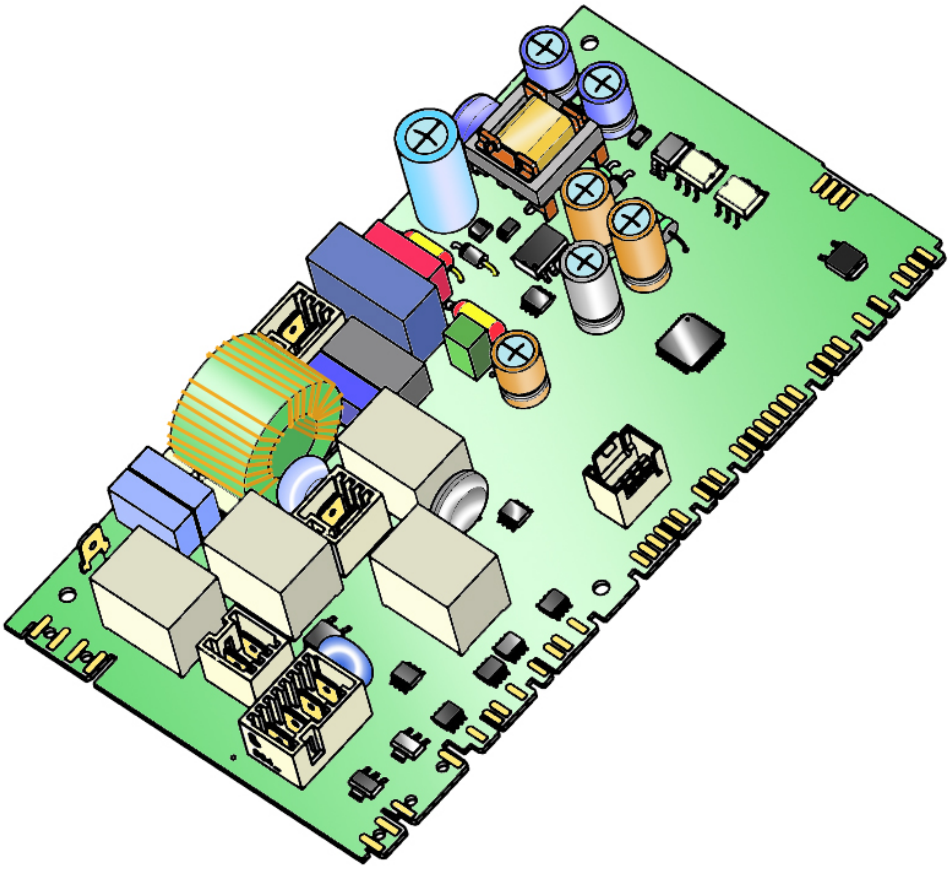
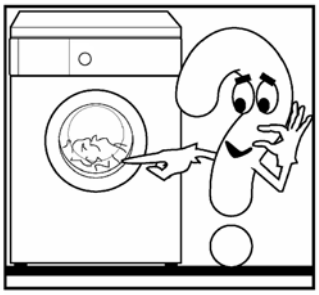
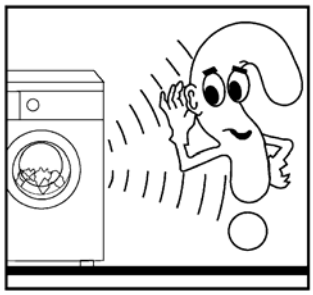
Electrolux Distriparts

SERVICE MANUAL

WASHING







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Washing machines

guide to diagnostics of electronic controls

EWM10931

THE INSPIRATION RANGE

TC3 / TC2 / TC1

Index

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 TC1-TC2-TC3 THE INSPIRATION RANGE.

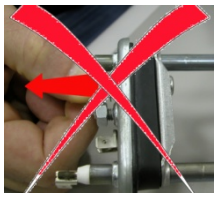
Depending on the appliance configuration, the alarms may be entirely or partially displayed to the user: the latter solution is usually adopted.
The diagnostics system is used by Service Technicians to:

- Read alarms
- delete the alarm stored,
- Test the appliance operation.

1.2 Cautions

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

  When the work is finished check that the equipment's safety conditions have been reinstated, as though it were straight off the assembly line.
- **If the circuit board has to be handled/replaced, use the ESD kit (Cod. 405 50 63-95/4) to avoid static electricity from damaging the circuit board, see S.B. No. 599 72 08-09 or consult the course "Electrostatic charges" at the address (http://electrolux.edvantage.net) on the Electrolux Learning Gateway portal.**
- **This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to cut the power supply.**
- **Make resistance measurements, rather than direct voltage and current measurements.**
- **Warning the sensors located on the display board could be at a potential of 220 Volts.**
- **When replacing the heating element, replace it with one that has the same characteristics (2 thermal fuses) in order not to compromise the safety of the appliance. Do not remove/switch the NTC sensors between heating elements.**



- **Always empty the appliance of all the water before laying it on its side.**
- **Never place the appliance on its right side (electronic control system side): some of the water in the detergent dispenser could leak onto the electrical/electronic components and cause these to burn.**
- **When replacing components, please refer to the code shown in the list of spare parts relating to the appliance.**
- **The resistance values of the components shown in this S.M. are purely indicative (relating to a sample appliance with new components).**
  For the actual value of the component, please refer:
  to S.B. 599706597 for motors, and for the other components, please consult S.M. 599728903 "Component Characteristics".

1.3 How to proceed

1. Identify the type of control in question **(page 7)** and access the diagnostic cycle. **(see page 8)**

2. Read the alarm stored **(page 14)** and consult the instructions regarding the “alarm codes”, **page 16÷19**

3. Delete the alarms stored **(page 15)**

4. If you are unable to access the diagnostic mode, consult the chapter entitled “The diagnostics system cannot be accessed” **(page 21)**

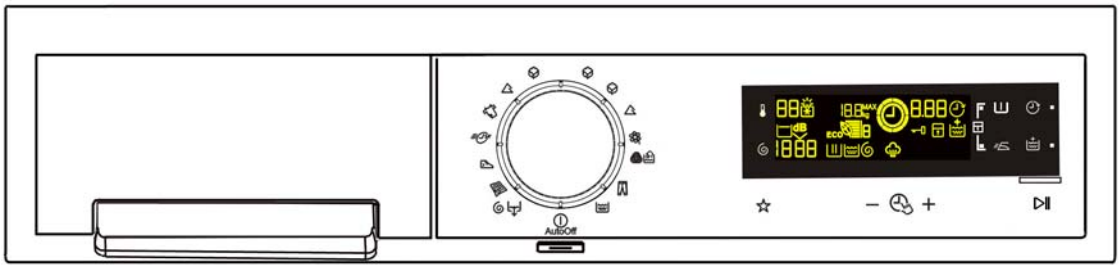
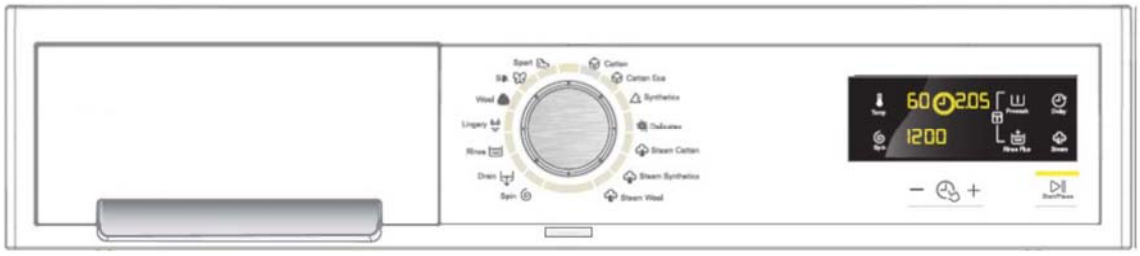
5. Should the main electronic circuit board need to be replaced, make sure there are no burns. **(see page 77)**

6. After all interventions, check the appliance is operating correctly using the diagnostic cycle. **(page 9)**

7. Delete any alarm that may have been stored during the diagnostics operations **(page 15)**

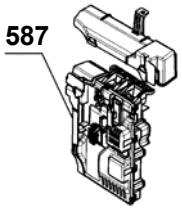
2 WM APPLIANCE CONTROL PANELS

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

THE INSPIRATION RANGE	TC 1	
	TC 2	
	TC 3	

3 PROGRAMMING/UPDATING THE MAIN CIRCUIT BOARD

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



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

The circuit board can be programmed/updated using the **Sidekick** application.
For further information, please refer to the instructions provided/illustrated in the course entitled << **Guide to Sidekick** >> at the address (http://electrolux.edvantage.net) on the Electrolux Learning Gateway portal.

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

- For WASHING MACHINES, this is done directly from the main board, see Fig.a.

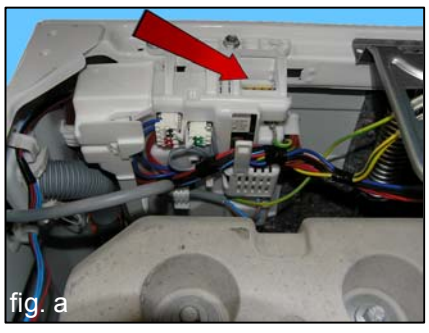
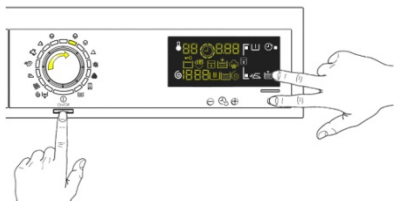
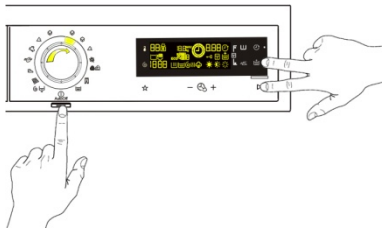
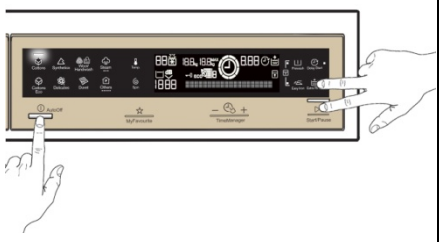


fig. a

4 DIAGNOSTICS SYSTEM

4.1 Accessing diagnostics

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

TC 3	TC 2	TC 1
		

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

1. Switch on the appliance using the ON/OFF button. The first LED lights up.
2. Simultaneously press the **START/PAUSE** button and the nearest **option sensor** (as shown in the diagram).
3. Hold your fingers over the sensors until the LEDs and symbols begin to flash in sequence (approximately 3 seconds).

In the first position, the operation of the sensors, the LEDs and the groups of symbols shown on the LCD display is checked;

For the TC3 and TC2 styling:
When the programme selector is turned in a **clockwise direction**, the operation of the various components is diagnosed and the alarms are read (see diagnostic test on the next page).

For the TC1 styling:
Since there is no selector with which to perform the diagnostics of the various components and the alarm reading, the two sensors shown in the figure below are used (the top one is used to move forward progressively and the bottom one to move backwards in the same way). Concurrently, the function performed is described in the text line (see diagnostic test on page 11).

Next	Previous
	

During this phase, if any combination of sensors (except the one for diagnosis) is pressed, all the option combinations stored will be deleted (Extra rinse, Buzzer disable, etc.).

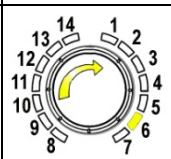
4.2 Quitting the diagnostics system

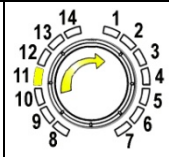
→ To exit the diagnostic cycle, switch the appliance off, then back on and then off again.

4.3 Phases of the diagnostics test

4.3.1 TC3-TC2 styling

Irrespective of the type of PCB and the configuration of the programme selector, after entering the diagnostic mode, turn the programme selector dial **clockwise** to perform the diagnostic cycle for the operation of the various components and to read any alarms.
Concurrently, a selector control code is shown on the LCD display, which indicates for **two** seconds the description in the last column of the table below.
(all alarms are enabled in the diagnostic cycle).

Selector position		Components activated	Working conditions	Function tested	LCD display
1		- The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence - Touch a sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time	Always active	User interface functioning	
2		- Door safety interlock - Wash solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to wash compartment	 Water level in the tub (mm)
3		- Door safety interlock - Pre-wash solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to pre-wash compartment	 Water level in the tub (mm)
4		- Door safety interlock - Solenoid valve pre-wash and wash	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to conditioner compartment	 Water level in the tub (mm)
5		- Door safety interlock - Third solenoid valve	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		- Door safety interlock - Fourth solenoid valve (hot water where featured)	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		- Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Heating element - Weight sensor (if there is one, an extra litre of water is loaded) - Circulation pump	Door closed Water level above the heating element Maximum time 10 mins up to 90°C **(*)**	Reheating Circulation	 Temperature in °C measured using the NTC probe

8		- Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Motor (55 rpm clockwise, 55 rpm anti-clockwise, 250 rpm pulse)	Door closed Water level above the heating element	Check for leaks from the tub	 Drum speed in rpm/10
9		- Door safety interlock - Drain pump - Motor up to 650 rpm then at maximum spin speed (**)	Door closed Water level lower than anti-boiling level for spinning	Drain, calibration of analogue pressure switch and spin	 Drum speed in rpm/10
10		- Door safety interlock - Drain pump - Power fan - Condensation solenoid valve - Drying heating element	Door closed Water level below anti-boiling level Maximum time 10 minutes	Drying	 Displays the air temperature alternating detection by the two NTC probes
11		- Reading/Deleting the last alarm	-----	----	
12 ÷ 14		- The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence - Touch a sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time	Always active	User interface functioning	

(*) In most cases, this time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostic cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating does not take place).
(**) The check at the maximum speed occurs without control of the A.G.S. and no garments must be inside the appliance.

4.3.2 TC1 styling

Irrespective of the type of circuit board and the configuration of the programmes, after entering the diagnostic mode, touch the sensor to the left of the display (as shown in the figure) to perform the diagnostic cycle for the operation of the various components and to read any alarms.
The LCD display shows the function checked in the middle (see third column) and at the top right, using the three digits:

- the water level in the tub, during the solenoid valve activation phases.
- the temperature in degrees °C, during the heating phases.
- the drum revolutions in rpm/10, during the phases when the motor is powered.

(all alarms are enabled in the diagnostic cycle)

Location		Components activated	Working conditions	Function tested	LCD display
1		- The LEDs are turned on in sequence, as are the symbol groups of the LCD display and its backlight - Touch a sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time	Always active	User interface functioning	
2		- Door safety interlock - Wash solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to wash compartment	
3		- Door safety interlock - Pre-wash solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to pre-wash compartment	
4		- Door safety interlock - Solenoid valve pre-wash and wash	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to conditioner compartment	
5		- Door safety interlock - Third solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to third solenoid valve compartment	
6		- Door safety interlock - Fourth solenoid valve (hot water where featured)	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to fourth solenoid valve compartment	
7		- Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Heating element - Weight sensor (if there is one, an extra litre of water is loaded) - Circulation pump	Door closed Water level above the heating element Maximum time 10 mins up to 90°C **(*)**	Reheating Circulation	

8		- Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Motor (55 rpm clockwise, 55 rpm anti-clockwise, 250 rpm pulse)	Door closed Water level above the heating element	Check for leaks from the tub	
9		- Door safety interlock - Drain pump - Motor up to 650 rpm then at maximum spin speed (**)	Door closed Water level lower than anti-boiling level for spinning	Drain, calibration of analogue pressure switch and spin	
10		-----	-----	-----	-----
11		- Reading/Deleting the last alarm	-----	----	
12 ÷ 14		- The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence - Touch a sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time	Always active	User interface functioning	

(*) In most cases, this time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostic cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating does not take place).
(**) The check at the maximum speed occurs without control of the A.G.S. and no garments must be inside the appliance.

5 ALARMS

5.1 Displaying the alarms to the user

When a problem occurs in the appliance, the LCD display shows a “WARNING”:

- in stylings TC3 and TC2 with a code (in the three digits, where the time until the end of the cycle is represented).
- in styling TC1, a message is shown (in the text line).

This information ceases to be displayed when the problem is repaired/solved. The buzzer then emits a sound (three short “beeps”every 20” for 5 minutes). This does not occur for alarm EH0.

TC 3	TC 2	TC 1
		

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

TC3 / TC2	TC1
E10 - Water fill difficulty (tap closed)	**Check the tap**
E20 - Drain difficulty (filter dirty)	**Check the drain filter**
E40 - Door open	**Check the door**
EF0 - Excessive detergent	**Excessive detergent**
EH0 - Voltage or frequency outside normal values	**Unstable frequency or voltage**

While the alarm listed below:

TC3 / TC2	TC1
EF0 - Water leakage (Aqua Control System)	**Caution: water**

The intervention of a service engineer is required.

The other alarms are displayed by a code.

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

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

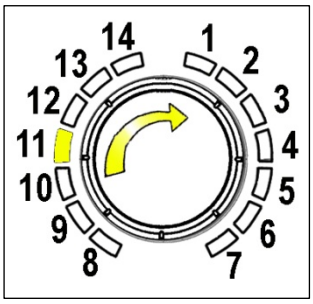
- The level of the water in the tub is below a certain level.
- The water temperature is lower than 55°C.
- The motor has stopped.

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

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

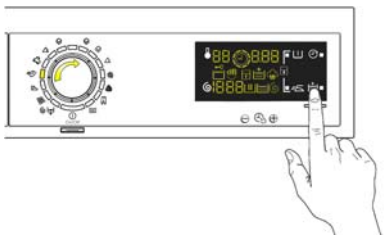
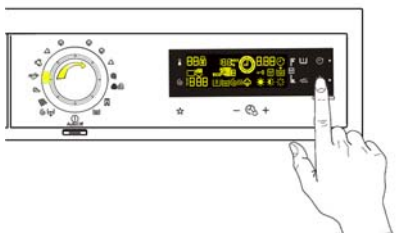
5.2 Reading the alarms

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



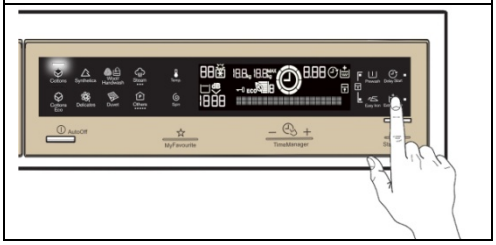
5.2.1 TC3-TC2 styling

- 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, touch the sensor closest to the START/PAUSE sensor in sequence (as shown in the figure).
- To return to the last alarm, touch the START/PAUSE sensor.

TC 3	TC 2
	

5.2.2 TC1 styling

- Enter the diagnostic mode (para. 3.1).
- Irrespective of the type of circuit board and configuration, using the sensor shown in the figure, go to the **eleventh position** and the last alarm is displayed.
- To display previous alarms, touch the sensor closest to the START/PAUSE sensor in sequence (as shown in the figure below).
- To return to the last alarm, touch the START/PAUSE sensor.

TC 1


5.3 Rapid reading of alarms

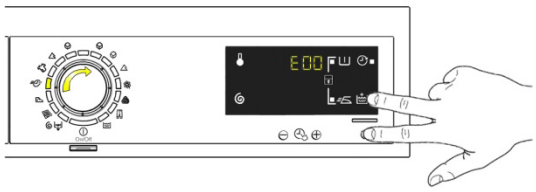
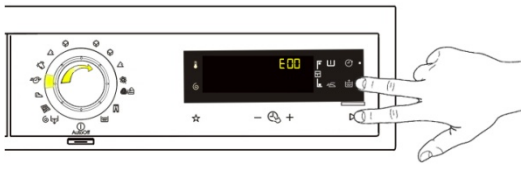
It is possible to display the last alarm even if the selector is not in the eleventh diagnostics position or if the appliance is in normal operating mode (for example when performing a wash programme):

→ Touch the **START/PAUSE** sensor and the nearest **option sensor** simultaneously (as if you were entering DIAGNOSTIC mode) and hold for at least 2 seconds: the LCD display shows the last alarm.
→ The alarm will continue to be displayed until a sensor is touched.
→ The alarm reading system is as described in para. 4.2.
→ While the alarm is being displayed, the appliance continues to perform the cycle or, if in the programme selection phase, it stores the previously selected options.

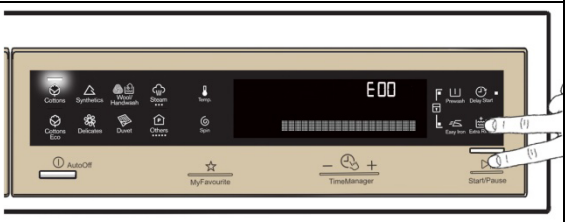
5.4 Deleting the last alarm

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

TC 3	TC 2
	

1. Enter the diagnostic mode (para. 3.1).
2. Turn the selector clockwise until the **eleventh** LED lights up.
3. Simultaneously press the **START/PAUSE** sensor and the nearest **option sensor** (as shown in the diagram).
4. Keep your fingers over the sensors until the LCD display shows “E00” (at least 5 seconds).

TC 1	
 Fig. a	 Fig. b

1. Enter the diagnostic mode (para. 3.1).
2. Irrespective of the type of circuit board and configuration, touch the sensor (shown in fig. a) to go to the **eleventh position** and the alarm is displayed.
3. Simultaneously press the **START/PAUSE** sensor and the nearest **option sensor** (as shown in fig. b).
4. Keep your fingers over the sensors until the LCD display shows “E00” (at least 5 seconds).

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

5.5 ALARM SUMMARY TABLE

Alarm	Description	Possible fault	Machine status/action	Reset	Page
E00					
E11	**Water fill difficulty during washing**	Tap closed or water pressure too low; drain pipe improperly positioned; water fill solenoid valve faulty; leaks from water circuit on pressure switch; pressure switch faulty; wiring faulty; main PCB faulty.	Cycle is paused with door locked	START/RESET	20
E13	**Water leaks**	Drain pipe improperly positioned; water pressure too low Water fill solenoid valve faulty; water circuit on pressure switch is leaking/clogged; pressure switch faulty.	Cycle is paused with door locked	START/RESET	22
E21	**Drain difficulty during washing**	Drain pipe kinked/clogged/improperly positioned; drain filter clogged/dirty; wiring faulty; pressure switch faulty; drain pump rotor blocked; drain pump faulty; main PCB faulty.	Cycle is paused (after 2 attempts)	START ON/OFF RESET	24
E23	**Faulty triac for drain pump**	Wiring faulty; drain pump faulty; main PCB fault.	Safety drain cycle - Cycle stops with door open	RESET	26
E24	**Drain pump triac "sensing" circuit faulty**	Main circuit board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET	28
E31	**Malfunction in electronic pressure switch circuit**	Wiring; Electronic pressure switch; Main PCB.	Cycle stops with door locked	RESET	28
E32	**Calibration error of the electronic pressure switch**	Drain pipe kinked/clogged/improperly positioned; solenoid valve faulty; drain filter clogged/dirty; drain pump faulty; leaks from pressure switch hydraulic circuit; pressure switch faulty; Wiring; main PCB.	Cycle is paused	START/RESET	29
E35	**Overflow**	Water fill solenoid valve faulty; leaks from water circuit on pressure switch; wiring faulty; pressure switch faulty; main PCB faulty.	Cycle interrupted. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET	30
E38	**Internal pressure chamber is clogged (water level does not change for at least 30 sec. of drum rotation)**	Motor belt broken; water circuit on pressure switch clogged.	Heating phase is skipped	RESET	31
E41	**Door open**	Check whether the door is closed properly; Wiring faulty; door safety interlock faulty; Main circuit board faulty.	Cycle is paused	START/RESET	32
E42	**Problems with door lock**	Wiring faulty; door safety interlock faulty; Electrical current leak between heating element and ground; main PCB faulty.	Cycle is paused	START/RESET	34
E43	**Faulty triac supplying power to door delay system**	Wiring faulty; door safety interlock faulty; Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	36
E44	**Faulty sensing by door delay system**	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	37
E45	**Faulty sensing by door delay system triac**	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	37

Alarm	Description	Possible fault	Machine status/action	Reset	Page
E52	**No signal from motor tachometric generator**	Wiring faulty; Motor faulty; Inverter board faulty.	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	38/40
E57	**Inverter is drawing too much current (>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 K2 relay status)**	Main PCB faulty.	Safety water fill Cycle stops with door closed.	ON/OFF RESET	54
E68	**Current leak to the ground**	Current leakage between heating element and ground.	The heating phase is skipped	START/RESET	55
E69	**Heating element interrupted**	Wiring faulty; Heating element for washing interrupted (thermal fuse open); Main PCB faulty.	----------	START ON/OFF RESET	56
E6A	**Heating relay sensing faulty**	Main circuit board faulty.	Cycle stops with door locked	RESET	57
E6H	**Heating element power relay faulty (inconsistency between sensing and K1 relay status)**	Wiring faulty; Earth-leakage between heating element and earth; Main PCB faulty.	Safety water fill Cycle stops with door closed.	ON/OFF RESET	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
E83	**Error in reading selector**	Main PCB faulty (Incorrect configuration data).	Cycle cancelled	START/RESET	60

Alarm	Description	Possible fault	Machine status/action	Reset	Page
E86	**Selector configuration error**	Display board.	----------	START ON/OFF RESET	60
E87	**Display board microprocessor faulty**	If this continues, replace the 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; Inverter PCB faulty; Weight sensor 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**	Wiring faulty; Solenoid valve faulty/blocked, Main PCB faulty.	Cycle stops with door locked Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET	64
EC2	**Data transfer error between Weight sensor and main PCB.**	Wiring faulty; Weight sensor faulty, PCB faulty.	No action to be taken	START/RESET	65
EC3	**Problems with weight sensor (no signal or outside the limits)**	Wiring faulty; Weight sensor faulty; Main PCB faulty.	----------	START/RESET	66
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	67
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	67
EF3	**Aqua control system intervention**	Water leaks onto base frame; Aqua control system faulty.	Appliance drains	ON/OFF RESET	67
EF4	**Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open**	Tap closed, water fill pressure too low.	----------	RESET	67
EF5	**Unbalanced load**	Final spin phases skipped.	----------	START/RESET	67
EF6	**Reset**	If it continues, replace the main board.	No action to be taken	----------	68
EH1	**Supply frequency of appliance outside the limits**	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal frequency conditions	ON/OFF	68

Alarm	Description	Possible fault	Machine status/action	Reset	Page
EH2	**Supply voltage too high**	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions	ON/OFF	68
EH3	**Supply voltage too low**	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions	ON/OFF	69
EH4	**0 Watt relay malfunction**	Main circuit board faulty.	----------	ON/OFF RESET	69
EHE	**Inconsistency between FCV relay (in the main board) and safety "sensing" circuit**	Faulty wiring; Main circuit board faulty.	Safety drain cycle Cycle stops with door open	RESET	69
EHF	**Safety sensing circuit faulty (wrong input voltage to microprocessor)**	Main circuit board faulty.	Safety drain cycle Cycle stops with door open	RESET	69

5.6 Notes on the behaviour of certain alarms

- **Configuration alarm E93:** when this alarm rings (when turned on) the machine blocks and the alarm code appears on the display provided the relevant configuration part is intact.
  It will not be possible to access diagnostics mode and the only available option is to turn the appliance off.

- **Configuration alarm E94:** and the code can be viewed from the display.
  The diagnostics mode cannot be accessed and the “quick alarm viewing” mode cannot be used.

- **Alarms EH1-EH2-EH3:** in the event of problems with the supply voltage, the appliance remains in alarm status until the mains frequency or voltage returns to acceptable values or the appliance is switched off (ON/OFF button). Only the **“H”** alarm family is displayed if the problem occurs while the appliance is working normally, the code is shown simultaneously 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 possibility to exit the alarm situation is to rotate the programme switch to the “0” position (reset) for the TC2 and TC3 stylings, while for the TC1 styling press the ON/OFF button.

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 **J1**) working properly?

NO → Replace/repair the power supply cable, check the connection.

YES ↓

Is the communication wiring between the main board (connector **J4**) and the display board (connectors **J2** and **J3**) 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.

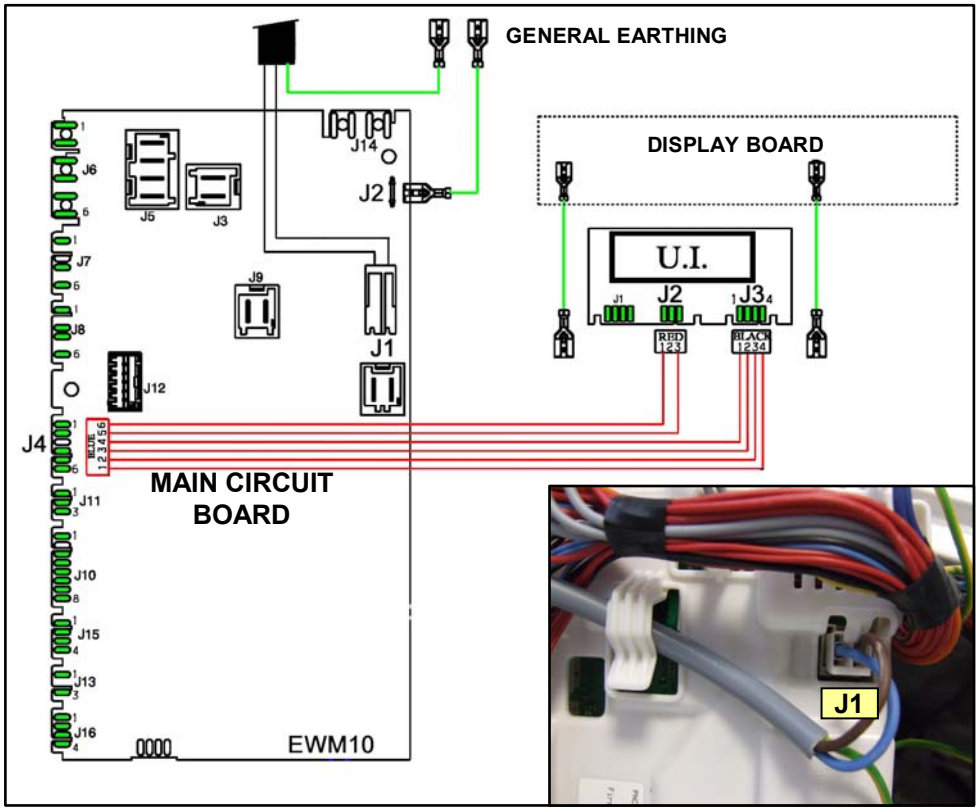
YES ↓

Change the main circuit board.
Is the appliance working correctly?

NO → Replace display board.

YES ↓

Run the diagnostics programme.



7 TROUBLESHOOTING BASED ON ALARM CODES

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

Checks to perform:

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

Run the diagnostic cycle and fill all the trays with water **(phases 2,3,4,5,6)**.
Are all the trays filling with water?

NO

YES

Is the drain tube positioned correctly and not causing the siphon effect? **(fig. 1)**

NO → Repair the drain circuit and repeat the diagnostic cycle to check for any further alarms.

YES

Is the washing machine's water circuit efficient (leaking)?

NO → Repair the water circuit and repeat the diagnostic cycle to check for any further alarms.

YES

Is the pressure switch's water circuit efficient (leaking/clogged)? **(fig. 2)**

NO → Repair the water circuit of the pressure switch 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 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
Between J8-1 and J8-3 third solenoid valve
Between J8-4 and J8-6 hot water
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.

! ***If there are burns on the circuit board, see page 77***

E11

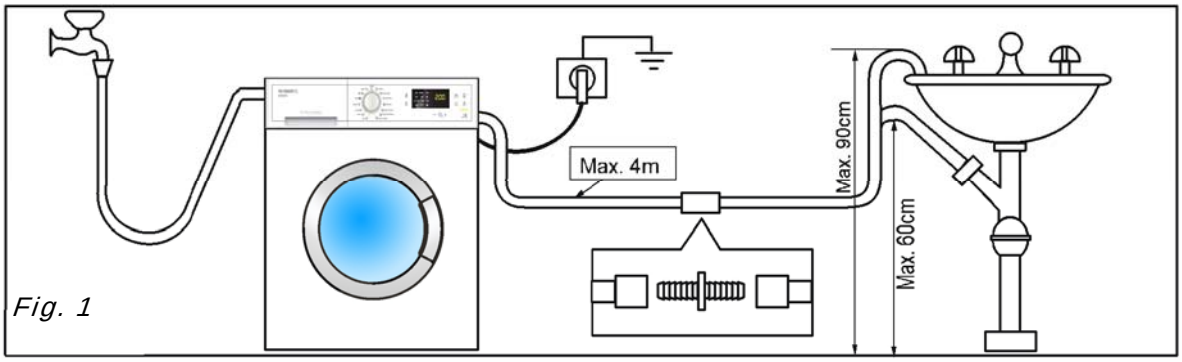


Fig. 1

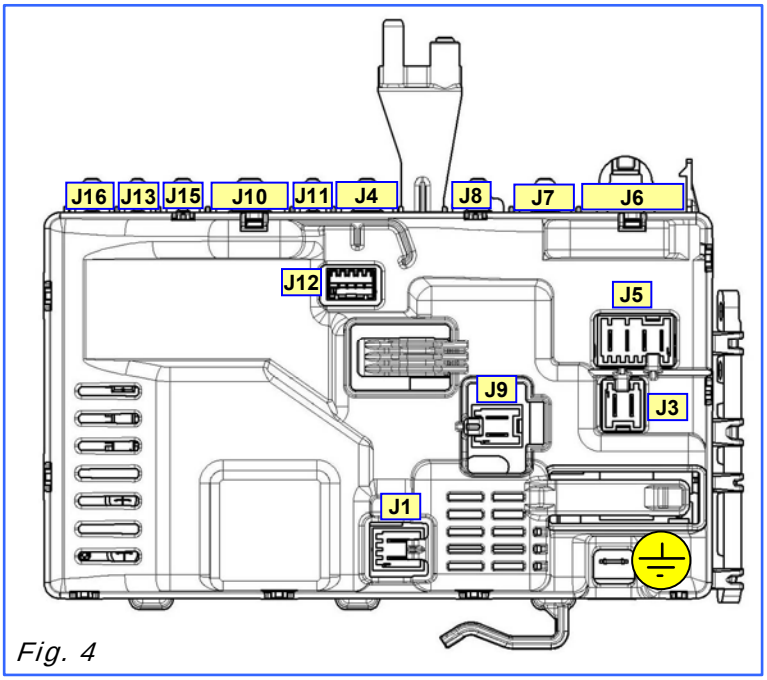


Fig. 4

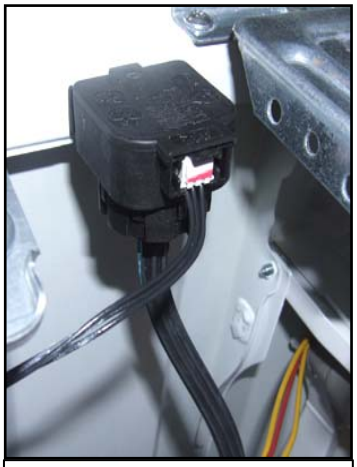


Fig. 2

If there are burns on the circuit board, see page 77

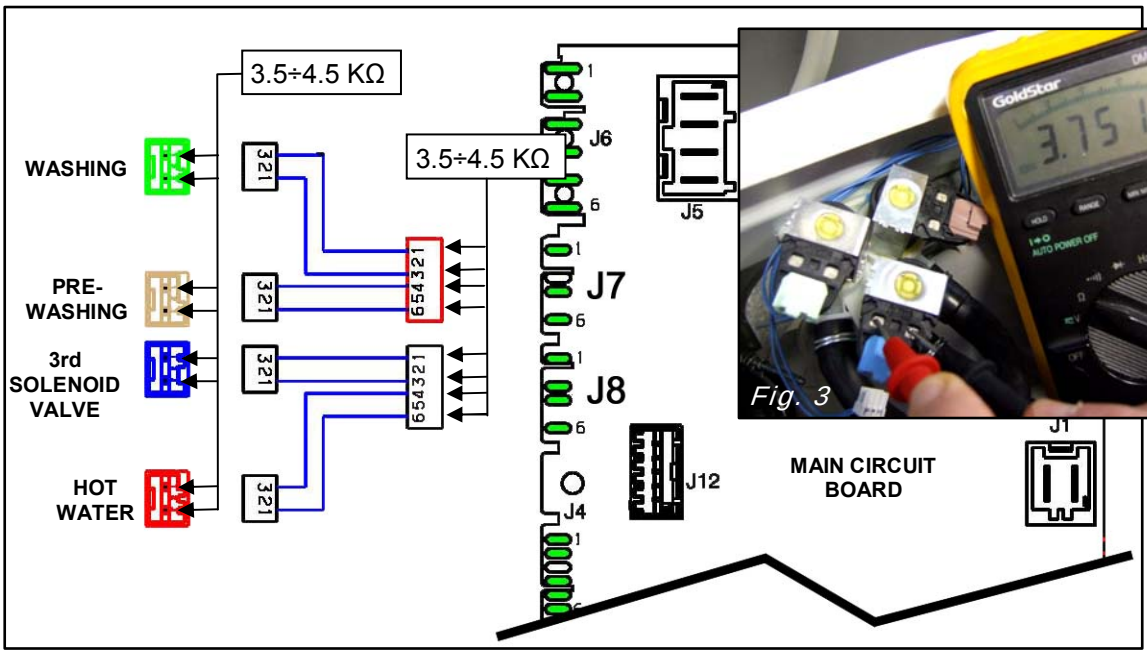


Fig. 3

E13	E13: Water leaks	E13
	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:

Check that all the connectors are correctly inserted

Run the diagnostic cycle and fill all the trays with water **(phases 2,3,4,5,6)**.
Are all the trays filling with water?

NO

YES

Is the drain tube positioned correctly and not causing the siphon effect? **(fig. 1)**

NO → Repair the drain circuit and repeat the diagnostic cycle to check for any further alarms.

YES

Is the washing machine's water circuit efficient (leaking)?

NO → Repair the water circuit and repeat the diagnostic cycle to check for any further alarms.

YES

Is the pressure switch's water circuit efficient (leaking/clogged)? **(fig. 2)**

NO → Repair the water circuit of the pressure switch 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 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
Between J8-1 and J8-3 third solenoid valve
Between J8-4 and J8-6 hot water
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.

If there are burns on the circuit board, see page 77

E13

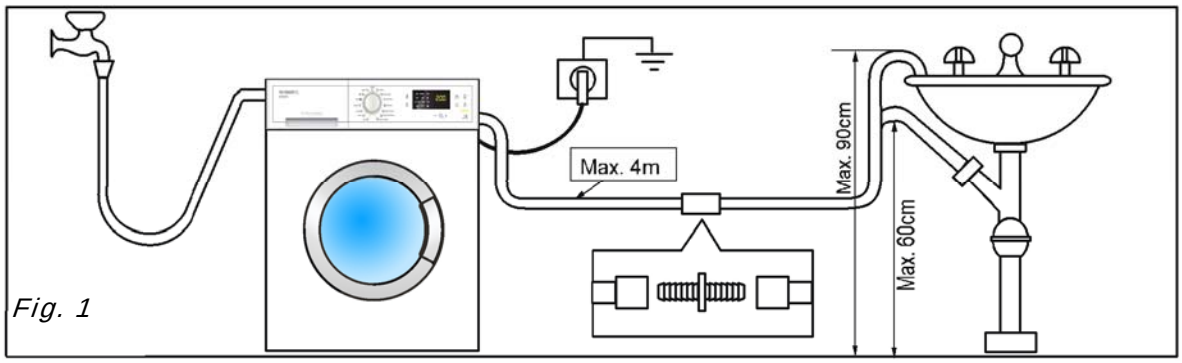


Fig. 1

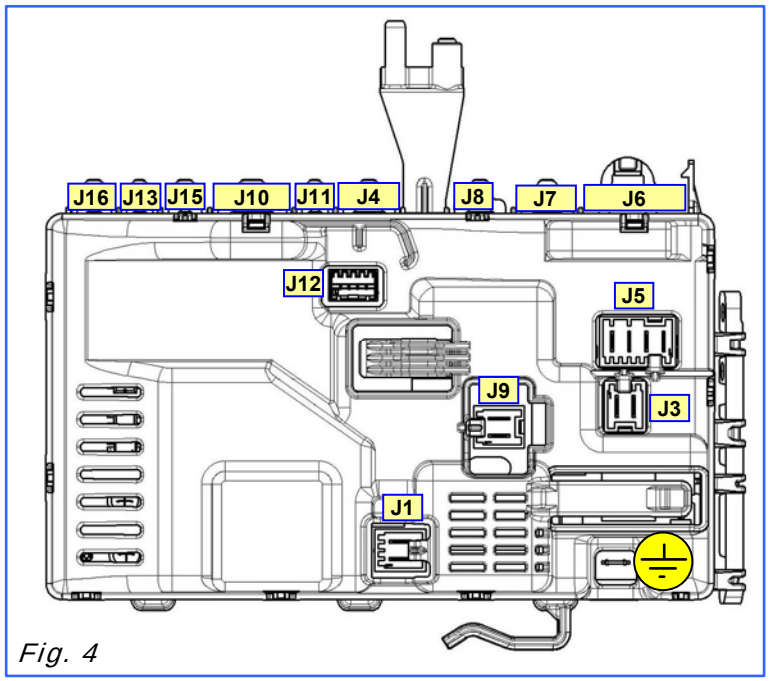


Fig. 4

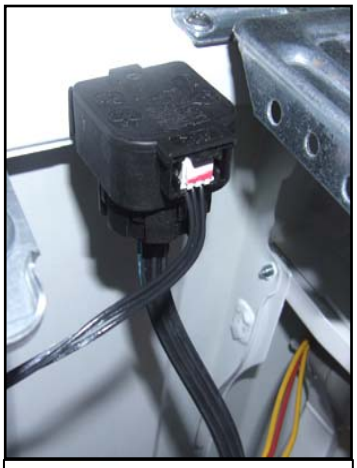


Fig. 2

If there are burns on the circuit board, see page 77

Fig. 3

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

Checks to perform:

Check that all the connectors are correctly inserted

Is the drain filter clean?
- NO → Clean the filter and repeat the diagnostic cycle to check for any further alarms.
- YES ↓

Is the drain system ok? (drain pipe and water system of the home) -(**fig. 1**)-
- NO → Disconnect and check the drain system and repeat the diagnostic cycle to check for any further alarms.
- YES ↓

Is the drain pump working? (In the diagnostic cycle, select **phase 2** fill and **phase 9** drain) (noise from the pump)
- NO → Is the resistance measurement of the pump approximately 155÷200 Ω? (Measure it directly on the connector on the board side between J6-3 and J4-4) -(**fig. 4**)-
  - NO → Is the resistance measurement of the pump approximately 155÷200 Ω? (Measure it directly on the pump) -(see **fig. 5**)-
    - NO → Replace the pump 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 ↓ Is the pump rotor mechanically blocked or broken?
    - NO → Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.
    - YES ↓ Clean/replace the drain pump and repeat the diagnostic cycle to check for any further alarms.
- YES ↓

Is the pressure switch's water circuit efficient? (no clogging)
- NO → Repair the water circuit of the pressure switch and repeat the diagnostic cycle to check for any further alarms.
- YES ↓ Replace the pressure switch and repeat the diagnostic cycle to check for any further alarms.

If there are burns on the circuit board, see page 77

E21

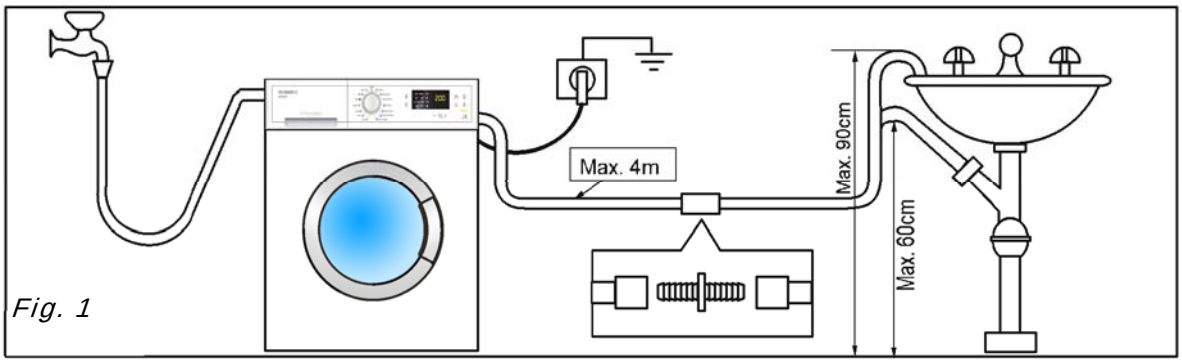


Fig. 1

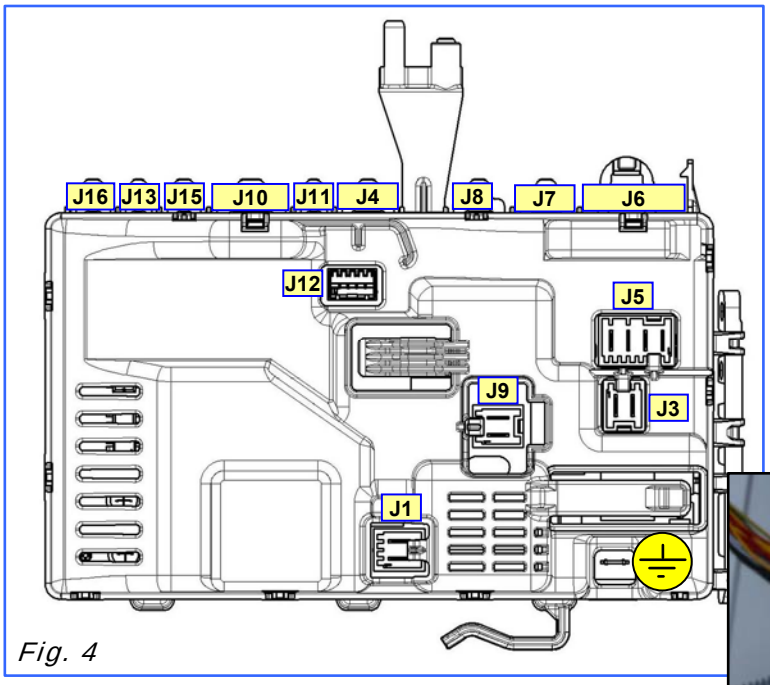


Fig. 4

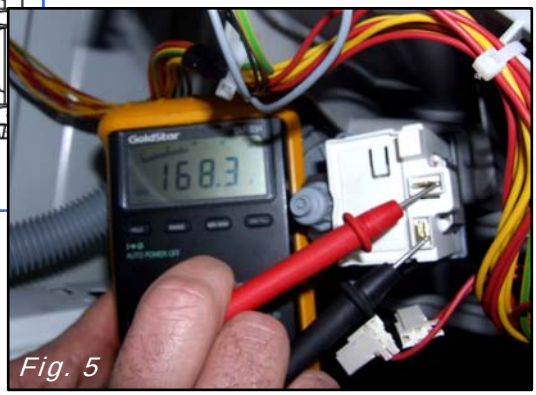
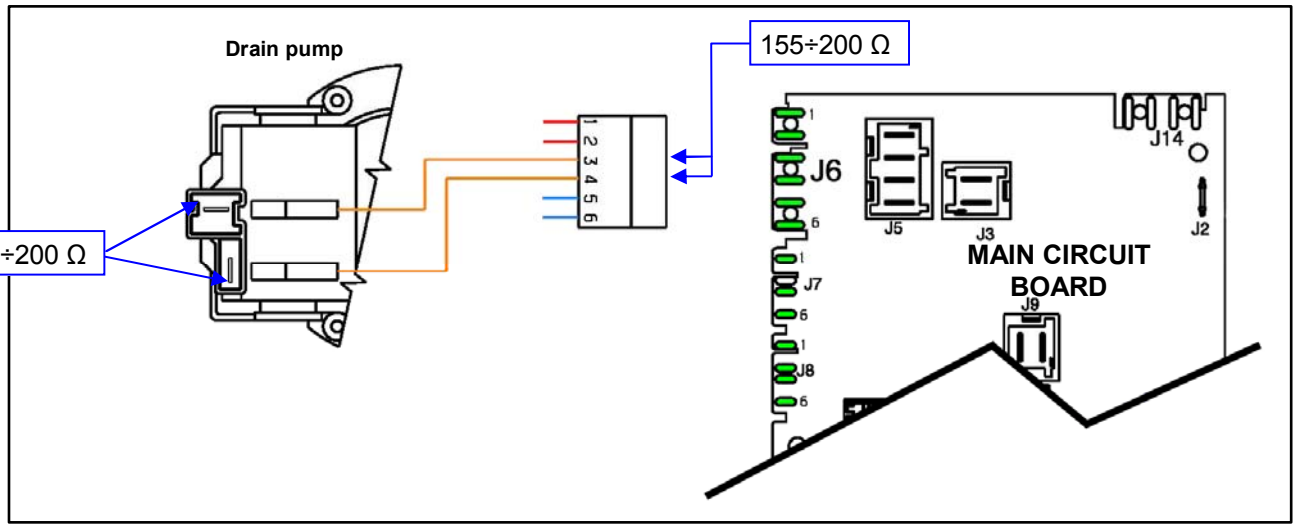


Fig. 5



If there are burns on the circuit board, see page 77

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

Checks to perform:

Check that all the connectors are correctly inserted

Is the resistance measurement of the pump approximately 155÷200 Ω? (Measure it between connectors J6-3 and J6-4 on the board side -**(fig. 4)**-

NO

Is the resistance measurement of the pump approximately 155÷200 Ω? (Measure it directly on the pump) -**(see fig. 5)**-

NO

Replace the pump 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 it between connectors J6-3 / J6-4 and the appliance body. -**(fig. 6)**-
Is there any dispersion?

NO

Replace the main 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 77

E23

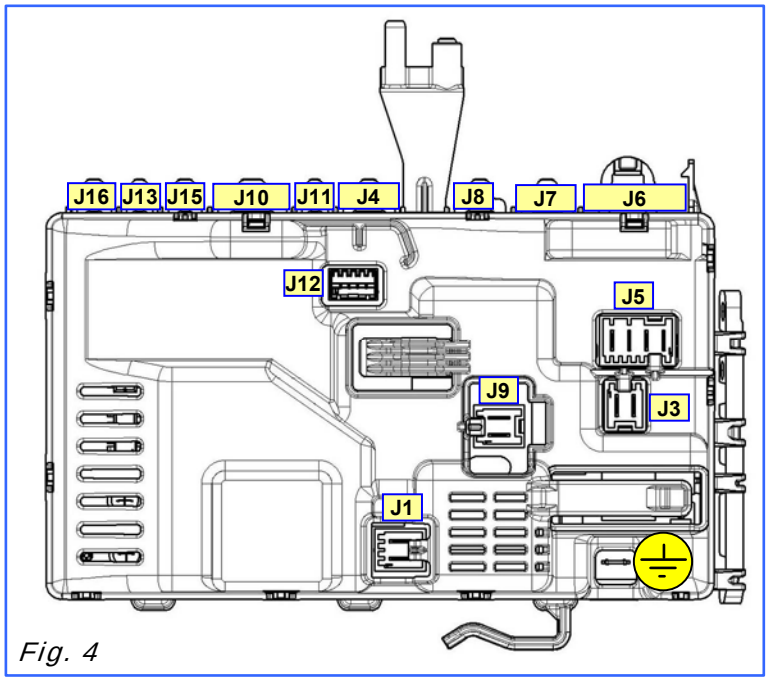


Fig. 4

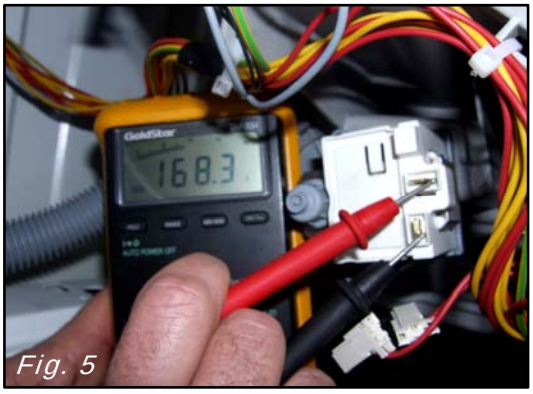
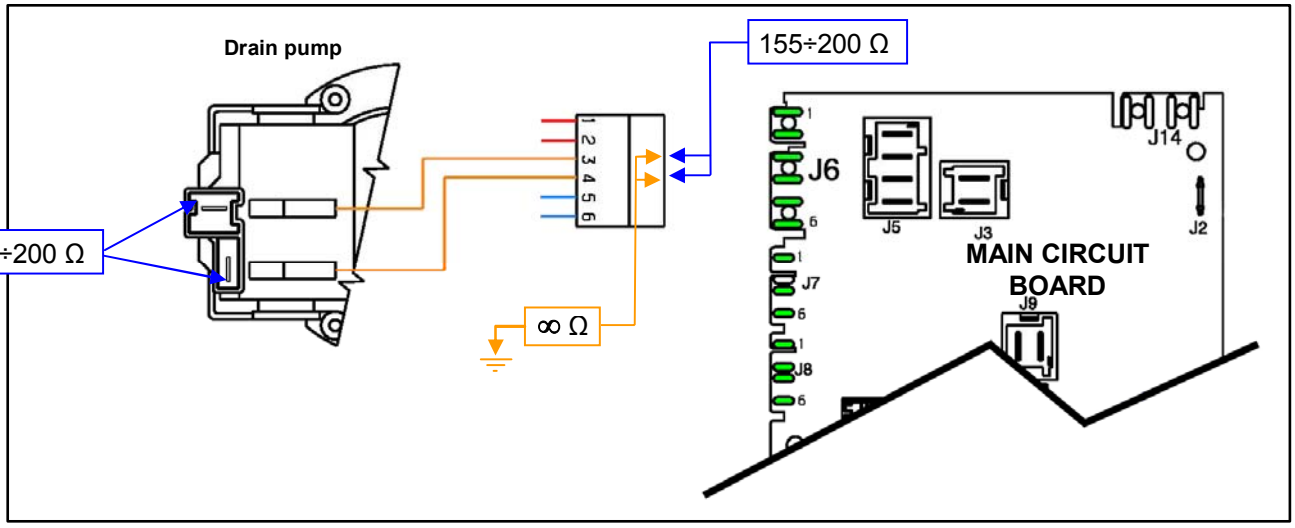


Fig. 5

Fig. 6



If there are burns on the circuit board, see page 77

E24	E24: Sensing circuit of the component (triac) controlling the drain pump faulty	E24

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 77

E31	E31: The analogue pressure switch provides the main circuit board with a signal outside the limits	E31

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 alarm codes.
Is the appliance displaying the same alarm code again?

YES

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

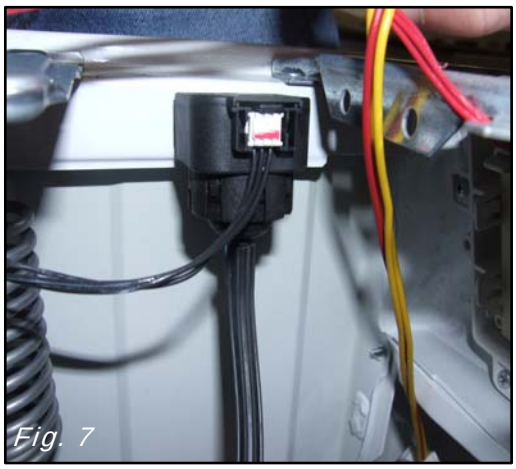
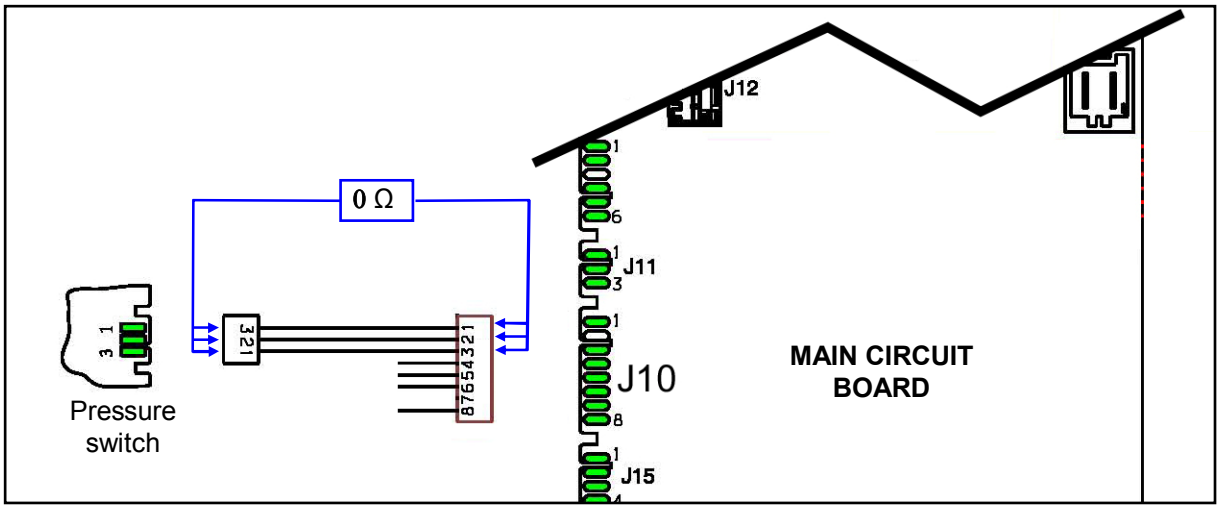


Fig. 7



If there are burns on the circuit board, see page 77

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

Checks to perform:

Check that all the connectors are correctly inserted

Drain the water from the tub. Are the pressure switch tube and pressure chamber unobstructed? (disconnect the tube and blow into it to make sure the system is unobstructed) **(fig. 2 and 8)**

NO → Clean/replace the tube and/or the pressure chamber and repeat the diagnostic cycle completely to check for any further alarms.

YES

Check the drain system (filter, drain pump, drain tube). Is the appliance draining correctly?

NO → Repair the drain circuit.

YES

YES

Select a washing cycle. After a few minutes, has the appliance filled with water and is the motor running?

NO → Replace the analogue pressure switch and repeat the diagnostic cycle to check for any further alarms.

YES

Appliance ok.

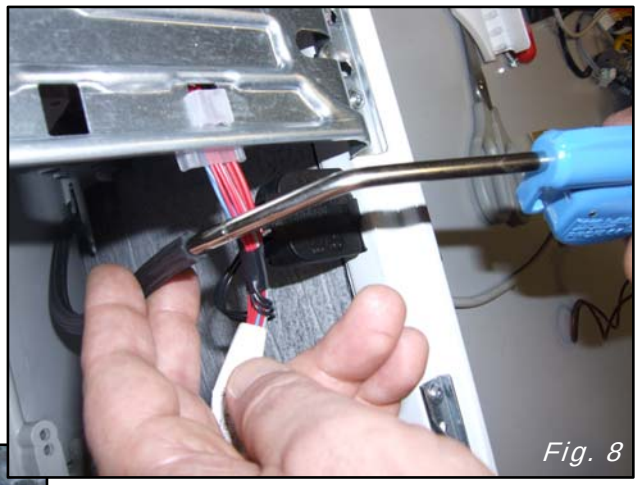


Fig. 8

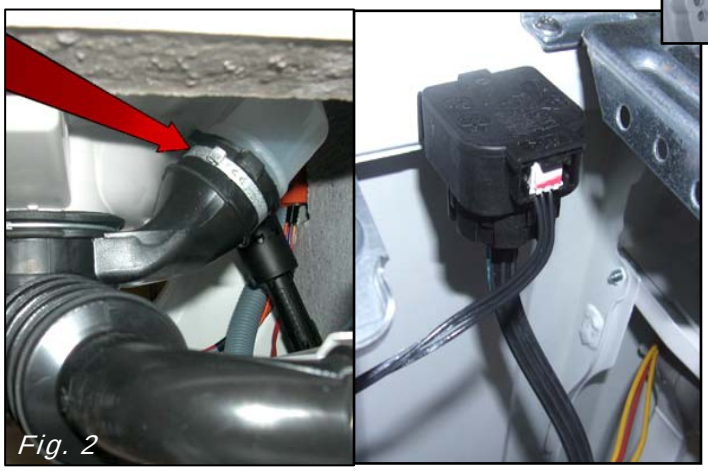


Fig. 2

If there are burns on the circuit board, see page 77

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

Checks to perform:

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

Drain the water from the tub. Are the pressure switch tube and pressure chamber unobstructed? (disconnect the tubes and blow into them to make sure the system is unobstructed) -**(see fig. 2 and 8)**-

NO → Clean/change the tube and/or the pressure chamber and repeat the diagnostic cycle completely to check for any further alarms.

YES ↓

Does the appliance continue to fill with water even when it is switched off?

NO → Run the diagnostic cycle at **phase 9**. Once the door has locked, does the appliance start to fill with water?

NO → Is the wiring between the main circuit board and the analogue pressure switch connected correctly on both sides?

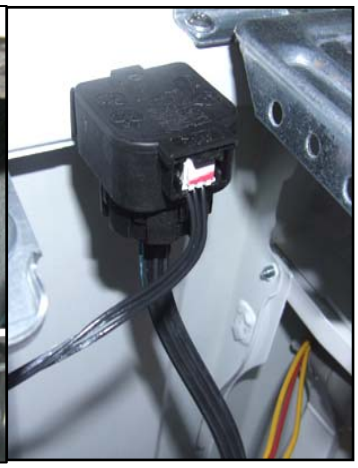
NO → Reconnect and/or replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES ↓ Replace the water fill solenoid valve 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.

YES ↓ Change the analogue pressure switch and repeat the diagnostic cycle to check for any further alarms.


Fig. 2



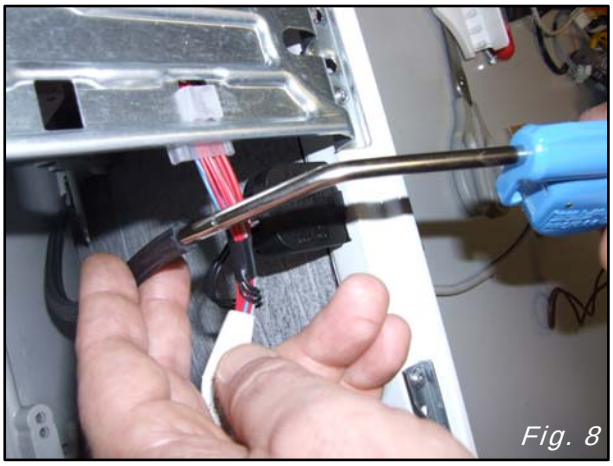


Fig. 8

! ***If there are burns on the circuit board, see page 77***

E38	E38: Internal pressure chamber is clogged	E38
	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:

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

Run the diagnostic cycle and set **phase 8**. Is the motor running and the drum not moving?

NO

Drain the water from the tub and check the internal pressure chamber and the pressure switch tube. Is the system unobstructed? -**(see fig. 2)**-

NO

Clean the internal pressure chamber and/or the pressure switch tube (disconnect the tube and blow into it to make sure the system is unobstructed). -**(see fig. 8)**- Repeat the diagnostic cycle to check for any further alarms.

YES

Replace/reposition the belt 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.

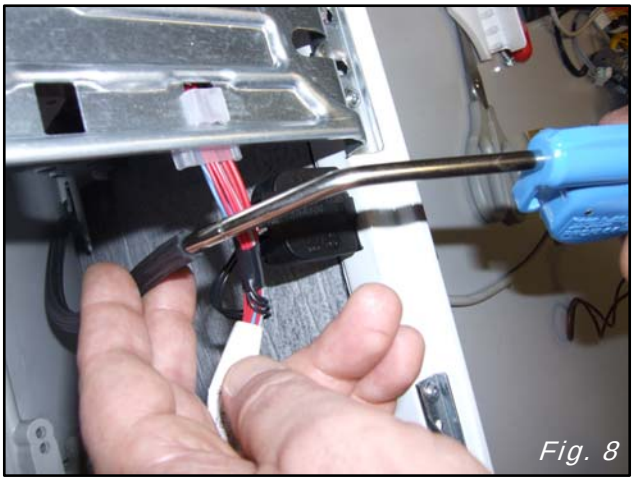


Fig. 8

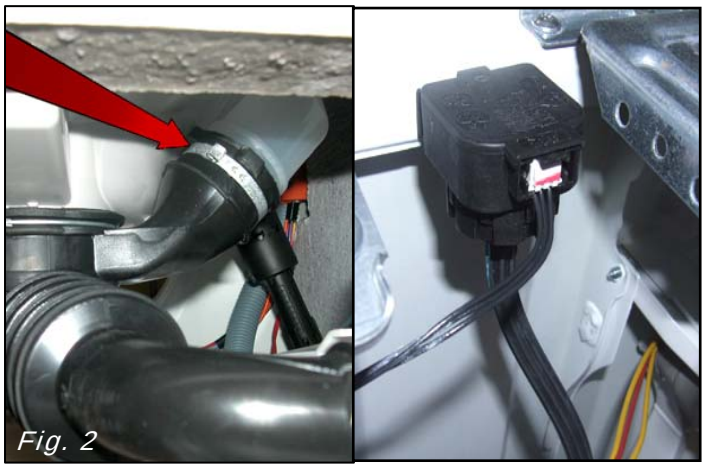


Fig. 2

! ***If there are burns on the circuit board, see page 77***

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

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?

NO → 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**)

NO → Replace the door lock 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.

YES → Check the mechanical coupling between the door lock and the door latch. Is the system efficient?

NO → Replace the door latch/ the door.

YES → Replace the door lock.
Is the appliance working correctly?

NO → Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

YES → Repeat the diagnostic cycle to check for any further alarms.

If there are burns on the circuit board, see page 77

E41 (device with 4 connections)

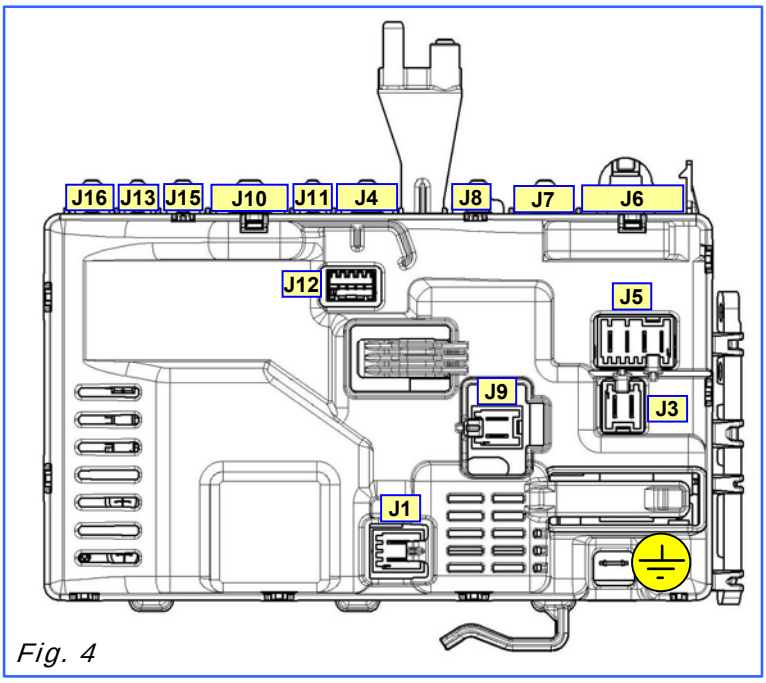


Fig. 4

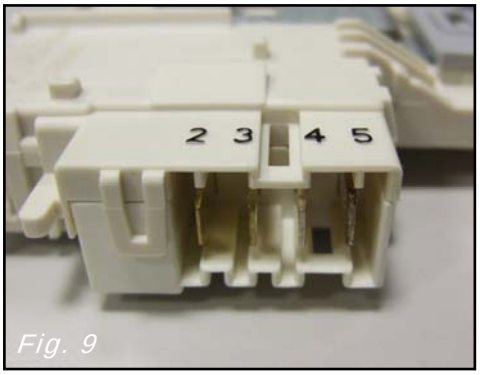
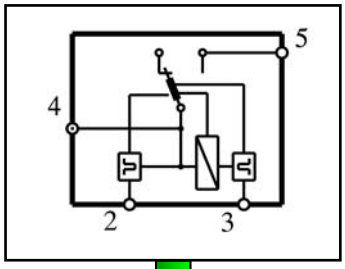
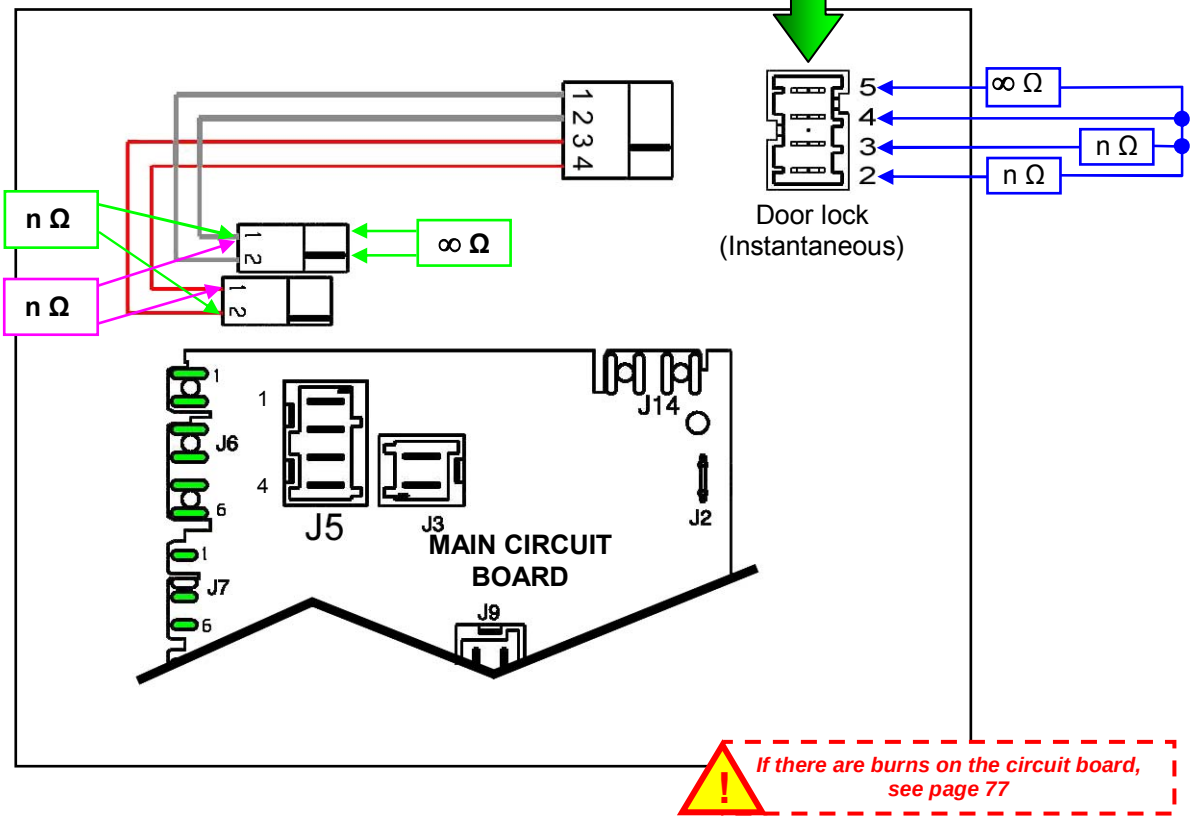


Fig. 9





If there are burns on the circuit board, see page 77

E42	E42: Problems opening door (device with 4 connections) Maximum time exceeded (5 pulses per instant).	E42

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?

NO → 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**)

NO → Replace the door lock 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.

YES → Check the mechanical coupling between the door lock and the door latch. Is the system efficient?

NO → Replace the door latch/ the door

YES → Replace the door lock.
Is the appliance working correctly?

NO → Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

YES → Repeat the diagnostic cycle to check for any further alarms.

If there are burns on the circuit board, see page 77

E42 (device with 4 connections)

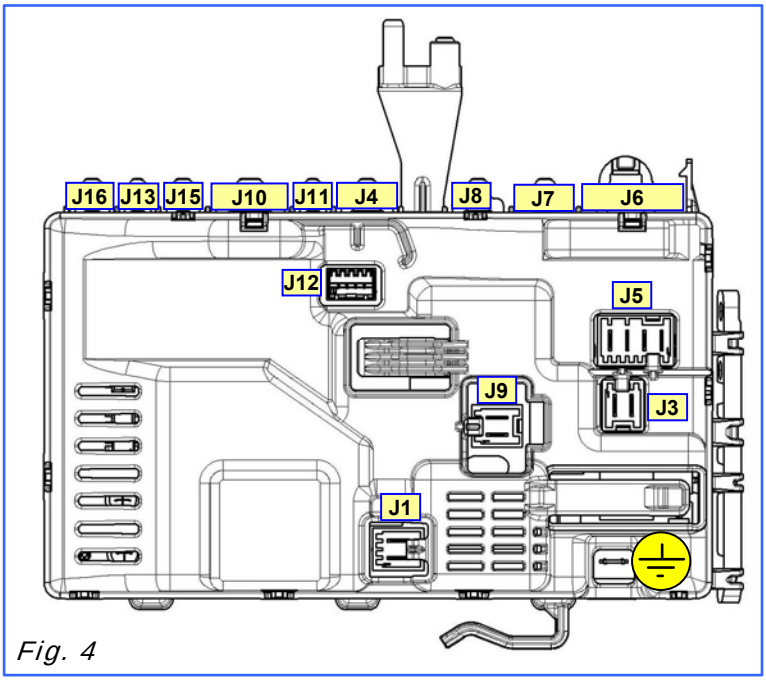


Fig. 4

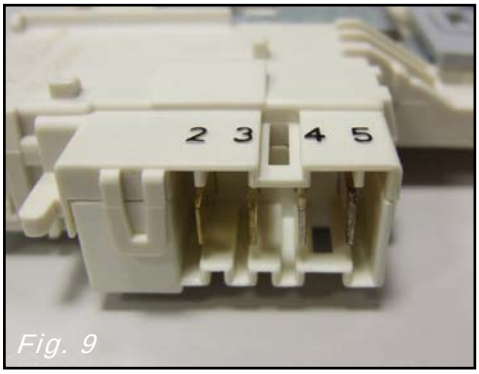
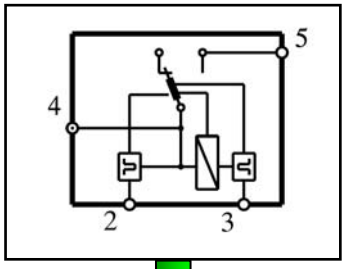
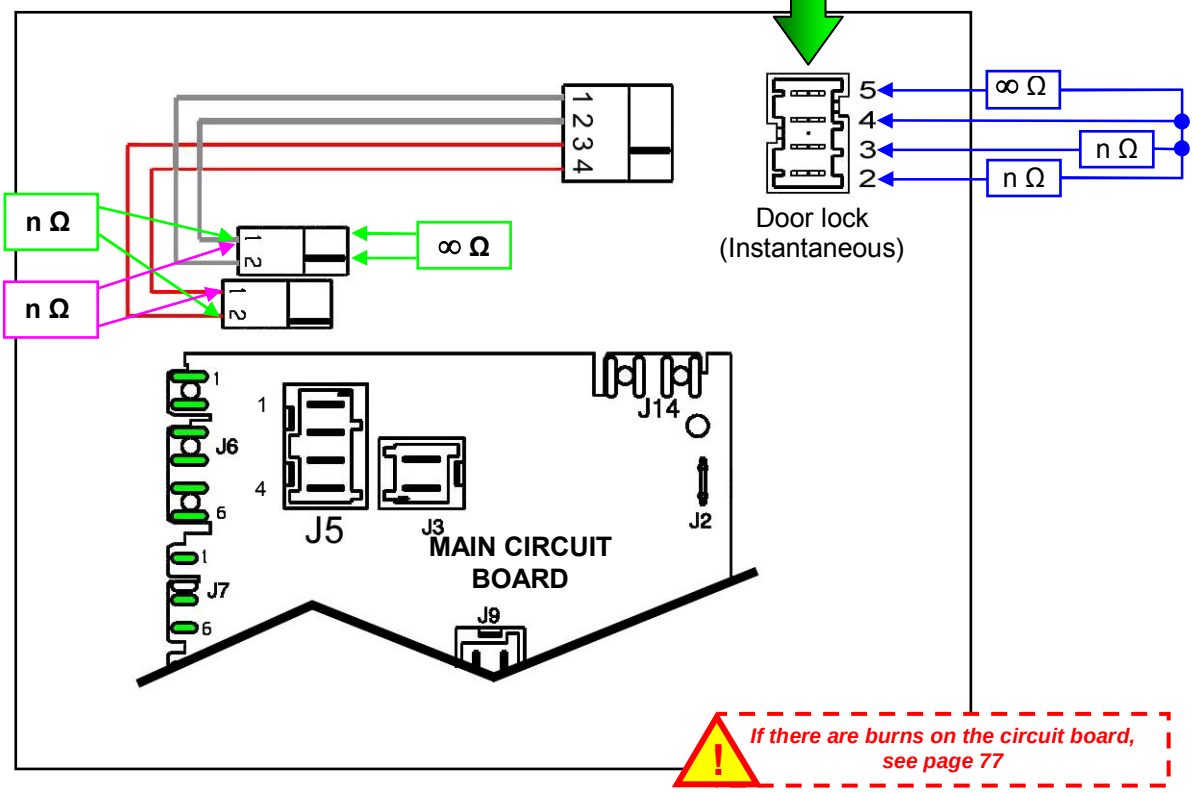


Fig. 9





If there are burns on the circuit board, see page 77

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?

NO → 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**)

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.

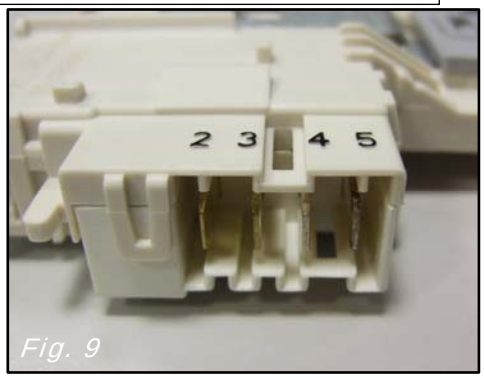
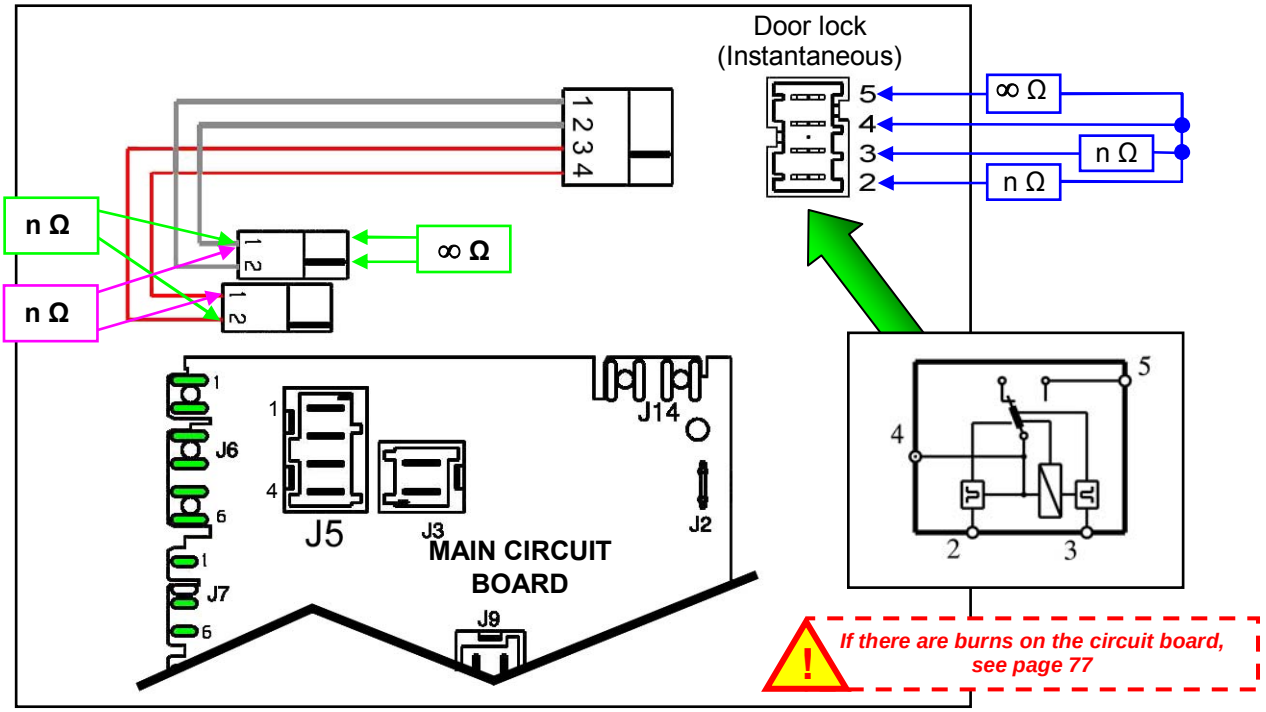


Fig. 9

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 77*

E44	E44: Door closed “sensing” circuit faulty	E44

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.

E45	E45: Problems with the “sensing” circuit of the component (triac) controlling the door delay system	E45

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 77

E52	**E52: No signal from the motor tachimetric generator (1st part)** Cycle interrupted after 5 attempts during the cycle, immediately if recognised at the start of the cycle or during diagnostics.	E52

Checks to perform:

! *Check that all the connectors are correctly inserted*

Access **phase 8** of the diagnostic cycle (The drum rotates at 55 rpm clockwise, 55 rpm anticlockwise with pulse at 250 rpm). Is the motor running correctly?

NO → **The motor never runs - see page 42 -**

YES ↓

Measure between the terminals of the wiring connector J2-3 and J2-4. Are the values (Ω) of the tachometric generator correct? (as on **page 43** - Point 4 - phase "A").

NO → Detach the connector from the motor and measure (Ω) the tachometric generator coil, -**(see fig. 11)**- Is the value correct? (as on **page 43** Point 4 - phase"A").

NO → Replace the motor or tachometric generator 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 the same terminals of the wiring connector (J2-3 and J2-4) and the appliance body. Is there any dispersion? -(**see fig. 13**)-

NO → Check the positioning of the tachometric generator. Is it correct? -**(see fig. 12)**-

NO → Replace the motor/generator 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.

YES ↓

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

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

YES ↓

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

! *If there are burns on the circuit board, see page 77*

E52


Fig. 12

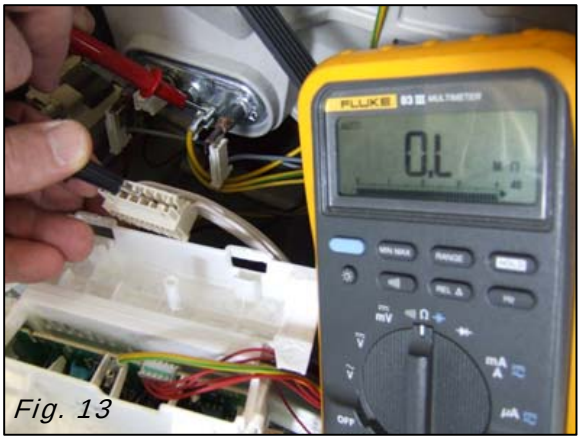


Fig. 13

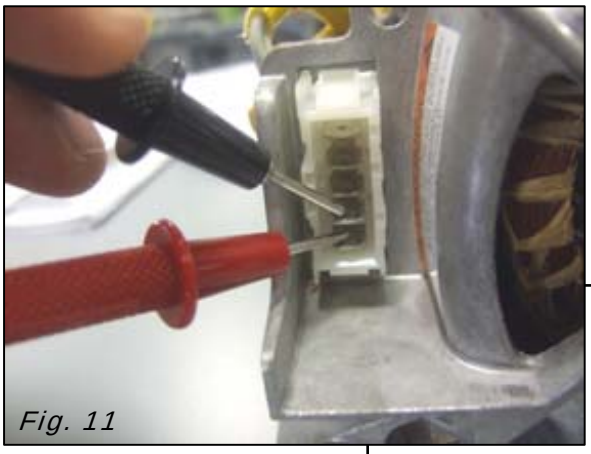


Fig. 11

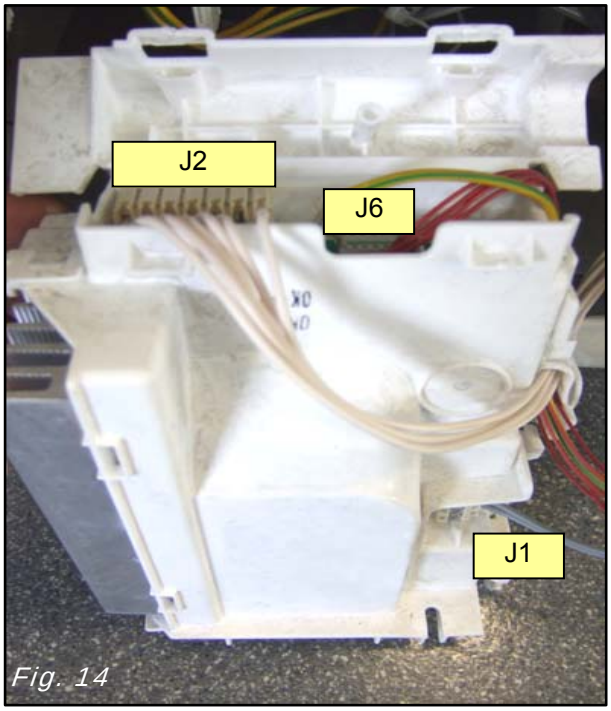
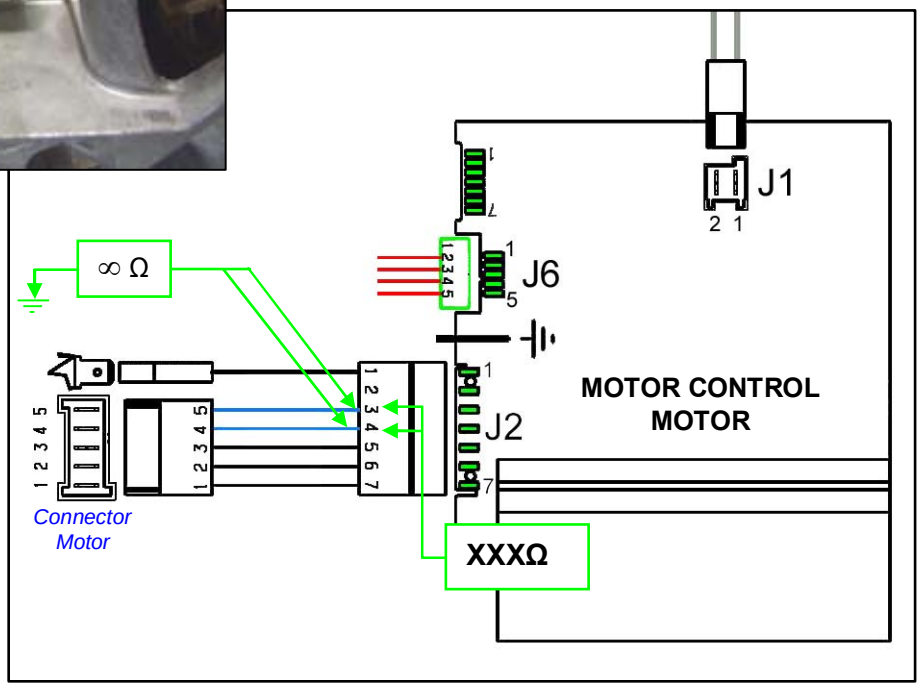


Fig. 14

Fig. 10



If there are burns on the circuit board, see page 77

E52	**E52: No signal from the motor tachimetric generator (2nd part)** Cycle interrupted after 5 attempts during the cycle, immediately if recognised at the start of the cycle or during diagnostics.	E52

Checks to perform:

Check that all the connectors are correctly inserted

The motor never runs

To check the wiring, measure (Ω) between the following wiring connectors of the motor control board **(fig. 14)** and compare the values with the correct values (**see page 43**: 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 43**. 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.

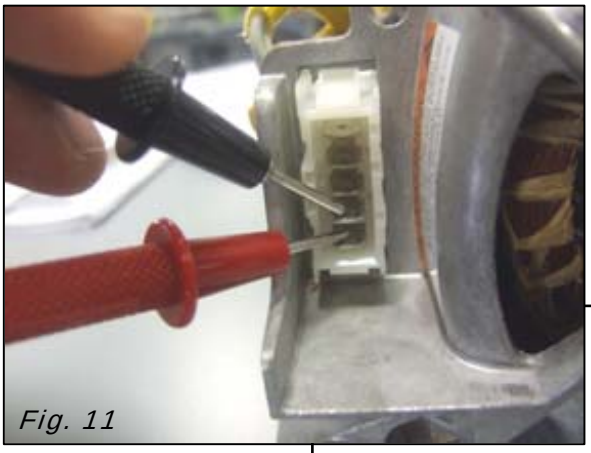


Fig. 11

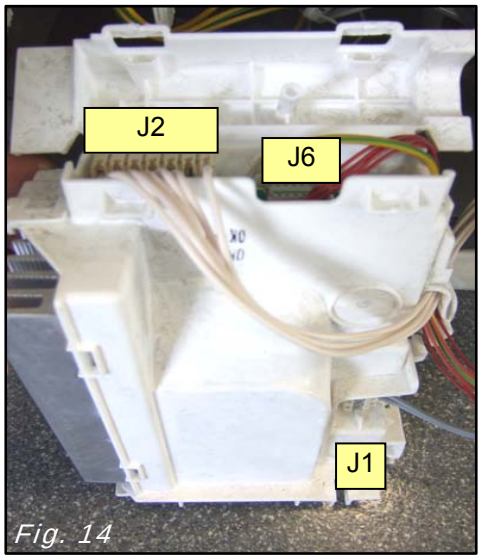
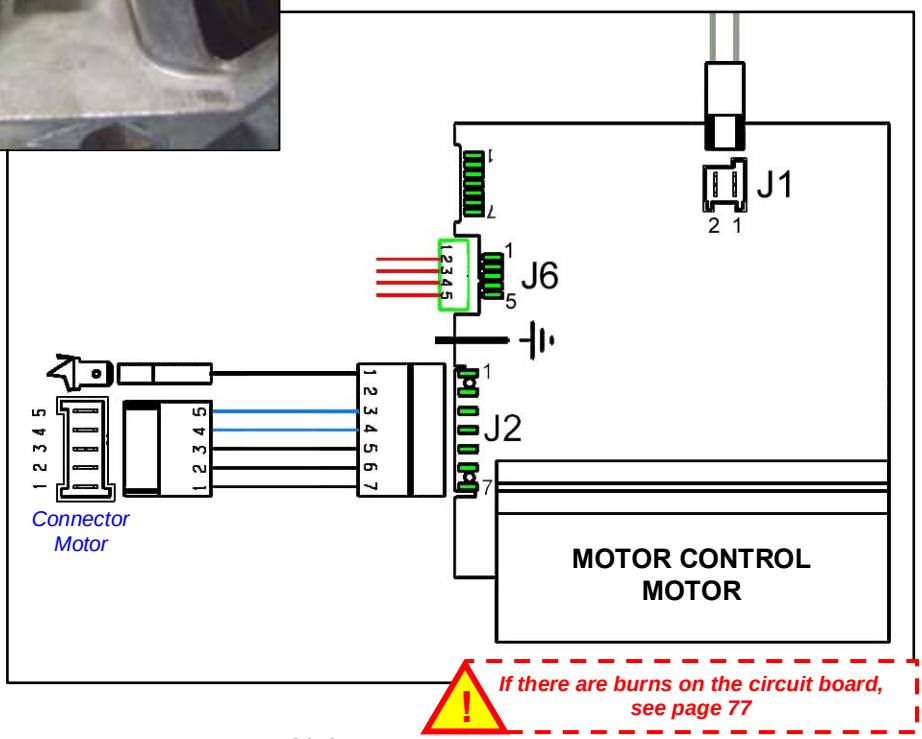


Fig. 14



If there are burns on the circuit board, see page 77

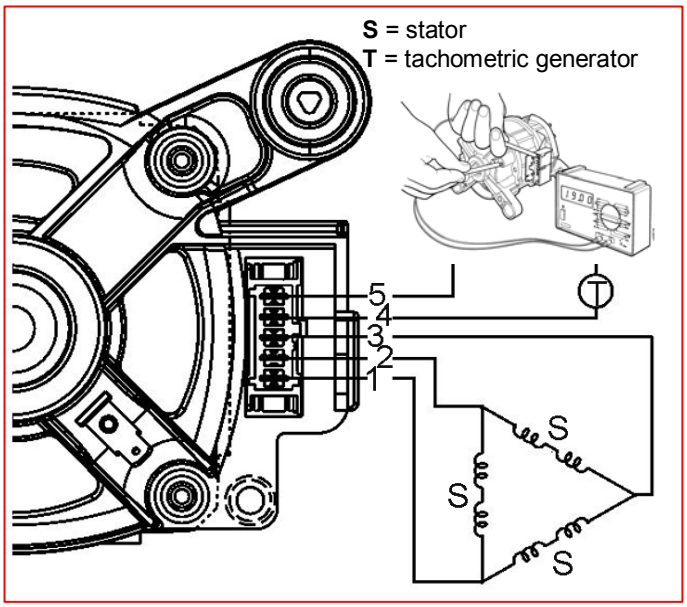
How to check three-phase motors

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 an 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.	MOTORS ACC (SOLE) NIDEC	MOTORS ECM
A	4-5	Tachometric generator winding	108÷133	169÷207	85÷98
B	1-2	Stator winding	5.0÷5.8	5.0÷5.8	5.0÷5.8
C	2-3	Stator winding	5.0÷5.8	5.0÷5.8	5.0÷5.8
D	3-1	Stator winding	5.0÷5.8	5.0÷5.8	5.0÷5.8

Fig. 10

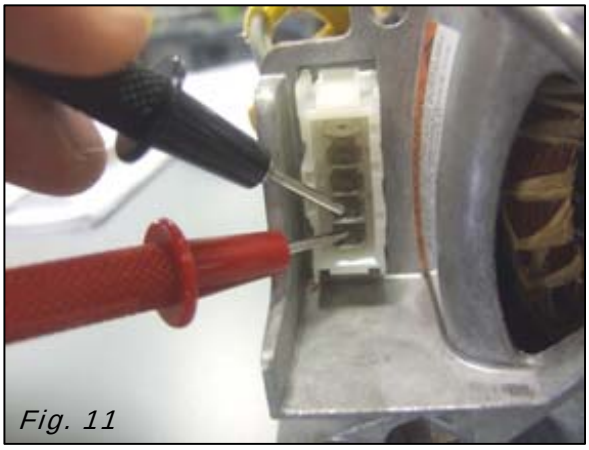


Fig. 11

If there are burns on the circuit board, see page 77

E57	E57: Inverter is drawing more than 16A current	E57
	Abnormal current absorption by Motor.	

Checks to perform:

Check that all the connectors are correctly inserted

Measure between the terminals of wiring connector J2-5, J2-6, J2-7 and the appliance body: is there any dispersion? - **(see fig. 13)** -

NO → Replace the motor control board and repeat the diagnostic cycle to check for any further alarms.

YES ↓

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

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

YES ↓

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

If there are burns on the circuit board, see page 77

E57

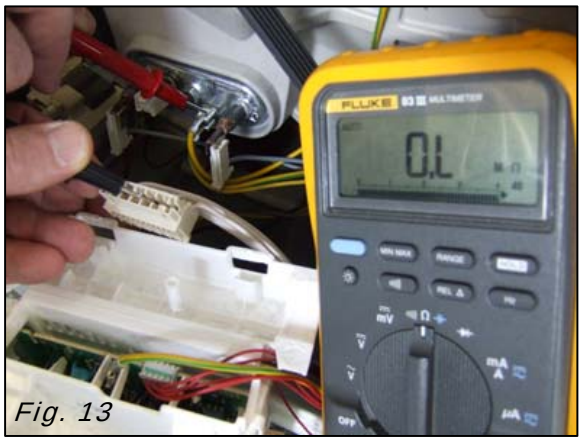


Fig. 13

Fig. 10

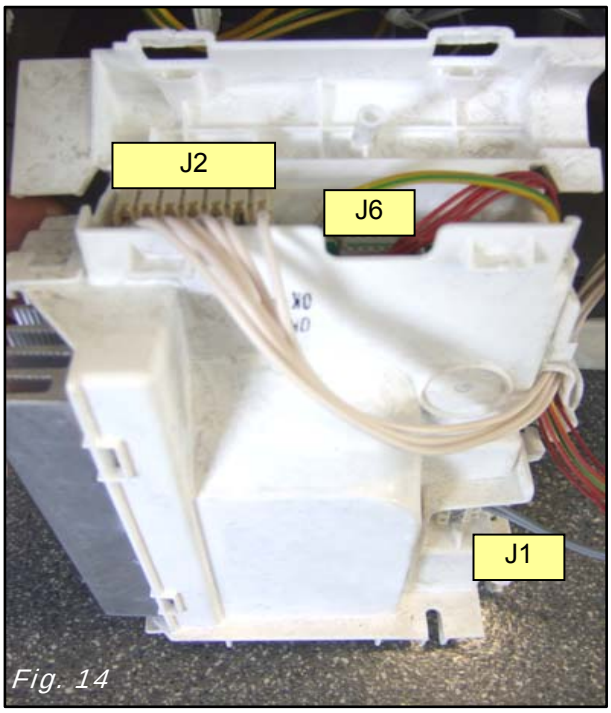
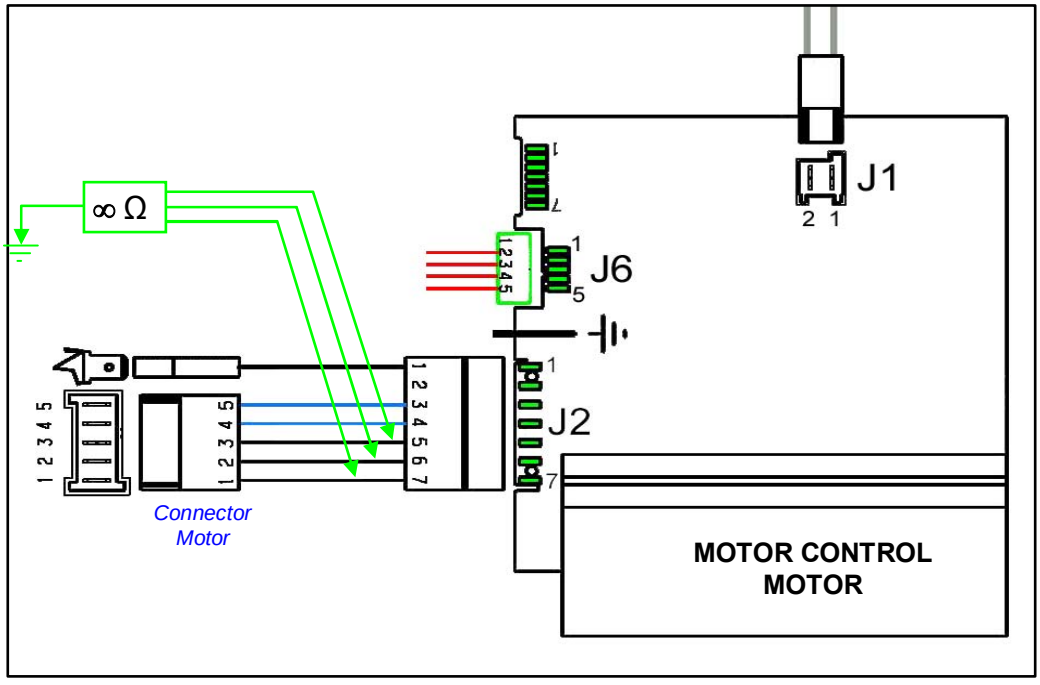


Fig. 14



If there are burns on the circuit board, see page 77

E58	E58: Inverter is drawing more than 4A current	E58
	Abnormal current absorption by Motor.	

Checks to perform:

Check that all the connectors are correctly inserted

Was the wash cycle performed with too large a laundry load?

YES → Reduce the laundry load in the drum and restart the wash cycle.

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

Measure between all the terminals of wiring connector J2-5, J2-6, J2-7 and the appliance body: is there any dispersion? - **(see fig. 13)** -

NO → Replace the motor control 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.

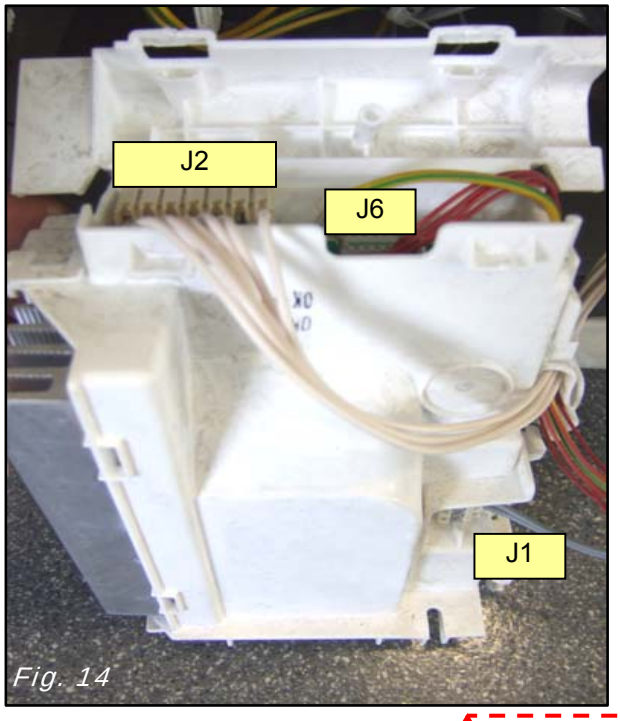


Fig. 14

If there are burns on the circuit board, see page 77

E58


Fig. 15

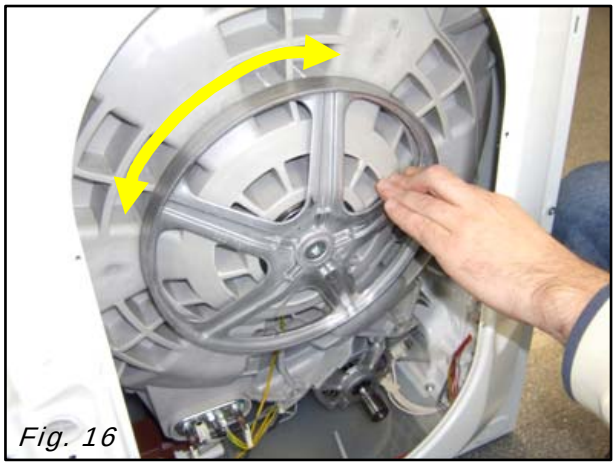


Fig. 16


Fig. 17

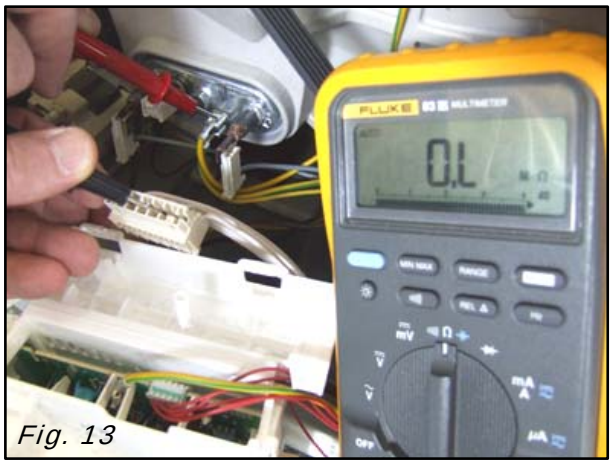
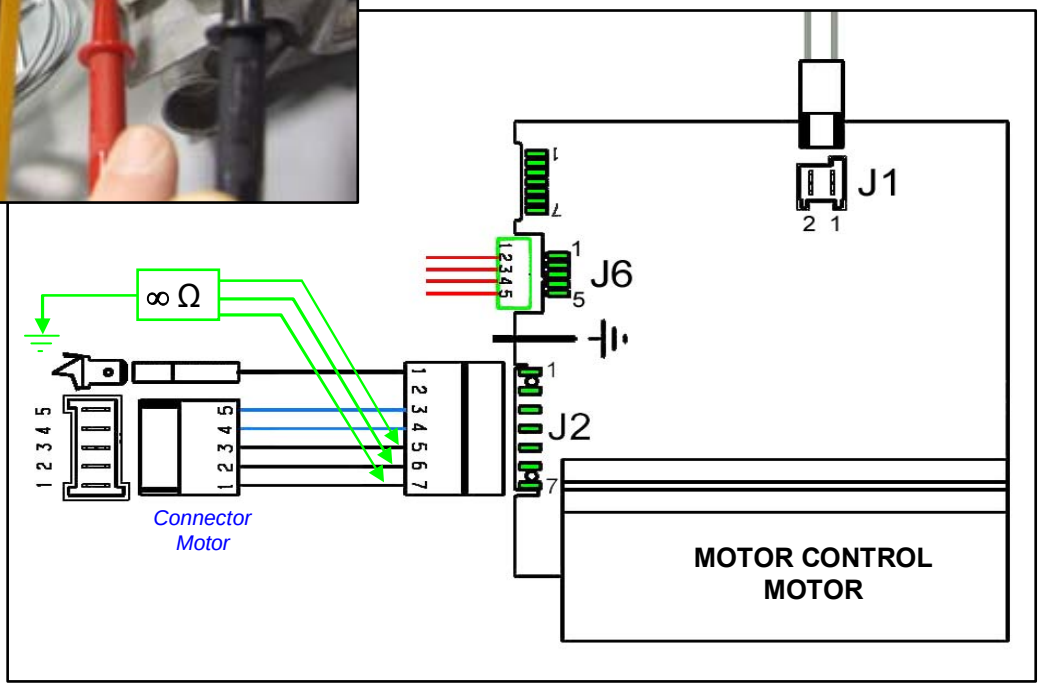


Fig. 13


Fig. 10

If there are burns on the circuit board, see page 77



E59	E59: No signal from the tachometric generator	E59
	The lack of signal should last at least 3 seconds.	

Checks to perform:

Check that all the connectors are correctly inserted

Measure between the terminals of the wiring connector J2-3 and J2-4, (Point 4, phase "A" **page 43**). Are the values (Ω) of the tachometric generator correct?

NO

Detach the connector from the motor and measure (Ω) the tachometric generator coil, (Point 4, phase "A" **page 43**) **-(see fig. 11)-** Is the value correct?

NO

Replace the motor or tachometric generator 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 the same terminals of the wiring connector (J2-3 and J2-4) and the appliance body. Is there any dispersion? **-(see fig. 13)-**

NO

Check the positioning of the tachometric generator. Is it correct? **-(see fig. 12)-**

NO

Replace the motor/generator 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.

YES

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

NO

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

YES

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

If there are burns on the circuit board, see page 77

E59


Fig. 12

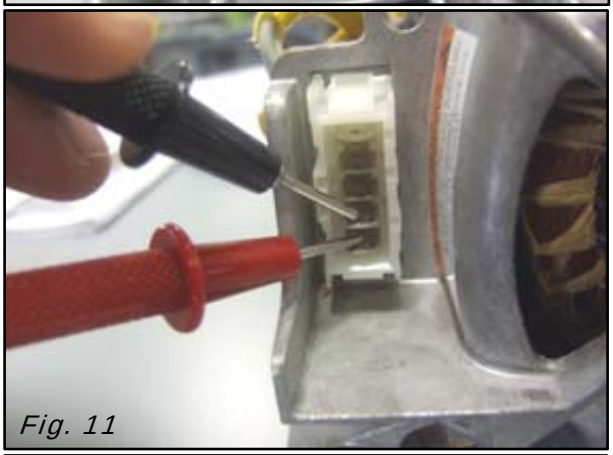


Fig. 11

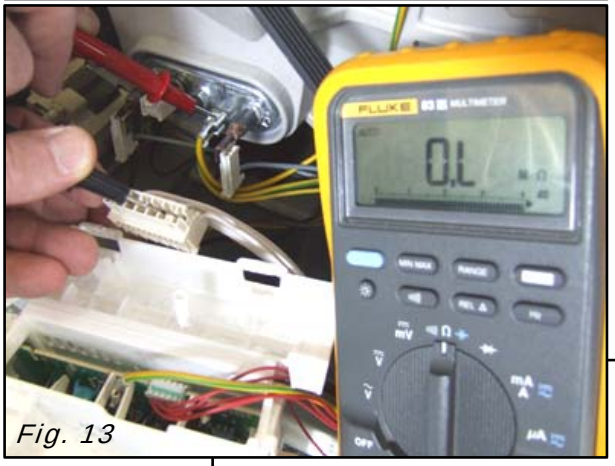


Fig. 13

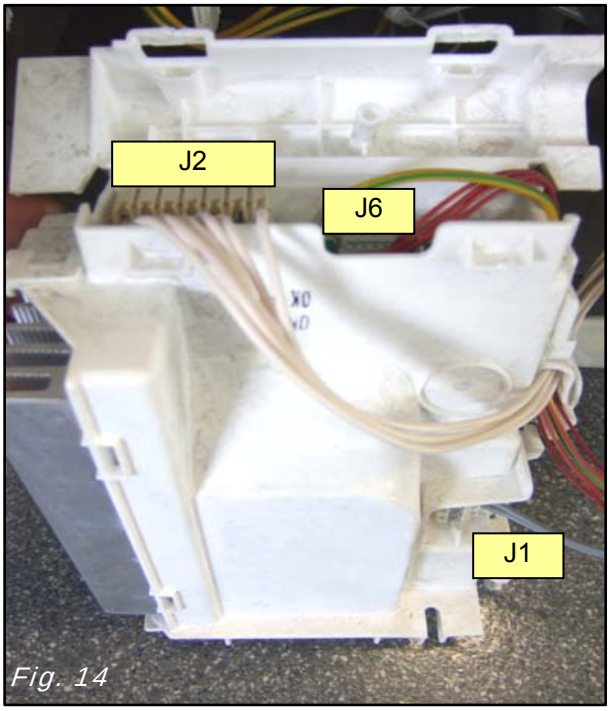
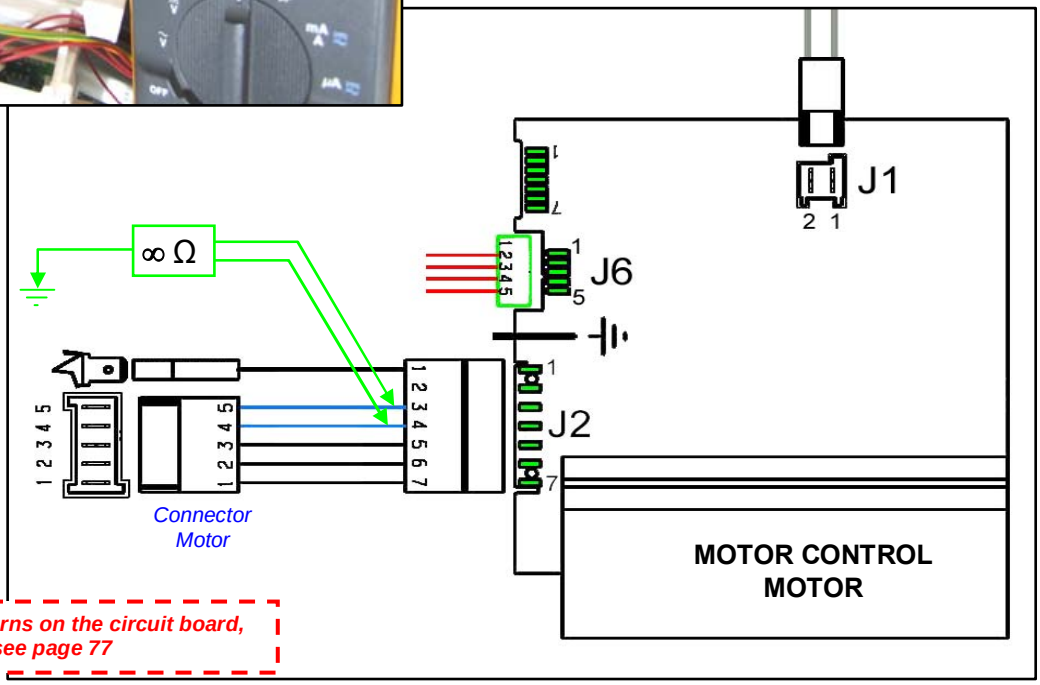


Fig. 14


Fig. 10



If there are burns on the circuit board, see page 77

E5A	E5A: Overheating on Inverter board heat dissipator	E5A
	The dissipator exceeds a temperature of 88°C.	

Checks to perform:

Check that all the connectors are correctly inserted

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

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

NO

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

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

NO

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


Fig. 15

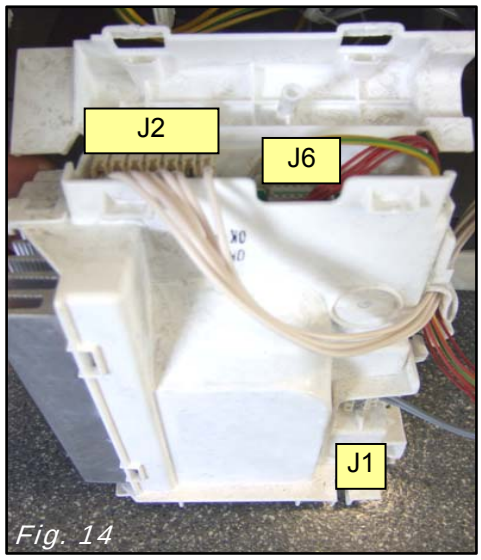


Fig. 14

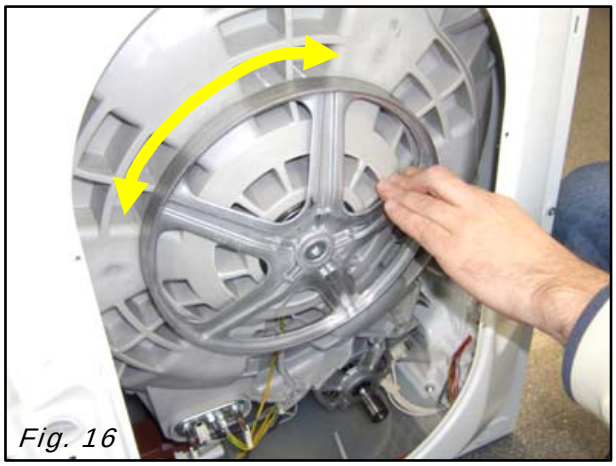


Fig. 16


Fig. 17

If there are burns on the circuit board, see page 77

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

Checks to perform:

Check that all the connectors are correctly inserted

Measure the mains voltage and make sure it is within the nominal range.
Is the mains voltage correct?

NO → Wait for the mains voltage to return to nominal conditions 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 77

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

Checks to perform:

Check that all the connectors are correctly inserted

Are connectors J16 (main circuit board) and J6 (motor control board) properly inserted?

NO → Repair the connectors and repeat the diagnostic cycle to check for any further alarms.

YES

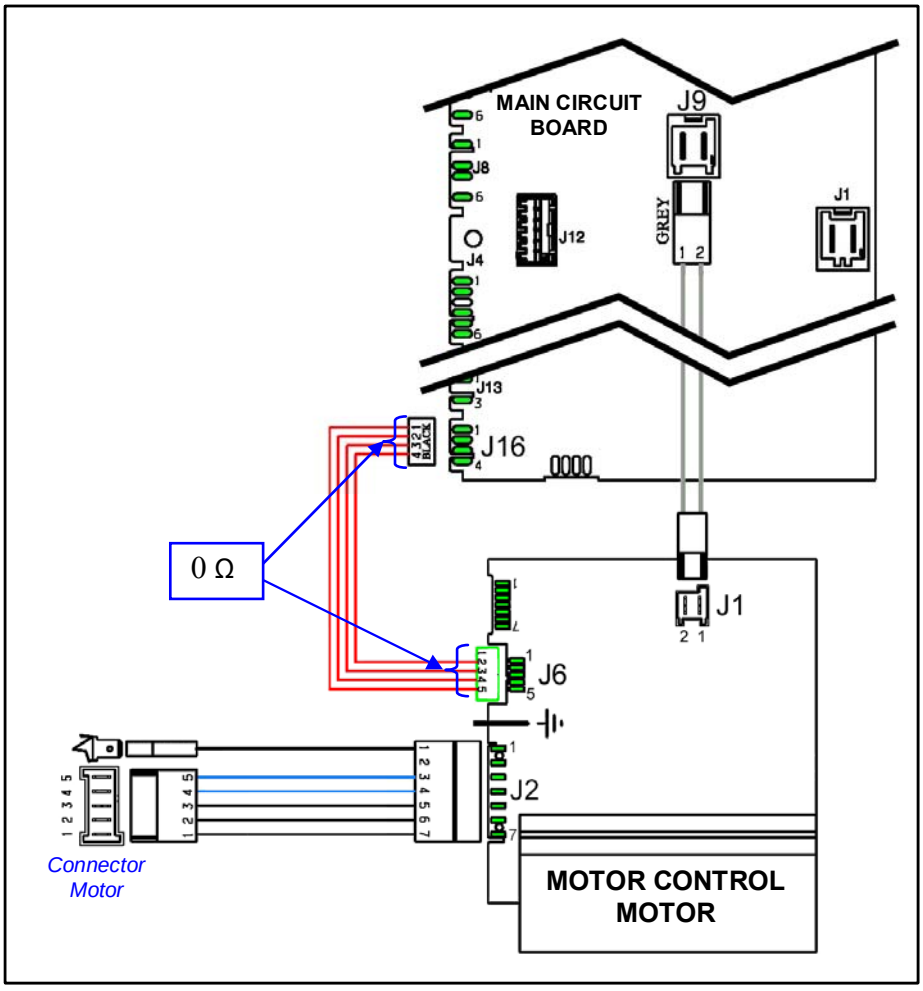
Measure the continuity between connector J16-1, J16-4 (main circuit board) and connector J6-2, J6-5 (motor control board).
Is the wiring ok?

NO → 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.
Is the appliance working?

NO → Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.



If there are burns on the circuit board, see page 77

E5E	E5E: Communication error between Inverter board and main circuit board	E5E
	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.

E5F	E5F: Inverter board fails to start the motor	E5F

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 77

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

Checks to perform:

Check that all the connectors are correctly inserted

Are connectors J9 (main circuit board) and J1 (motor control board) properly inserted?

NO → Repair the connectors and repeat the diagnostic cycle to check for any further alarms.

YES ↓

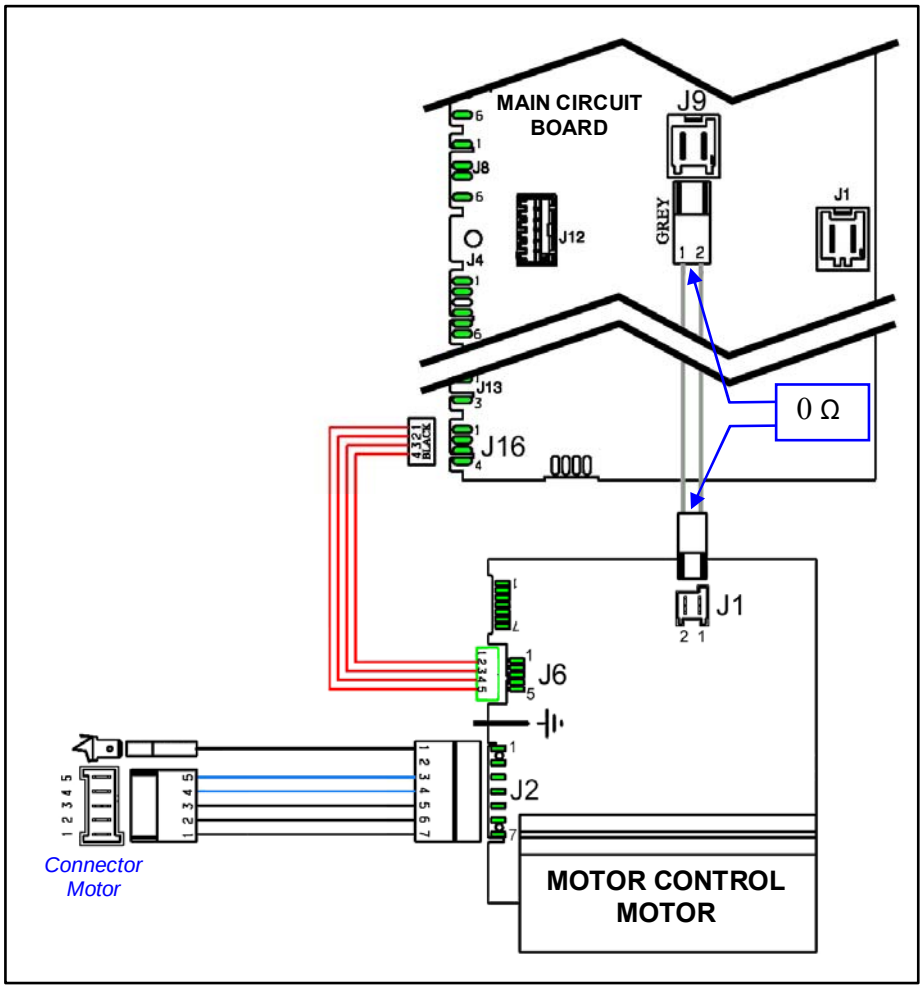
Measure the continuity between connectors J9-1, J9-2 (main circuit board) and J1-1, J1-2 (motor control board). Is the wiring ok?

NO → 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. Is the appliance working?

NO → Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.



If there are burns on the circuit board, see page 77

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

Checks to perform:

Check that all the connectors are correctly inserted

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 connector and measure between the heating element and the earth contact. **-(see 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.

YES → Measure the NTC probe between terminals J10-4 and J10-5 of the main circuit board connector. Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

NO → Detach the connector and measure the value directly on the NTC probe. **-(see fig. 18)-** Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

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. 6

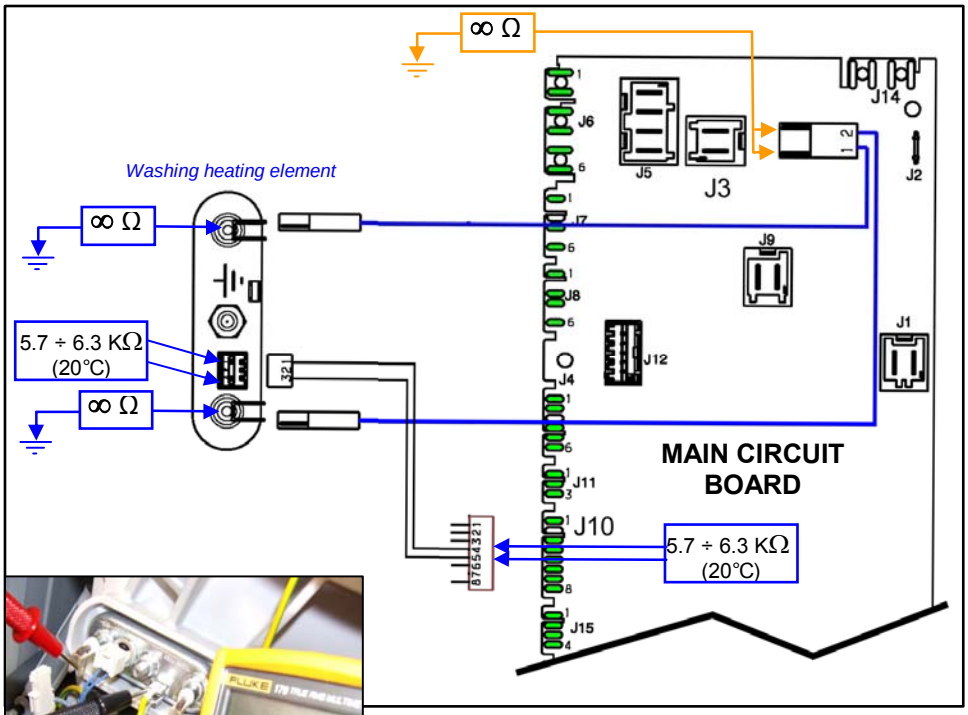



Fig. 18


Fig. 19

If there are burns on the circuit board, see page 77

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.

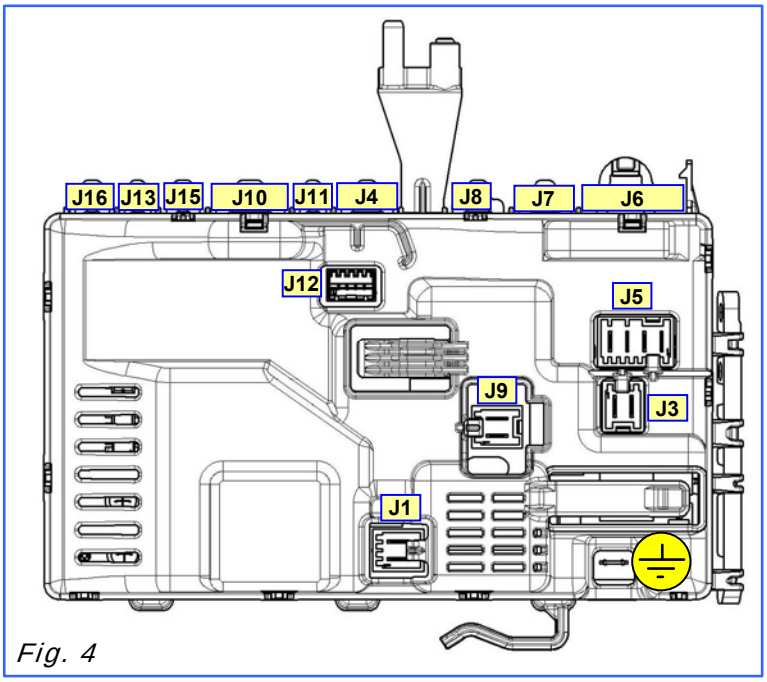
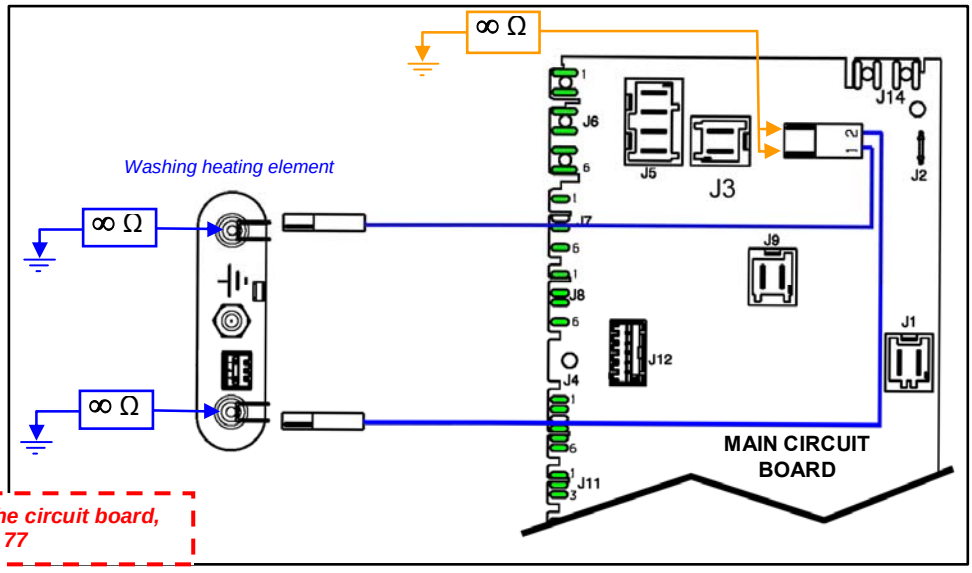


Fig. 4


Fig. 6


Fig. 19



! ***If there are burns on the circuit board, see page 77***

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

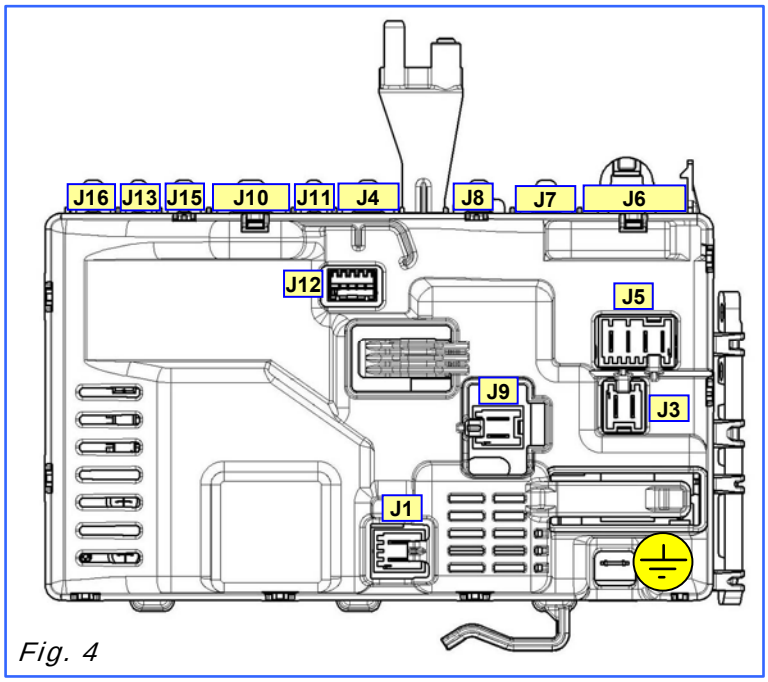
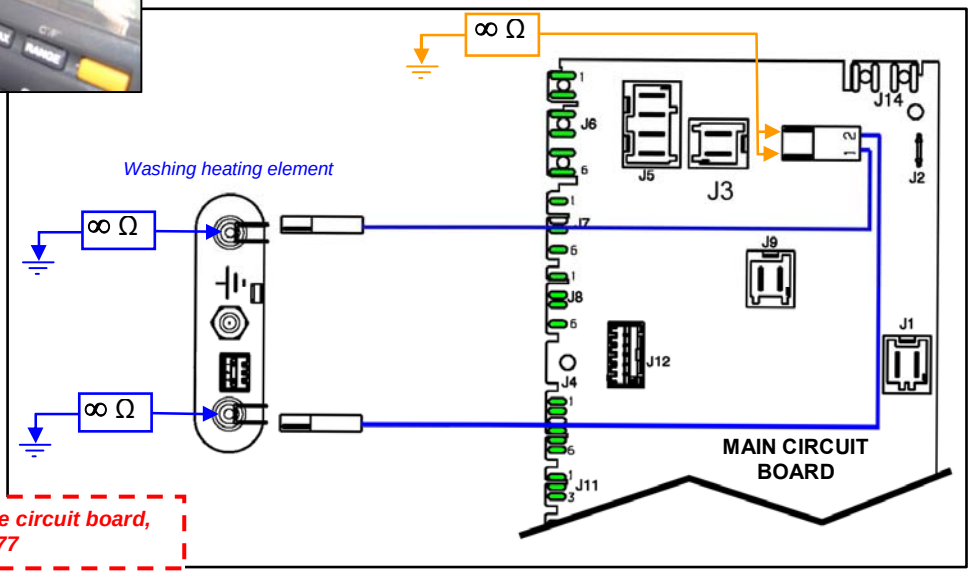


Fig. 4



! ***If there are burns on the circuit board, see page 77***

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 (Ω) between terminals J3-1 ÷ J3-2 of the wiring connector.
-(see fig. 4)-
Is the value correct?
(28÷31 Ω for 230 V/1,750 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÷31 Ω for 230 V/1,750 W)

NO →

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

YES ↓

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

YES ↓

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

Fig. 20

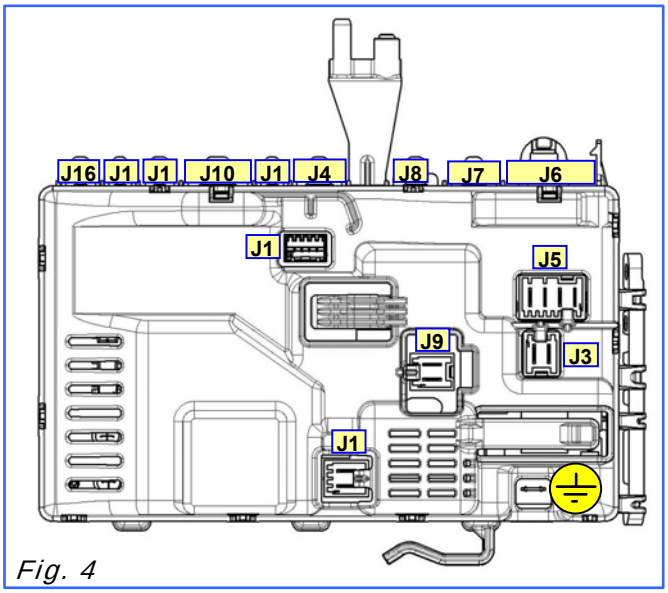
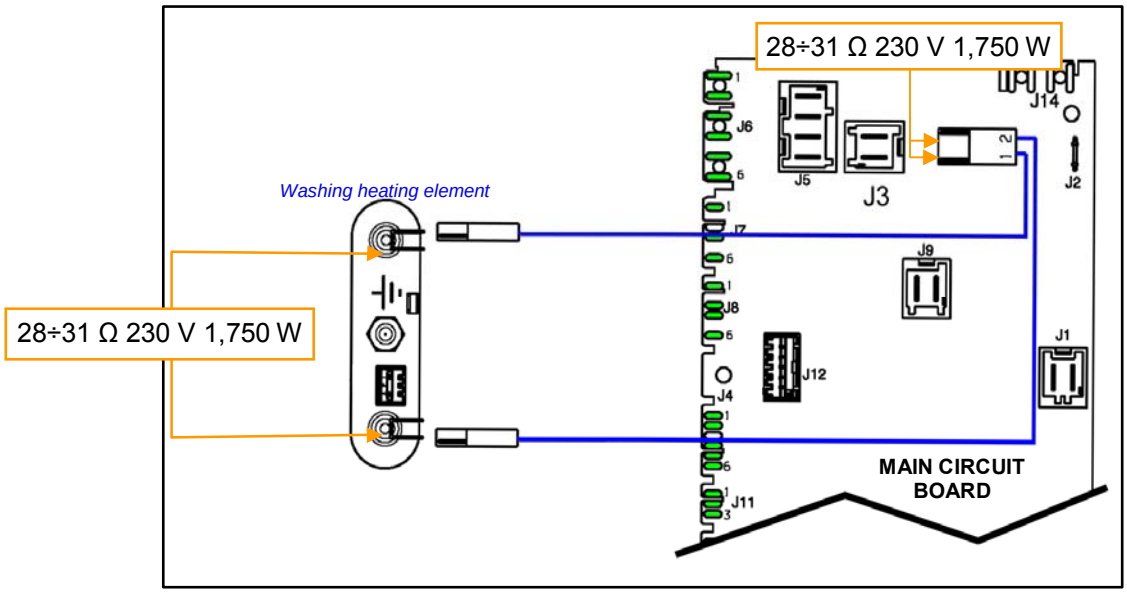


Fig. 4



! ***If there are burns on the circuit board, see page 77***

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 77

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

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

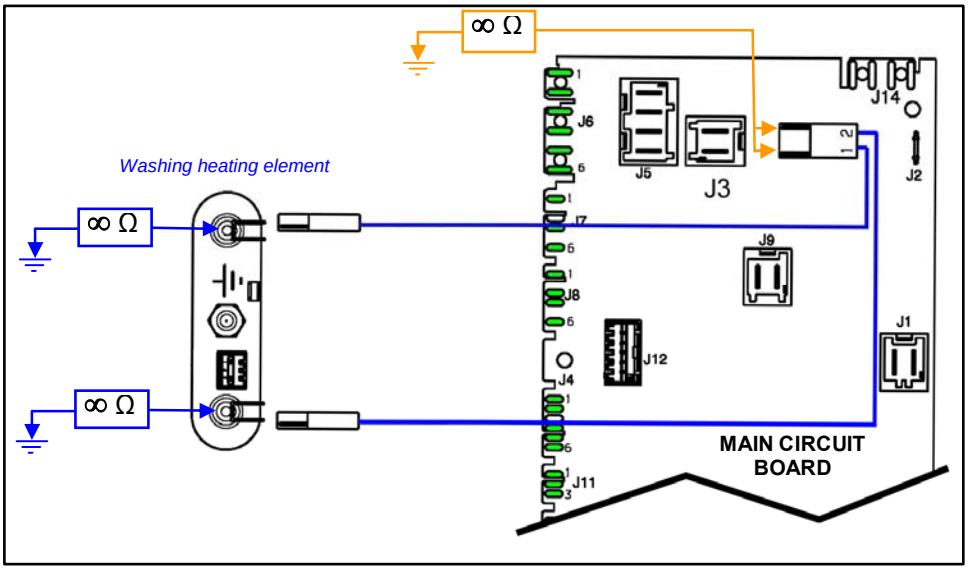
Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES

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


Fig. 6


Fig. 19



If there are burns on the circuit board, see page 77

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

Checks to perform:

Check that all the connectors are correctly inserted

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.

Fig. 6

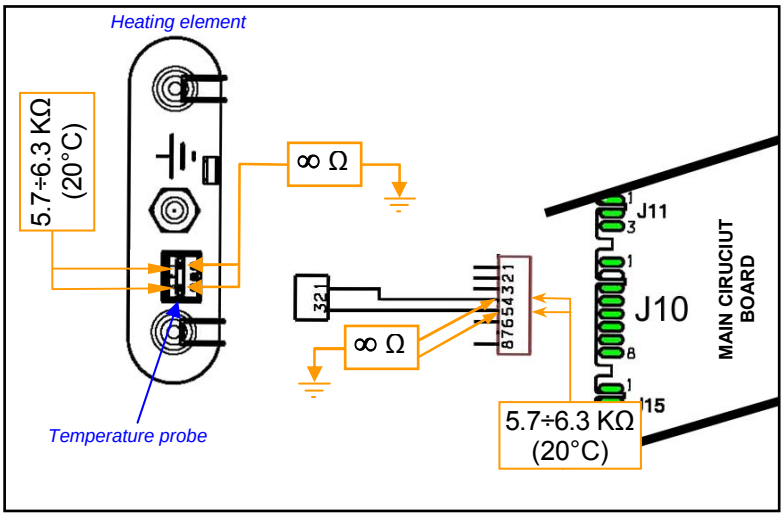


Fig. 18

If there are burns on the circuit board, see page 77

E74	E74: NTC probe improperly positioned	E74

Checks to perform:

Check that all the connectors are correctly inserted

Is the probe visibly positioned correctly in its seat?
-**see fig. 21**-

NO → Reposition the probe in its seat and repeat the diagnostic cycle to check for any further alarms.

YES

Measure the value of the NTC probe (5.7÷6.3 KΩ at 20°C) between contacts J10-4 and J10-5 of the wiring connector **(fig. 4)**.
Is the value correct?
(between 5.7 and 6.3 KΩ at 20°C)

NO → Replace the washing heating element and repeat the diagnostic cycle to check for any further alarms.

YES

Run **phase 7** 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 J10-4 and J10-5 of the wiring connector **(fig. 4)**.
Is the value below 5 KΩ?

NO → Run phase **9** of the diagnostic cycle, drain water from the tub.

!!CAUTION: THE WATER COULD BE SCALDING 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.

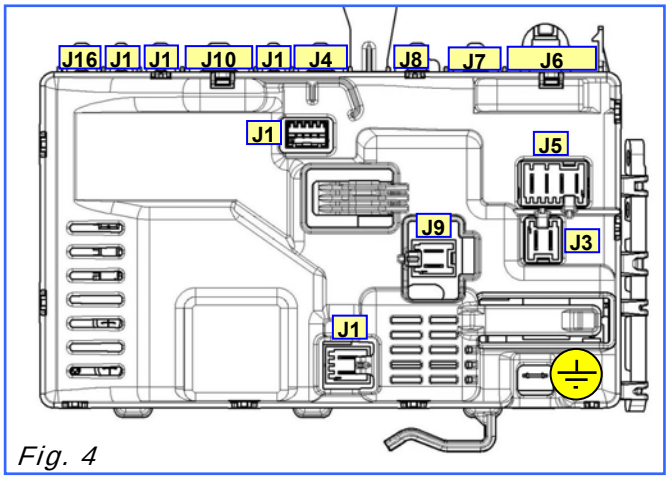
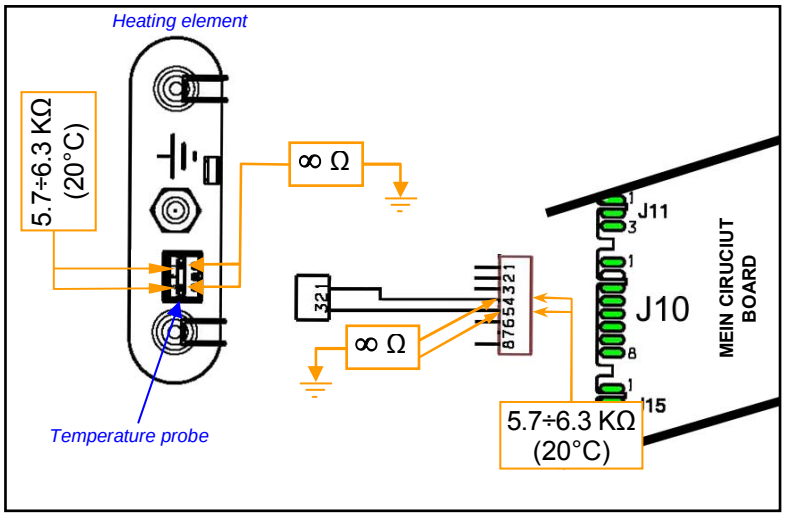


Fig. 4



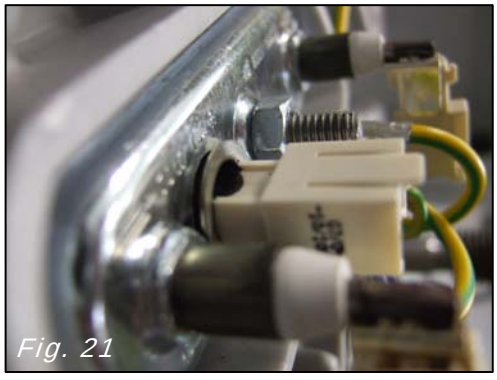


Fig. 21

If there are burns on the circuit board, see page 77

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

Checks to perform:

Check that all the connectors are correctly inserted

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.

If there are burns on the circuit board, see page 77

E86	E86: Programme selector configuration error	E86

Checks to perform:

Check that all the connectors are correctly inserted

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

If there are burns on the circuit board, see page 77

E87	E87: Display board microprocessor faulty	E87

Checks to perform:

Check that all the connectors are correctly inserted

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

If there are burns on the circuit board, see page 77

E91	E91: Communication error between the display board and the main circuit board (1st part)	E91

Checks to perform:

Check that all the connectors are correctly inserted

Disconnect the connectors:
J16 and J15 of the main board that respectively connect the motor control board and the weight sensor board (if there is one)
Does the E91 alarm appear again?

YES → See page 65

NO

Connect the wiring
J16 main board
Does the E91 alarm appear again?

NO → See page 64

YES

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

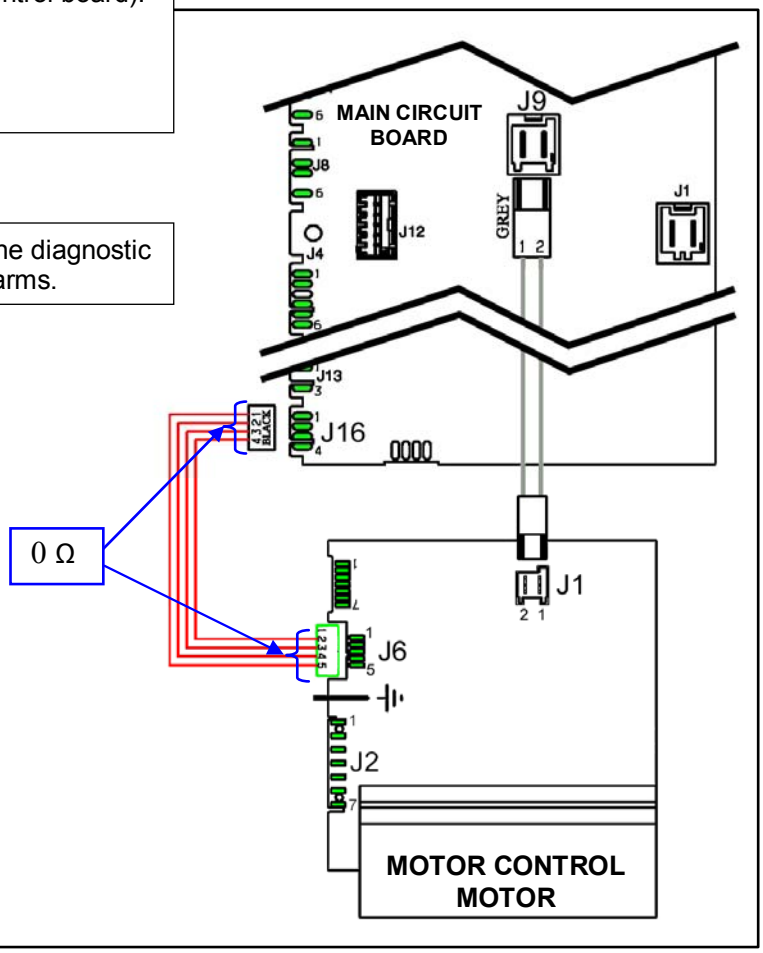
- ► Connect and disconnect the connector on both boards several times.
- ► Measure the continuity between connector J16 (main circuit board) and J6 (motor control board).

Is the wiring ok?

NO → Replace / repair the wiring and repeat the diagnostic cycle to check for any further alarms.

YES

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



If there are burns on the circuit board, see page 77

E91	E91: Communication error between the display board and the main circuit board (2nd part)	E91

Checks to perform:

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

Follow from pag. 63

Connect the J15 main circuit board wiring

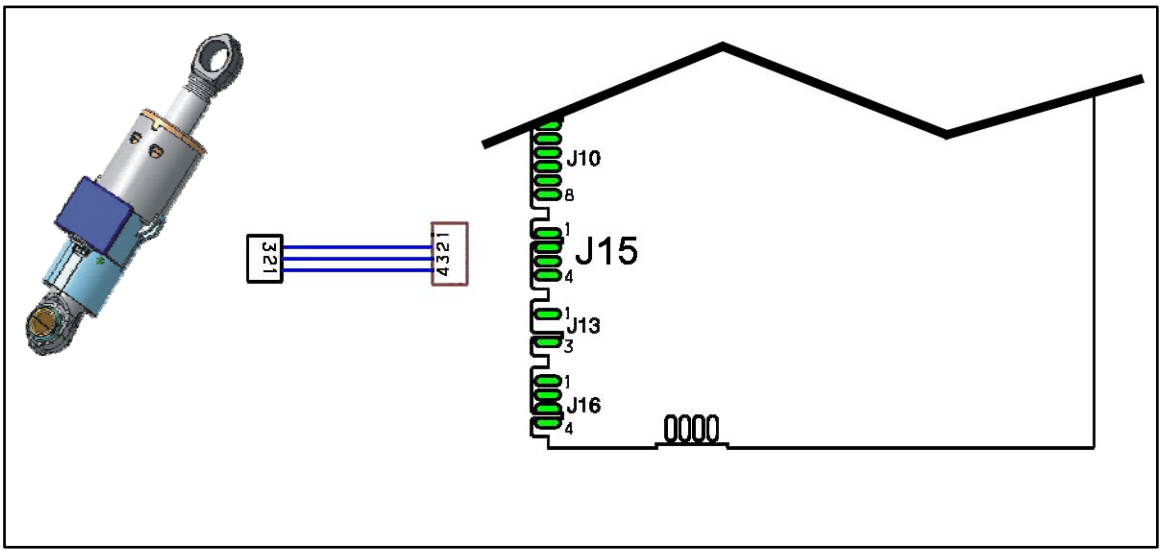
Check the wiring between the main circuit board and the weight sensor board.

- ► Connect and disconnect the connector on both boards several times.
- ► Measure the continuity between connector J15 (main circuit board) and the weight sensor board.

Is the wiring ok?

NO → Replace / repair the wiring and repeat the diagnostic cycle to check for any further alarms.

YES → Replace the weight sensor board and repeat the diagnostic cycle to check for any further alarms.



! ***If there are burns on the circuit board, see page 77***

E91	E91: Communication error between the display board and the main circuit board (3rd part)	E91
	Inconsistency between configuration values on starting the appliance.	

Checks to perform:

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

Follow from pag. 63

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?

NO → Replace/repair the wiring and repeat the diagnostic cycle to check for any further alarms.

YES ↓

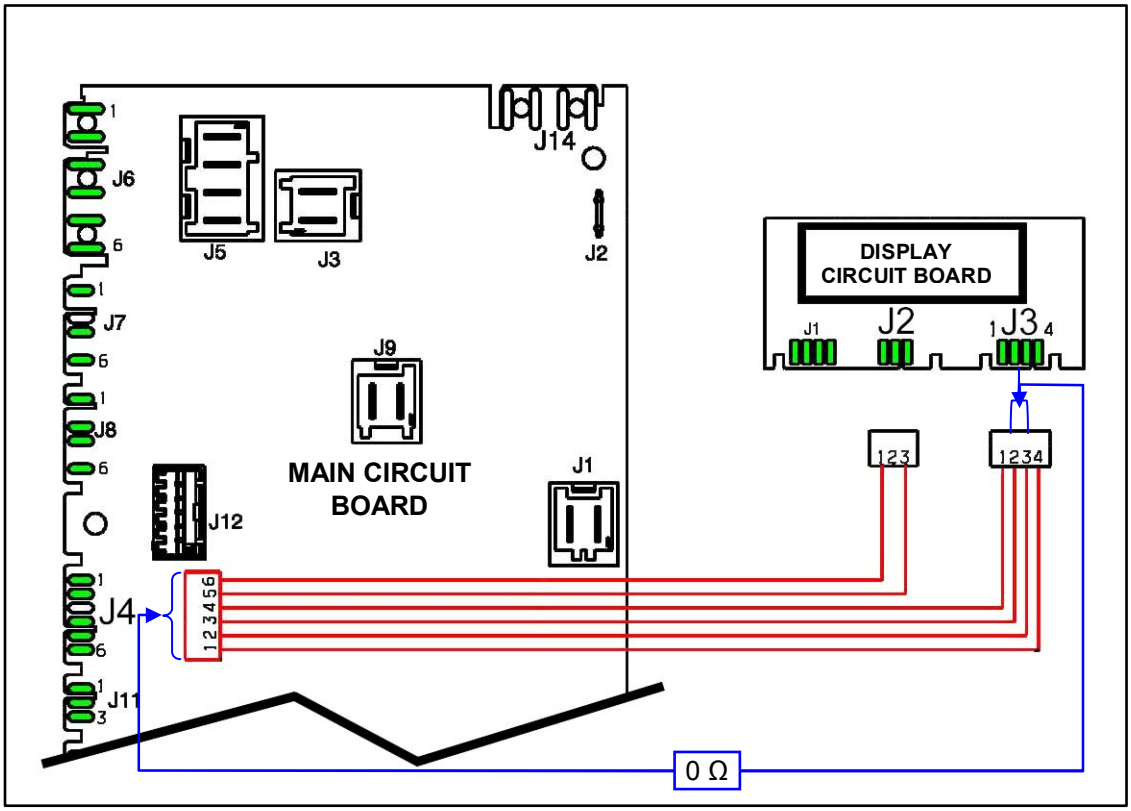
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.
Is the appliance still displaying E91?

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 77***



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

Checks to perform:

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

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

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

Checks to perform:

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

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

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

Checks to perform:

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

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

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

Checks to perform:

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

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

E98	E98: Communication error between main PCB and Inverter board	E98
	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 77***

E9C	E9C: Display board configuration error	E9C

Checks to perform:

Check that all the connectors are correctly inserted

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

E9E	E9E: Display board sensor/touch key faulty	E9E

Checks to perform:

Check that all the connectors are correctly inserted

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

If there are burns on the circuit board, see page 77

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

Checks to perform:

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

Does the appliance fill with water when the appliance is turned off?

NO → Does the solenoid valve start filling with water as soon as the appliance is turned on?

NO → Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.

YES → Open the drawer to check which solenoid valve is leaking and replace it. Repeat the diagnostic cycle to check for any further alarms.

YES → Open the drawer to check which solenoid valve is leaking and measure between the wiring connector of the respective solenoid valve and the appliance body to see if there is any dispersion **(fig. 6 and table 1)**. Is there any dispersion?

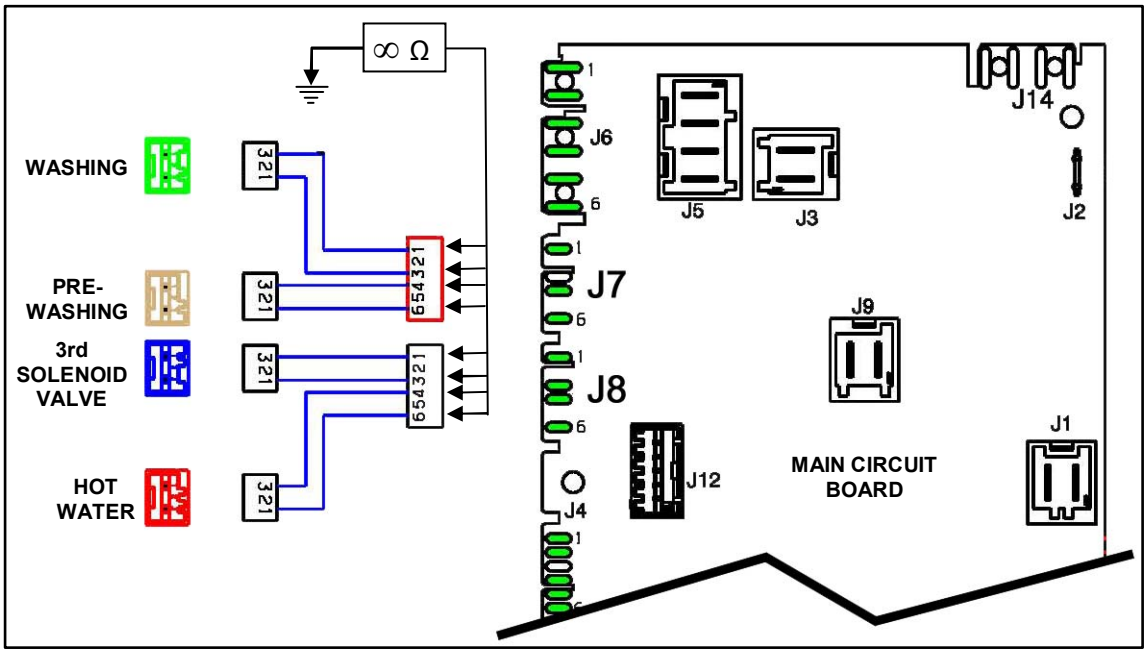
NO → Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.

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

Fig. 6

Tab. 1

Between J7-1 and J7-3 wash solenoid valve
Between J7-4 and J7-6 pre-wash solenoid valve
Between J8-1 and J8-3 third solenoid valve
Between J8-4 and J8-6 hot water solenoid valve



! ***If there are burns on the circuit board, see page 77***

EC2	EC2: Problem with weight sensor	EC2

Checks to perform:

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

Turn the appliance off and back on again, enter the diagnostic cycle. Does the EC2 alarm appear again?

NO → Appliance ok.

YES

Measure the continuity between connector J15 (main circuit board **fig. 4**) and the weight sensor connector. Is the wiring ok?

NO → Replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES

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

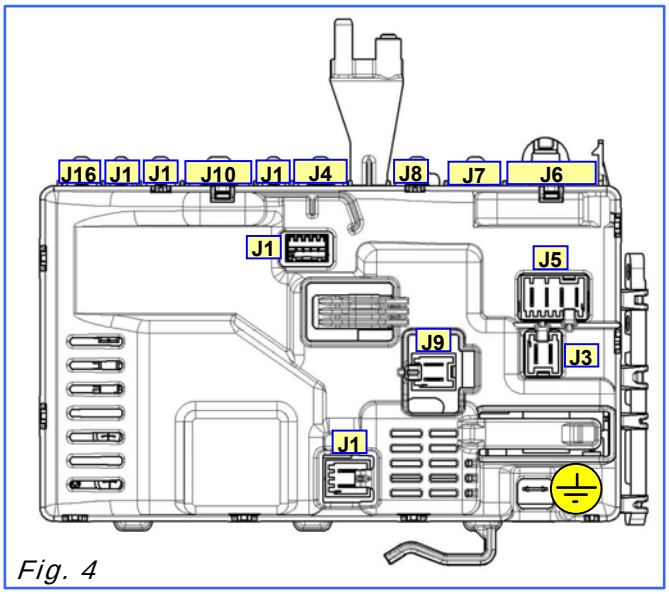
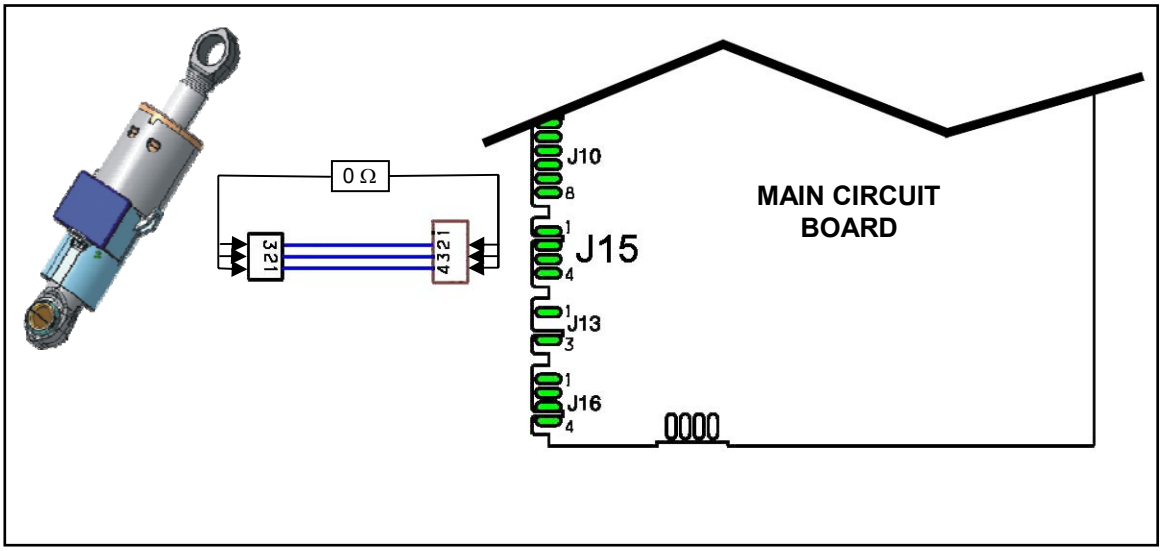


Fig. 4



! ***If there are burns on the circuit board, see page 77***

EC3	EC3: Problem with weight sensor	EC3
	No signal or outside the limits	

Checks to perform:

! Check that all the connectors are correctly inserted

Turn the appliance off and back on again, enter the diagnostic cycle. Does the EC3 alarm appear again?

NO → Appliance ok.

YES

Measure the continuity between connector J15 (main circuit board **fig. 4**) and the weight sensor connector. Is the wiring ok?

NO → Replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES

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

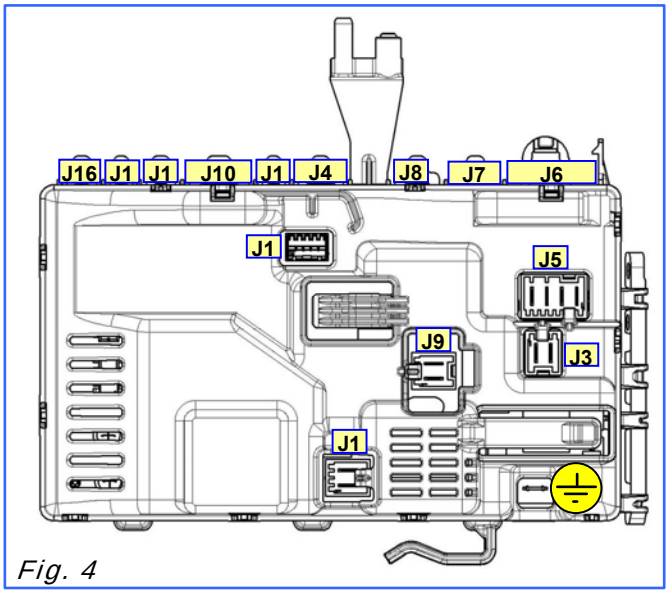
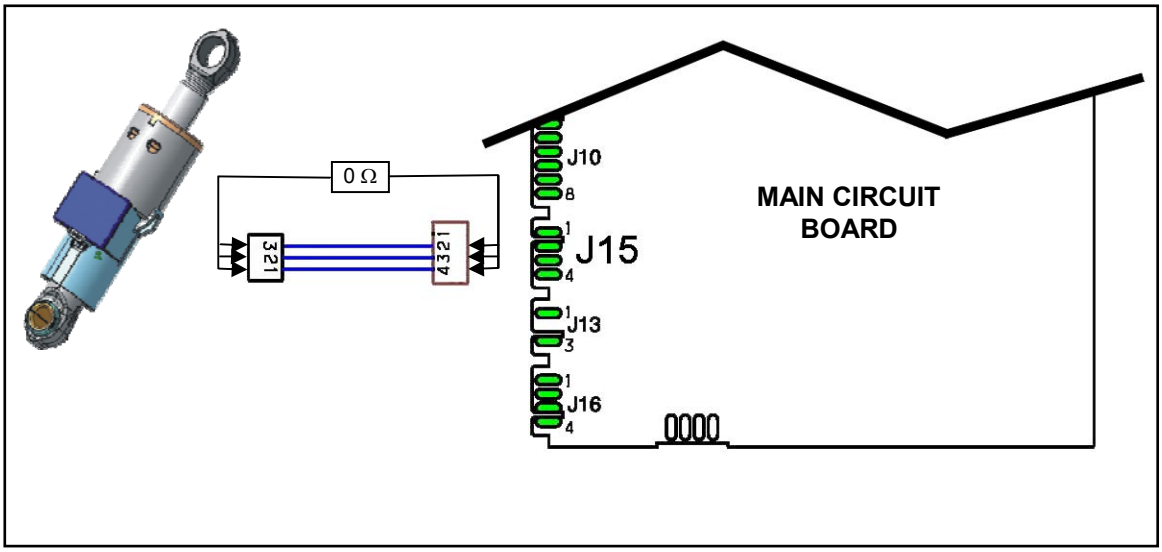


Fig. 4



! If there are burns on the circuit board, see page 77

EF1	EF1: Drain hose blocked/kinked/too high; drain filter clogged/dirty	EF1

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.

EF2	EF2: Excessive detergent dosing; drain hose kinked/blocked; drain filter dirty/clogged	EF2

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.

EF3	EF3: Aqua Control device triggered	EF3

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.

EF4	EF4: Water fill pressure too low and solenoid valve open	EF4

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.

EF5	EF5: Unbalanced load, spin phases skipped.	EF5

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 77

EF6	EF6: Reset appliance.	EF6

Checks to perform:

! *Check that all the connectors are correctly inserted*

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

EH1	EH1: Mains frequency incorrect Power supply frequency out of configured range.	EH1

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. !

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 77*

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

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. !

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 77*

EH3	EH3: Supply voltage too low	EH3
	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. !

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 77*

EH4	EH4: “zero watt” relay not functioning	EH4

Checks to perform:

! *Check that all the connectors are correctly inserted*

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

! *If there are burns on the circuit board, see page 77*

EHE	EHE: Inconsistency between safety relay (main circuit board) and safety sensing circuit	EHE

Checks to perform:

! *Check that all the connectors are correctly inserted*

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

! *If there are burns on the circuit board, see page 77*

EHF	EHF: Safety sensing circuit faulty	EHF
	Input voltage microprocessor wrong.	

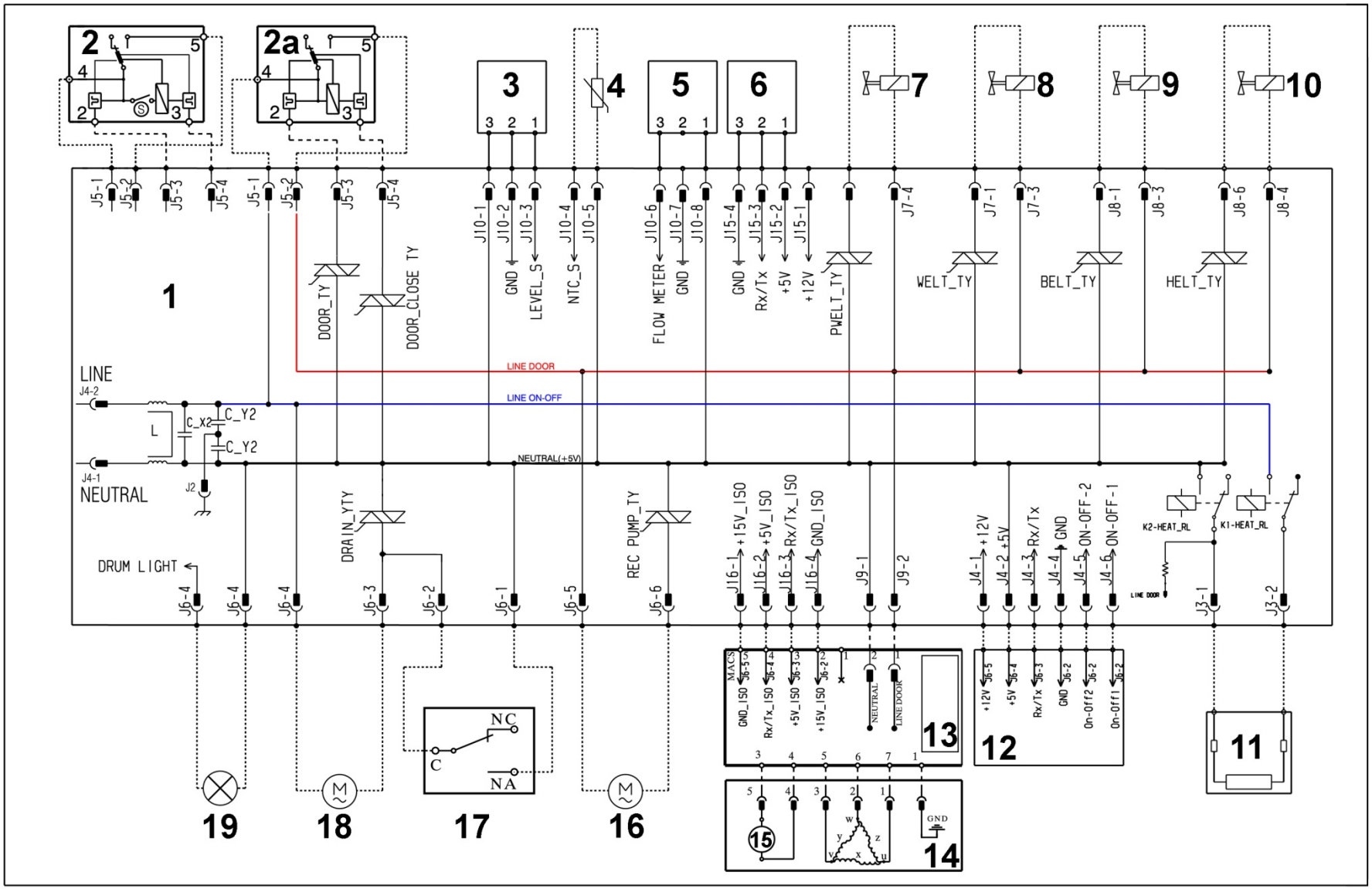
Checks to perform:

! *Check that all the connectors are correctly inserted*

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

! *If there are burns on the circuit board, see page 77*

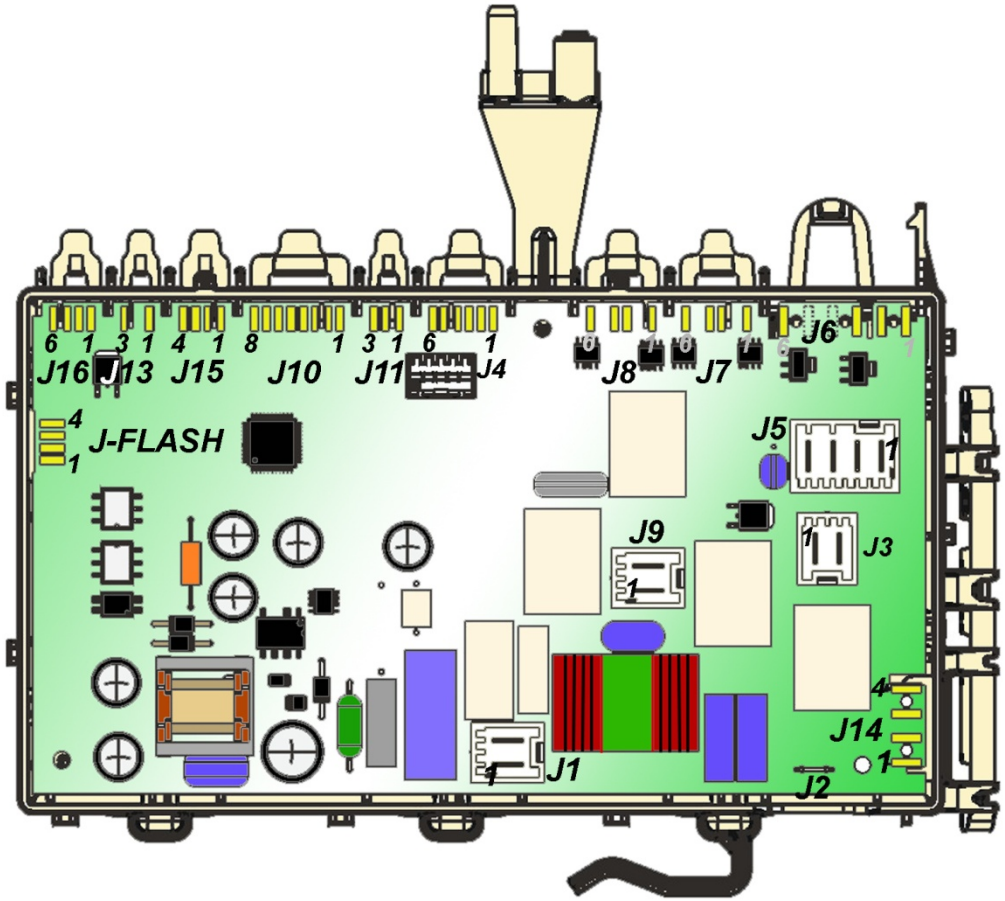
8 WM OPERATING CIRCUIT DIAGRAM



8.1 Key to circuit diagram WM

Appliance electrical components		PCB components	
1.	Main circuit board	DRAIN_YTY	Drain pump Triac
2.	Door safety interlock (with light micro-switch)	DOOR_TY	Door interlock Triac
2a	Door safety interlock (without light micro-switch)	DOOR_CLOSE_TY	Door interlock Triac
3.	Electronic pressure switch	REC PUMP_TY	Circulation pump TRIAC switch
4.	NTC (washing)	PWELT_TY	Pre-wash solenoid Triac
5.	Flow sensor	WELV_TY	Wash solenoid Triac
6.	Weight sensor	BELT_TY	Electronically controlled TRIAC bleach valve
7.	Pre-wash solenoid valve	HELT_TY	Hot water solenoid triac
8.	Wash solenoid valve	K1	Heating element relay
9.	Bleach solenoid valve	K2	Heating element relay
10.	Hot water solenoid valve		
11.	Heating element		
12.	Display board		
13.	Motor control board (Inverter)		
14.	Triple-phase motor		
15.	Tachometric generator (motor)		
16.	Circulation pump		
17.	Aqua control sensor		
18.	Drain pump		
19.	Drum light		

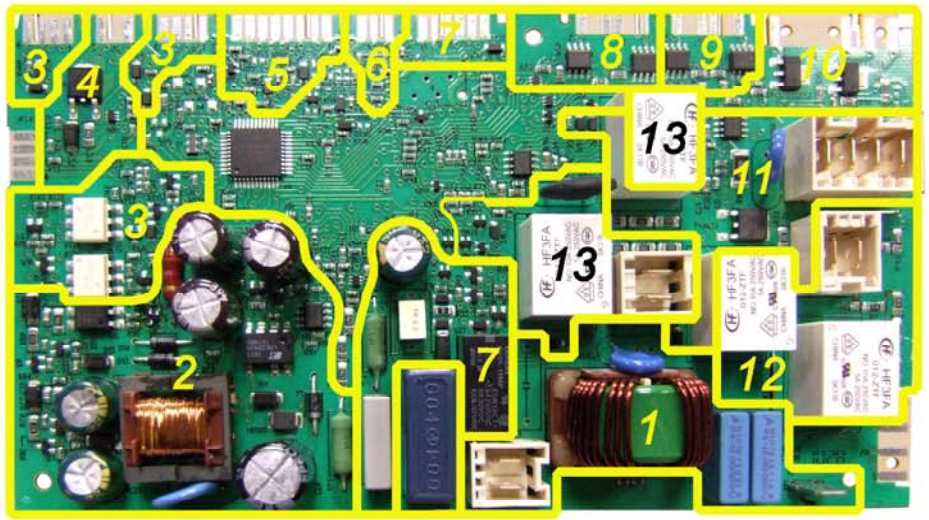
8.2 Main circuit board connectors

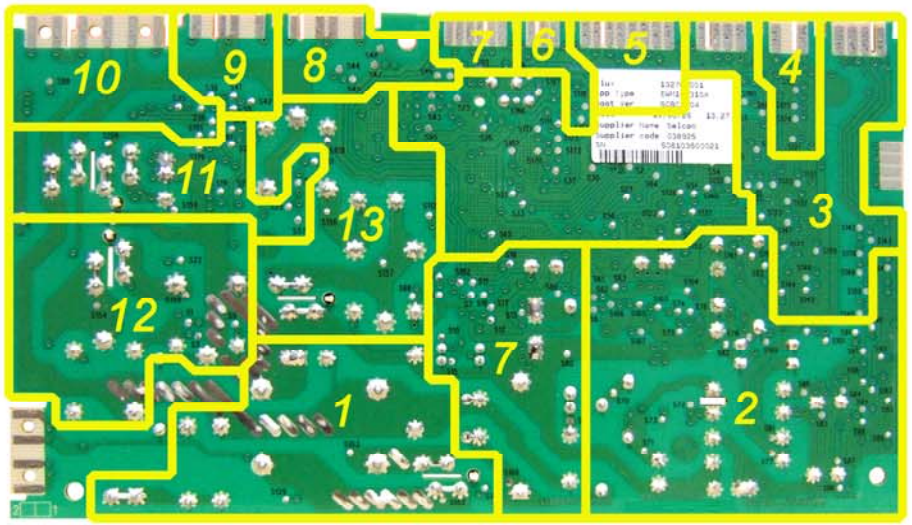


J15	J10
MACS communication **J15-1** Vee 12 V **J15-2** 5 V **J15-3** Rx/Tx **J15-4** GND	**J10-1** Analogue pressure switch (+5 V) **J10-2** Analogue pressure switch (GND) **J10-3** Analogue pressure switch (signal) **J10-4** NTC temperature probe (signal) **J10-5** NTC temperature probe (+5 V) **J10-6**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

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. Water fill solenoid valves area (bleach and 3rd) 9. Water fill solenoid valves area (wash and pre-wash) 10. Drain pump and circulation pump area 11. Door lock area 12. Heating element area 13. FCV relay area (motor)

Remarks

REVISION:

Revision	Date	Description	Author	Approved by
00	04/2012	Document Creation	DMM	XX – 0X/201X