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EN

**Top loading washing  
machines**

**guide to diagnostics of  
electronic controls**

**EWM09312**



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# 1 INTRODUCTION

## 1.1 Purpose of this manual

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



- **Before starting work on a piece of equipment, check that the earth in the lodgings is working properly by using an appropriate tool and follow the instructions described/illustrated on the Electrolux Learning Gateway portal**
- <http://electrolux.edvantage.net>
- **When the work is finished check that the equipment's safety conditions have been reinstated, as though it were straight off the assembly line.**
- **In the event of handling/replacing the electronic circuit board, use the ESD (Cod. 405 50 63-95/4) kit to avoid electrostatic discharges damaging the electronic circuit board - see S.B. No. 599 72 08-09.**
- **Any work on electrical appliances must only be carried out by qualified technicians.**
- **This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to disconnect the power supply.**
- **When replacing the heating element, replace it with one that has the same characteristics (2 thermal fuses) to avoid compromising 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.**
- **When replacing components, please refer to the code shown in the list of spare parts relating to the appliance.**

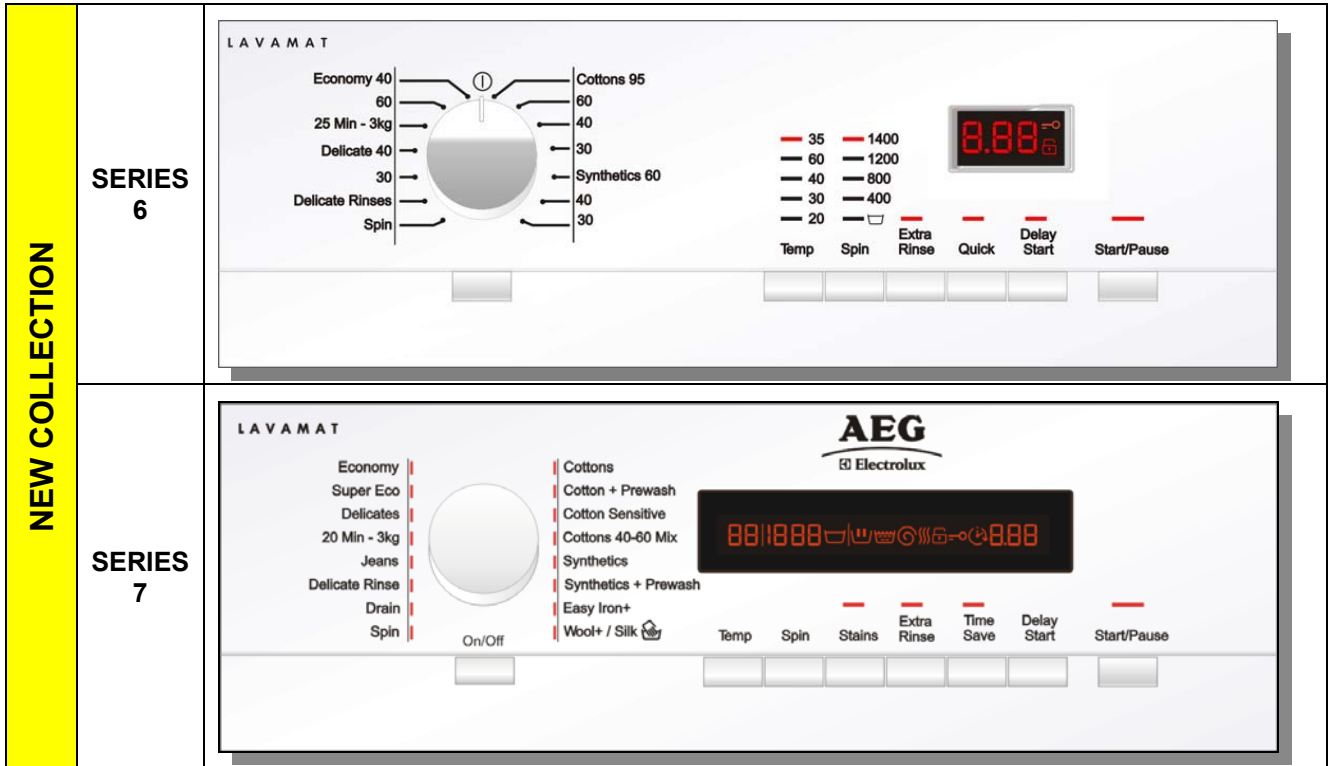


### 1.3 How to proceed

1. Identify the type of control in question (**page 2**) and access the diagnostic cycle (**see page 3**).
2. Read the alarm stored (**page 4**) and consult the instructions regarding the “alarm codes”, (**page 15**).
3. Delete the alarms stored (**page 14**).
4. If you are unable to access the diagnostic mode, consult the chapter entitled “The diagnostics system cannot be accessed” (**page 25**).
5. Should the main electronic circuit board need to be replaced, make sure there are no burns. (**See page 68**).
6. After all intervention, check the appliance is operating correctly using the diagnostic cycle (**page 7**).
7. Delete any alarm that may have been stored during the diagnostics operations (**page 14**).

## 2 WM APPLIANCE CONTROL PANELS

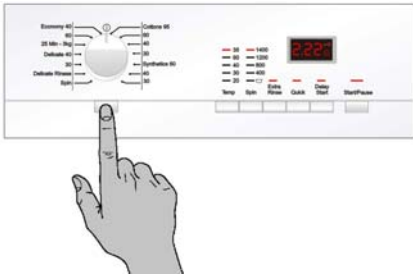
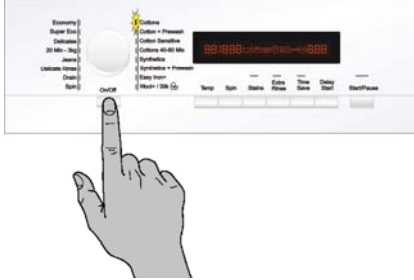

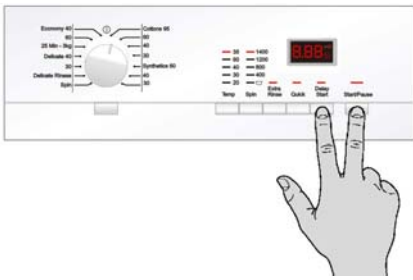
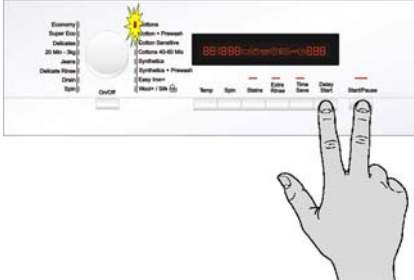
Below are the styling versions available at the time of issuing of this Service Manual.  
 Series 6 with 14-position selector plus OFF position  
 Series 7 with 16-position hi fi selector without OFF position.



### 3 DIAGNOSTICS SYSTEM

#### 3.1 Accessing diagnostics

**Do not start the procedure with the combination buttons pressed**

	Series 6	Series 7
<p>Turn the appliance on at the ON/OFF switch.</p> <p>In series 7, the first LED in the right-hand row lights up.</p>		
<p>Only in series 6, turn the selector to the first position on the right.</p>		
<p>Press the <b>START/PAUSE</b> button and the nearest <b>option button</b> simultaneously (as shown in the figure).</p> <p>Hold the buttons/sensors down/pressed until the LEDs and symbols begin to flash in sequence (approximately 3 seconds).</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 **clockwise** to run the diagnostic cycle for the operation of the various components and to read any alarms (see diagnostic test).

During this phase, if any key combination is pressed (except for the one relating to diagnostics), all the combinations of options stored are deleted (Extra rinse, No buzzer, etc.) whereas for SERIES 9, the memories with the customised programmes are also deleted.

#### 3.2 Quitting the diagnostics system

To exit the diagnostic cycle, switch the appliance off, then back on and then off again.

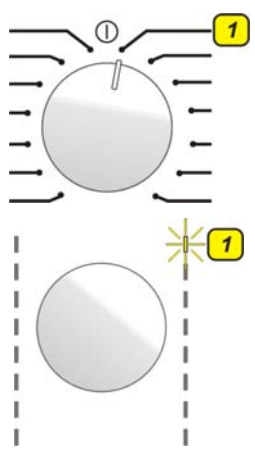

### 3.3 Diagnostic test phases

Irrespective of the type of circuit board and the configuration of the 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.

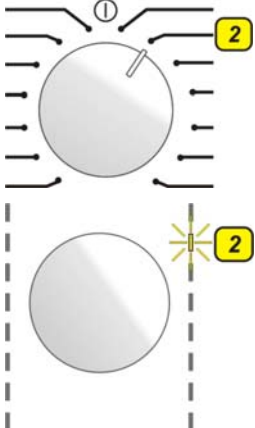

Concurrently, a selector control code is shown on the LCD display, which indicates for two seconds the description in the last column of the table below.

(All alarms are enabled in the diagnostic cycle).

#### Position 1

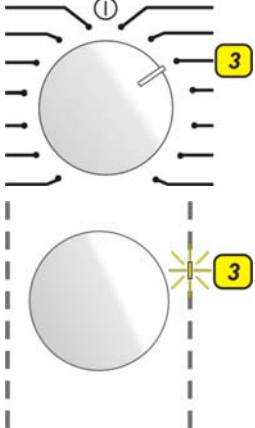

User interface test	Purpose of the test:	To test operation of all the LEDs and switches.
	Components activated:	<ul style="list-style-type: none"> <li>The LEDs are turned on in sequence, as are the symbol groups of the LCD display and its backlight.</li> </ul>
	Behaviour:	<ul style="list-style-type: none"> <li>All LEDs turn on in sequence.</li> <li>By pressing a key the corresponding icon unit lights up.</li> <li>The code is shown on the LCD and a beep sounds.</li> <li>All the icons on the LCD flash.</li> </ul>
	Working conditions:	There is a control to run the test (always active).
	LCD display	

#### Position 2

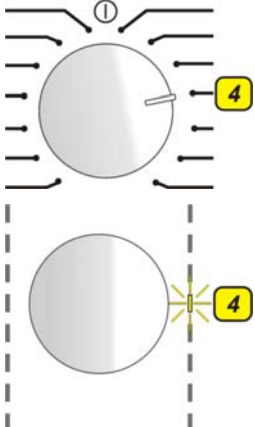

Water fill to wash compartment	Purpose of the test:	To check the correct operation of the wash compartment water route.
	Components activated:	<ul style="list-style-type: none"> <li>Door safety interlock</li> <li>Wash solenoid</li> </ul>
	Working conditions:	<ul style="list-style-type: none"> <li>Door closed</li> <li>Water level below anti-flooding level</li> <li>Maximum time 5 mins.</li> </ul>
	LCD display	  Water level in the tub is displayed (mm)



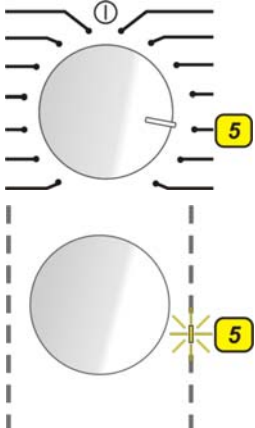

**Position 3**

Water fill to pre-wash compartment	Purpose of the test:	To check the correct operation of the pre-wash compartment water route.
	Components activated:	<ul style="list-style-type: none"> <li>• Door safety interlock</li> <li>• Pre-wash solenoid</li> </ul>
	Working conditions:	<ul style="list-style-type: none"> <li>• Door closed</li> <li>• Water level below anti-flooding level</li> <li>• Maximum time 5 mins.</li> </ul>
	LCD display	  Water level in the tub is displayed (mm)

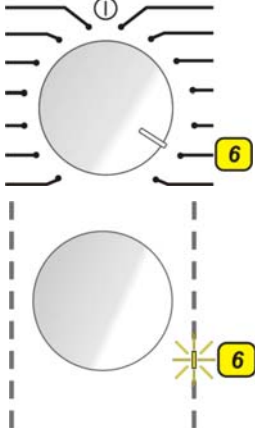

**Position 4**

Water fill to conditioner compartment	Purpose of the test:	To check the correct operation of the conditioner compartment water route.
	Components activated:	<ul style="list-style-type: none"> <li>• Door safety interlock</li> <li>• Pre-wash and wash solenoid valves</li> </ul>
	Working conditions:	<ul style="list-style-type: none"> <li>• Door closed.</li> <li>• Water level below anti-flooding level</li> <li>• Maximum time 5 mins.</li> </ul>
	LCD display	  Water level in the tub is displayed (mm)

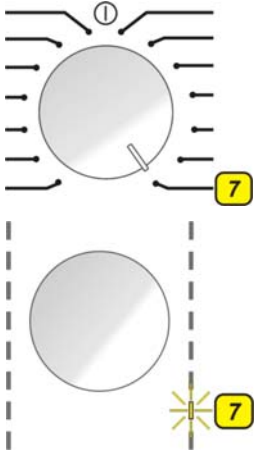

**Position 5**

No command	Purpose of the test:	-----
	Components activated:	-----
	Working conditions:	-----
	LCD display	

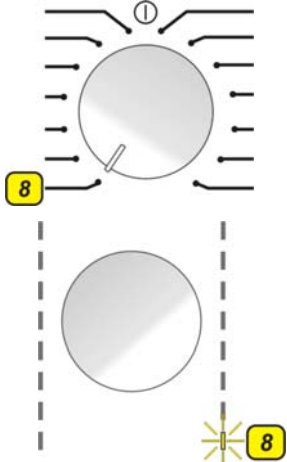

### Position 6

No command	Purpose of the test:	-----
	Components activated:	-----
	Working conditions:	-----
	LCD display	

### Position 7

Heating	Purpose of the test:	To check the correct operation of the heater unit.
	Components activated:	<ul style="list-style-type: none"> <li>• Door fastening device.</li> <li>• Wash solenoid, if the water in the tub is not enough to cover the heating element.</li> <li>• Heating element.</li> </ul>
	Working conditions:	<ul style="list-style-type: none"> <li>• Door closed</li> <li>• Water level high enough to cover the heating element.</li> <li>• Maximum time 10 mins up to 90°C. (*)</li> </ul>
	LCD display	 Temperature in °C measured using the NTC probe.

### Position 8

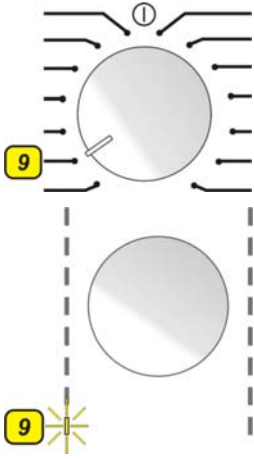
Leaks from the tub	Purpose of the test:	To check for any water leaks from the tub during operation.
	Components activated:	<ul style="list-style-type: none"> <li>• Door fastening device.</li> <li>• Wash solenoid, if the water in the tub is not enough to cover the heating element.</li> <li>• Motor (anticlockwise rpm, pulse at 250 rpm).</li> </ul>
	Working conditions:	<ul style="list-style-type: none"> <li>• Door closed.</li> <li>• Water level above</li> <li>• The heating element.</li> </ul>
	LCD display	 Drum speed in rpm/10

**Position 9**

Drain, calibration of analogue pressure switch and spin.

Purpose of the test:

To check the correct operation of the spin cycle drain pump and calibrate the analogue pressure switch.



Components activated:

- Door safety interlock
- Drain pump
- Motor up to 650 rpm then at maximum spin speed (\*\*)

Working conditions:

- Door closed
- Water level lower than anti-boiling level for spinning

LCD display

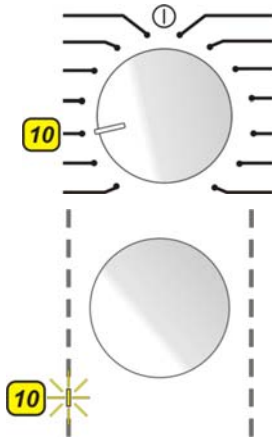
Drum speed in rpm/10

**Position 10**

Drum position

Purpose of the test:

To check the correct position of the drum via DSP



Components activated:

- Drum rotation motor.
- Door fastening device.
- Drum position sensor DSP.

Working conditions:

- Door closed.

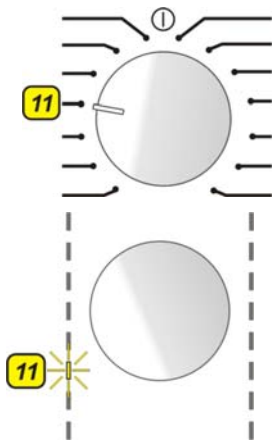
LCD display

**Position 11**

Reading/Deleting the last alarm

Purpose of the test:

Reading/Deleting the last alarm



Components activated:

-----

Working conditions:

-----

LCD display

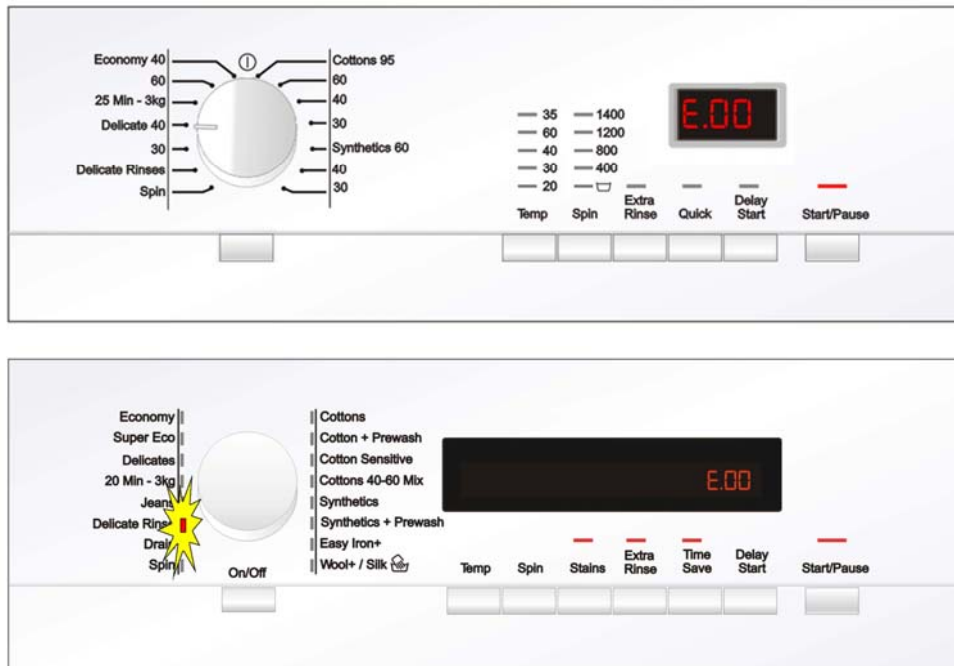
(\*) In most cases, this time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostic cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating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

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

## 4 ALARMS

### 4.1 Displaying user alarms

When a problem arises in the appliance, which generates a “WARNING” or an “ALARM”, this is displayed with three digits, where normally the remaining cycle time 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)**

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

While for the alarm:

- ↪ **EH0 – Voltage or frequency outside normal values**

**It is necessary to wait for power supply voltage and/or frequency to restore normal conditions.**

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

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

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

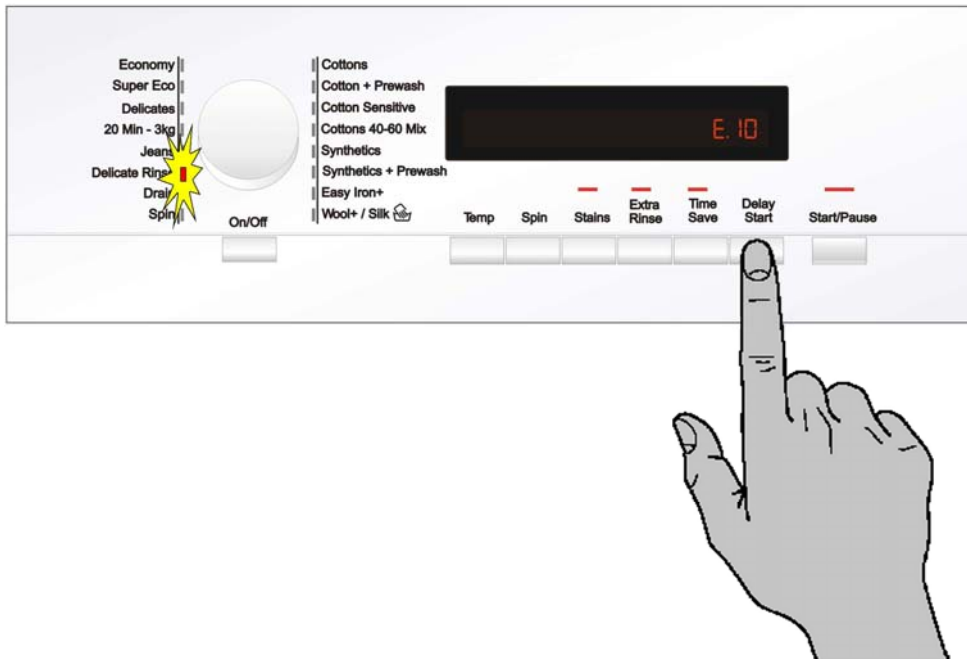
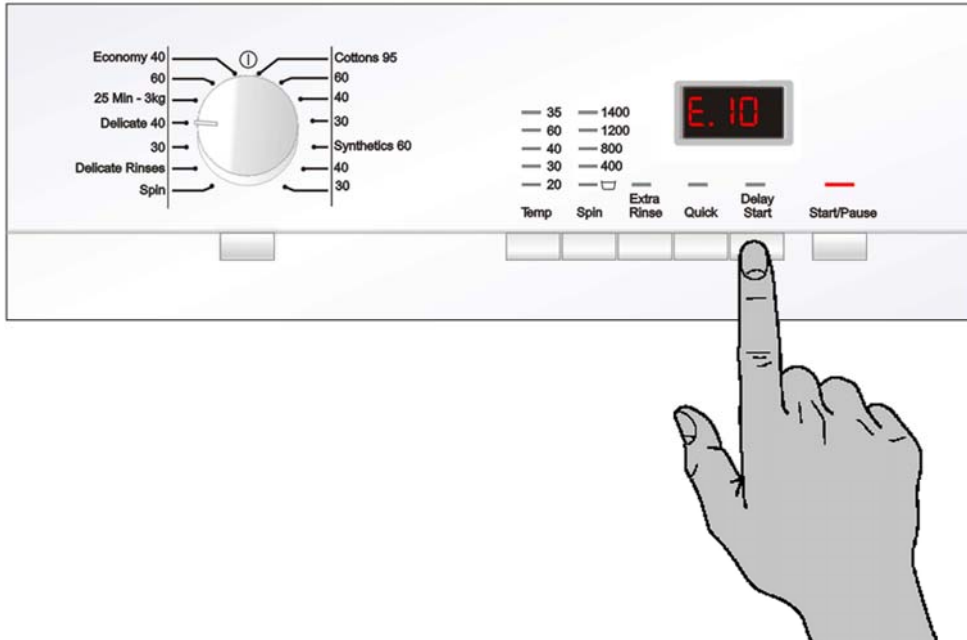
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

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

## 4.2 Reading the alarms

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

- Enter the diagnostic mode.
- Irrespective of the type of circuit board and configuration, turn the programme selector knob clockwise to the eleventh position and this will display the last alarm.
- 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

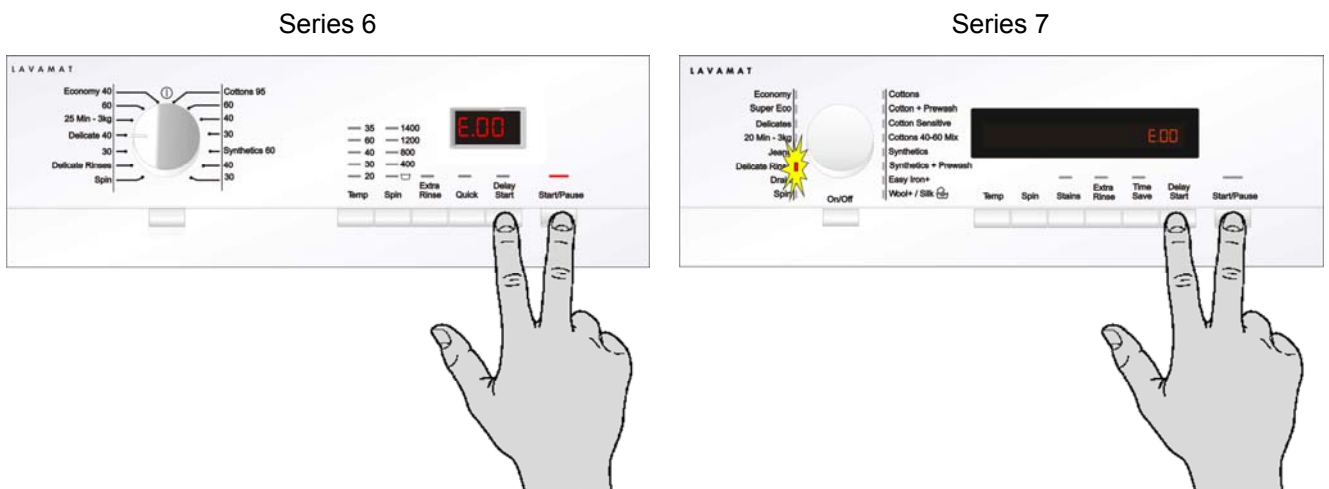
The last three alarms can even be displayed if the selector is not in the eleventh diagnostic position or if the appliance is in normal operating mode (for example when performing a wash programme):

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

### 4.4 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



1. Enter the diagnostic mode,
2. Turn the programme selector clockwise to position eleven.
3. Press the **START/PAUSE** button and the nearest **option button** simultaneously (as shown in the figure).
4. Hold down the buttons (for at least 5 seconds) until the LCD display shows “E00”.

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

## 4.5 Alarm Summary Table

ALARM CODE	Description	Possible fault	Machine status/action	Reset
E11	Water fill difficulty during washing	<ul style="list-style-type: none"> <li>• Tap closed.</li> <li>• Water pressure too low.</li> <li>• Drain pipe improperly positioned.</li> <li>• Water fill solenoid valve faulty.</li> <li>• Leaks from pressure switch water circuit.</li> <li>• Pressure switch faulty.</li> <li>• Faulty wiring.</li> <li>• Main circuit board faulty.</li> </ul>	Cycle is paused with door locked	START/RESET
E13	Water leaks	<ul style="list-style-type: none"> <li>• Drain pipe improperly positioned.</li> <li>• Water pressure too low.</li> <li>• Water fill solenoid valve faulty.</li> <li>• Leaks/clogging of pressure switch water circuit.</li> <li>• Pressure switch faulty.</li> </ul>	Cycle is paused with door locked	START/RESET
E21	Drain difficulty during washing	<ul style="list-style-type: none"> <li>• Drain tube kinked/clogged/improperly positioned.</li> <li>• Drain filter clogged/dirty.</li> <li>• Faulty wiring.</li> <li>• Pressure switch faulty.</li> <li>• Drain pump rotor blocked.</li> <li>• Drain pump faulty.</li> <li>• Main circuit board faulty.</li> </ul>	Cycle is paused (after 2 attempts)	START ON/OFF RESET
E23	Faulty Triac for drain pump	<ul style="list-style-type: none"> <li>• Faulty wiring.</li> <li>• Drain pump faulty.</li> <li>• Main circuit board faulty.</li> </ul>	Safety drain cycle - Cycle stops with door open.	RESET
E24	Drain pump TRIAC "sensing" circuit faulty.	<ul style="list-style-type: none"> <li>• Main circuit board faulty.</li> </ul>	Safety drain cycle - Cycle stops with door unlocked	RESET

ALARM CODE	Description	Possible fault	Action Machine status	Reset
E31	Malfunction in electronic pressure switch circuit	<ul style="list-style-type: none"> <li>• Wiring; Electronic pressure switch.</li> <li>• Main electronic circuit board.</li> </ul>	Cycle stops with door locked	RESET
E32	Calibration error of the electronic pressure switch	<ul style="list-style-type: none"> <li>• Drain tube kinked/clogged/improperly positioned.</li> <li>• Solenoid valve faulty.</li> <li>• Drain filter clogged/dirty.</li> <li>• Drain pump faulty.</li> <li>• Leaks from pressure switch water circuit.</li> <li>• Pressure switch defective;</li> <li>• Wiring; main circuit board.</li> </ul>	Cycle paused	START/RESET
E35	Overflow	<ul style="list-style-type: none"> <li>• Water fill solenoid valve faulty.</li> <li>• Leaks from pressure switch water circuit.</li> <li>• Faulty wiring.</li> <li>• Pressure switch faulty.</li> <li>• Main circuit board faulty.</li> </ul>	Cycle interrupted. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
E38	Internal pressure chamber is clogged (water level does not change for at least 30 sec. of drum rotation)	<ul style="list-style-type: none"> <li>• Motor belt broken.</li> <li>• Pressure switch hydraulic circuit clogged.</li> </ul>	Heating phase is skipped	RESET



ALARM CODE	Description	Possible fault	Action Machine status	Reset
E41	Door open	<ul style="list-style-type: none"> <li>• Check whether the door is closed properly</li> <li>• Faulty wiring.</li> <li>• Door safety interlock faulty</li> <li>• Main circuit board faulty.</li> </ul>	Cycle paused	CLOSE THE DOOR
E42	Problems with door lock	<ul style="list-style-type: none"> <li>• Faulty wiring.</li> <li>• Door safety interlock faulty.</li> <li>• Electrical current leak between heating element and ground.</li> <li>• Main circuit board faulty.</li> </ul>	Cycle paused	START/RESET
E43	Faulty Triac supplying power to door delay system	<ul style="list-style-type: none"> <li>• Faulty wiring.</li> <li>• Door safety interlock faulty.</li> <li>• Main circuit board faulty.</li> </ul>	Safety drain cycle. Cycle blocked	RESET
E44	Faulty sensing by door delay system	<ul style="list-style-type: none"> <li>• Main circuit board faulty.</li> </ul>	Safety drain cycle. Cycle blocked	RESET
E45	Faulty sensing by door delay system Triac	<ul style="list-style-type: none"> <li>• Main circuit board faulty.</li> </ul>	Safety drain cycle. Cycle blocked	RESET
E51	Motor power Triac short-circuited	<ul style="list-style-type: none"> <li>• Faulty wiring.</li> <li>• Motor faulty;</li> <li>• Main circuit board faulty.</li> </ul>	After 5 attempts, cycle blocked with door unlocked.	ON/OFF RESET
E52	No signal from motor tachometric generator.	<ul style="list-style-type: none"> <li>• Faulty wiring.</li> <li>• Motor faulty.</li> <li>• Main circuit board faulty.</li> </ul>	Cycle blocked with door locked after 5 attempts	ON/OFF
E53	"Sensing" faulty Triac motor. Input voltage to microprocessor faulty.	<ul style="list-style-type: none"> <li>• Main circuit board faulty.</li> </ul>	Cycle interrupted.	RESET
E54	Motor relay contacts sticking (high voltage level when the relay switches to OFF).	<ul style="list-style-type: none"> <li>• Current leakage from the motor</li> <li>• Current leakage from the cabling</li> <li>• Main circuit board faulty.</li> </ul>	Cycle blocked with door locked after 5 attempts.	RESET

ALARM CODE	Description	Possible fault	Action Machine status	Reset
E61	Insufficient heating during the washing phase	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>NTC probe for wash cycle faulty.</li> <li>Heating element faulty.</li> <li>Main circuit board faulty.</li> </ul>	The heating phase is skipped	START/RESET
E62	Overheating during washing phase (temperature higher than 88°C for more than 5 min.)	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>NTC probe for wash cycle faulty.</li> <li>Heating element faulty.</li> <li>Main circuit board faulty.</li> </ul>	Safety drain cycle. Cycle stops with door open	RESET
E66	Heating element power relay faulty (inconsistency between sensing and relay status)	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> </ul>	Safety water fill. Cycle stops with door closed.	ON/OFF RESET
E68	Current leak to the ground	<ul style="list-style-type: none"> <li>Earth leakage between heating element and earth.</li> </ul>	The heating phase is skipped	START/RESET
E69	Heating element interrupted	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Heating element for washing interrupted (thermal fuse open).</li> <li>Main circuit board faulty.</li> </ul>	-----	START ON/OFF RESET
E6A	Heating relay sensing faulty	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> </ul>	Cycle stops with door locked	RESET
E6H	Heating element power relay faulty (inconsistency between sensing and relay status)	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Earth leakage between heating element and earth.</li> <li>Main circuit board faulty.</li> </ul>	Safety water fill Cycle stops with door closed.	ON/OFF RESET

ALARM CODE	Description	Possible fault	Action Machine status	Reset
E71	NTC probe for wash cycle faulty (short-circuited or open)	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>NTC probe for wash cycle faulty.</li> <li>Main circuit board faulty.</li> </ul>	The heating phase is skipped	START/RESET
E74	NTC probe for wash cycle improperly positioned	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>NTC probe for wash cycle improperly positioned.</li> <li>NTC probe faulty.</li> <li>Main circuit board faulty.</li> </ul>	The heating phase is skipped	RESET
E83	Error in reading selector	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> <li>Incorrect configuration data.</li> </ul>	Cycle cancelled	START/RESET
E86	Selector configuration error	<ul style="list-style-type: none"> <li>Incorrect configuration of display board.</li> </ul>	-----	START ON/OFF RESET
E87	Display board microprocessor faulty	<ul style="list-style-type: none"> <li>Display board faulty.</li> </ul>	-----	START ON/OFF RESET

ALARM CODE	Description	Possible fault	Action Machine status	Reset
E91	Communication error between main PCB and display board	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Control/display circuit board faulty.</li> <li>Main circuit board faulty.</li> </ul>	-----	RESET
E92	Communication inconsistency between main PCB and display board. (incompatible versions)	<ul style="list-style-type: none"> <li>Incorrect control/display board.</li> <li>Incorrect PCB (does not correspond to the model)</li> </ul>	Cycle blocked	ON/OFF
E93	Appliance configuration error	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> <li>Incorrect configuration data.</li> </ul>	Cycle blocked	ON/OFF
E94	Incorrect configuration of washing cycle	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> <li>Incorrect configuration data.</li> </ul>	Cycle blocked	ON/OFF
E97	Inconsistency between programme selector and cycle configuration	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> <li>Incorrect configuration data.</li> </ul>	Cycle blocked	RESET
E9C	Display board configuration error	<ul style="list-style-type: none"> <li>Display board faulty</li> </ul>	-----	START ON/OFF RESET
E9F	Communication error between main board and display board	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Display board faulty.</li> <li>Main board faulty.</li> </ul>	-----	ON/OFF
EA1	No drum position signal made.	<ul style="list-style-type: none"> <li>DSP sensor faulty.</li> <li>Transmission belt broken.</li> <li>Main circuit board faulty.</li> <li>Faulty wiring.</li> </ul>	Drum positioning cycle cancelled	START/RESET
EA6	No signal from the DSP during motor activation.	<ul style="list-style-type: none"> <li>DSP sensor faulty.</li> <li>Transmission belt broken.</li> <li>Main circuit board faulty.</li> <li>Faulty wiring.</li> </ul>	Cycle paused.	START RESET
EC1	Electronically controlled valve blocked with operating flowmeter	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Solenoid valve faulty/blocked.</li> <li>Circuit board faulty</li> </ul>	Cycle stops with door locked Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
EC4	AGS current sensor faulty	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Main board faulty.</li> </ul>	Spin speed reduced to safety speed.	RESET

ALARM CODE	Description	Possible fault	Action Machine status	Reset
EF1	Drain filter clogged (drain phase too long)	<ul style="list-style-type: none"> <li>Drain filter clogged/dirty.</li> <li>Drain hose blocked/kinked/too high.</li> </ul>	Warning displayed at the end of cycle.	START/RESET
EF2	Overdosing of detergent (too much foam during drain phases)	<ul style="list-style-type: none"> <li>Excessive detergent dosing.</li> <li>Drain hose kinked/blocked.</li> <li>Drain filter clogged/dirty.</li> </ul>	Warning displayed after 5 attempts or by the specific LED.	RESET
EF3	Aqua control system intervention	<ul style="list-style-type: none"> <li>Water leaks onto base frame.</li> <li>Aqua control device faulty.</li> </ul>	Appliance drains	ON/OFF RESET
EF4	Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open	<ul style="list-style-type: none"> <li>Tap closed.</li> <li>Water fill pressure too low.</li> </ul>	-----	RESET
EF5	Unbalanced load	<ul style="list-style-type: none"> <li>Final spin phases skipped.</li> </ul>	-----	START/RESET
EF6	Reset	<ul style="list-style-type: none"> <li>If it continues, replace the main board</li> </ul>	-----	-----

EH1	Power supply frequency of appliance outside the limits	<ul style="list-style-type: none"> <li>Problem with the power supply network (incorrect/disturbed).</li> <li>Main circuit board faulty.</li> </ul>	Wait for nominal frequency conditions	ON/OFF
EH2	Supply voltage too high	<ul style="list-style-type: none"> <li>Problem with the power supply network (incorrect/disturbed).</li> <li>Main circuit board faulty.</li> </ul>	Wait for nominal voltage conditions.	ON/OFF
EH3	Supply voltage too low	<ul style="list-style-type: none"> <li>Problem with the power supply network (incorrect/disturbed).</li> <li>Main circuit board faulty.</li> </ul>	Wait for nominal voltage conditions.	ON/OFF
EH4	0Watt relay malfunction	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> </ul>	-----	ON/OFF RESET
EHE	Inconsistency between FCV relay (in the main board) and safety "sensing" circuit	<ul style="list-style-type: none"> <li>Faulty wiring.</li> <li>Main circuit board faulty.</li> </ul>	Safety drain cycle Cycle stops with door open	RESET
EHF	Safety sensing circuit faulty (wrong input voltage to microprocessor)	<ul style="list-style-type: none"> <li>Main circuit board faulty.</li> </ul>	Safety drain cycle Cycle stops with door open	RESET

## 4.6 Notes on the behaviour of certain alarms

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

## 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.

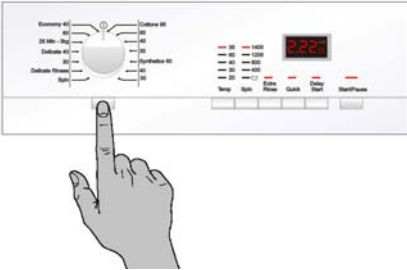
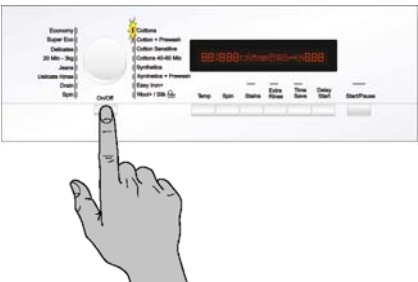

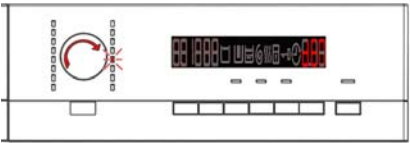
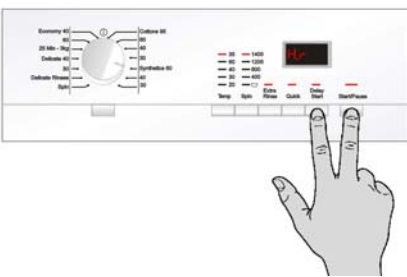
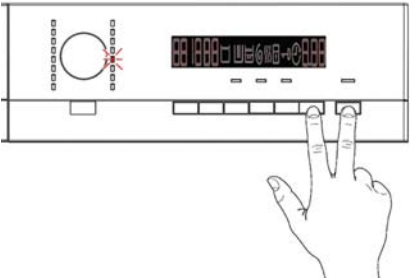
- only the operating time of normal programmes (and not diagnostic cycles) is counted
- the actual operating time for the cycle is counted (which does not include pauses, delayed start time, rinse hold time and soaking phases)
- the precision of the counter is 30 seconds per programme.
- only whole hours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

### 5.1 Reading the operating time

**Do not start the procedure with the combination buttons pressed**

Series 6

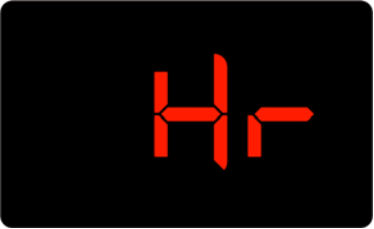


Series 7

<p>Turn the appliance on at the ON/OFF switch</p>		
<p>Turn the selector in a clockwise direction to position five.</p>		
<p>Press the <b>START/PAUSE</b> button and the nearest <b>option button</b> simultaneously (as shown in the figure).</p> <p>Hold the buttons for approximately 5 seconds.</p> <p>The display shows the operating hours.</p>		

## 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 →
For <u>two</u> seconds, the following is displayed: Hr	For <u>two</u> seconds, the following digits are displayed: ↵ thousands ( <b>6</b> ) ↵ hundreds ( <b>5</b> )	For the next two seconds the following digits are displayed: ↵ tens ( <b>5</b> ) ↵ units ( <b>0</b> )
		

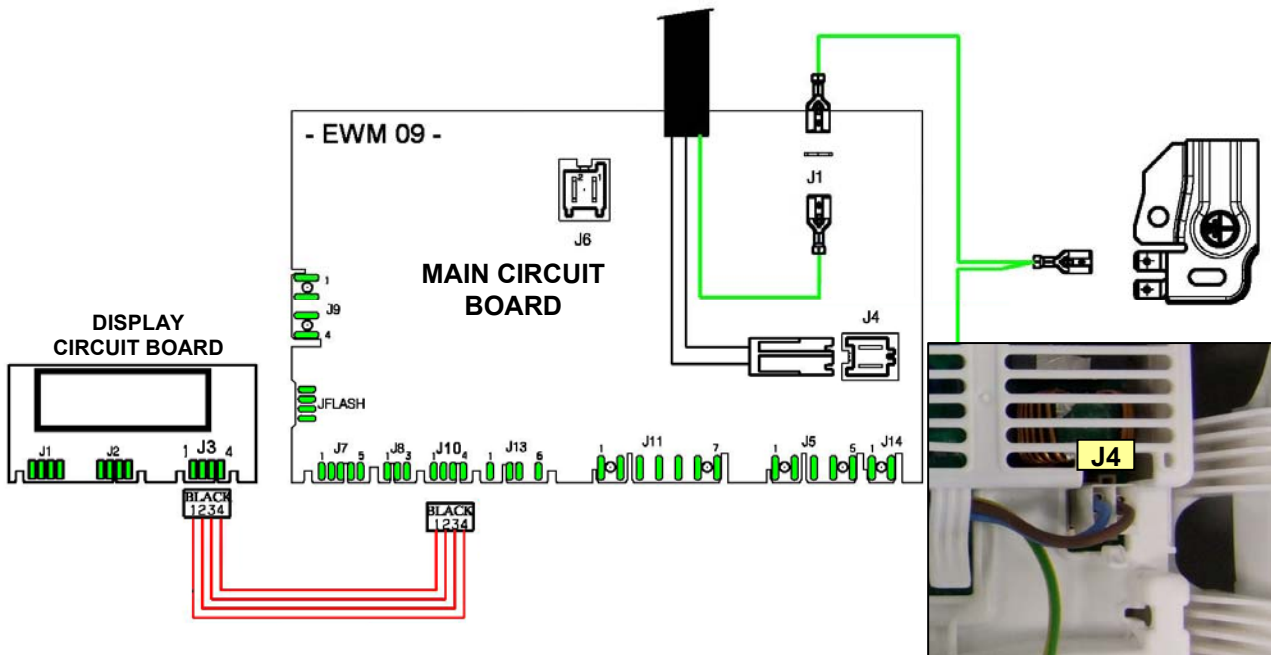
At the end of phase three (after the tens and units are displayed), the cycle is repeated. To return to normal mode, either: switch the appliance off or press a button or turn the selector knob.



## 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>J4</b> ) working properly?	No →	Replace/repair the power supply cable, check the connection.
Yes ↓		
Is the communication wiring between the main board (connector <b>J10</b> ) and the display board (connector <b>J3</b> ) working properly? (insert and remove)	No →	Replace/repair wiring.
Yes ↓		
Does the programme selector knob function mechanically?	No →	Replace/repair knob Replace display board.
Yes ↓		
Change the main circuit board Is the appliance working correctly?	No →	Replace display board.
Yes ↓		
Run the diagnostics programme.		

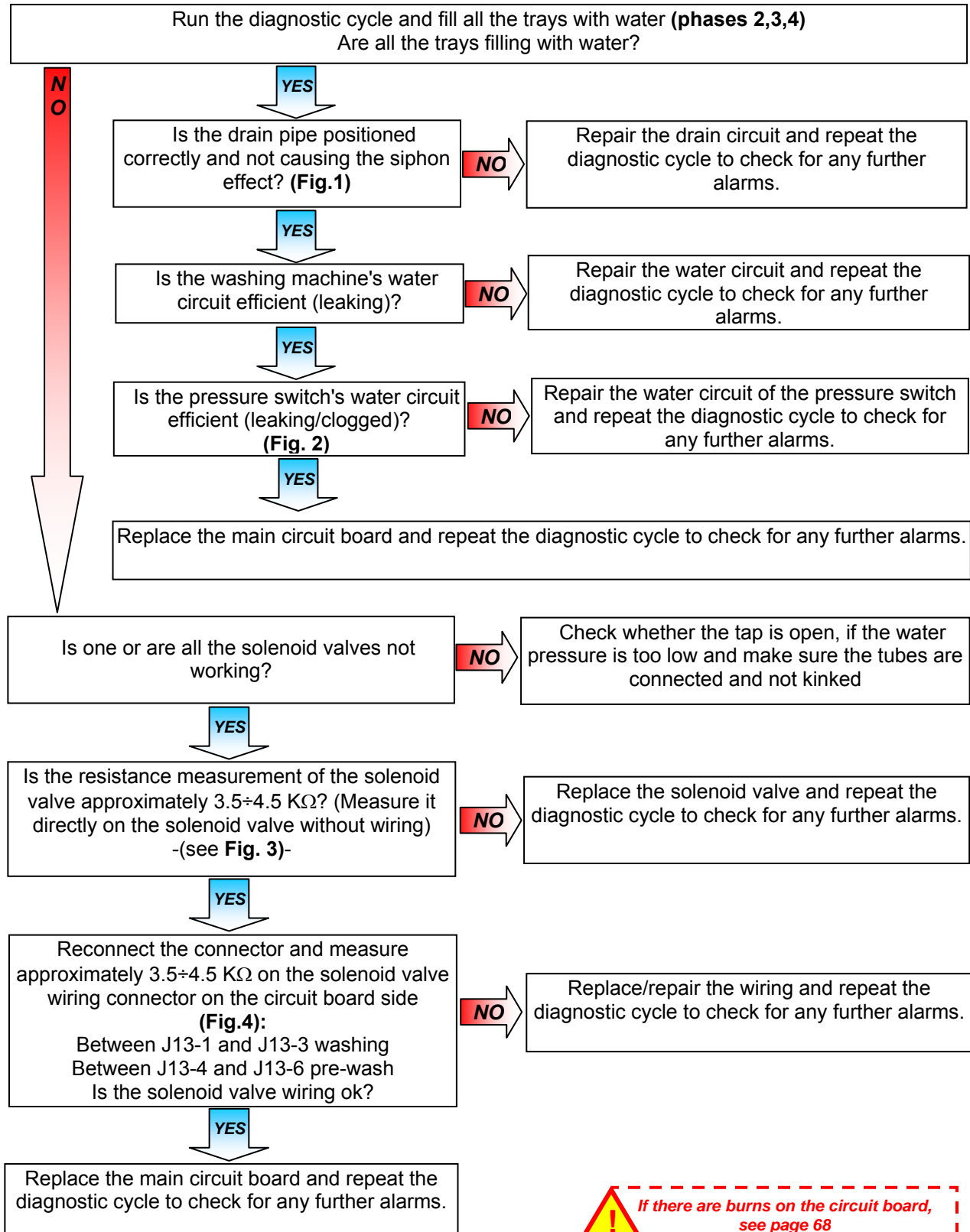


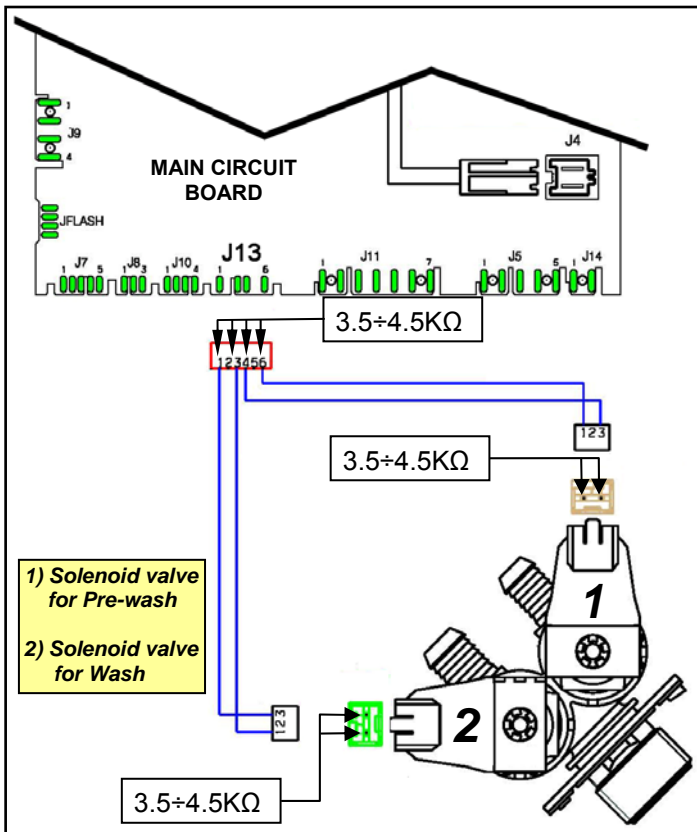
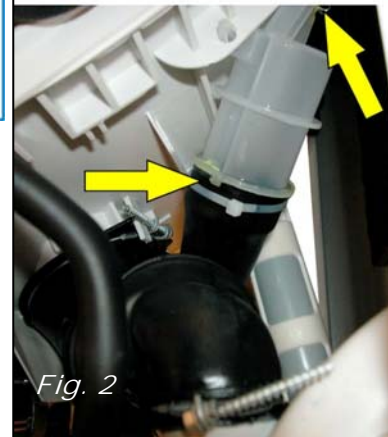
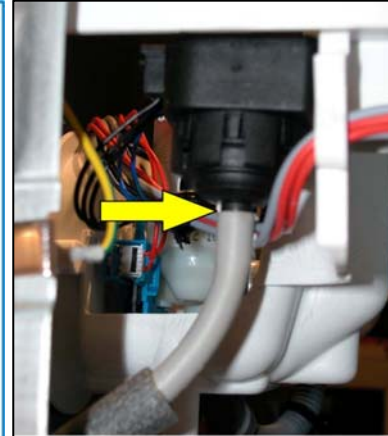
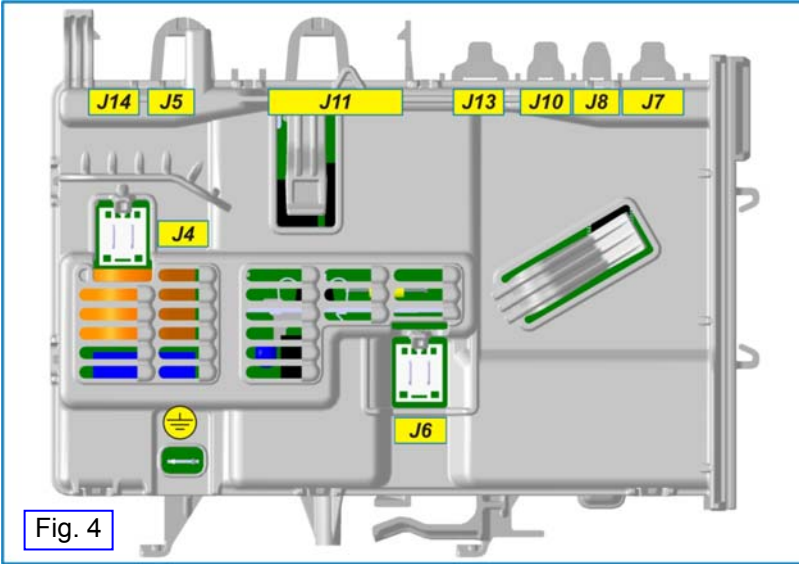
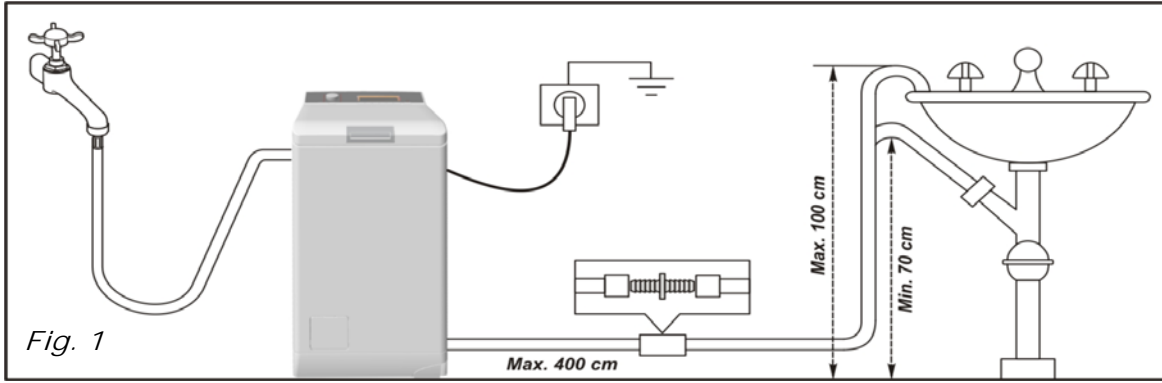
### 6.2 Some of the LEDs on the circuit board light up

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 circuit board and run the diagnostics programme.		

## 7 TROUBLESHOOTING BASED ON ALARM CODES

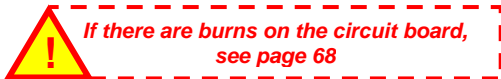
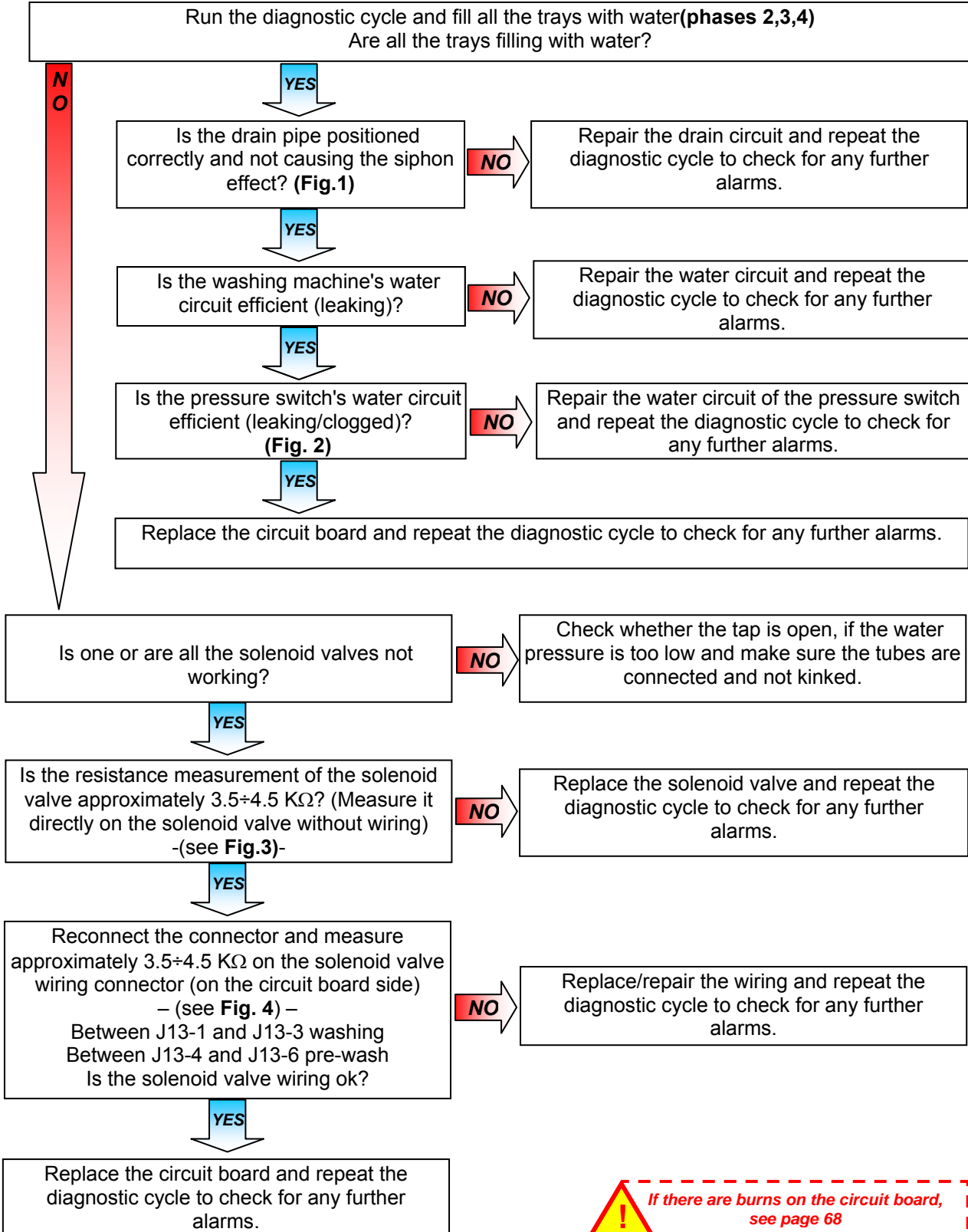
<b>E11</b>	<b>E11: Water fill difficulty during washing</b>	<b>E11</b>
	Maximum water fill time for every level of the pressure switch (the time is reset every time the level is achieved)	

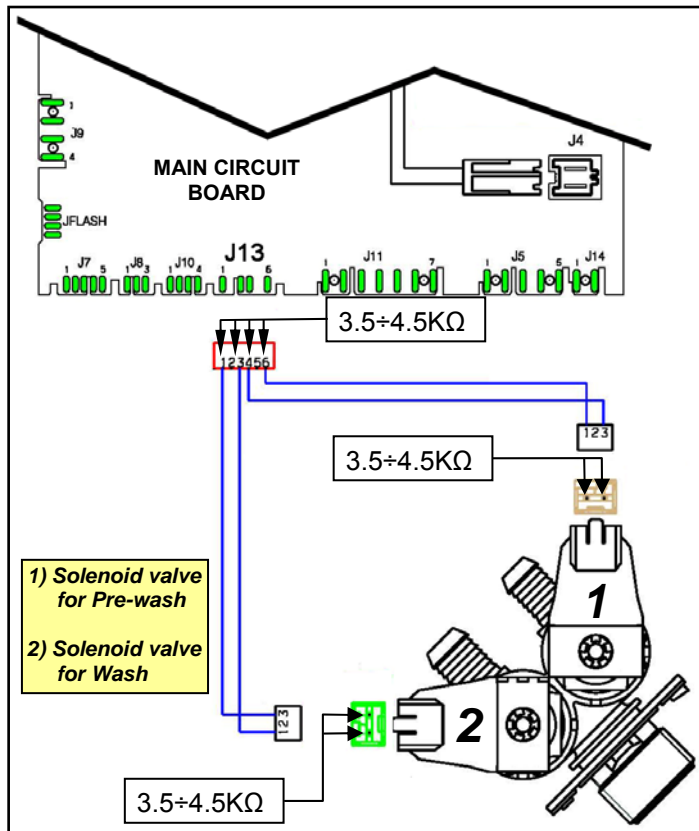
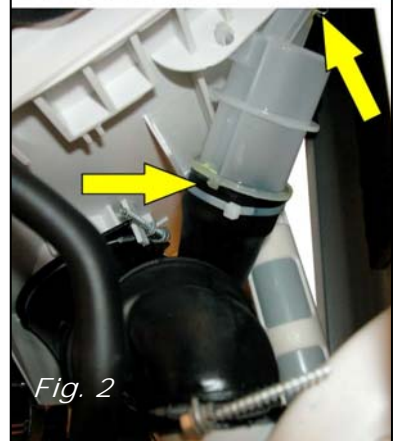
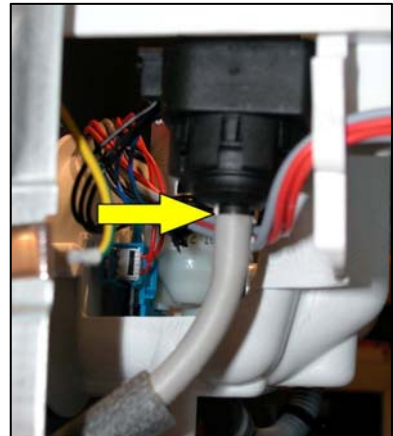
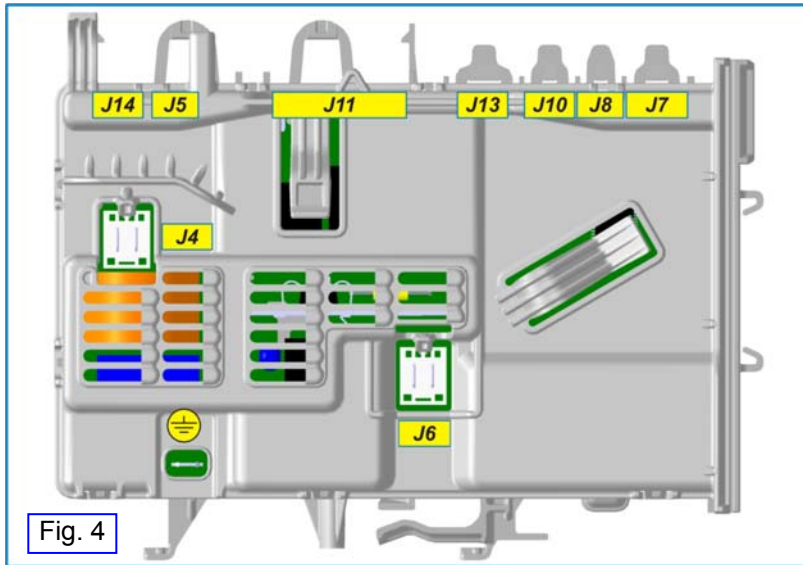
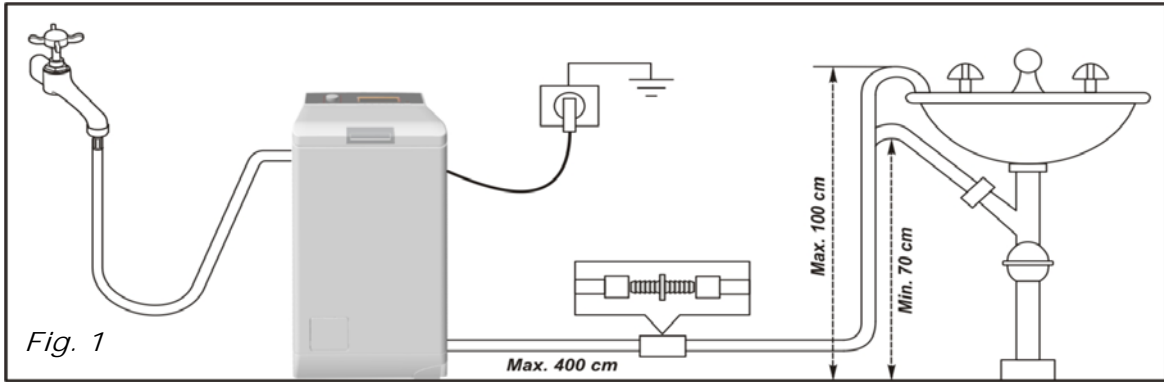




**!** If there are burns on the circuit board, see page 68

<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)	



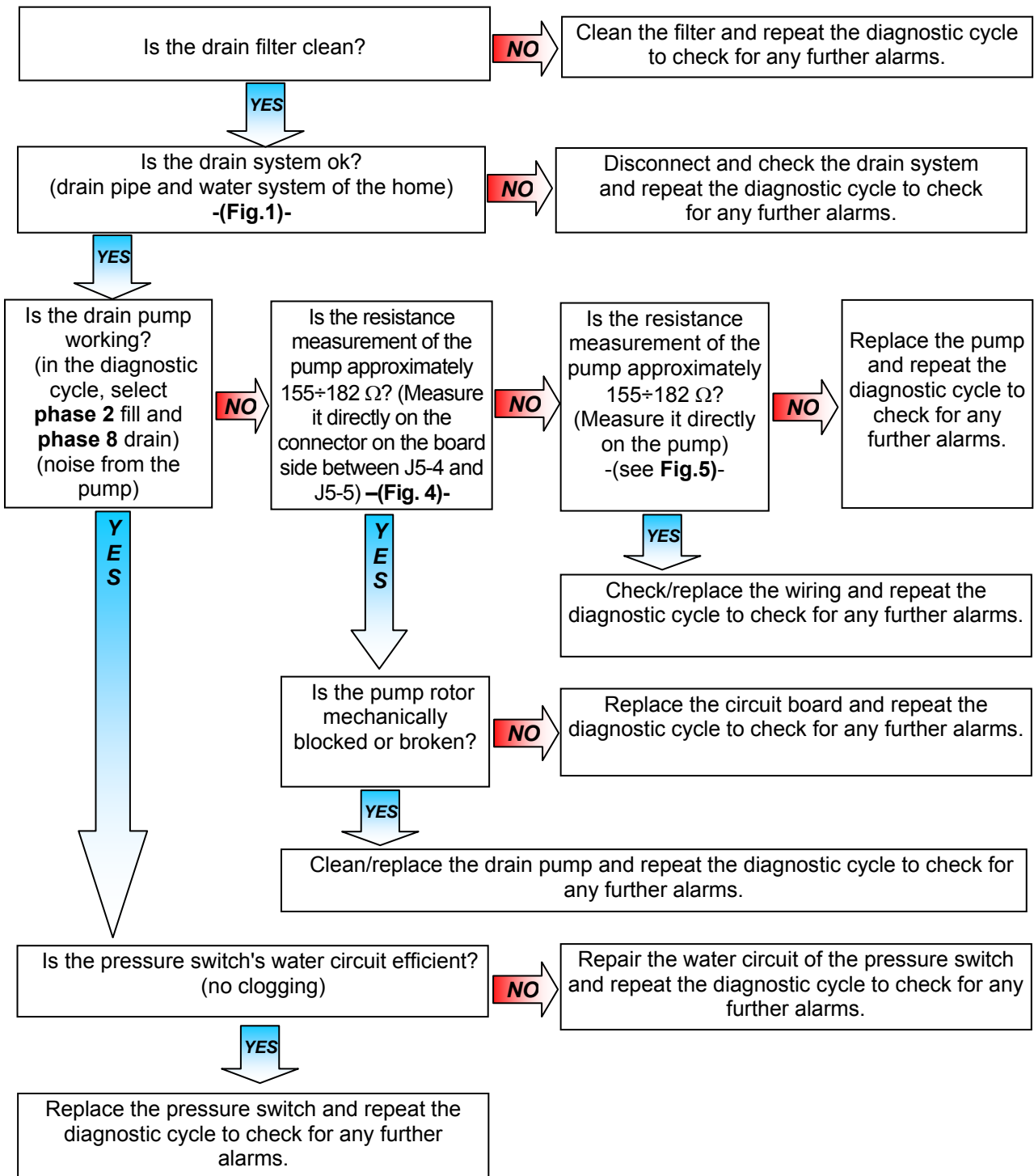


**!** If there are burns on the circuit board, see page 68

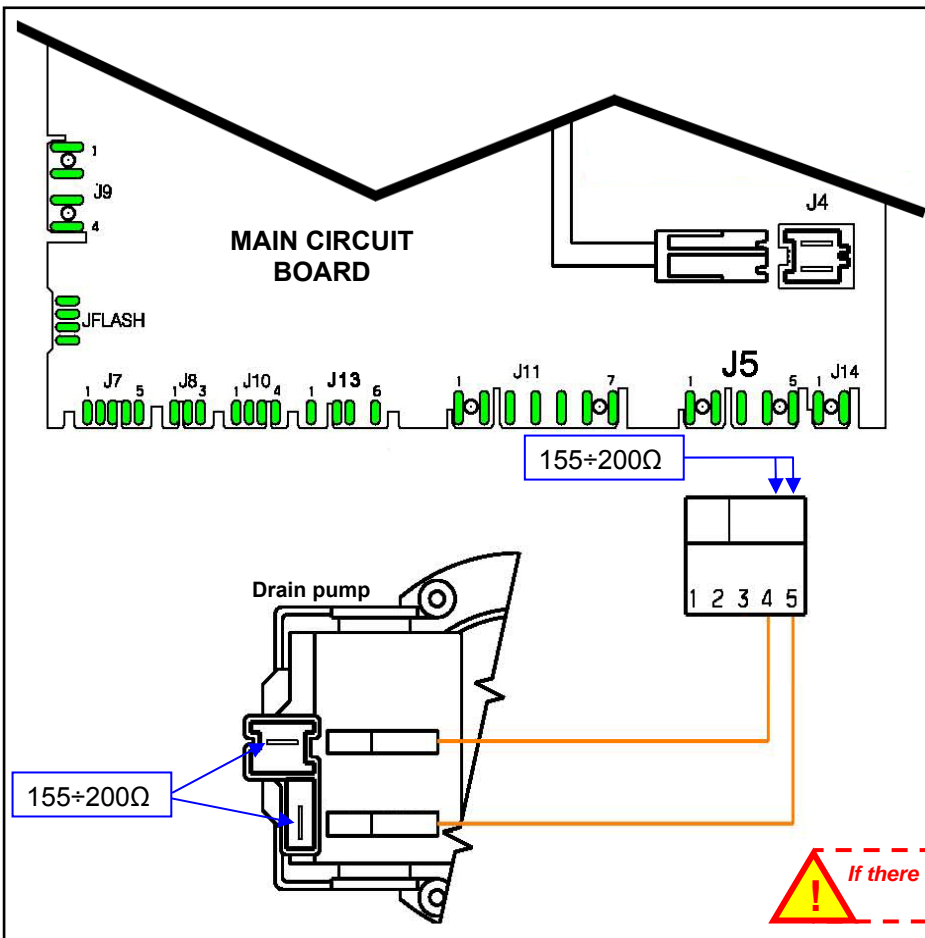
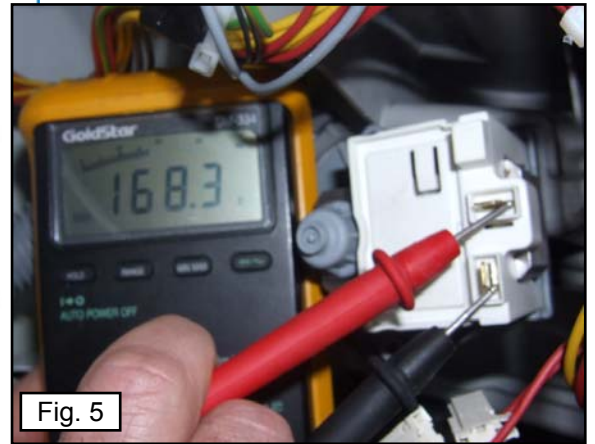
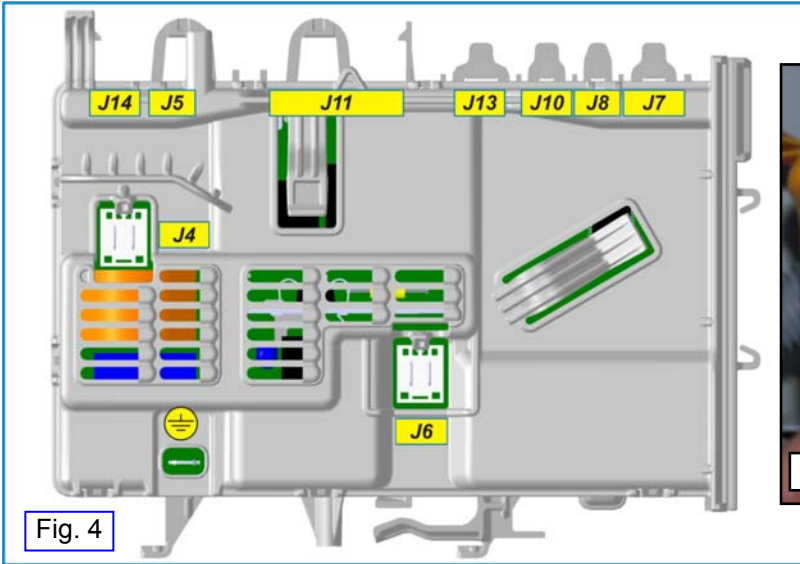
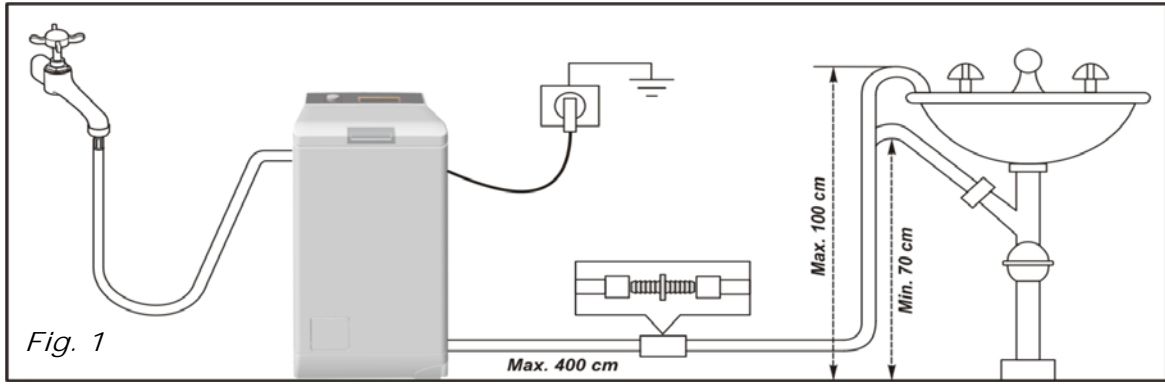


<b>E21</b>	<b>E21: Drain difficulty</b>	<b>E21</b>
	Maximum drain time exceeded (measured for every cycle phase)	

Check that all the connectors are correctly inserted

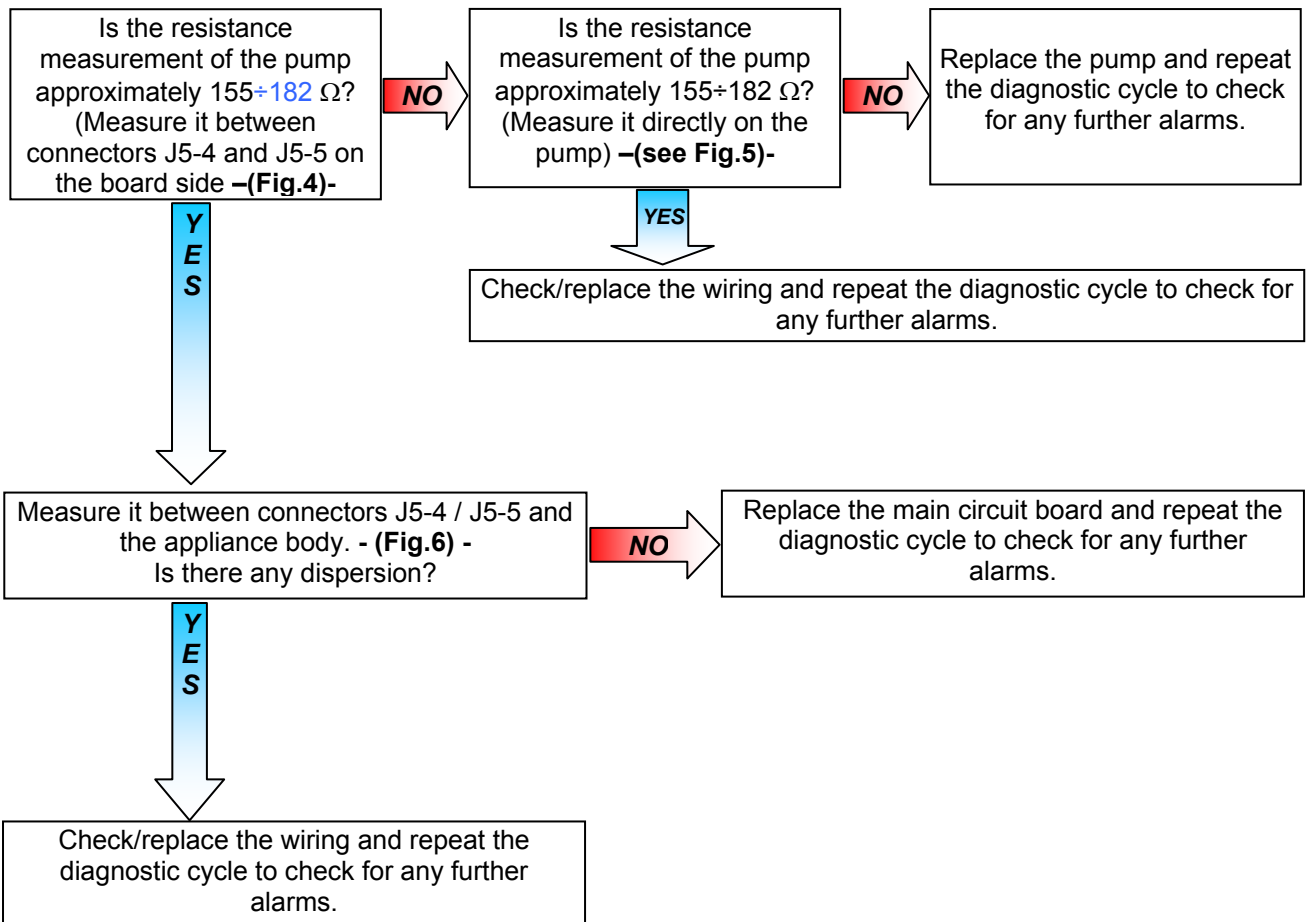


If there are burns on the circuit board, see page 68





Check that all the connectors are correctly inserted



If there are burns on the circuit board, see page 68



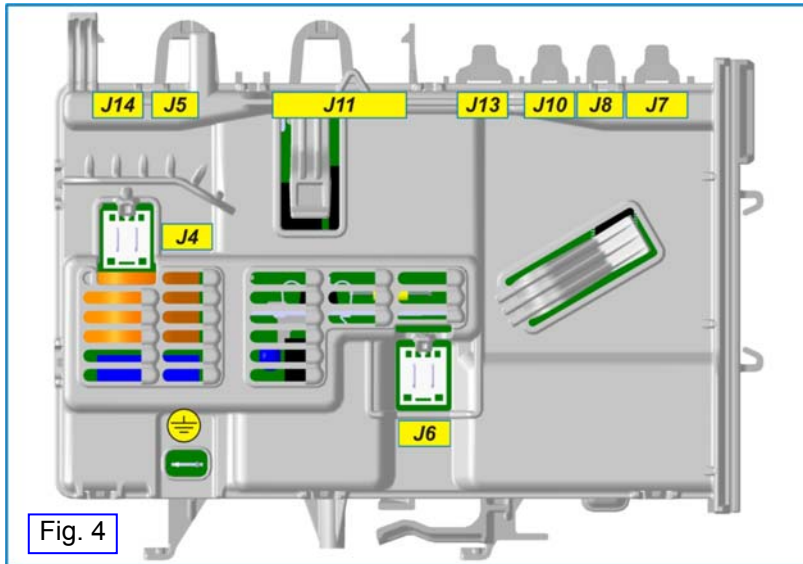


Fig. 4

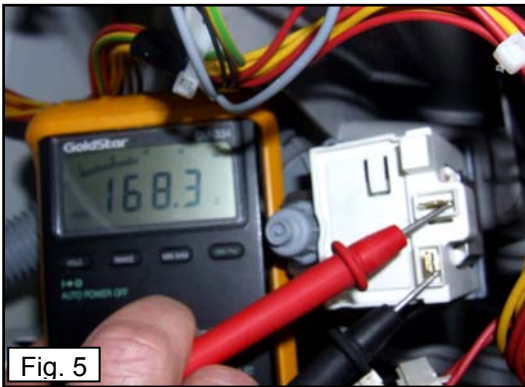


Fig. 5

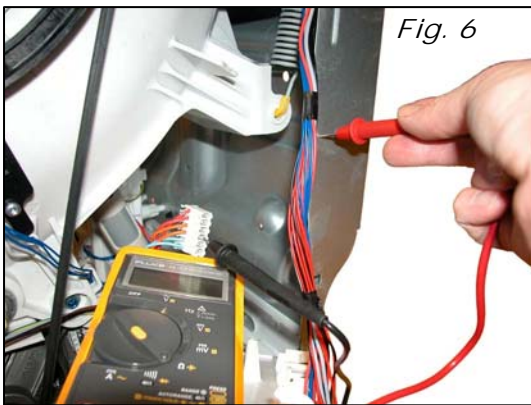
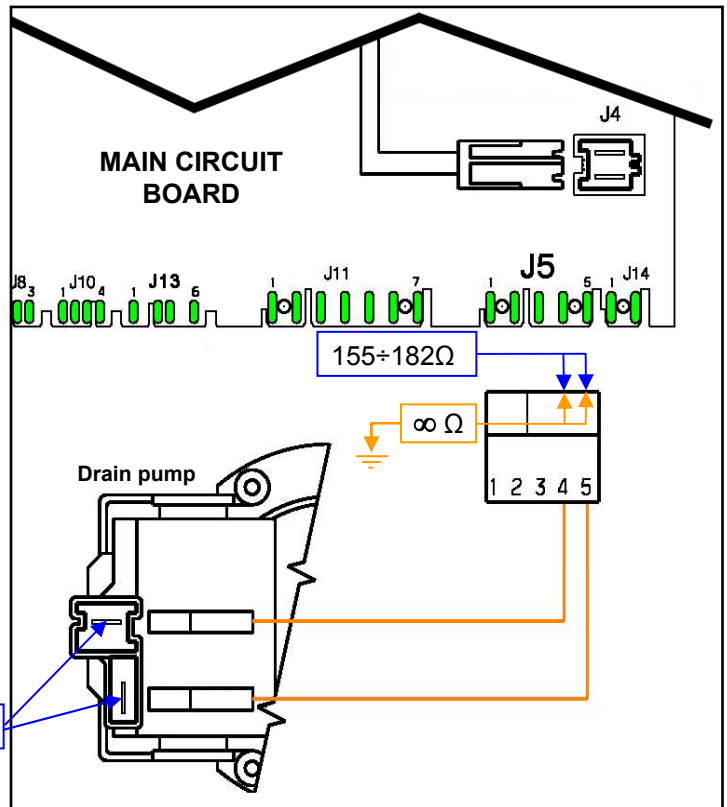


Fig. 6



**!** If there are burns on the circuit board, see page 68

<b>E24</b>	<b>E24: Sensing circuit of the component (Triac) controlling the drain pump faulty</b>	<b>E24</b>
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 *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 68*

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

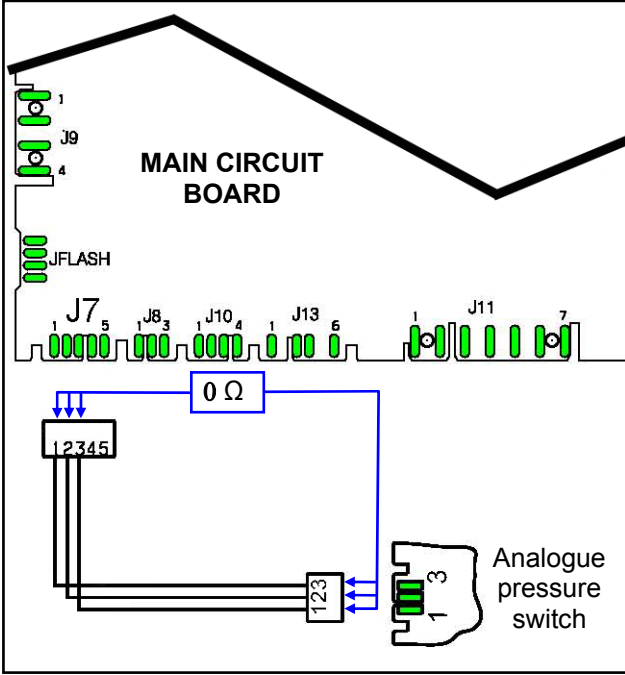
**NO** → Reconnect and/or replace the wiring and repeat the diagnostic cycle to check for any further alarms.

**YES**

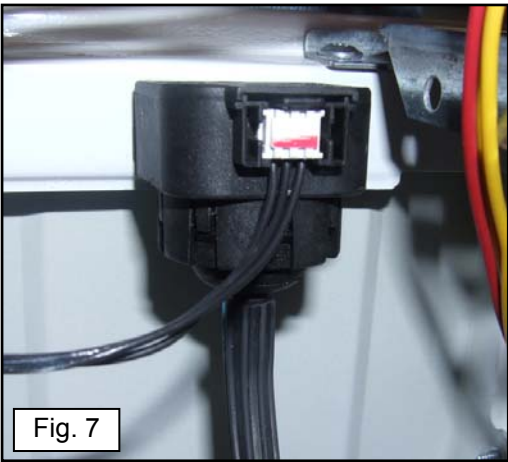
Replace the analogue pressure switch and repeat the diagnostic cycle to check for any further alarms codes.  
Is the appliance displaying the alarm code again?

**YES**

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



 *If there are burns on the circuit board, see page 68*



E32

**E32: The analogue pressure switch causes an error during calibration**

(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)

E32

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

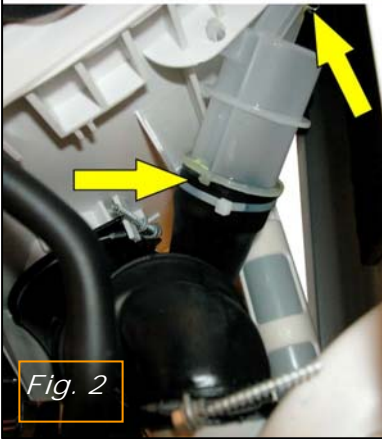
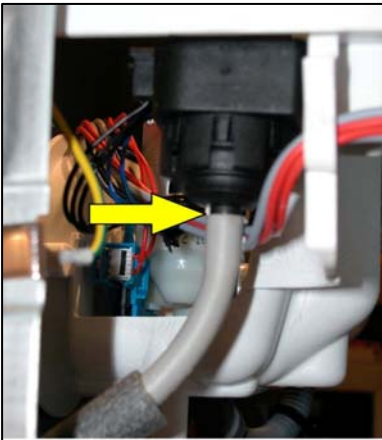
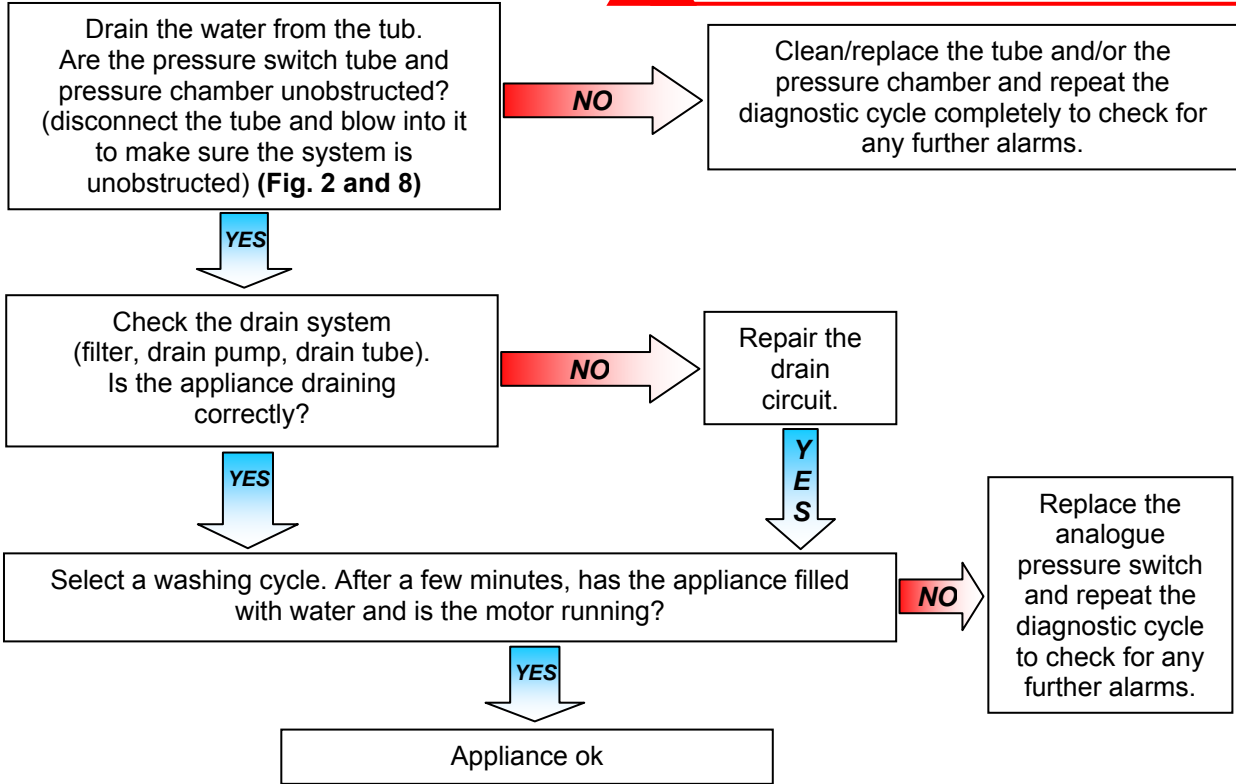


Fig. 2

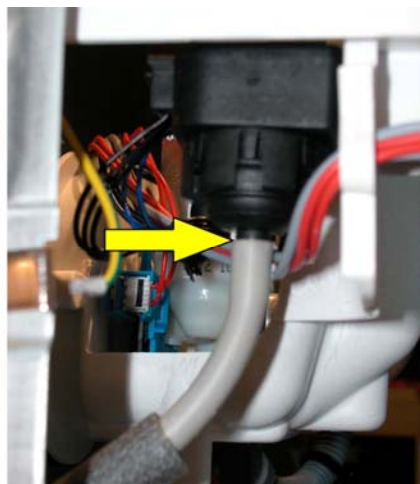
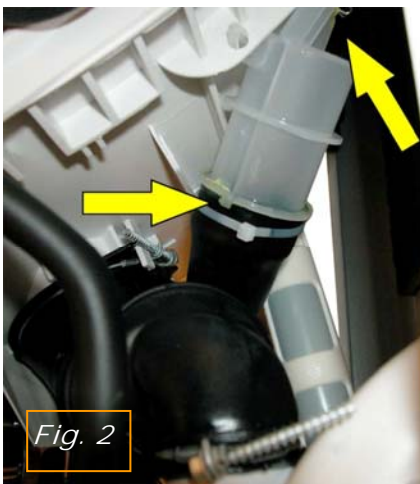
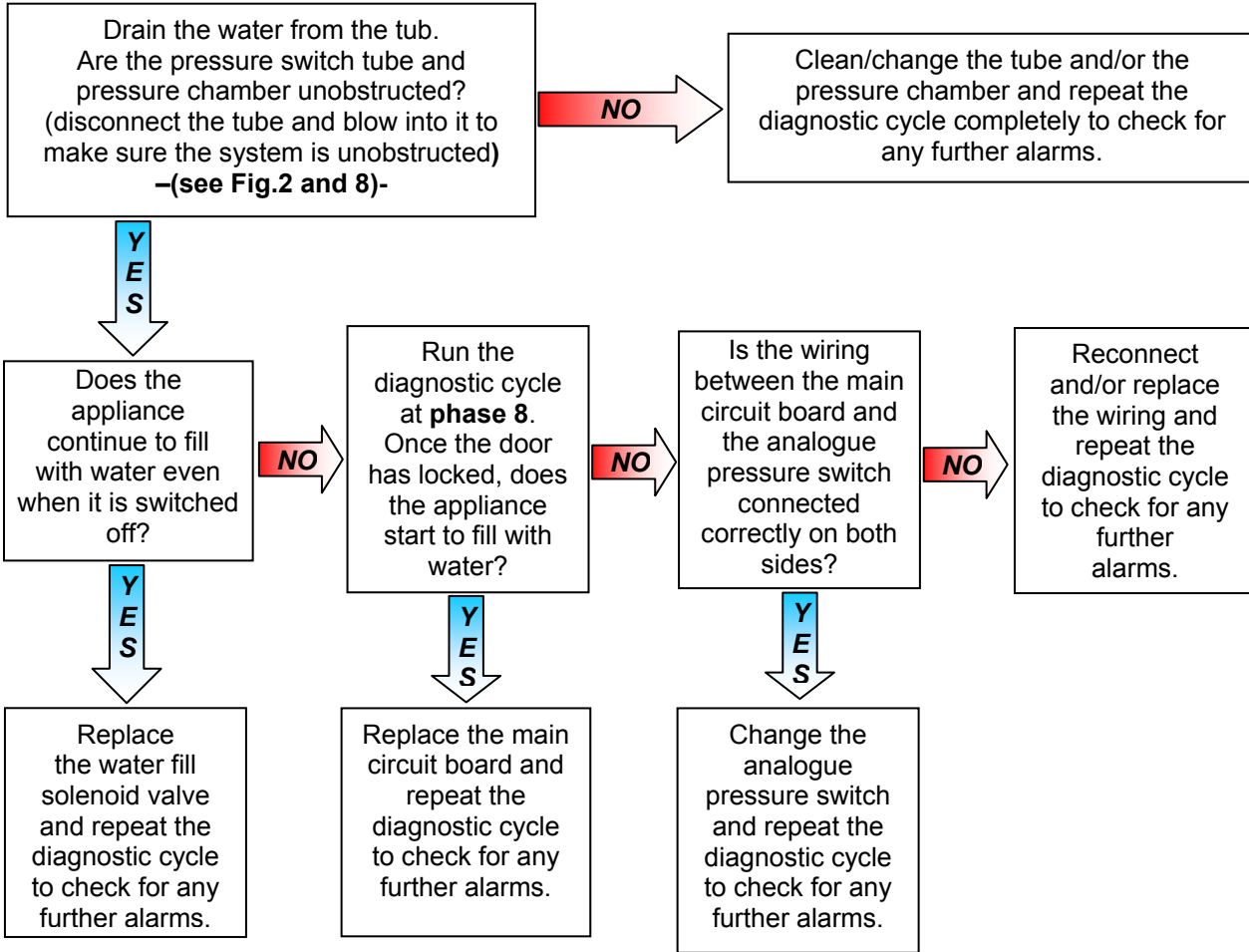


Fig. 8

**!** If there are burns on the circuit board, see page 68

<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.	

Check that all the connectors are correctly inserted

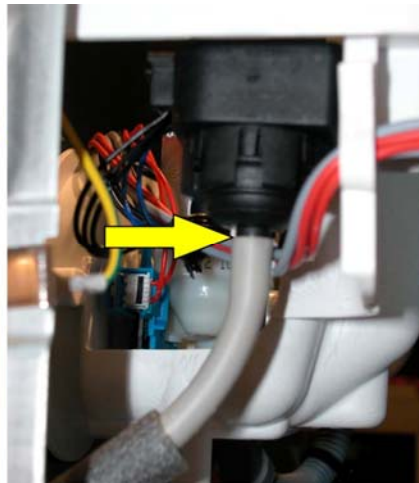
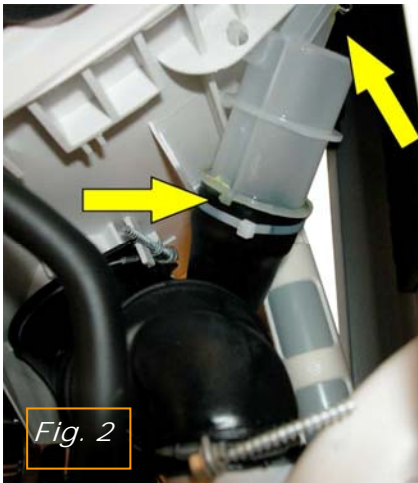
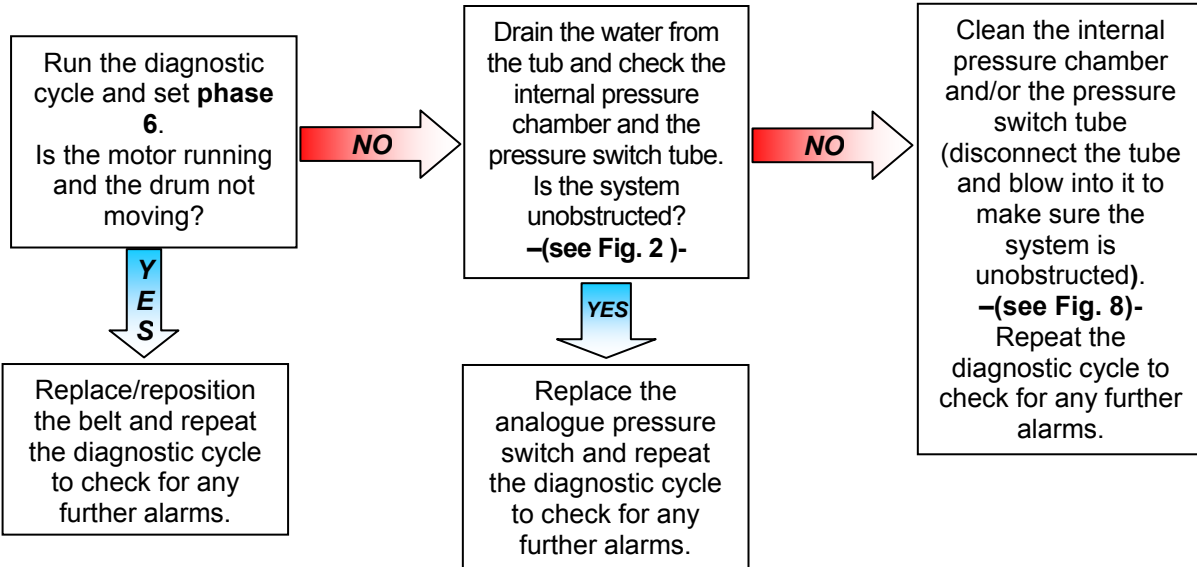


If there are burns on the circuit board, see page 68



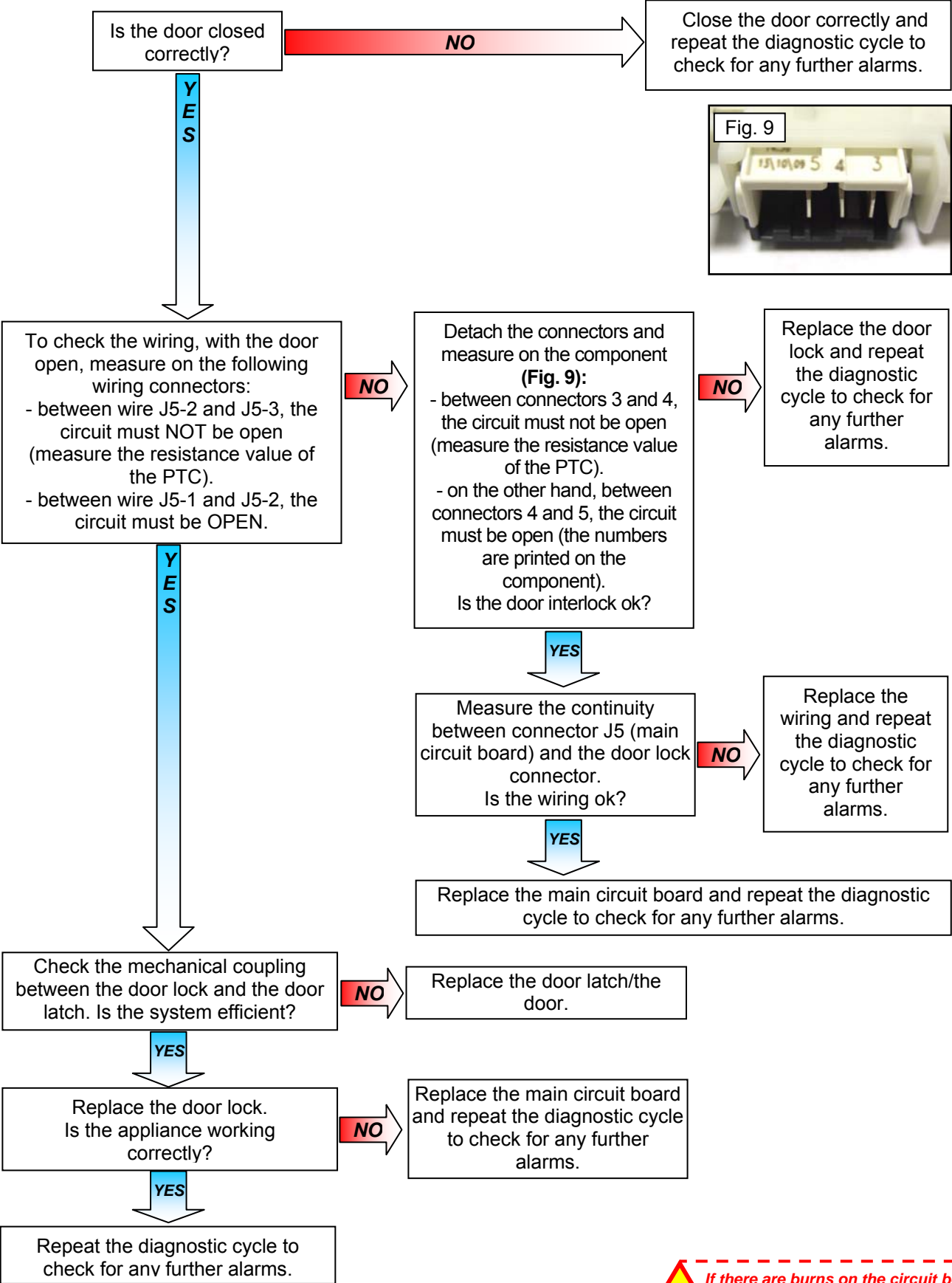
<b>E38</b>	<b>E38: Internal pressure chamber is clogged</b>	<b>E38</b>
	The analogue pressure switch is not able to measure any variation in the water level for at least 30 secs during drum rotation.	

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



**!** If there are burns on the circuit board, see page 68

<b>E41</b>	<b>E41: Door open (device with 3 connections)</b>	<b>E41</b>
	Maximum time exceeded (PTC = 15 seconds)	



**!** If there are burns on the circuit board, see page 68

E41 (device with 3 connections)

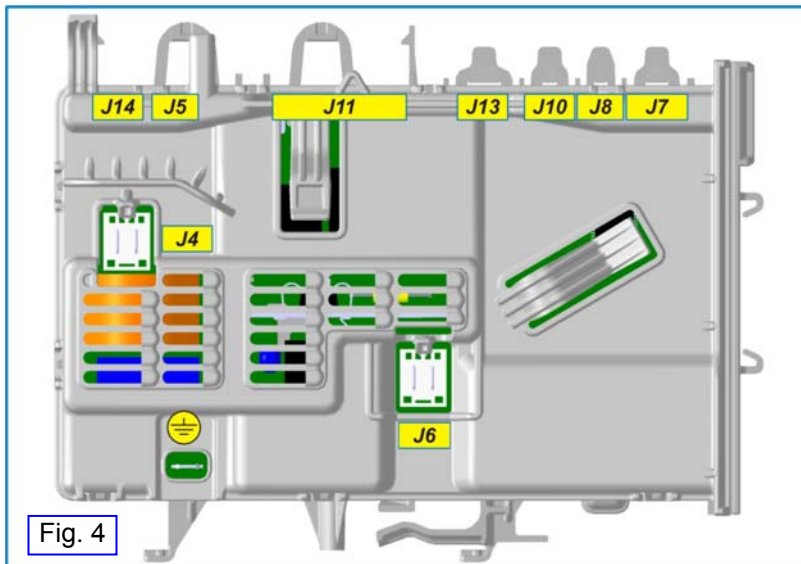


Fig. 4

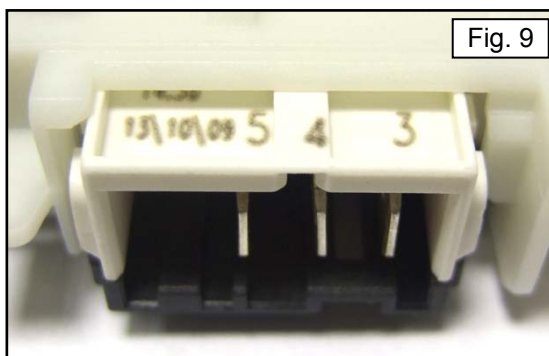
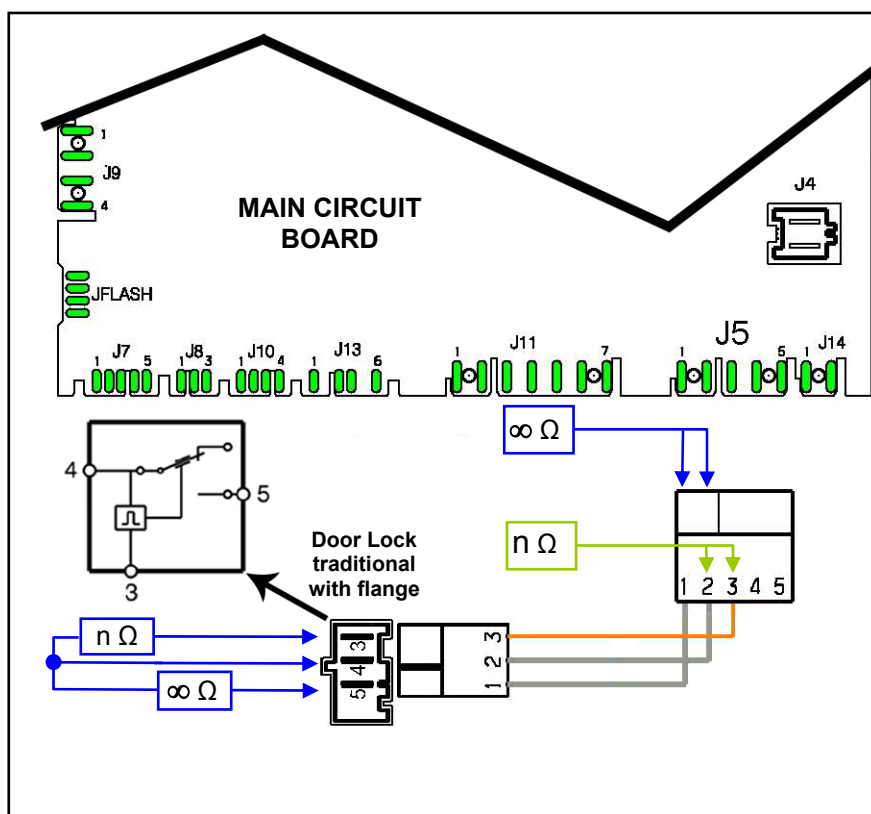
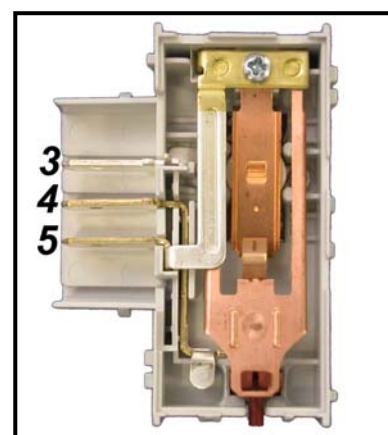
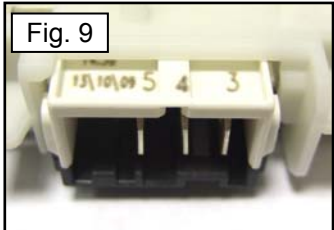
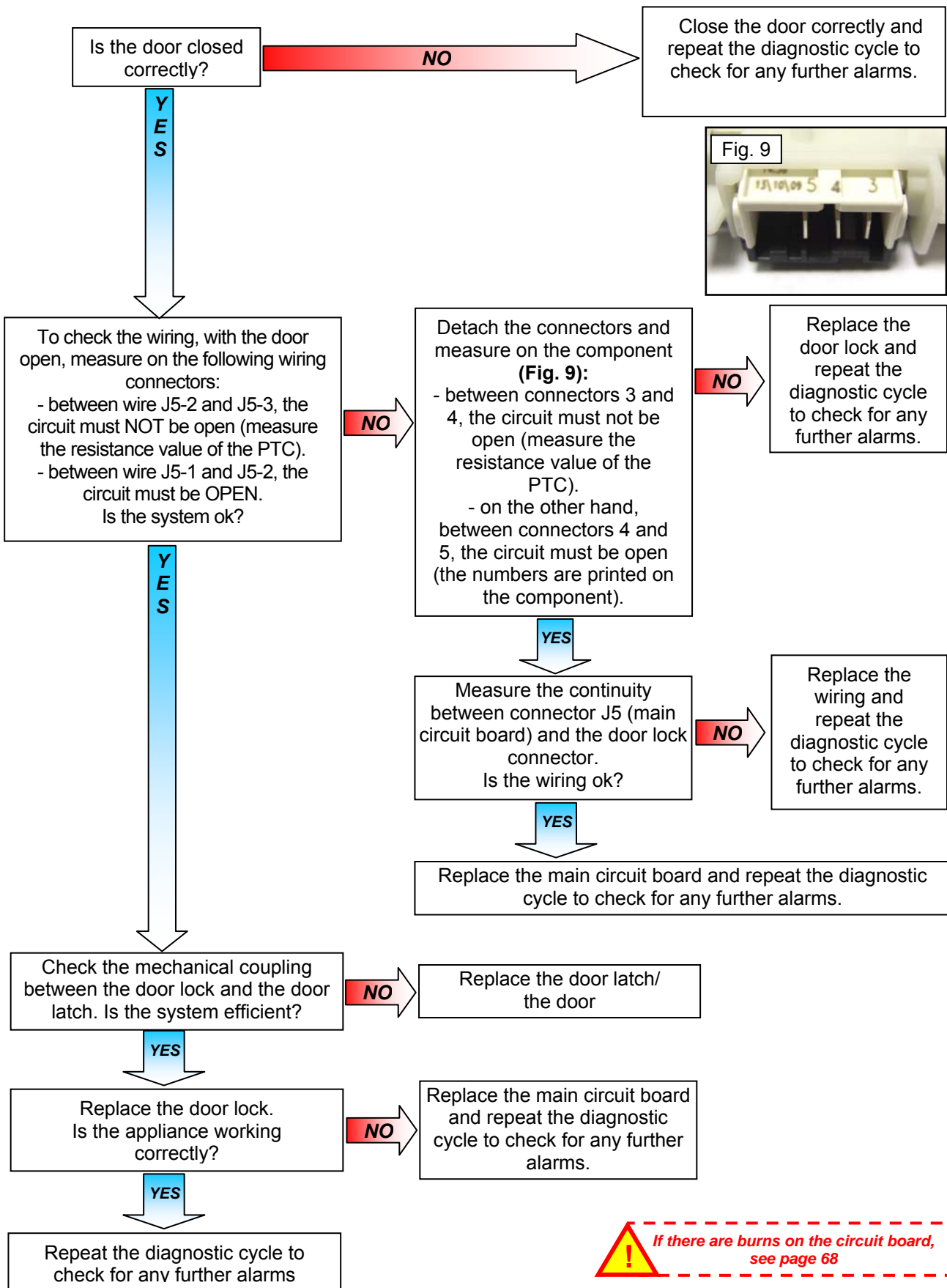


Fig. 9



**!** If there are burns on the circuit board, see page 68

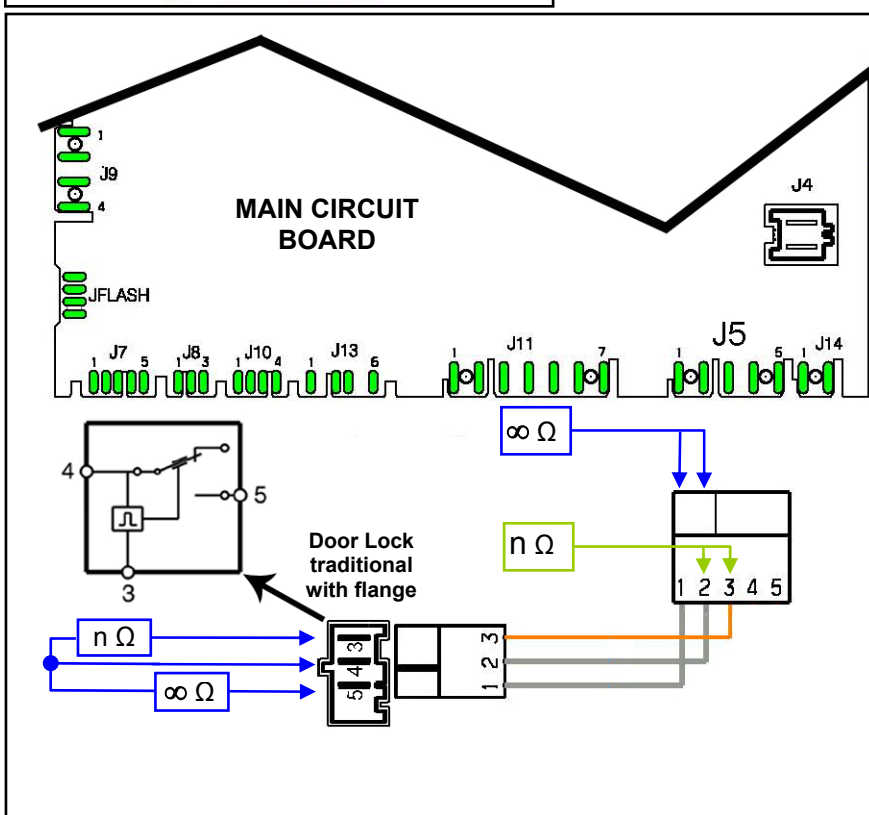
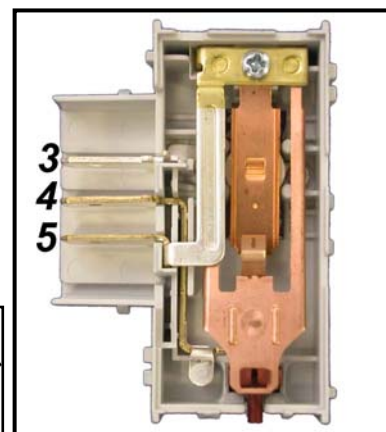
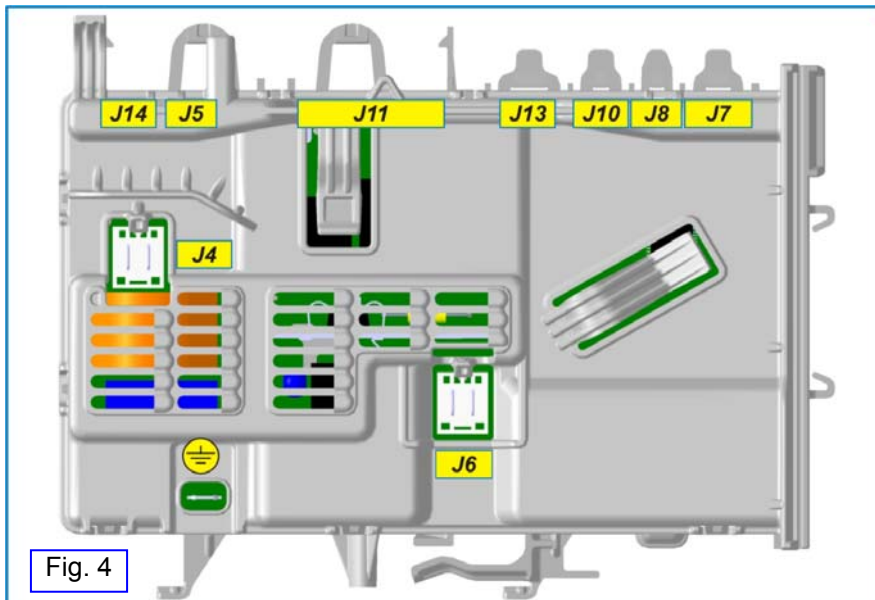
**Check that all the connectors are correctly inserted**



**If there are burns on the circuit board, see page 68**



E42 (device with 3 connections)



**!** If there are burns on the circuit board, see page 68

<b>E43</b>	<b>E43: Problems with the component (Triac) controlling the door delay system (device with 3 connections)</b>	<b>E43</b>
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**!** *Check that all the connectors are correctly inserted*

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

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

Is the system ok?

**NO**

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

- between connectors 3 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 interlock ok?

**NO**

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

**YES**

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

**YES**

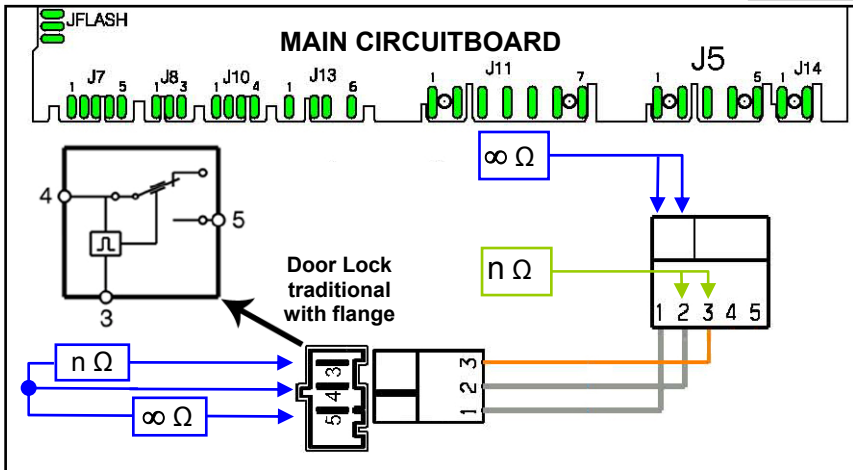
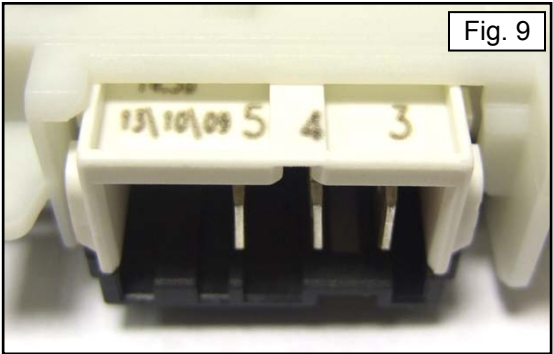
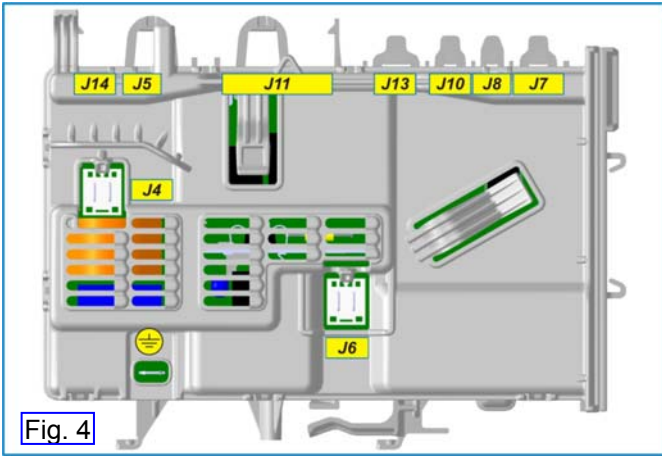
Measure the continuity between connector J5 (main circuit board) and the door lock connector. Is the wiring ok?

**NO**

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

**YES**

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



**!** *If there are burns on the circuit board, see page 68*

<b>E44</b>	<b>E44: Door closed "sensing" circuit faulty</b>	<b>E44</b>
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*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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*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 68*

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

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

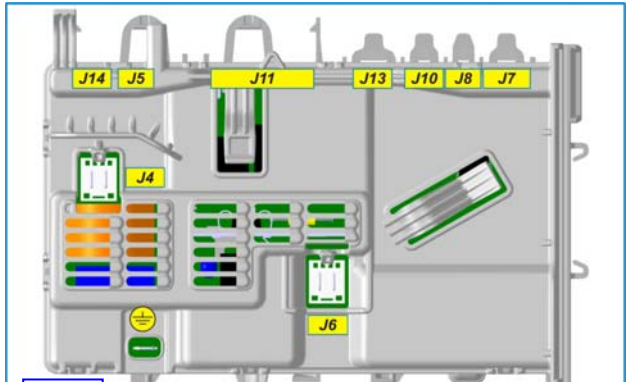
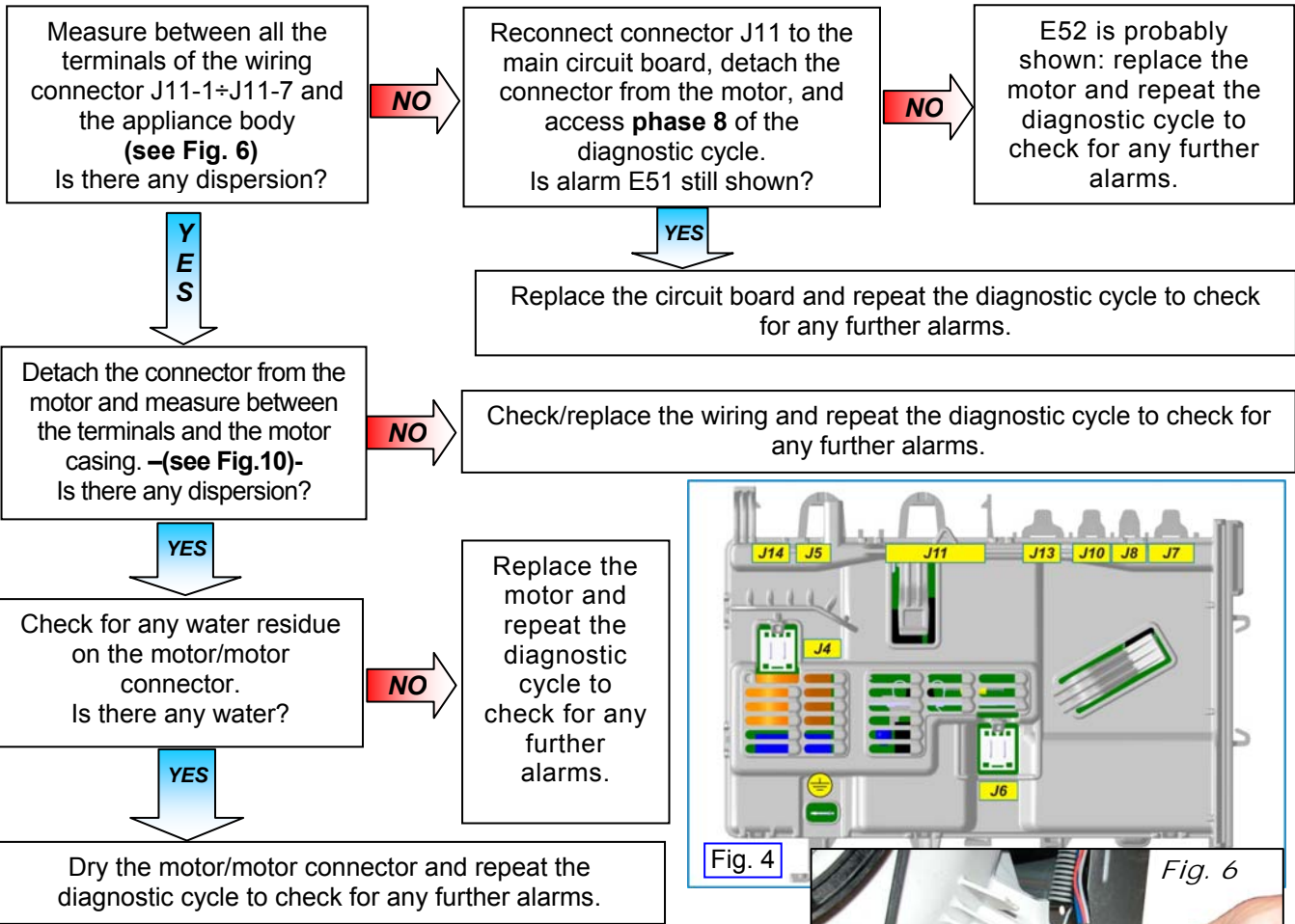


Fig. 4

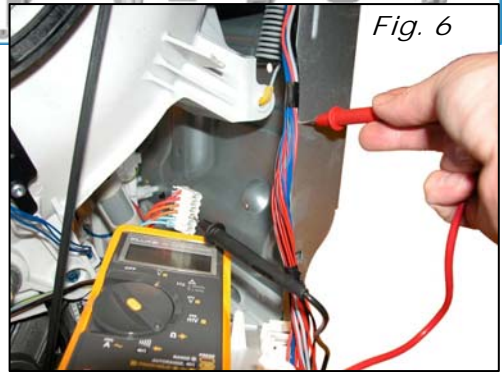


Fig. 6

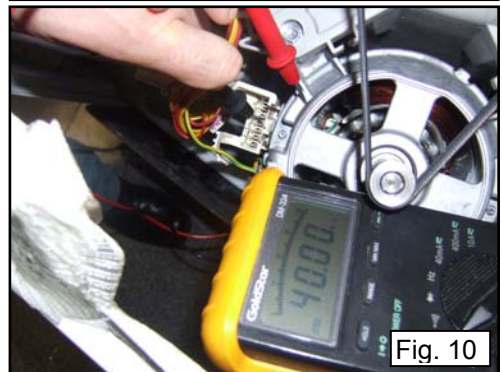
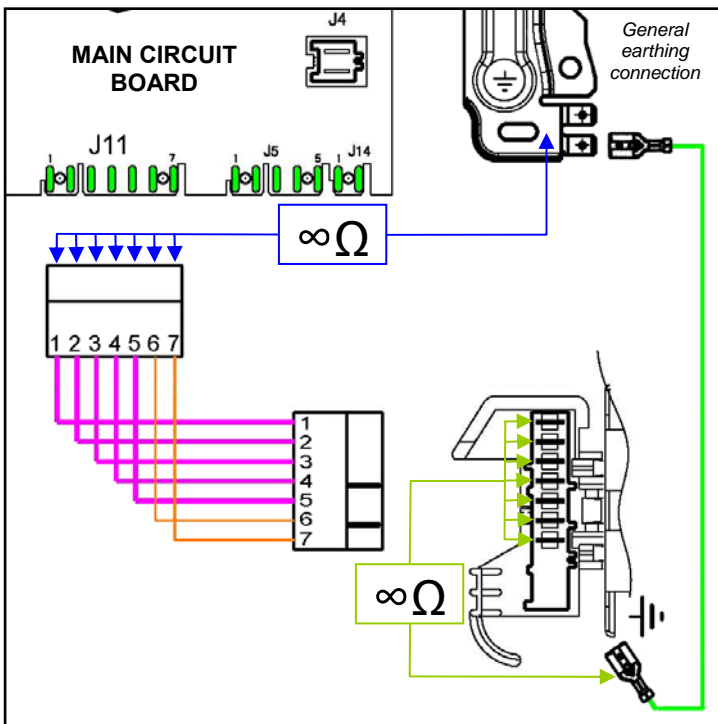


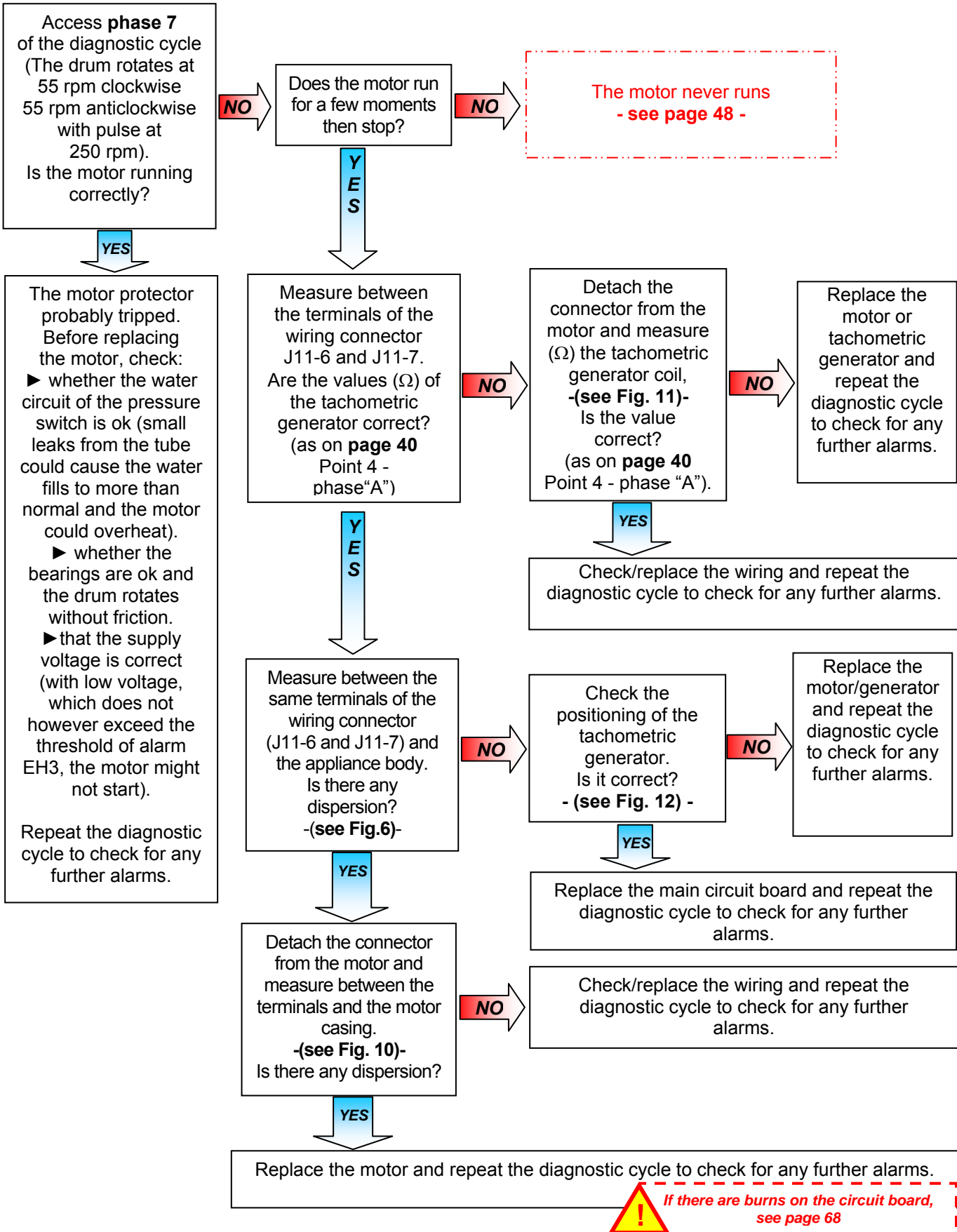
Fig. 10



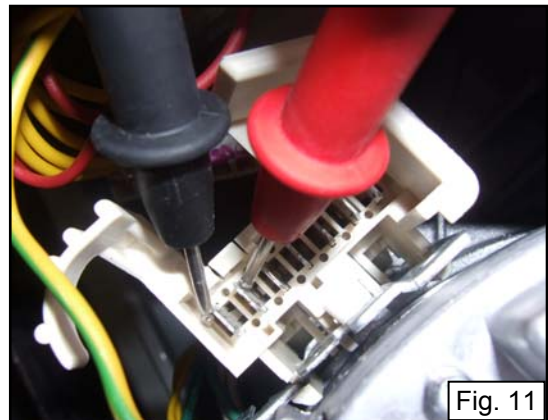
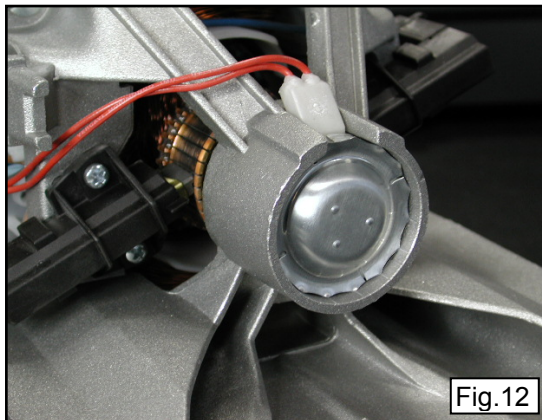
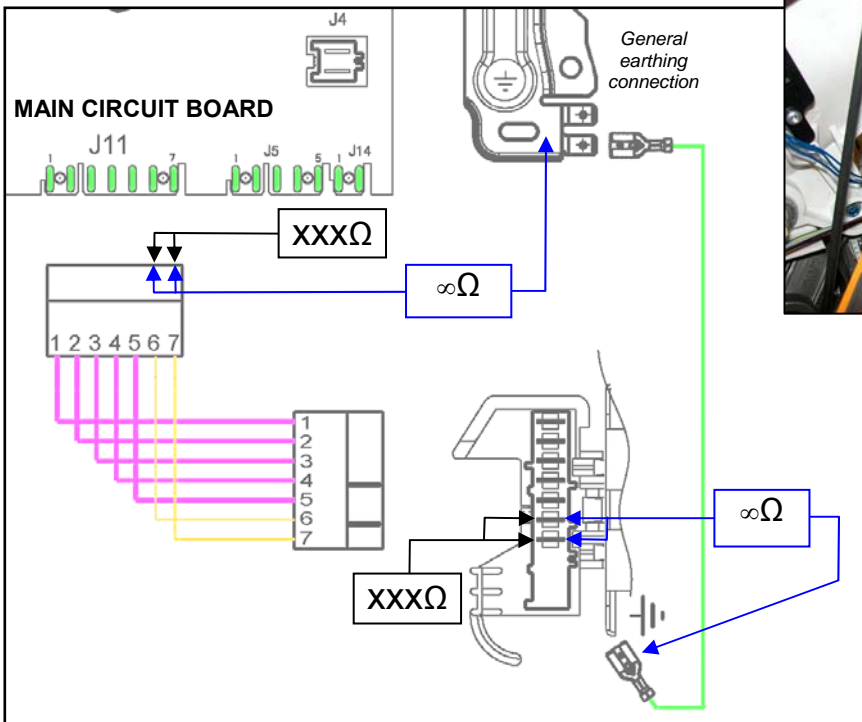
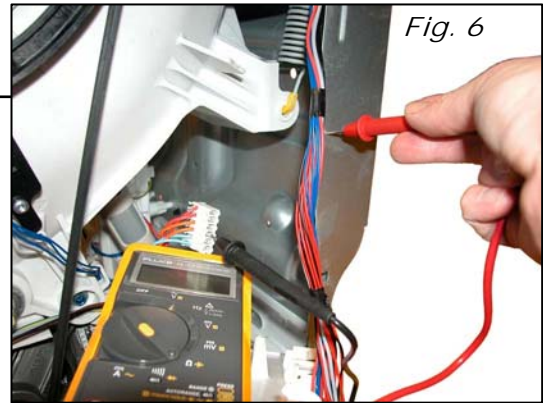
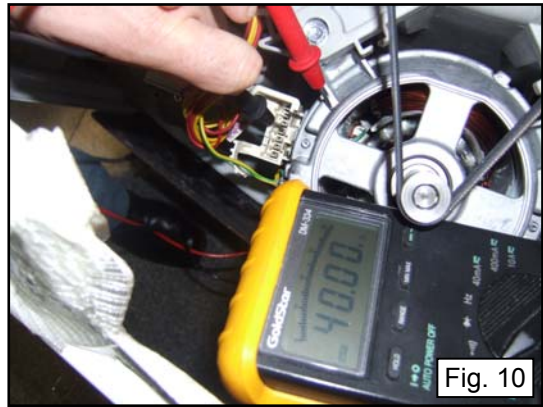
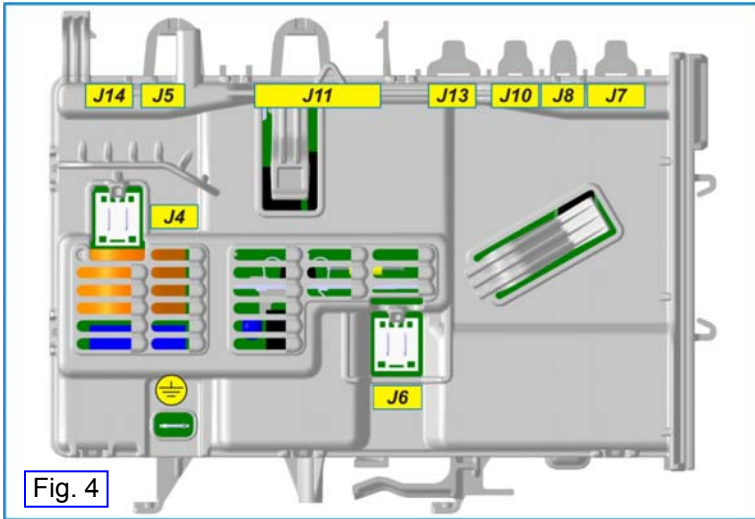
**!** If there are burns on the circuit board, see page 68

<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.	

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







**!** If there are burns on the circuit board, see page 68

<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.	

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

**The motor never runs**

To check the wiring, measure ( $\Omega$ ) between the following wiring connectors of the main circuit board (**Fig.4**) and compare the values with the correct ones (see **page 40**: point 4 - motor parameters)

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

Are the values correct?

**NO**

Check the motor as on **page 40**. 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 circuit board and repeat the diagnostic cycle to check for any further alarms.

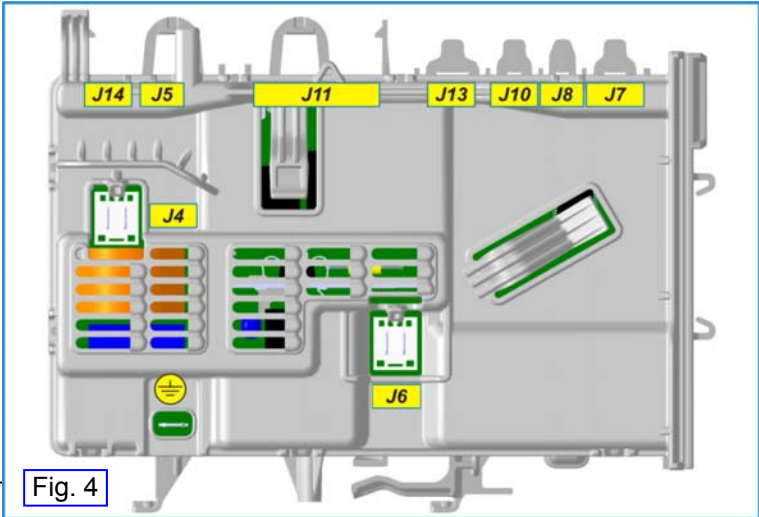


Fig. 4

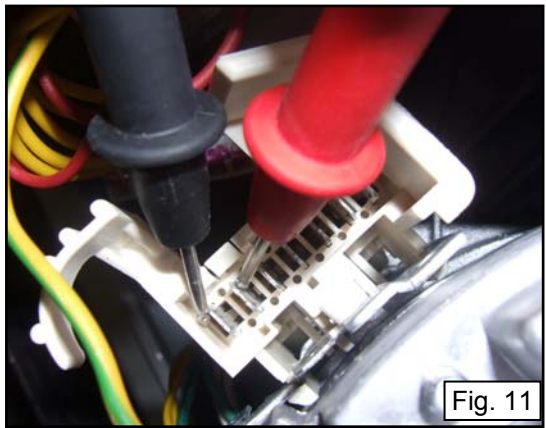
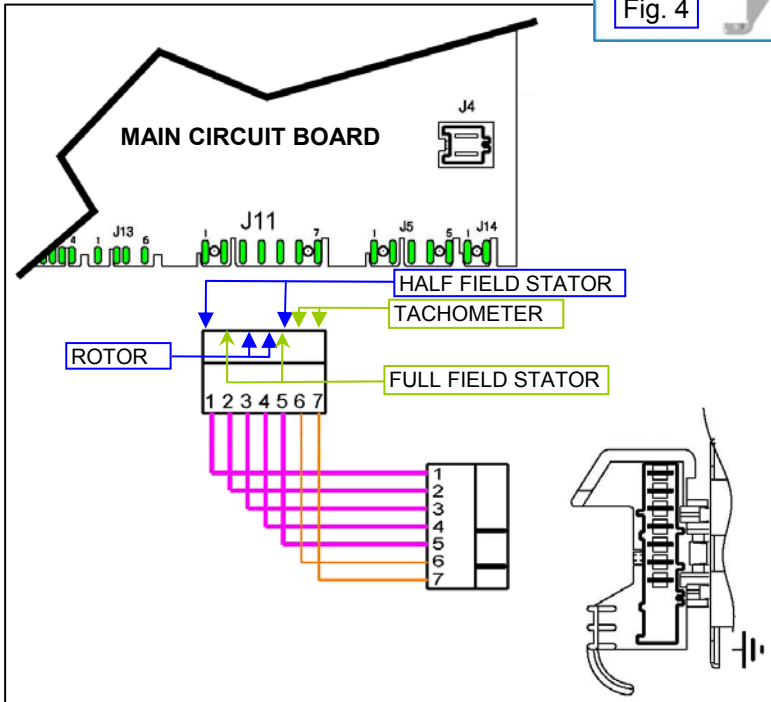
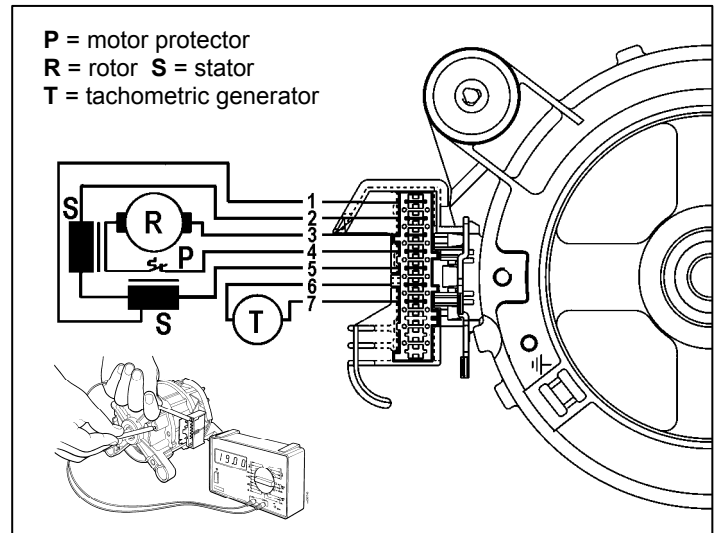


Fig. 11

**!** If there are burns on the circuit board, see page 68

## How to check collector motors

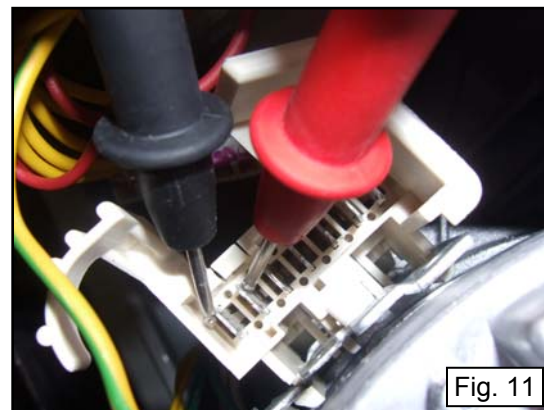
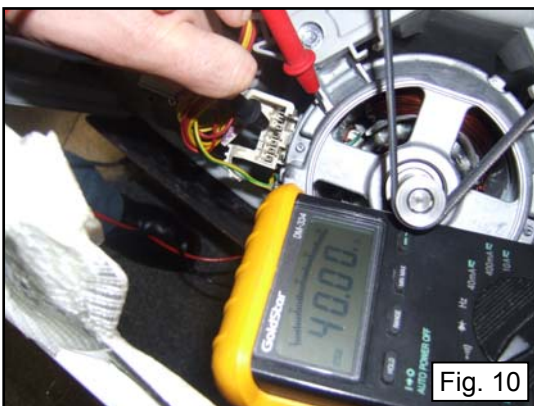
- 1) Check the connection blocks (wiring) and for the presence of any protruding/kinked terminals.
- 2) Check for the presence of any marks / residue / water or detergent deposits on the motor and where these come from.
- 3) Proceed by checking for any windings / earthed parts or parts with poor earthing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



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

The tolerance of the resistance of windings is  $\pm 7\%$

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





**E53**

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

**E53**



*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 68*

<b>E54</b>	<b>E54: Motor relay contacts sticking</b>	<b>E54</b>
	Voltage value on the motor circuit even when the same should not be operating	

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

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

**NO**

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

**YES**

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

**NO**

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

**YES**

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

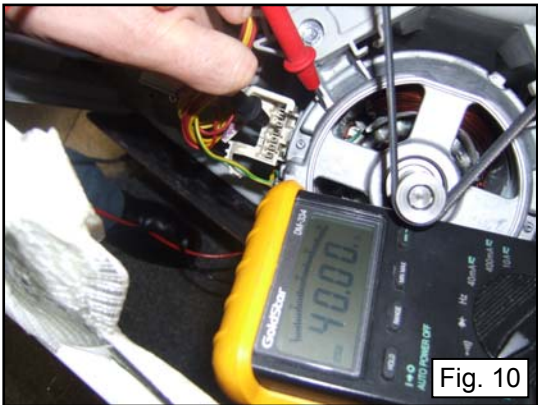


Fig. 10

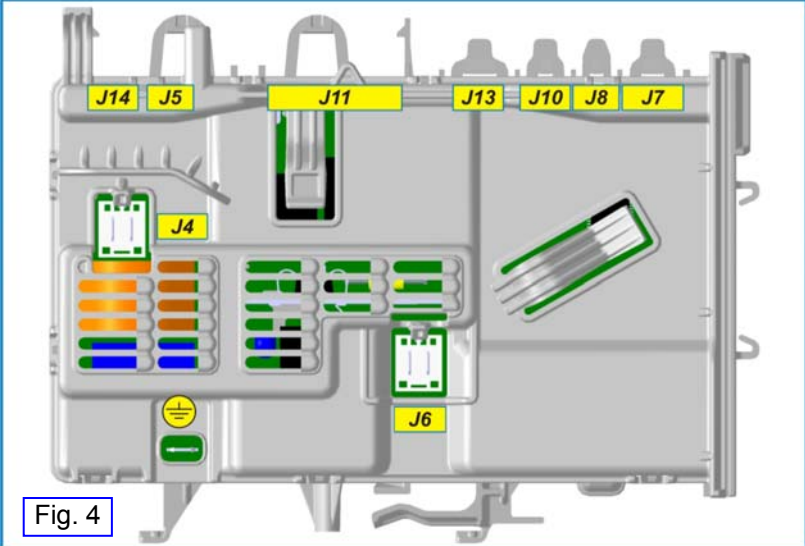


Fig. 4

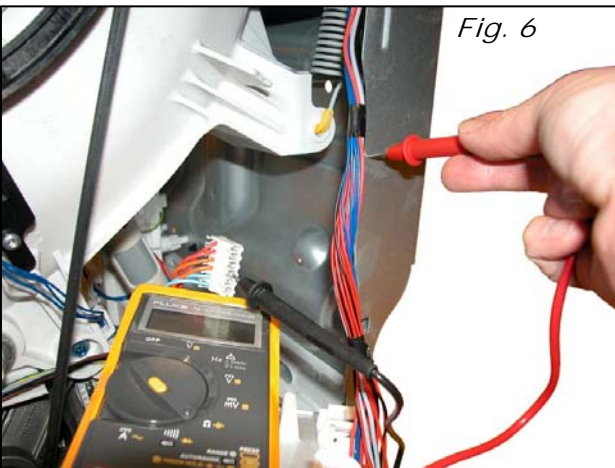
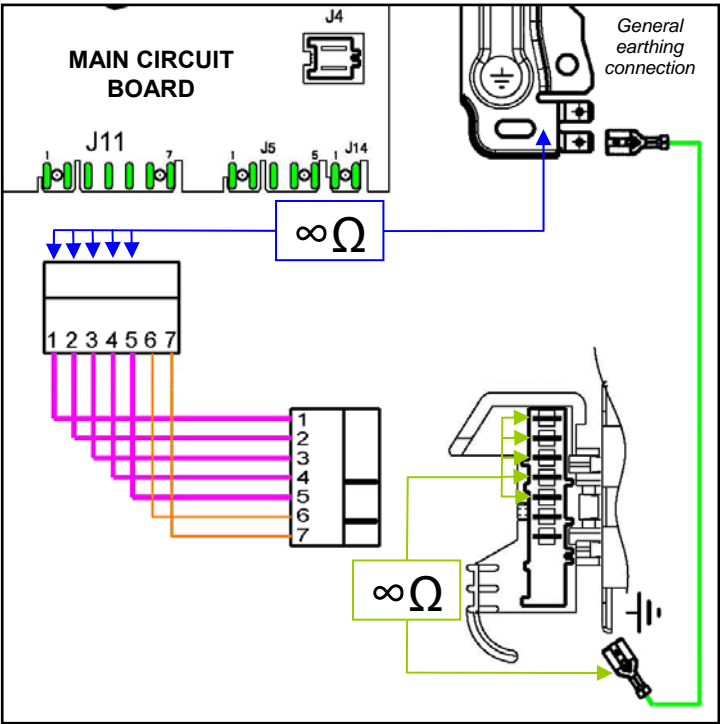


Fig. 6

**!** If there are burns on the circuit board, see page 68

<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.	

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

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

**YES**

Measure the NTC probe between terminals J7-4 and J7-5 of the main circuit board connector. Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

**YES**

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

**NO**

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

**YES**

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

**NO**

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

**NO**

Detach the connector and measure the value directly on the NTC probe. - (see Fig. 14)- Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

**YES**

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

**NO**

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

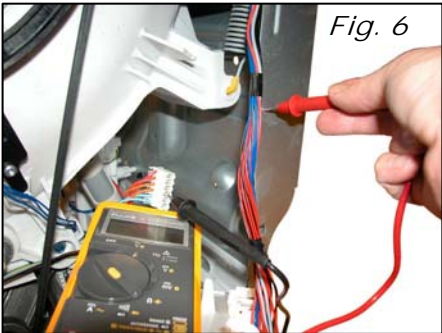


Fig. 6

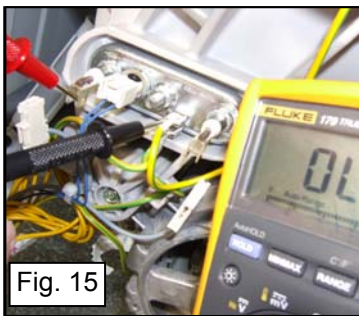
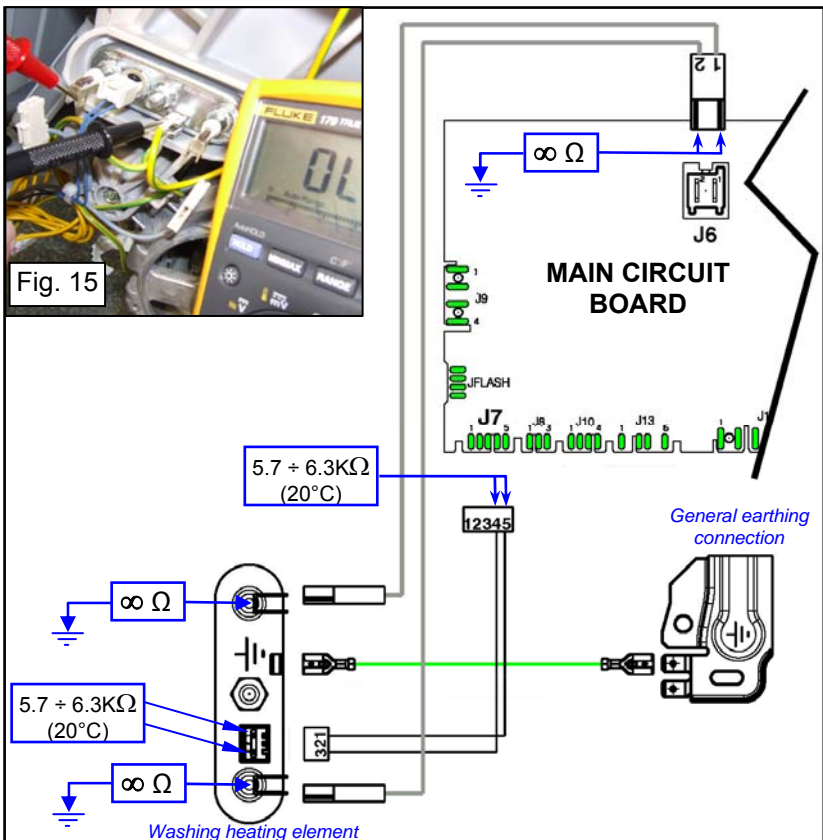


Fig. 15



Fig. 14



**!** If there are burns on the circuit board, see page 68

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

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

**NO**

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

**YES**

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

**NO**

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

**YES**

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



Fig. 15

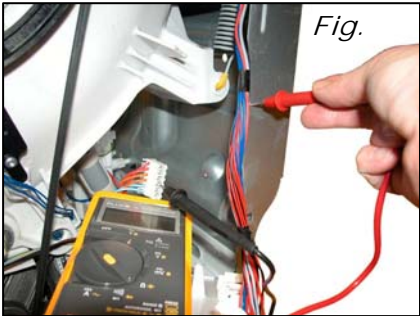


Fig.

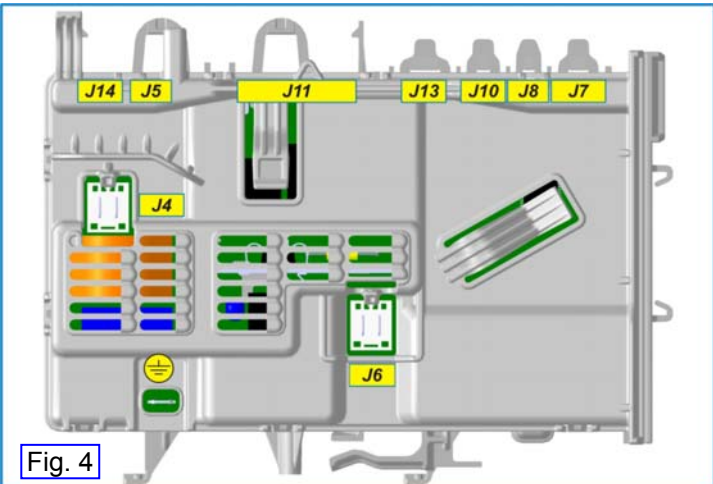
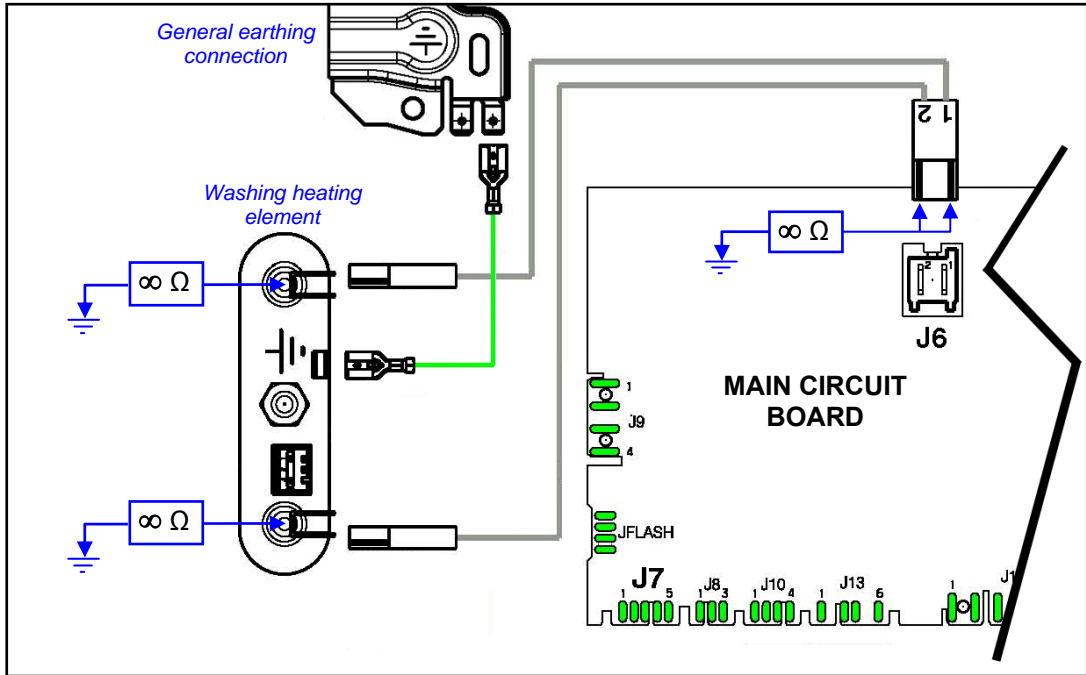


Fig. 4



**!** If there are burns on the circuit board, see page 68



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

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

**YES**

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

**NO**

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

**YES**

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

**NO**

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

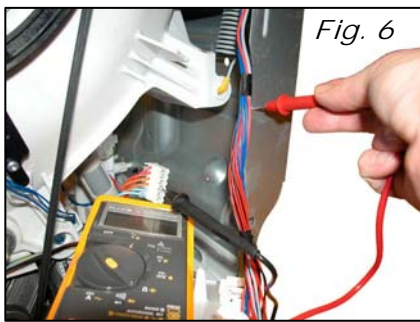


Fig. 6

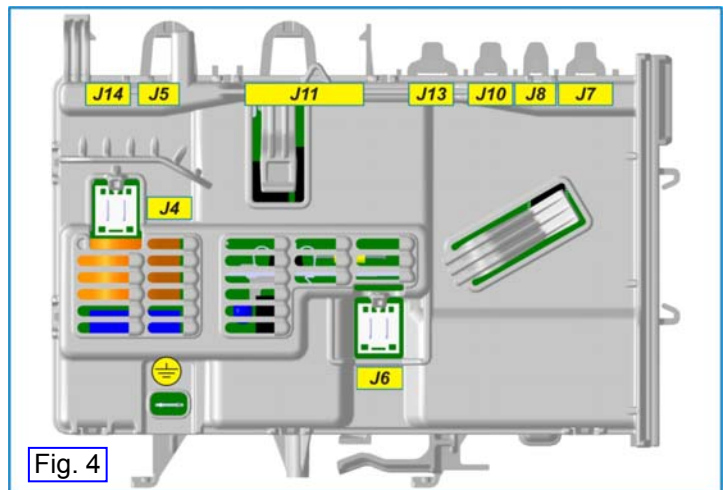


Fig. 4

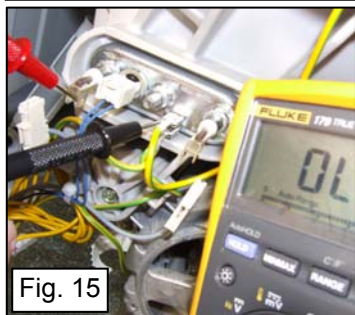
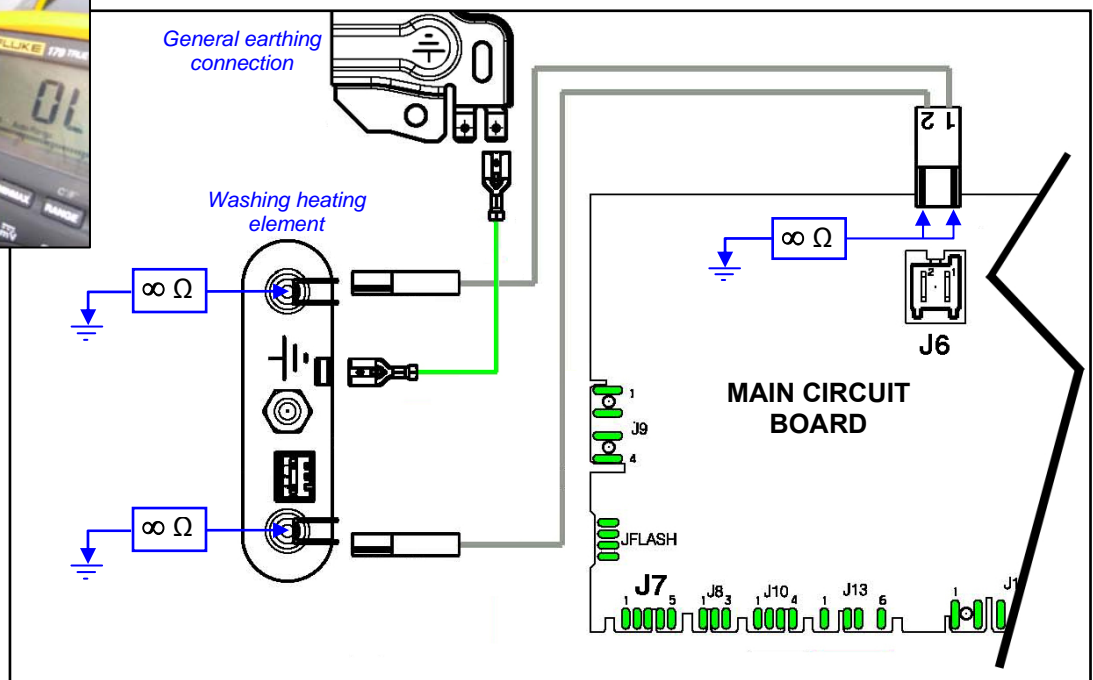


Fig. 15



**!** If there are burns on the circuit board, see page 68

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

Measure the resistance value of the heating element ( $\Omega$ ) between terminals J6-1 ÷ J6-2 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 13)**-  
Is the value correct?  
( $28\div 31\Omega$  for 230V/1750W)

**NO**

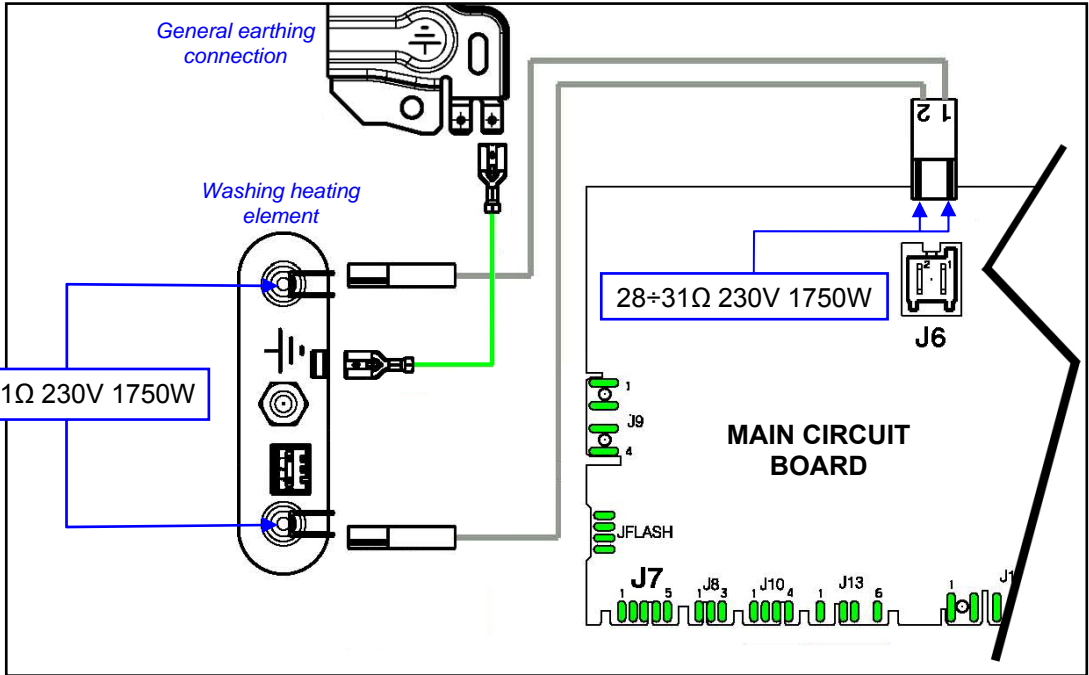
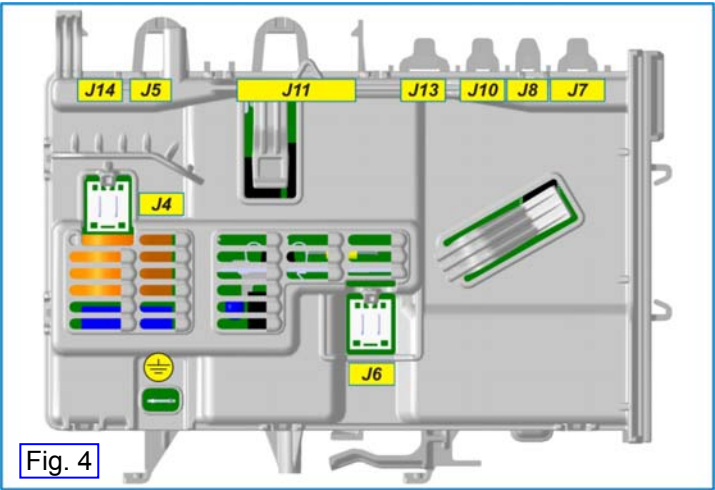
Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

**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.



**!** If there are burns on the circuit board, see page 68

<b>E6A</b>	<b>E6A: Heating relay sensing faulty</b>	<b>E6A</b>
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**!** 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 68

<b>E6H</b>	<b>E6H: Heating element power relay faulty (incongruence between sensing and relay status)</b>	<b>E6H</b>
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Run the diagnostic cycle and fill with water up to the door level to make sure the heating element is completely submerged. Measure between the wiring connector J6-1/J6-2 and the appliance body. **-(see Fig. 6)-** Is the circuit open?

**NO**

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

**NO**

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

**YES**

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

**YES**

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



Fig. 15

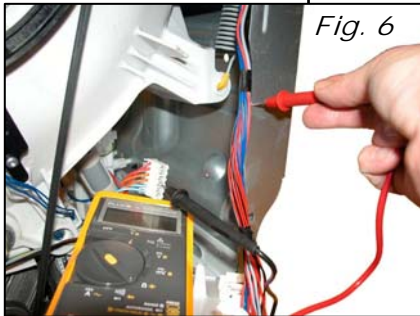
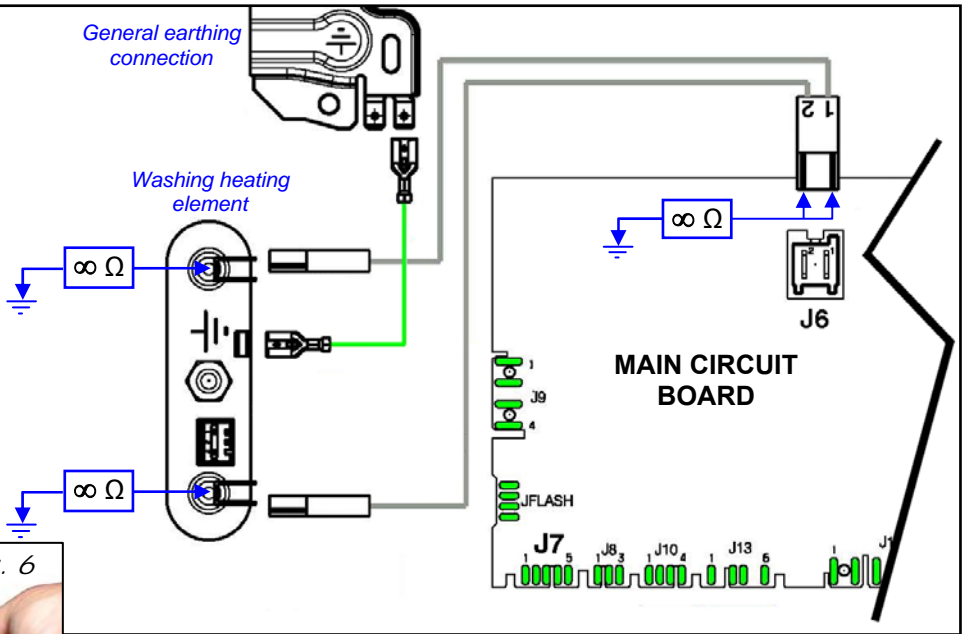


Fig. 6



**!** If there are burns on the circuit board, see page 68

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

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

Run **phase 6** 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 J7-4 and J7-5 of the wiring connector -see Fig. 4-  
Is the value correct?  
(between 5.7 and 6.3 K $\Omega$  at 20°C)

**NO**

Detach the connector and measure directly on the NTC probe.  
- (see Fig. 14)-  
Is the value correct?  
(5.7÷6.3 K $\Omega$  at 20°C)

**NO**

Run **phase 8** 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.

Measure between terminals J7-4, J7-5 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**

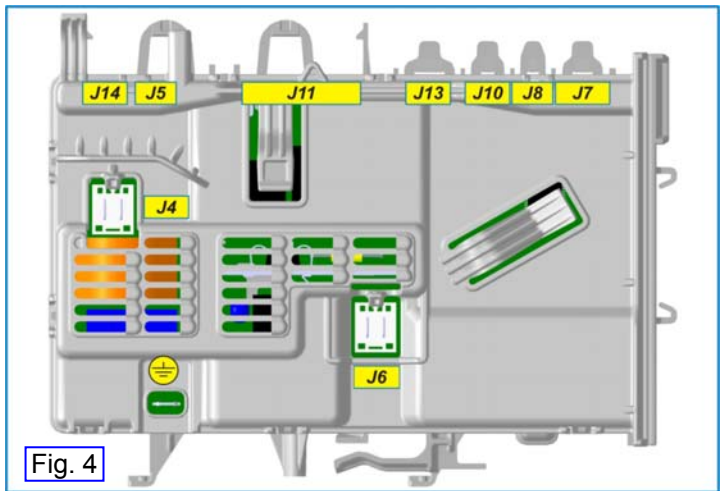
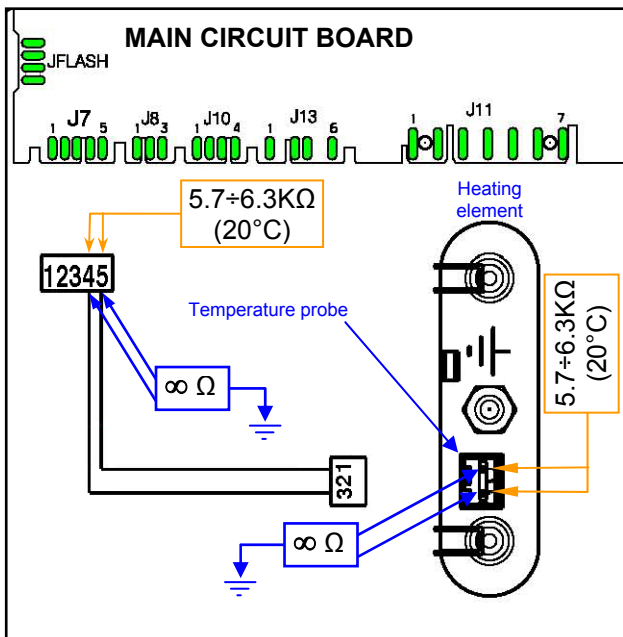
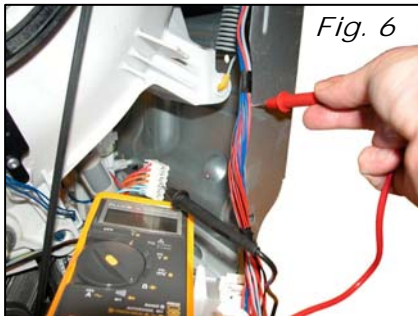
Detach the connector and measure directly between the terminals of the NTC probe and the appliance body (there must be water in the tub).  
Has the dispersion been measured?

**NO**

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

**YES**

Run **phase 8** 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.



**!** If there are burns on the circuit board, see page 68



Is the probe visibly positioned correctly in its seat?  
-See Fig.17-

NO

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

YES

Measure the value of the NTC probe ( $5.7 \div 6.3 \text{K}\Omega$  at  $20^\circ\text{C}$ ) between contacts J7-4 and J7-5 of the wiring connector (Fig. 4). Is the value correct?  
(between  $5.7$  and  $6.3 \text{K}\Omega$  at  $20^\circ\text{C}$ )

NO

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

YES

Run **phase 6** of the diagnostic cycle and wait for the water to fill. Wait in this phase for five minutes. Switch the appliance off and measure the value of the NTC probe between contacts J7-4 and J7-5 of the wiring connector (Fig. 4). Is the value below  $5 \text{K}\Omega$ ?

NO

**!!WARNING!!**

**DRAIN THE WATER FROM THE TUB BECAUSE IT IS BOILING HOT**

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

YES

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

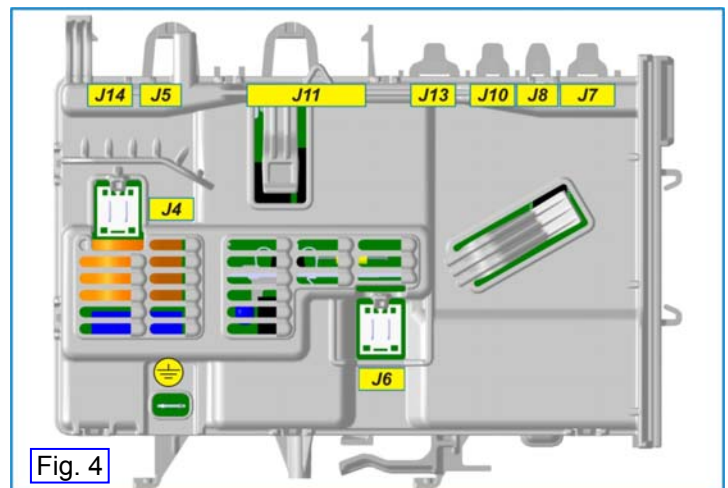


Fig. 4

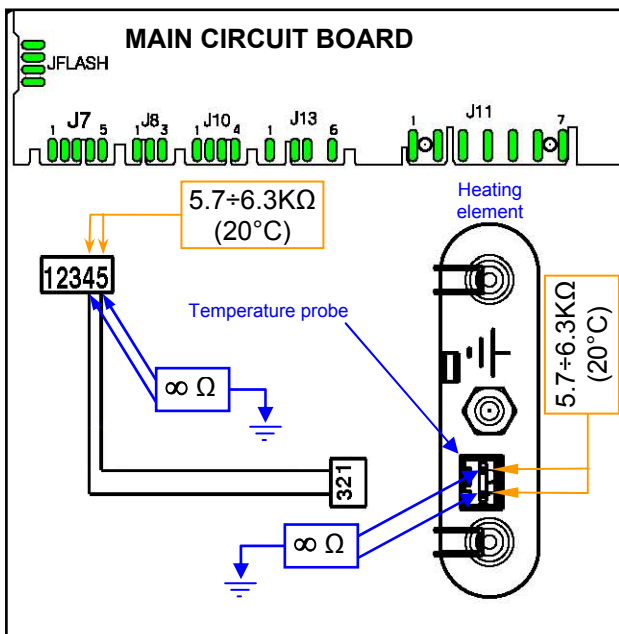
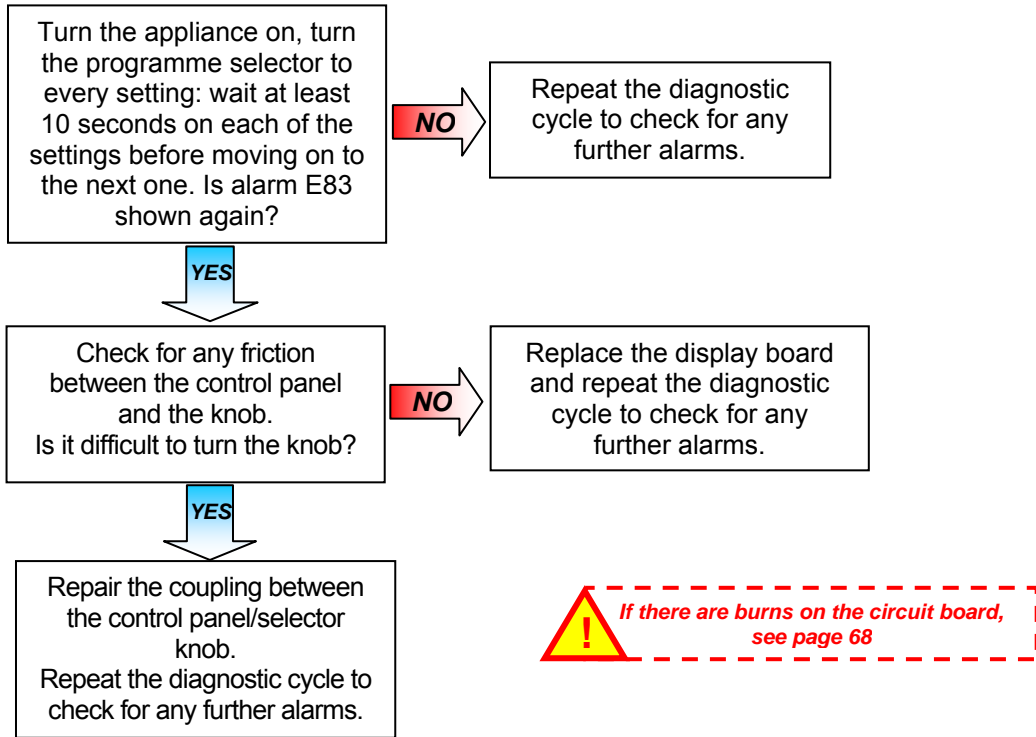


Fig. 17



If there are burns on the circuit board, see page 68

<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		

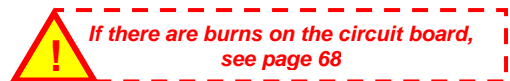


<b>E86</b>	<b>E86: Programme selector configuration error</b>	<b>E86</b>
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Replace the display board and run the diagnostic cycle to check for any further alarms.

<b>E87</b>	<b>E87: Display board microprocessor faulty</b>	<b>E87</b>
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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		

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

- ▶ Detach and reconnect the connectors on both boards several times.
- ▶ Measure the continuity between connector J10 (main circuit board) and J3 (display board). Is the wiring ok?

NO

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

YES

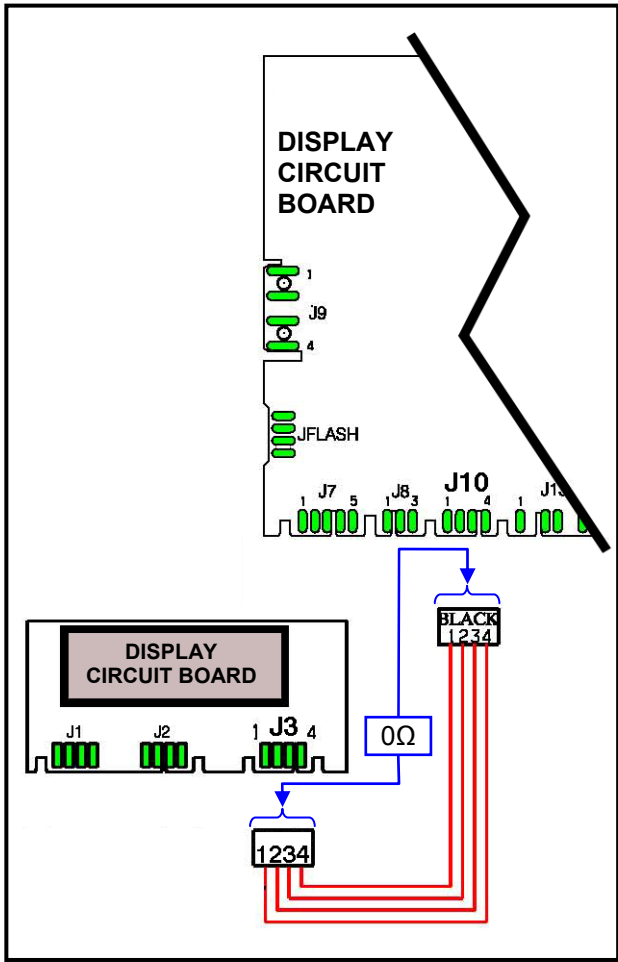
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms. Is the appliance still displaying E91?

NO

Appliance ok

YES

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 68

<b>E92</b>	<b>E92: protocol incongruence</b>	<b>E92</b>
	Inconsistency between configuration values on starting the appliance	



*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	



*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	



*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	



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

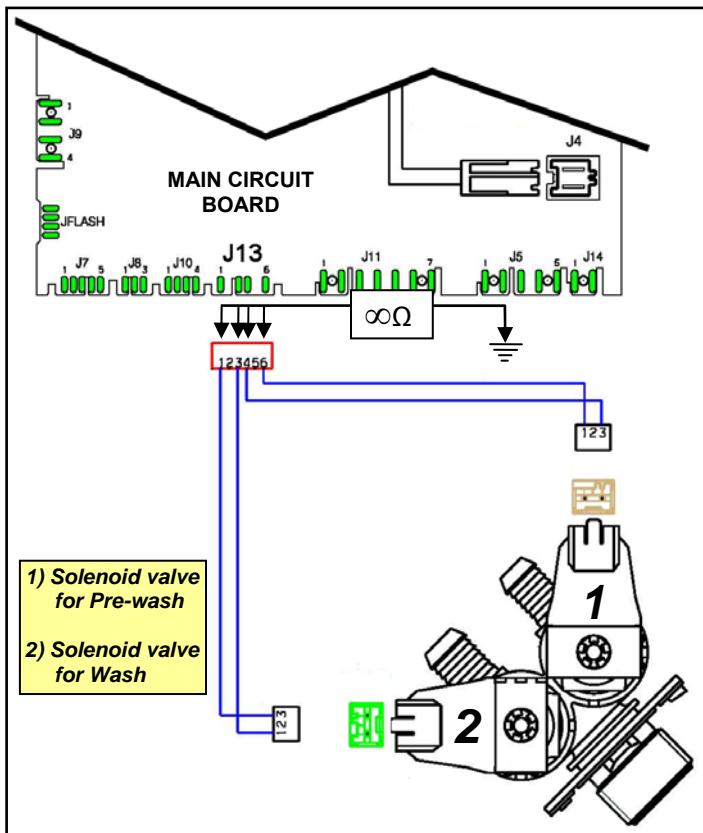
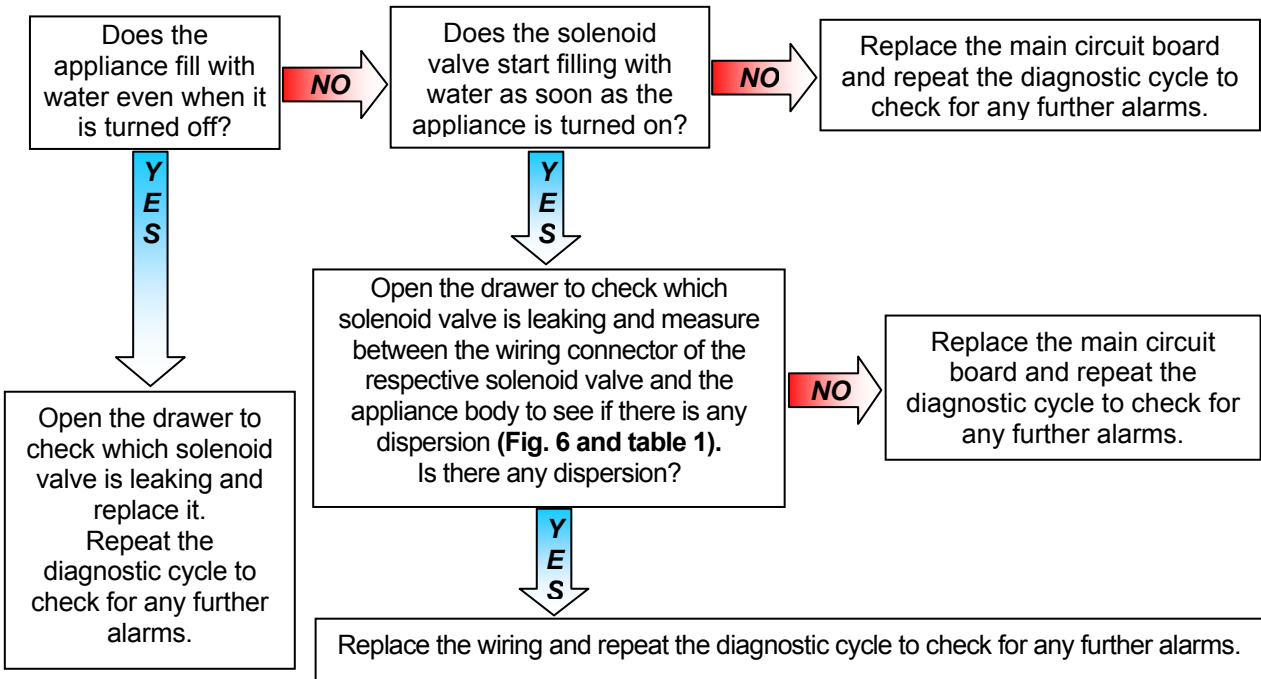


*Check that all the connectors are correctly inserted*

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

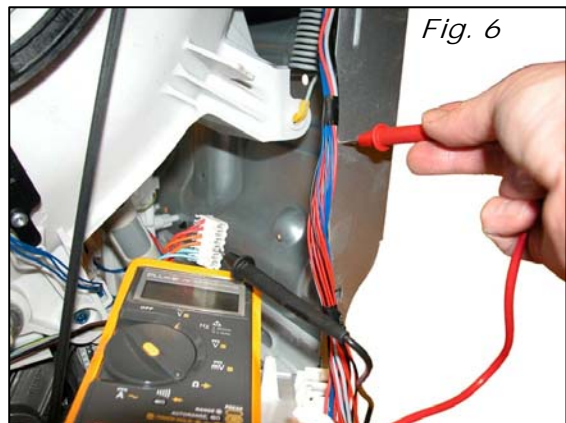
<b>EC1</b>	<b>EC1: Water fill solenoid valves blocked</b>	<b>EC1</b>
	The flowmeter has to fill water even with the solenoid valve not piloted	

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



*Tab. 1*

Between J13-1 and J13-3 washing solenoid valve  
Between J13-4 and J13-6 pre-wash solenoid valve



**!** If there are burns on the circuit board, see page 68

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



*If there are burns on the circuit board, see page 68*

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

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

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 pressure too low, no signal from flowmeter, with electronically controlled valve open.</b>	<b>EF4</b>
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This warning is for the water pressure which is too low. Or the tap is closed.  
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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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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No action to be performed; if it continues, replace the main circuit board.

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

 **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.

Is the supply line disturbed or the mains frequency out of range?

**NO**

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

**YES**

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

 **If there are burns on the circuit board, see page 68**

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

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

**Important**

The appliance remains in alarm status until the mains voltage 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.


Is the supply line disturbed or the mains voltage out of range?

**NO**

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

**YES**

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

 **If there are burns on the circuit board, see page 68**

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



*Check that all the connectors are correctly inserted*



**Important**

The appliance remains in alarm status until the mains voltage 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.



Is the supply line disturbed or the mains voltage out of range?

**NO** →

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

↓  
**Y  
E  
S**

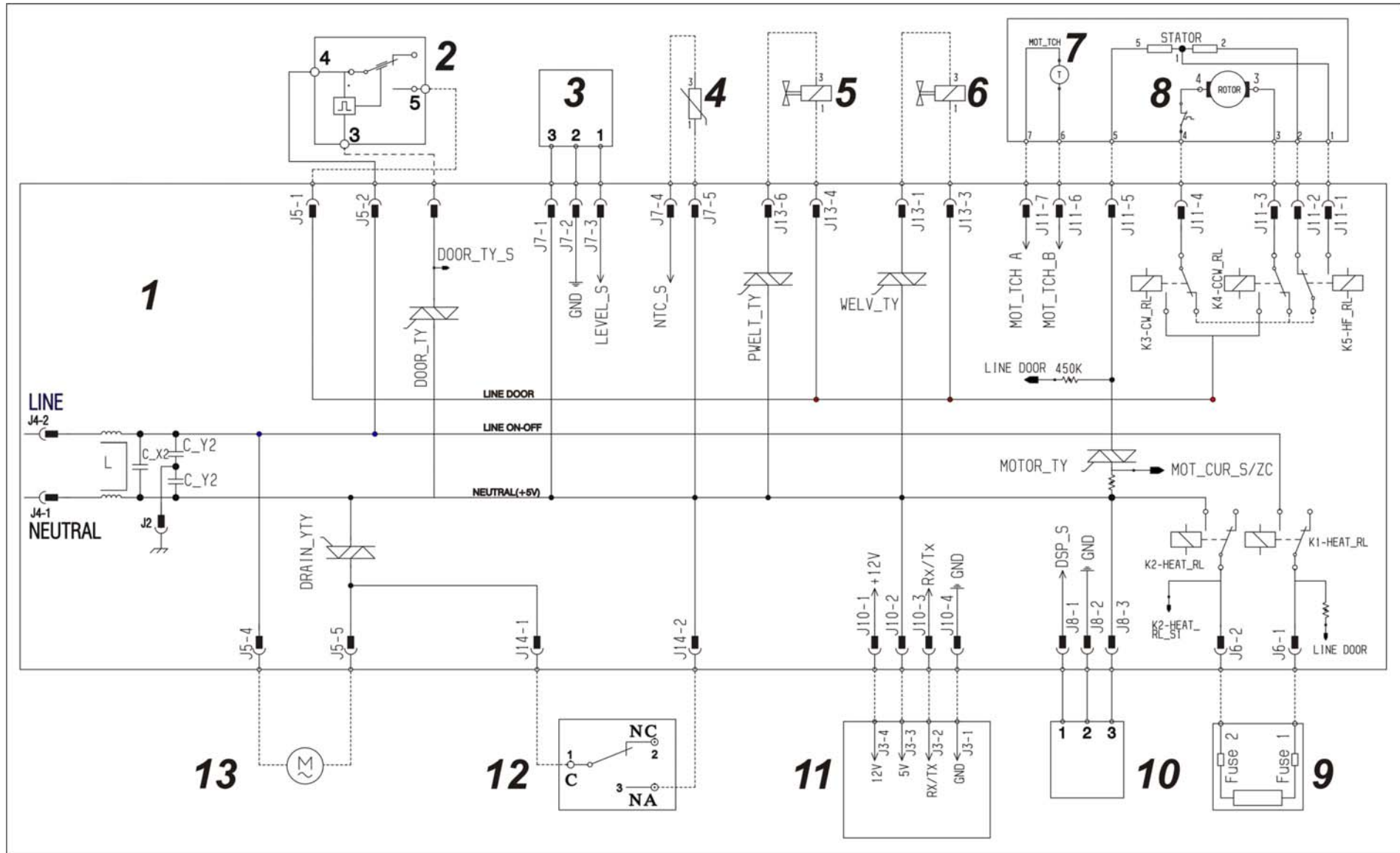
Have the electrical system of the home checked / repaired by the proper Body.



*If there are burns on the circuit board, see page 68*



## 8 OPERATING CIRCUIT DIAGRAM WM WITH AQUA CONTROL

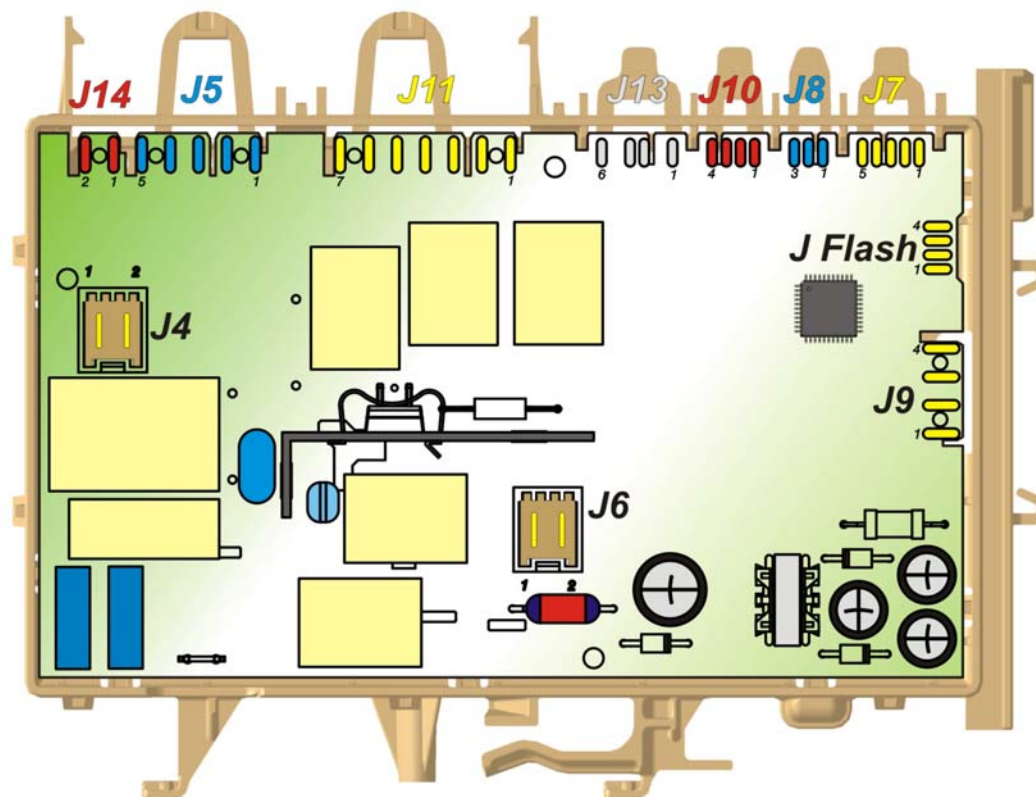


## 8.1 Key to circuit diagram WM

Appliance electrical components		PCB components	
1.	Main electronic circuit board.	DRAIN_YTY	Drain pump Triac
2.	Door safety interlock.	DOOR_TY	Door interlock Triac
3.	Pressure switch.	PWELT_TY	Pre-wash solenoid Triac
4.	NTC (washing).	WELV_TY	Wash solenoid Triac
5.	Pre-wash solenoid	MOTOR_TY	Drum rotation motor Triac
6.	Wash solenoid	K1	Heating element relay
7.	Tachometric generator (motor)	K2	Heating element relay
8.	Motor	K3	Clockwise motor rotation relay
9.	Heating element	K4	Anti-clockwise motor rotation relay
10.	DSP	K5	Half-field relay
11.	Display board		
12.	Aqua control sensor		
13.	Drain pump		

## 8.2 Main circuit board connectors

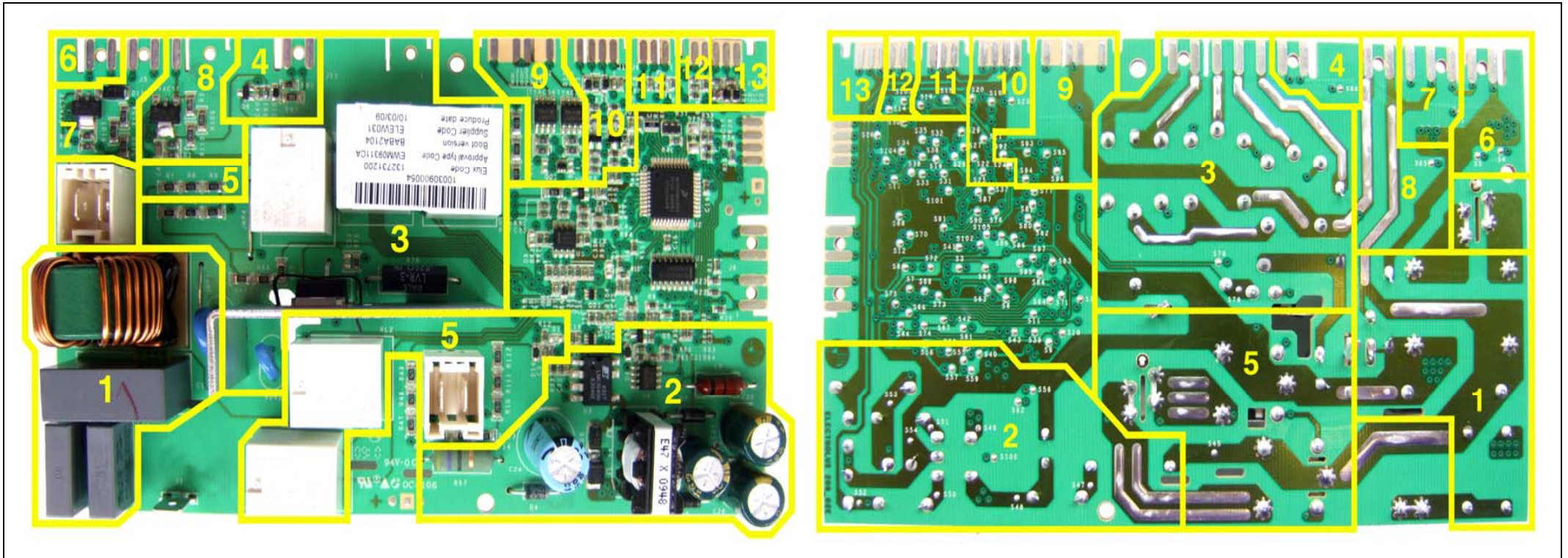
J9	J7
Serial Interface: <b>J9-1</b> ASY_IN <b>J9-2</b> ASY_OUT <b>J9-3</b> +5V <b>J9-4</b> GND	<b>J7-1</b> Analogue pressure switch (+5V) <b>J7-2</b> Analogue pressure switch (GND) <b>J7-3</b> Analogue pressure switch (signal) <b>J7-4</b> NTC temperature probe <b>J7-5</b> NTC temperature probe
J8	J10
<b>J8-1</b> DSP (signal) <b>J8-2</b> GND <b>J8-3</b> DSP	Communication with display board: <b>J10-1</b> Vee 12V <b>J10-2</b> 5V <b>J10-3</b> Rx/Tx <b>J10-4</b> GND
J13	J11
<b>J13-1</b> Wash solenoid valve (Triac) <b>J13-2</b> ----- <b>J13-3</b> Solenoid valves (line) <b>J13-4</b> Solenoid valves (line) <b>J13-5</b> ----- <b>J13-6</b> Pre-wash solenoid valves (Triac)	<b>J11-1</b> Motor (stator - half range) <b>J11-2</b> Motor (stator full range) <b>J11-3</b> Motor (rotor) <b>J11-4</b> Motor (rotor) <b>J11-5</b> Motor (Triac) <b>J11-6</b> Motor (tachometric generator) <b>J11-7</b> Motor (tachometric generator)
J5	J14
<b>J5-1</b> Door lock (Sensing Line) <b>J5-2</b> Door lock (Line) <b>J5-3</b> Door lock (Triac) <b>J5-4</b> Drain pump (Line) <b>J5-5</b> Drain pump (Triac)	<b>J14-1</b> Aqua control sensor <b>J14-2</b> Aqua control sensor line (neutral)
	J6
	<b>J6-1</b> heating element (Line Relay) <b>J6-2</b> heating element (Neutral Relay)
	J4
	<b>J4-1</b> line (neutral) <b>J4-2</b> line



### 8.3 Burns on the main circuit board EWM09312

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

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



## Revisions:

Revision	Date	Description	Written by	Approved by - on
00	04/2011	Document creation	A.D.L.	A.D.L. – 04/2011

