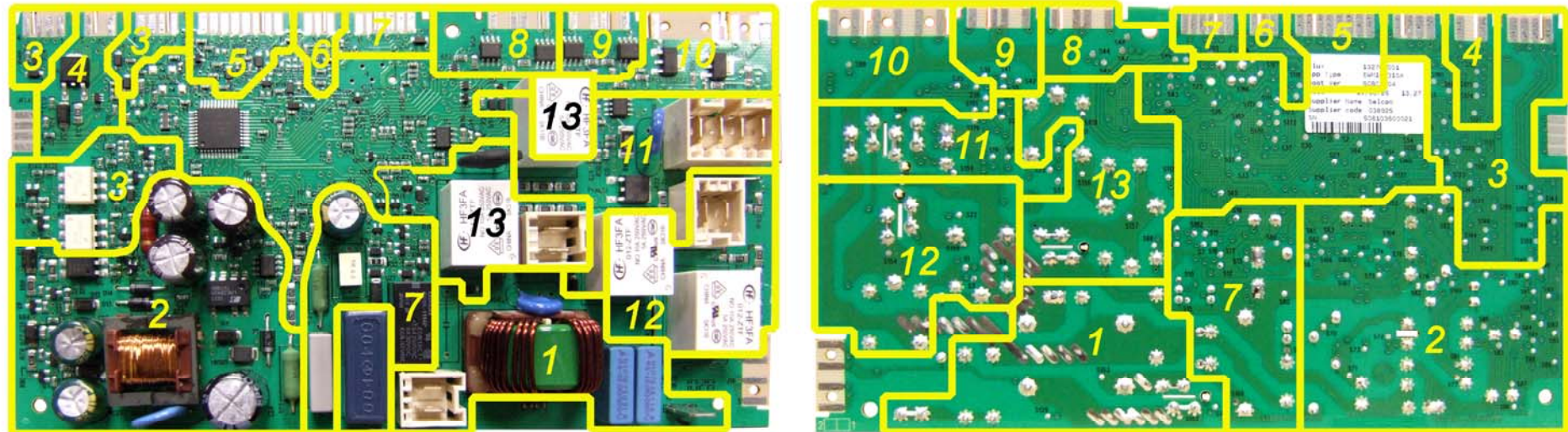
<b>J15</b>	<b>J10</b>
MACS communication J15-1 Vee 12 V J15-2 5 V J15-3 Rx/Tx J15-4 GND	J10-1 Analogue pressure switch (+5 V) J10-2 Analogue pressure switch (GND) J10-3 Analogue pressure switch (Signal) J10-4 NTC temperature probe (Signal) J10-5 NTC temperature probe (+5 V)
<b>J16</b>	J10-6 Flowmeter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



### 8.3 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.*



- 1. Anti-disturbance filter area
- 2. Power supply area
- 3. Satellite board communication area
- 4. Drum light circuit area
- 5. Analogue level sensor, wash NTC temperature probe, flowmeter and weight sensor area
- 6. Drum positioning sensor area (top loading)

- 7. Zero watt circuit area
- 8. Unused area
- 9. Water fill solenoid valves area (wash and pre-wash)
- 10. Drain pump area
- 11. Door lock area
- 12. Heating element area
- 13. Relay FCV area (motor)



**REVISION:**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>Written by</b>	<b>Approved by</b>
00	06/2011	Document Creation	DMM	XX – 0X/201X