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Washing machines

guide to diagnostics of
electronic controls

EWX11831

**THE INSPIRATION
RANGE**

TC4 / TC3

G60

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1 INTRODUCTION

1.1 Purpose of this manual

The purpose of this manual is to explain, simply and schematically, the steps any Technician must take when faced with the problems indicated by the various alarm codes on appliances with electronic control in the EWX11831 series, THE INSPIRATION RANGE TC4-TC3 version

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:

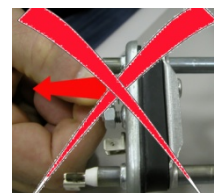
- ◆ Read alarms
- ◆ Delete the alarm stored
- ◆ Test the appliance operation

1.2 Cautions

- **Any work on electrical appliances must only be carried out by qualified personnel.**
- **Before carrying out work on the appliance, use suitable instruments to check that the power supply system in the house is fully efficient. 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.**

On completing operations, check that the appliance has been restored to the same state of safety as when it came off the assembly line.

- **If the circuit board has to be handled/replaced, use 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. NEVER remove/switch the NTC sensors between heating elements.**
- **Always empty the appliance of all the water before laying it on its side.**
- **Never place the appliance on its right side (electronic control system side): some of the water in the detergent dispenser could leak onto the electrical/electronic components and cause these to burn.**
- **When replacing components, please refer to the code shown in the list of spare parts relating to the appliance.**
- **The resistance values of the components shown in this S.M. are purely indicative (relating to a sample appliance with new components). For the actual value of the component, please refer: to S.B. 599706597 for motors, while for the other components, please consult S.M. 599728903 "Component Characteristics".**
- **Do not place any kind of container under the appliance to catch any drips of water.**



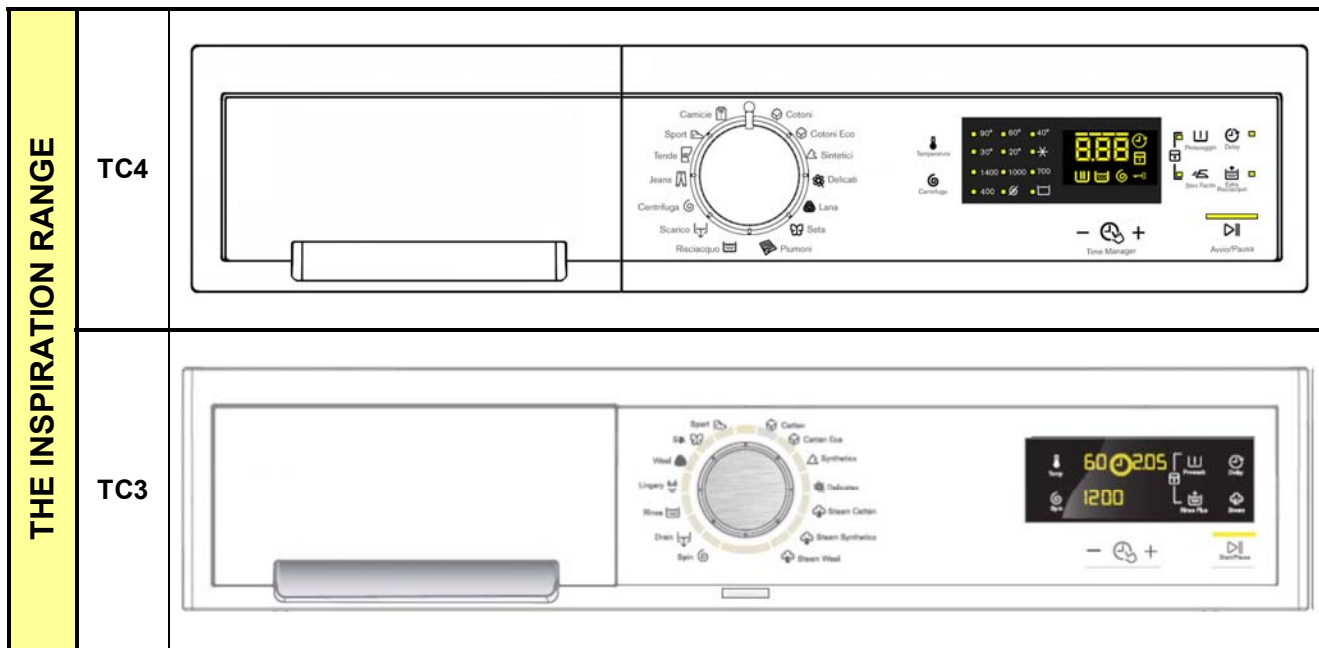
1.3 How to proceed

1. Identify the type of control in question (**page 7**) and access the diagnostic cycle. (**see page 8**)
2. Read the alarm stored (**page 13**) and consult the instructions regarding the “alarm codes”, **page 14÷18**.
3. Delete the alarms stored. (**page 13**)
4. If you are unable to access the diagnostic mode, consult the chapter entitled “The diagnostics system cannot be accessed”. (**page 19**)
5. Should the main electronic circuit board need to be replaced, make sure there are no burns. (**see page 69**)
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 13**)

2 APPLIANCE CONTROL PANELS

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

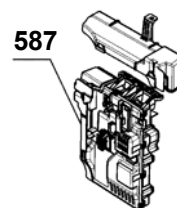
3 PROGRAMMING/UPDATING THE MAIN BOARD



- **Any programming / updating / diagnostics operation carried out with the board inserted in the machine and the mains plug disconnected from the socket.**
- **If one of these operations is accidentally carried out when plugged in to the socket, on completing the operation, the appliance will remain turned off when restarting; disconnect the plug from the socket and wait at least 40 minutes before starting up the appliance (any operation will only create further delay).**

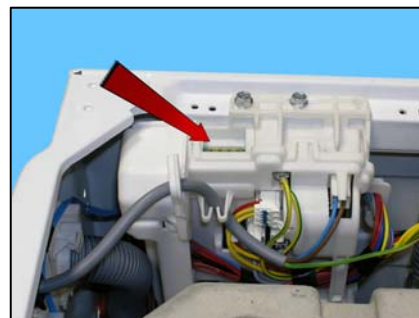
In the Service Notes the main circuit board (587) is identified with two spare parts codes:

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



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

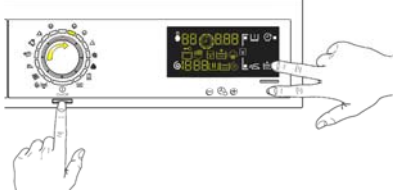

To update/program the main board, insert the **Sidekick** connector in the position shown by the red arrow:



4 DIAGNOSTIC SYSTEM

4.1 Accessing diagnostics

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

TC 3	TC 4
	
<p><u>Do not start the procedure with your fingers over the combination sensors</u></p>	
<ol style="list-style-type: none"> 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). <p>In the first position, the operation of the sensors, the LEDs and the groups of symbols shown on the LCD display is checked; When the programme selector is turned in a clockwise direction, the operation of the various components is diagnosed and the alarms are read (see diagnostic test on the next page).</p>	<ol style="list-style-type: none"> 1. Set the selector dial to position 0 (zero). 2. Rotate the programme selector by one position clockwise. 3. Simultaneously press the START/PAUSE button and the nearest option sensor (as shown in the diagram). 4. Keep your fingers above the sensors until the LEDs and display symbols start flashing. <p>In the first position, the operation of the buttons and the related LEDs is checked; turn the programme selector dial clockwise to run the diagnostic cycle for the operation of the various components and to read any alarms (see diagnostic test on the next page).</p>

4.2 Quitting the diagnostics system

→ **Styling TC4:** To exit the diagnostics system, turn the selector dial to position 0 (zero).

→ **Styling TC3:** In order to exit the diagnostic system turn the appliance off using the ON/OFF push button.



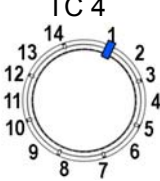


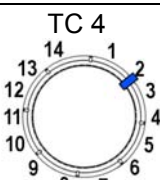


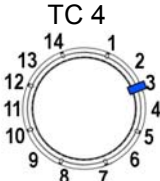


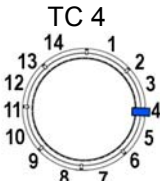
If "ELE" (electricity trials) appears on the screen when you turn the appliance on, repeat the operation of turning it on and off.



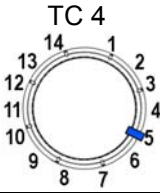


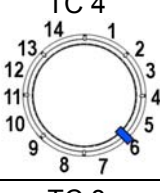
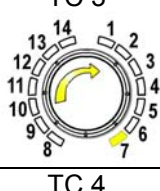

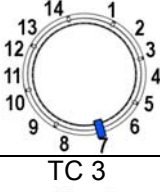
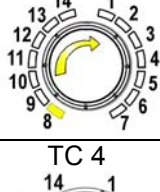

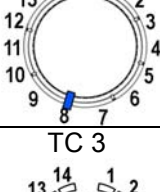
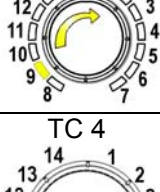
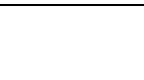
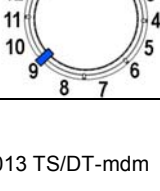
4.3 Diagnostic test phases


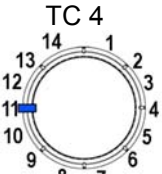


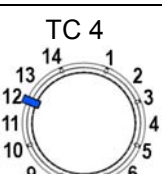
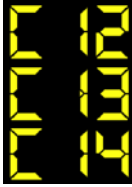
Irrespective of the type of circuit board and the configuration of the selector, after entering the diagnostic mode, turn the programme selector dial **clockwise** to perform the diagnostic cycle for the operation of the various components and to read any alarms.

Concurrently a selector control code is shown on the LDC display for **two** seconds, before displaying what is described in the last column of the table below.

(All alarms are enabled in the diagnostic cycle).

Selector position	Components activated	Working conditions	Function tested	LCD display	
1	 <p>TC 3</p>	<ul style="list-style-type: none"> The LEDs light up in sequence, the symbols on the LCD display light up in groups and the backlighting comes on, 	Always active	User interface functioning	
	 <p>TC 4</p>				
2	 <p>TC 3</p>	<ul style="list-style-type: none"> Door safety interlock Wash solenoid 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to wash compartment	
	 <p>TC 4</p>				Water level in the tub (mm)
3	 <p>TC 3</p>	<ul style="list-style-type: none"> Door safety interlock Pre-wash solenoid 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to pre-wash compartment	
	 <p>TC 4</p>				Water level in the tub (mm)
4	 <p>TC 3</p>	<ul style="list-style-type: none"> 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	
	 <p>TC 4</p>				Water level in the tub (mm)

Selector position	Components activated	Working conditions	Function tested	LCD display	
5	 <p>TC 3</p>	<ul style="list-style-type: none"> - 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	
	 <p>TC 4</p>				Water level in the tub is displayed (mm)
6	 <p>TC 3</p>	<ul style="list-style-type: none"> - Door safety interlock - Fourth solenoid (hot water, if present) 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to Fourth solenoid valve compartment	
	 <p>TC 4</p>				Water level in the tub is displayed (mm)
7	 <p>TC 3</p>	<ul style="list-style-type: none"> - Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Heating element 	Door closed Water level above the heating element. Maximum time 10 mins up to 90°C. (*)	Heating	
	 <p>TC 4</p>				Temperature in °C measured using the NTC probe.
8	 <p>TC 3</p>	<ul style="list-style-type: none"> - 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.	
	 <p>TC 4</p>				Drum speed in rpm/10
9	 <p>TC 3</p>	<ul style="list-style-type: none"> - 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.	
	 <p>TC 4</p>				Drum speed in rpm/10

Selector position	Components activated	Working conditions	Function tested	LCD display
10	-----	-----	-----	-----
11	 	- Reading/Deleting the last alarm	-----	
12 ÷ 14	 	- The LEDs light up in sequence, the symbols on the LCD display light up in groups and the backlighting comes on, - 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.

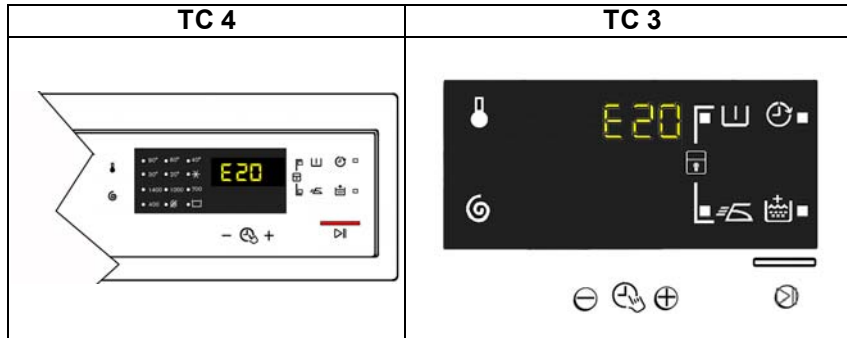
4.4 ALARMS

4.4.1 Displaying the alarms to the user

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

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

This does not occur for EH0 alarm.



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

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

While the alarm listed below:

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

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

The other alarms are displayed by a code

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

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

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

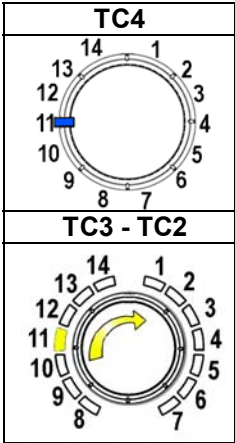
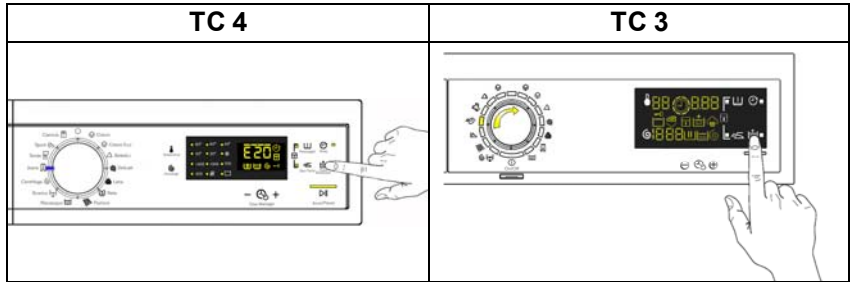
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

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

4.4.2 Reading the alarms

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

- enter the diagnostic mode (para. 4.1)
- Irrespective of the type of PCB and configuration, turn the programme selector knob **clockwise** to the **eleventh position** and the last alarm is displayed.
- to display previous alarms, touch the sensor closest to the START/PAUSE sensor in sequence (as shown in the figure)
- To return to the last alarm, touch the START/PAUSE sensor.



4.4.3 Rapid reading of alarms

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

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

4.4.4 Deleting the last alarm

It is good practice to cancel the alarms stored:

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

TC 4	TC 3
<ol style="list-style-type: none"> 1. enter the diagnostic mode (para. 4.1) 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). 	

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

4.5 ALARM SUMMARY TABLE

Alarm	Description	Possible fault	Machine status/action	Reset	Page
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 paused (after 2 attempts)	START ON/OFF RESET	24
E23	Faulty triac for drain pump	Wiring faulty; Drain pump faulty; Main PCB faulty.	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	Electronic pressure switch circuit faulty	Wiring; Electronic pressure switch; Main PCB;	Cycle stops with door locked	RESET	28
E32	Calibration error of the electronic pressure switch	Drain tube kinked/clogged/improperly positioned; Faulty solenoid; Drain filter clogged/dirty; Drain pump faulty; Leaks in the pressure switch hydraulic circuit; Pressure switch faulty; Wiring; main PCB;	Cycle 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 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 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	38
E45	Faulty sensing by door delay system triac	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	38

Alarm	Description	Possible fault	Machine status/action	Reset	Page
E57	Inverter is drawing too much current (>15A)	Wiring faulty on inverter for motor; Inverter PCB faulty; Motor faulty.	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	39
E58	Inverter is drawing too much current (>4.5A)	Motor malfunction (overload); Wiring faulty on inverter faulty; Motor faulty; Inverter PCB faulty	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	40
E59	No rotation of the motor	Wiring faulty on inverter for motor; inverter PCB faulty; motor faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	42
E5A	Overheating on heat dissipater 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	44
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	46
E5d	Data transfer error between Inverter and main PCB	Line interference; Wiring faulty; Faulty main PCB or Inverter PCB.	-----	ON/OFF RESET	47
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	48
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	48
E5H	Input voltage is lower than 175V	Wiring faulty; Inverter PCB faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET	49
E62	Overheating during washing (temperature higher than 88°C for more than 5 min.)	Wiring faulty; NTC probe for wash cycle faulty; Heating element faulty; Main PCB faulty.	Safety drain cycle Cycle stops with door open	RESET	50
E66	Heating element power relay faulty (inconsistency between sensing and K2 relay status)	Main PCB faulty;	Safety water fill Cycle stops with door closed.	ON/OFF RESET	51
E68	Earth leakage	Earth leakage between heating element and earth.	The heating phase is skipped	START/RESET	52
E69	Heating element interrupted	Wiring faulty; Heating element for washing interrupted (thermal fuse open); Main circuit board faulty.	-----	START ON/OFF RESET	53
E6A	Heating relay sensing faulty	Main circuit board faulty.	Cycle stops with door locked	RESET	54
E6H	Heating element power relay faulty (inconsistency between sensing and K1 relay status)	Wiring faulty; Earth leakage between heating element and earth; Main PCB faulty.	Safety water fill Cycle stops with door closed.	ON/OFF RESET	54
E71	NTC probe for wash cycle faulty (short-circuited or open)	Wiring faulty; NTC probe for wash cycle faulty Main circuit board faulty.	The heating phase is skipped	START/RESET	55
E74	NTC probe for wash cycle improperly positioned	Wiring faulty; NTC probe for wash cycle improperly positioned; NTC probe faulty; Main PCB faulty.	The heating phase is skipped	RESET	56
E83	Error in reading selector	Main PCB faulty (Incorrect configuration data).	Cycle cancelled	START/RESET	57
E86	Selector configuration error	Display board	-----	START ON/OFF RESET	57

Alarm	Description	Possible fault	Machine status/action	Reset	Page
E87	Display board microprocessor faulty	If this continues, replace the display board	No action to be taken	START ON/OFF RESET	57
E91	Communication error between main PCB and display	Wiring faulty; Control/display PCB faulty, Inverter board faulty, Weight sensor board faulty, Main PCB faulty.	-----	RESET	58
E92	Communication inconsistency between main PCB and display (incompatible versions)	Incorrect control/display PCB Incorrect PCB (does not correspond to the model).	Cycle blocked	ON/OFF	60
E93	Appliance configuration error	Main PCB faulty (incorrect configuration data);	Cycle blocked	ON/OFF	60
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data);	Cycle blocked	ON/OFF	60
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked	RESET	60
E98	Communication error between main PCB - Inverter	Incompatibility between main PCB and Inverter	Cycle blocked	ON/OFF	60
E9C	Display board configuration error	Display board faulty	-----	START ON/OFF RESET	61
E9E	Display board sensor/touch key faulty	Display board faulty	-----	ON/OFF	61
EC1	Solenoid 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	62
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	63
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	63
EF3	Aqua control system intervention	Water leaks onto base frame; Aqua control system faulty.	Appliance drain	ON/OFF RESET	63
EF4	Water fill pressure too low, no signal from flowmeter and solenoid valve is open	Tap closed, water fill pressure too low	-----	RESET	63
EF5	Unbalanced load	Final spin phases skipped.	-----	START/RESET	63
EF6	Reset	If it continues, replace the main board.	No action to be taken	-----	64
EH1	Appliance power supply frequency out of limits	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal frequency conditions	ON/OFF	64
EH2	Supply voltage too high	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	64
EH3	Supply voltage too low	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	65
EH4	0Watt relay malfunction	Main circuit board faulty.	-----	ON/OFF RESET	65

Guide to diagnostics of EWX11831 electronic controls

Alarm	Description	Possible fault	Machine status/action	Reset	Page
EHE	Inconsistency between FCV relay (in the main board) and safety "sensing" circuit	Faulty cabling; Main circuit board faulty	Safety drain cycle Cycle stops with door open	RESET	65
EHF	Safety sensing circuit faulty (wrong input voltage to microprocessor)	Main circuit board faulty.	Safety drain cycle Cycle stops with door open	RESET	65

4.6 Notes on the behaviour of certain alarms

- **Configuration alarm E93:** when this alarm rings (when turned on) the machine blocks and the alarm code appears on the display, provided the relevant configuration part is intact.
It is not 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.

5 CANNOT ACCESS THE DIAGNOSTICS PROGRAMME

5.1 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 **J19**) and the display board (connectors **J2** and **J4**) working properly? (insert and remove)

NO

Replace/repair wiring

YES

Does the ON/OFF button function mechanically?

NO

Replace/repair the button or replace the display board

YES

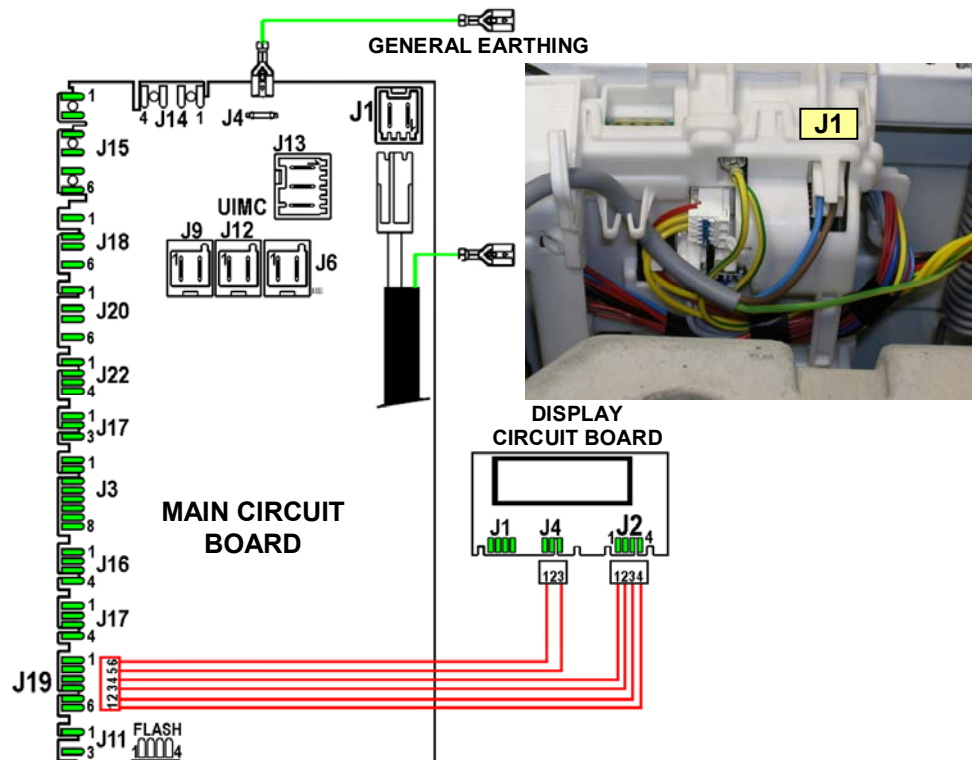
Change the main circuit board
Is the appliance working correctly?

NO

Replace display board

YES

Run the diagnostics programme.



6 TROUBLESHOOTING BASED ON ALARM CODES

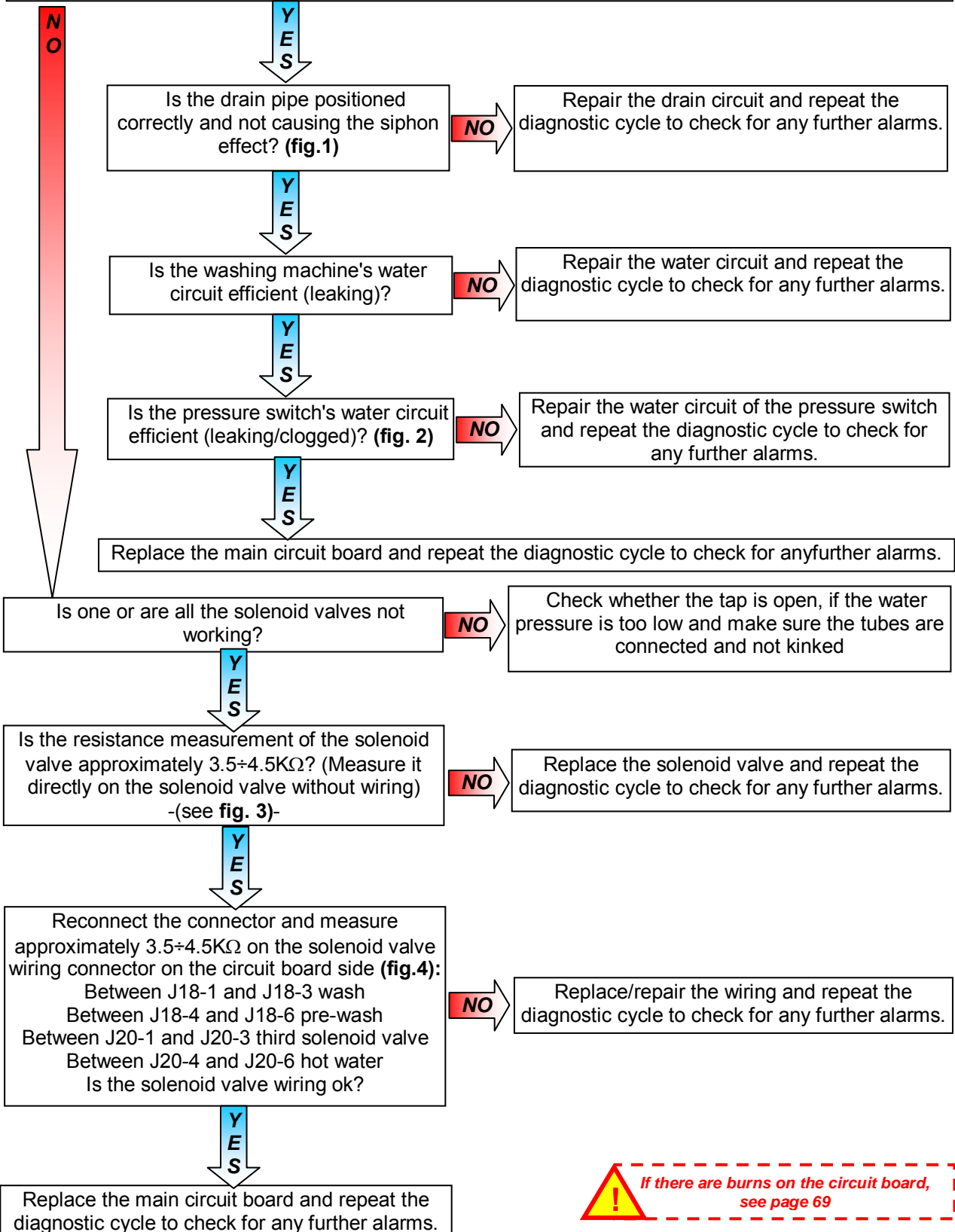
E11	E11: Water fill difficulty during washing	E11
	Maximum water fill time for every level of the pressure switch (the time is reset every time the level is achieved)	

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?



If there are burns on the circuit board, see page 69

E11

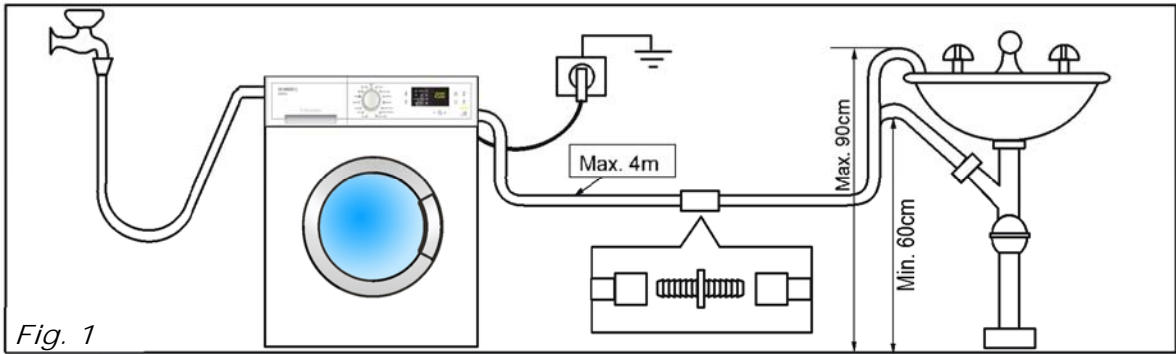


Fig. 1

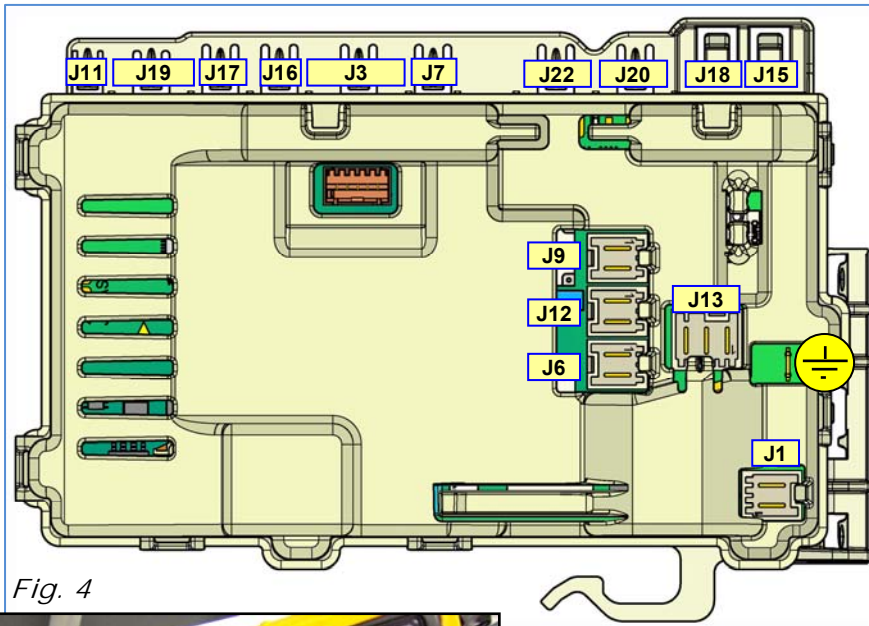


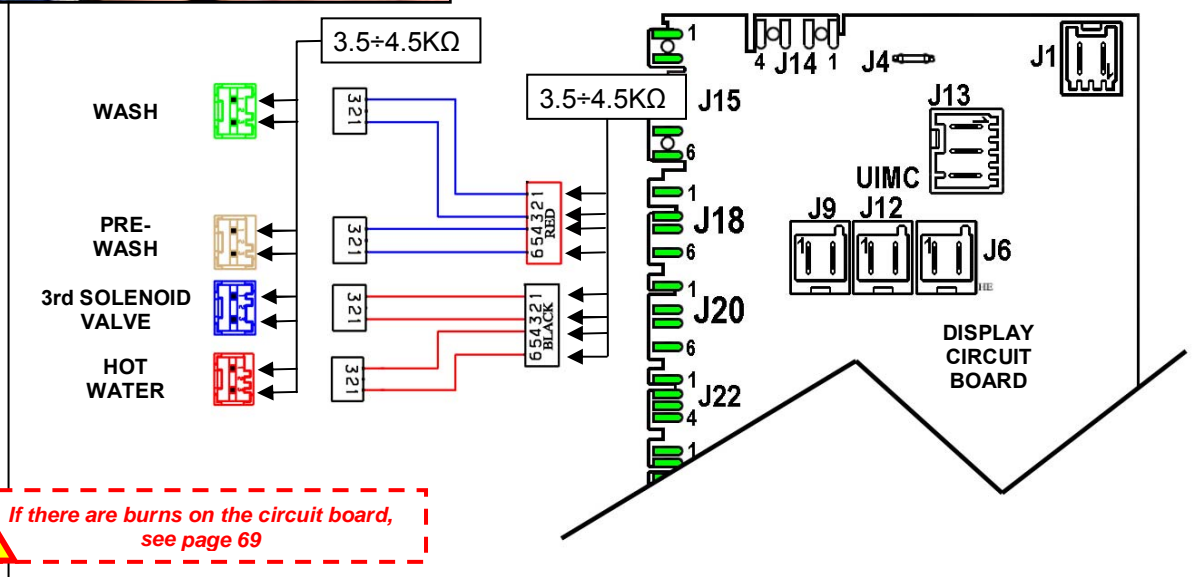
Fig. 4



Fig. 2



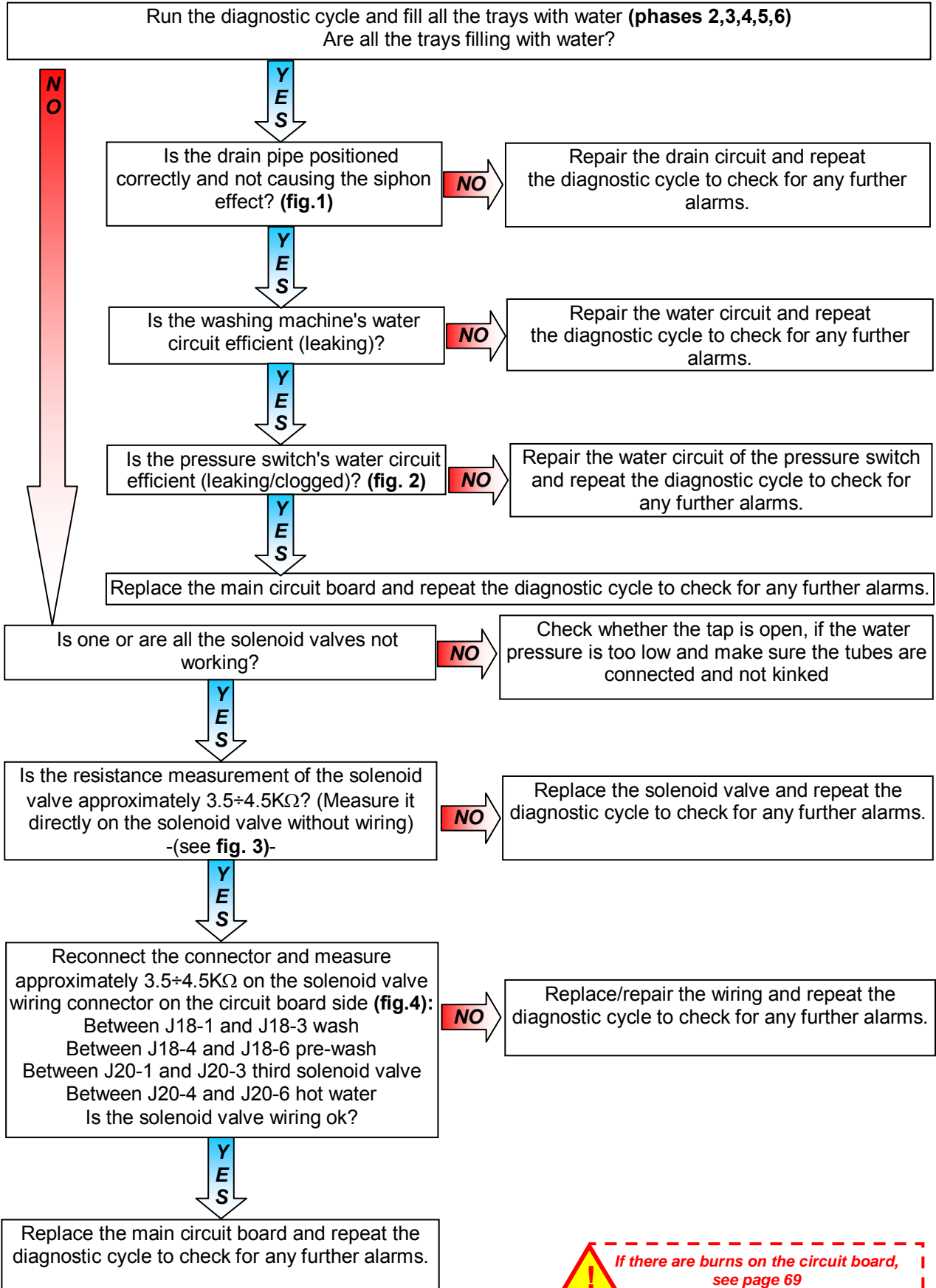
Fig. 3



! If there are burns on the circuit board, see page 69

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:



E13

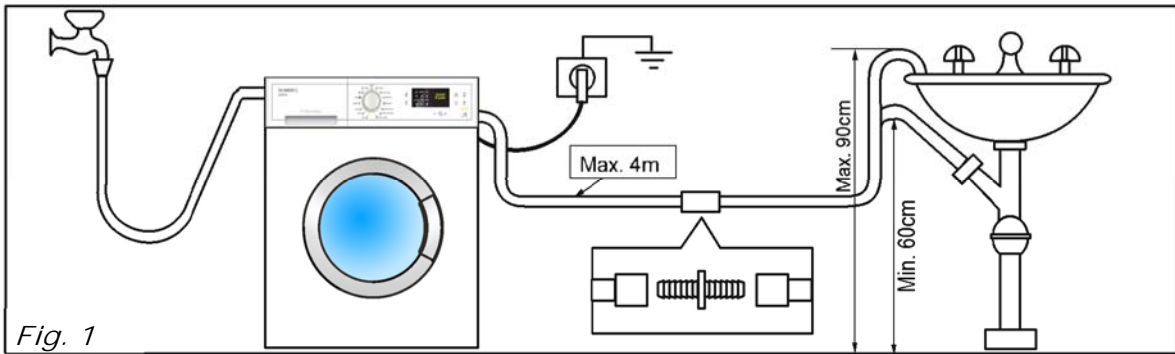


Fig. 1

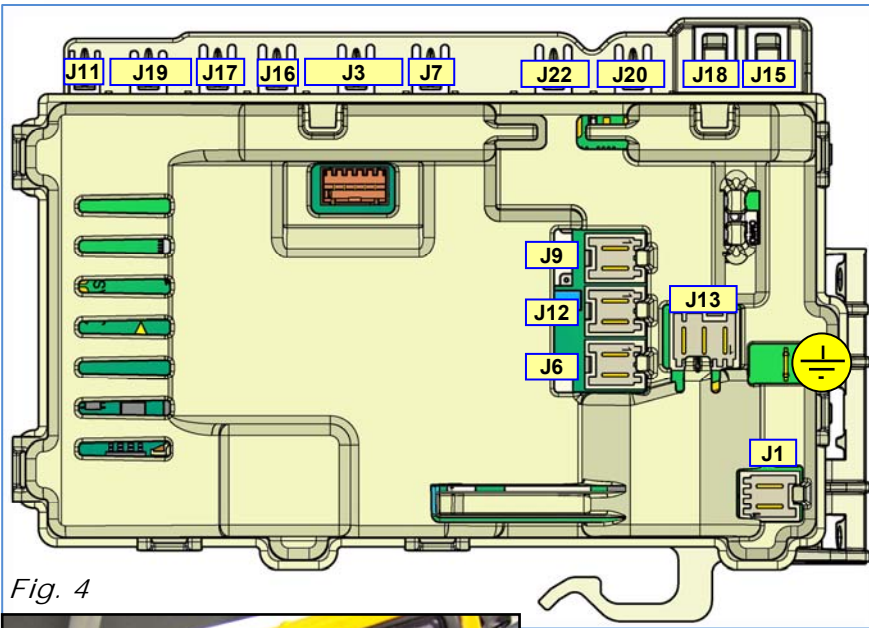


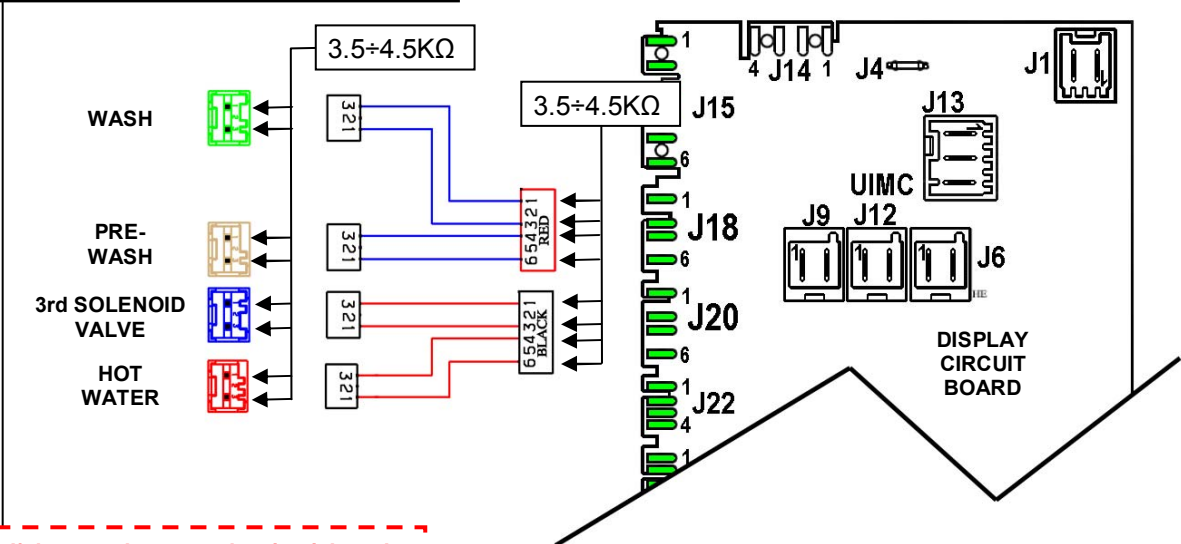
Fig. 4



Fig. 2



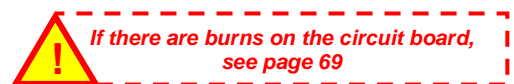
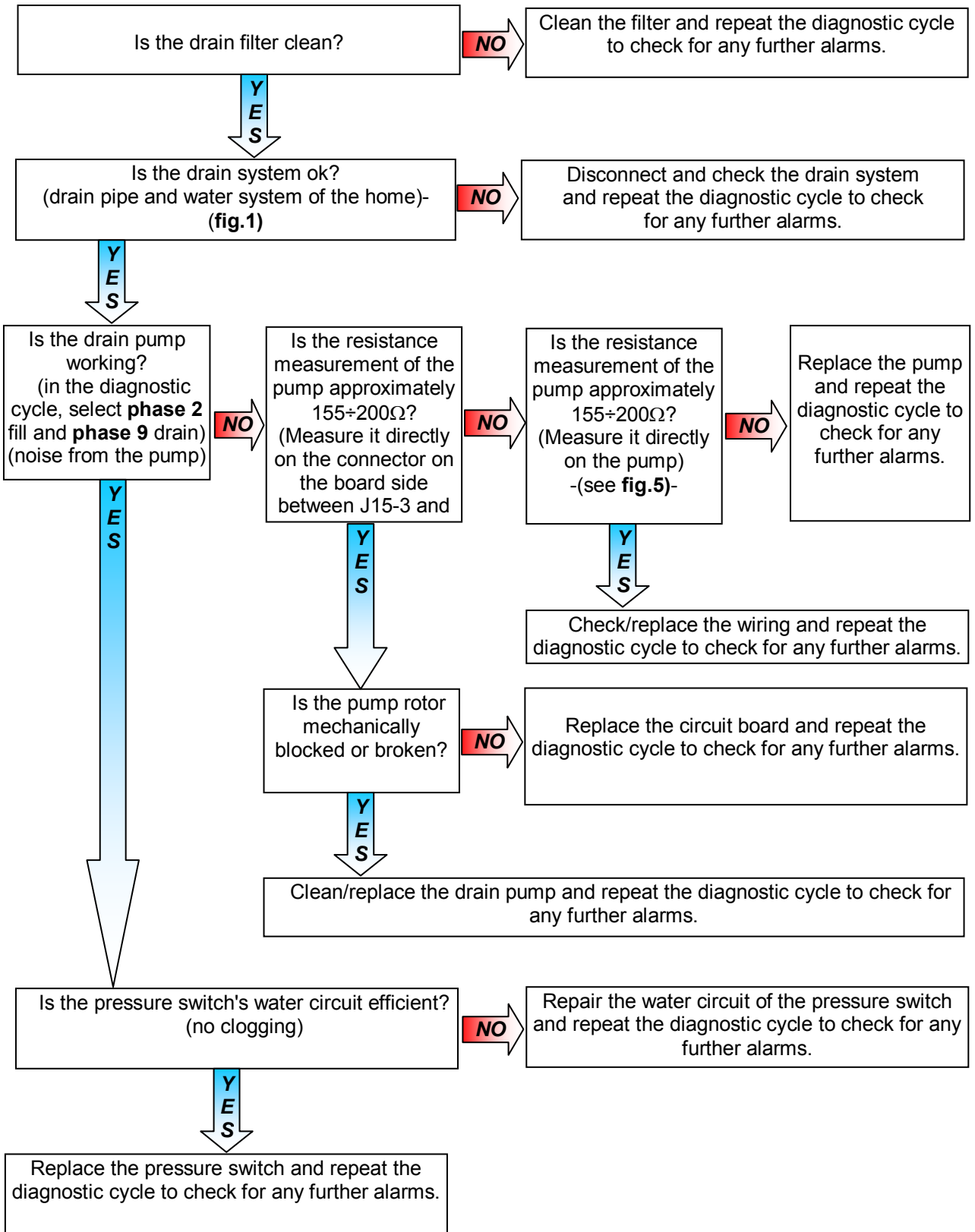
Fig. 3



! If there are burns on the circuit board, see page 69

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

Checks to perform:



E21

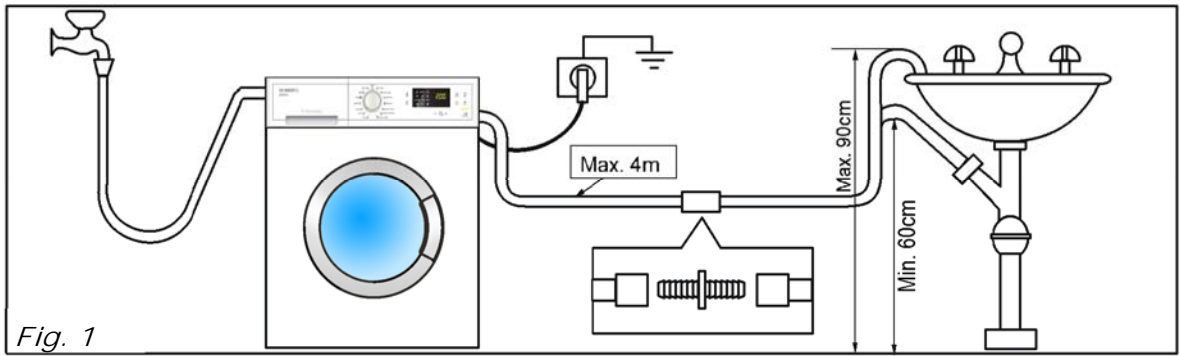


Fig. 1

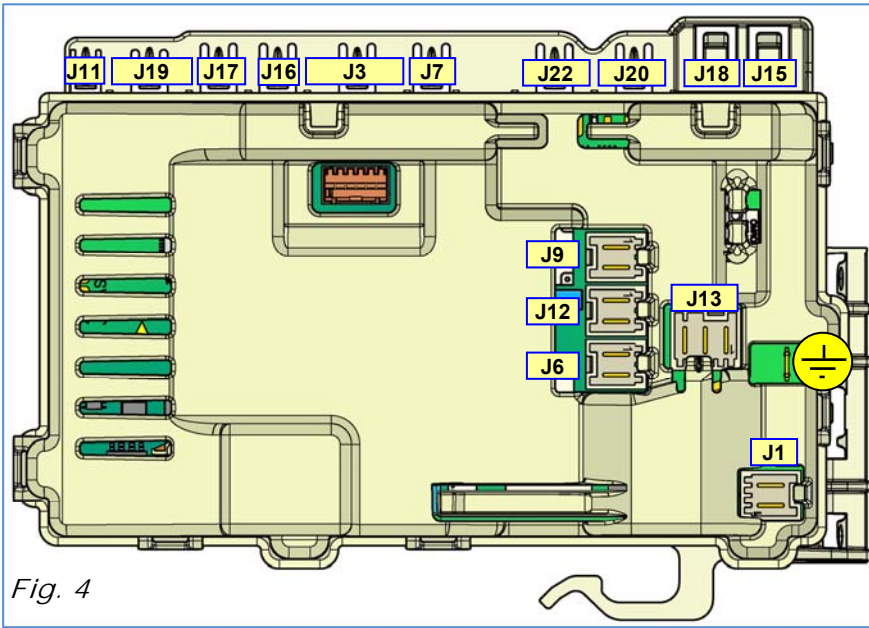


Fig. 4

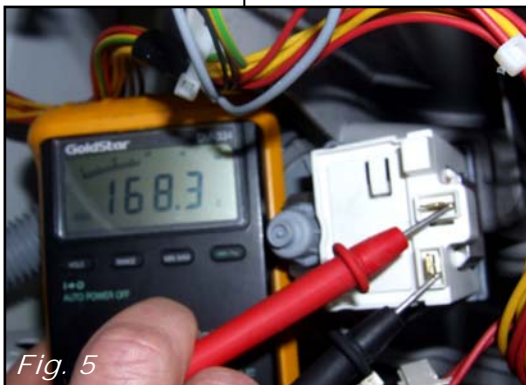
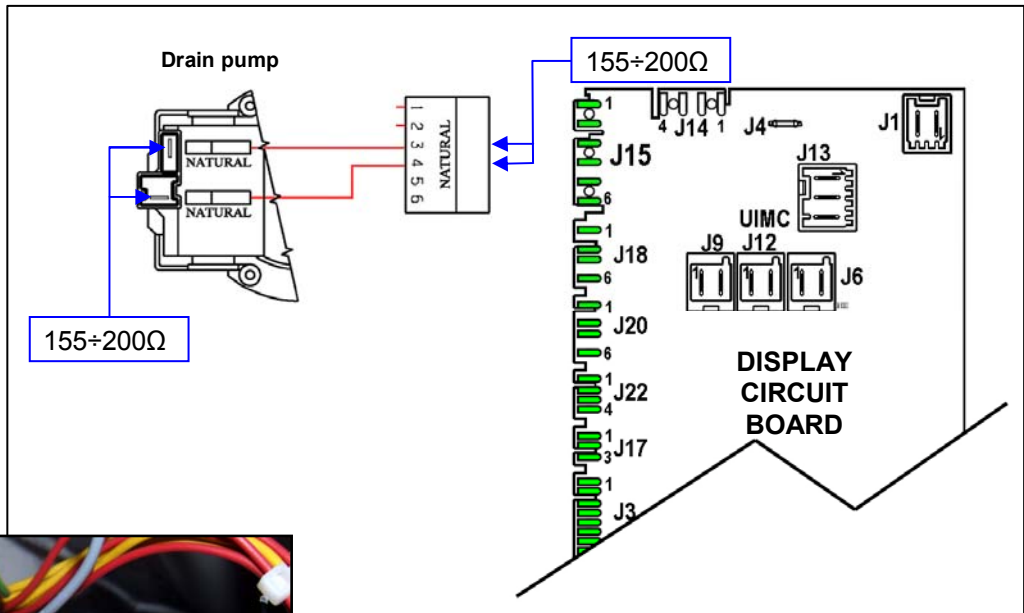
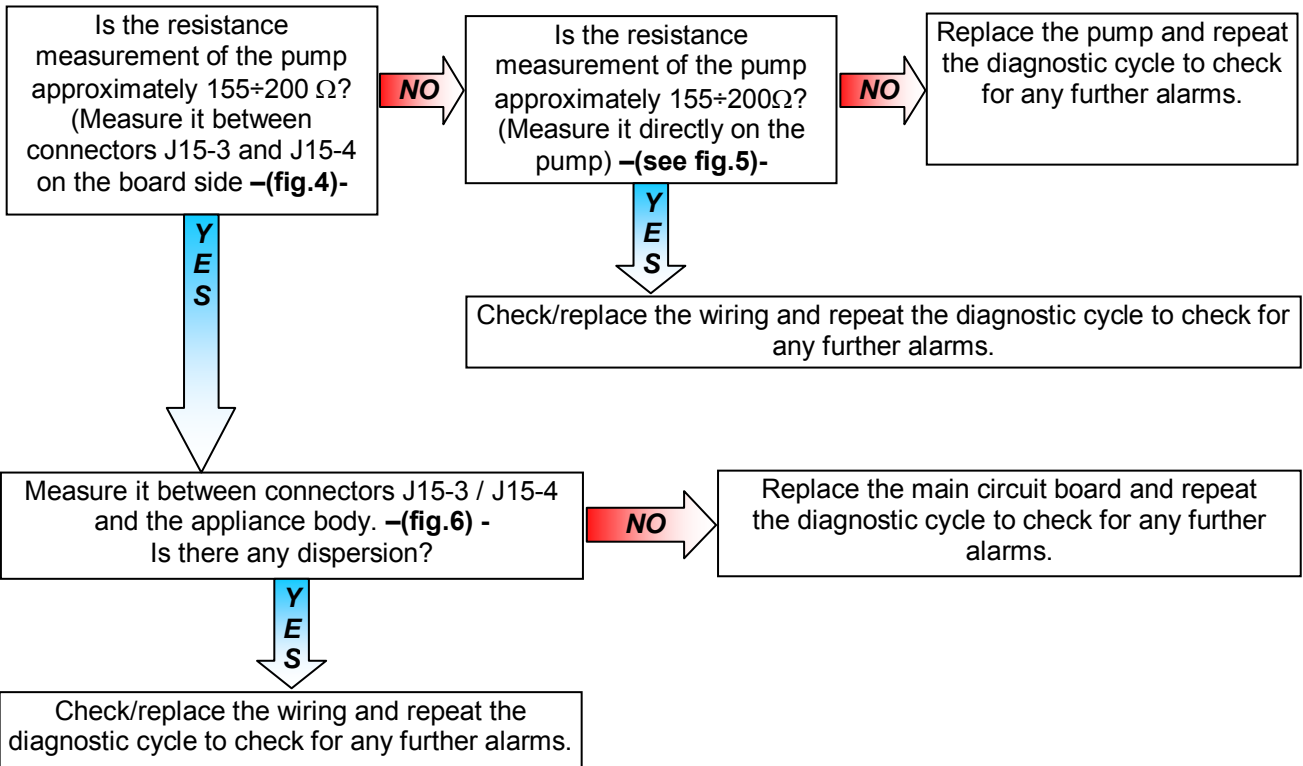


Fig. 5

! If there are burns on the circuit board, see page 69

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

Checks to perform:



E23

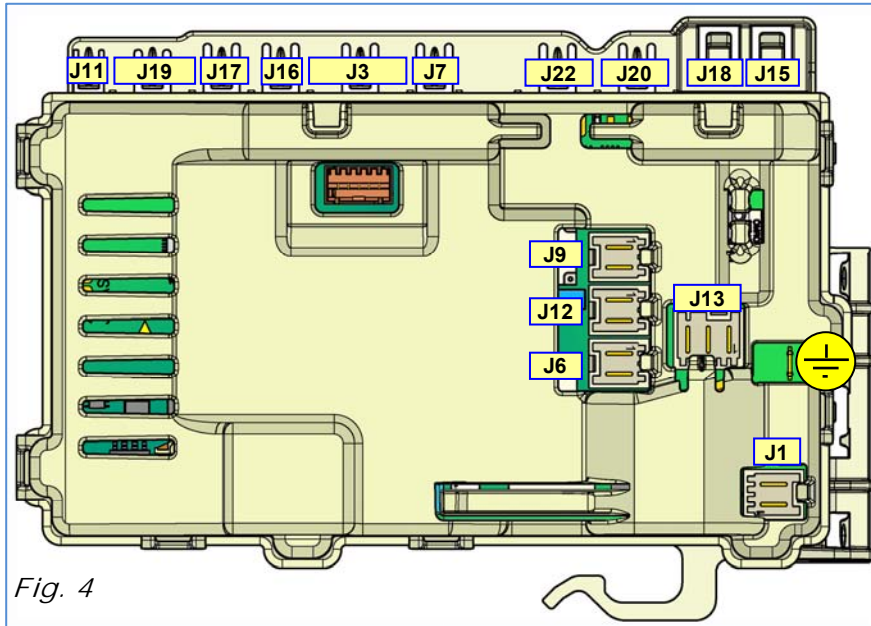


Fig. 4

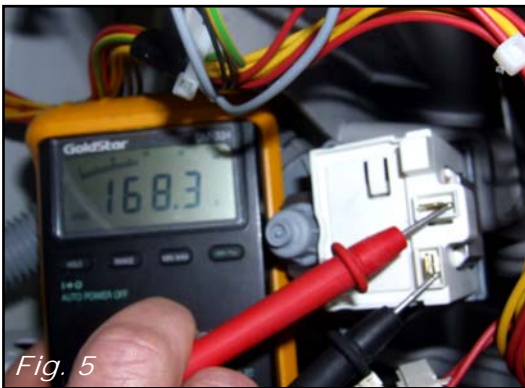
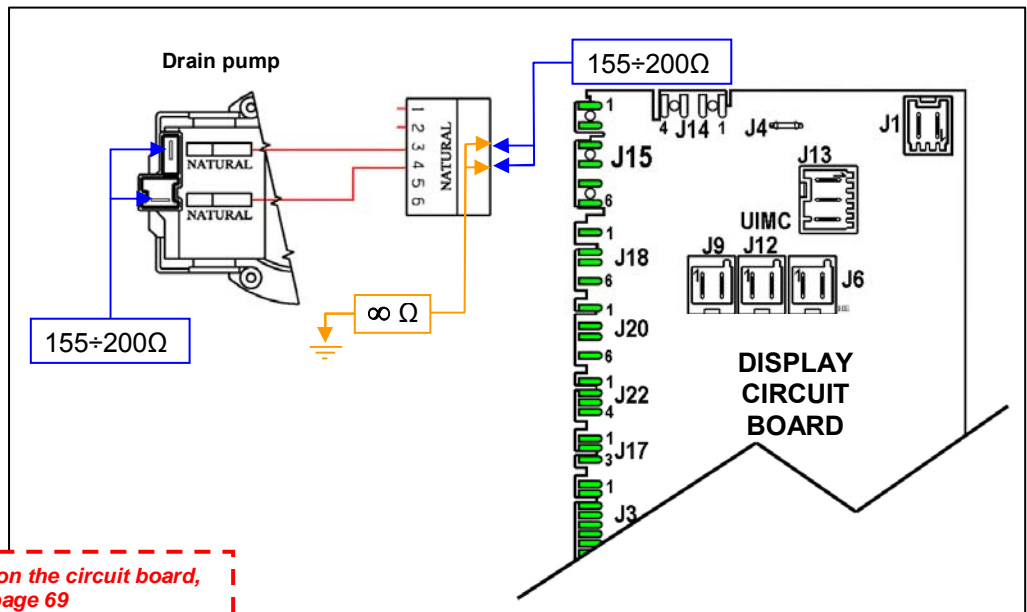


Fig. 5



Fig. 6



! If there are burns on the circuit board, see page 69

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 69

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

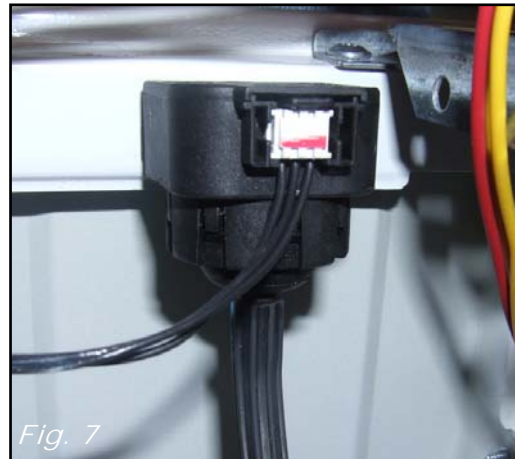


Check that all the connectors are correctly inserted

Measure that the circuit is closed between J3-1, J3-2, J3-3 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.

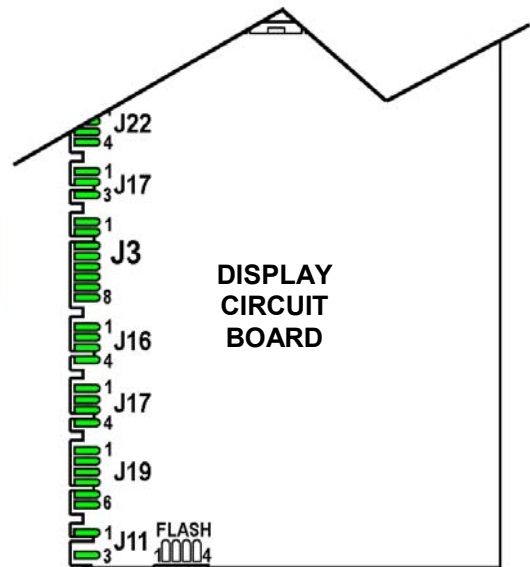
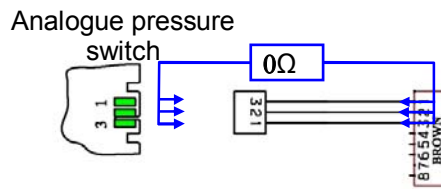


YES

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.

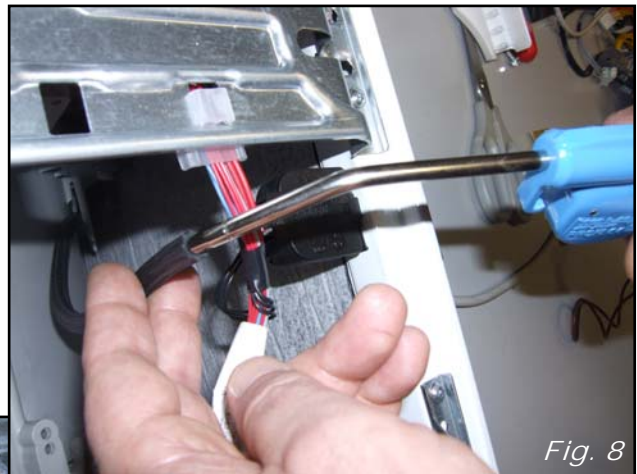
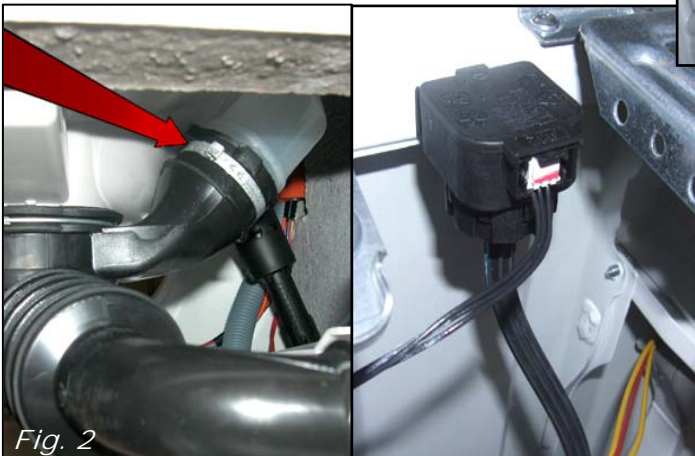
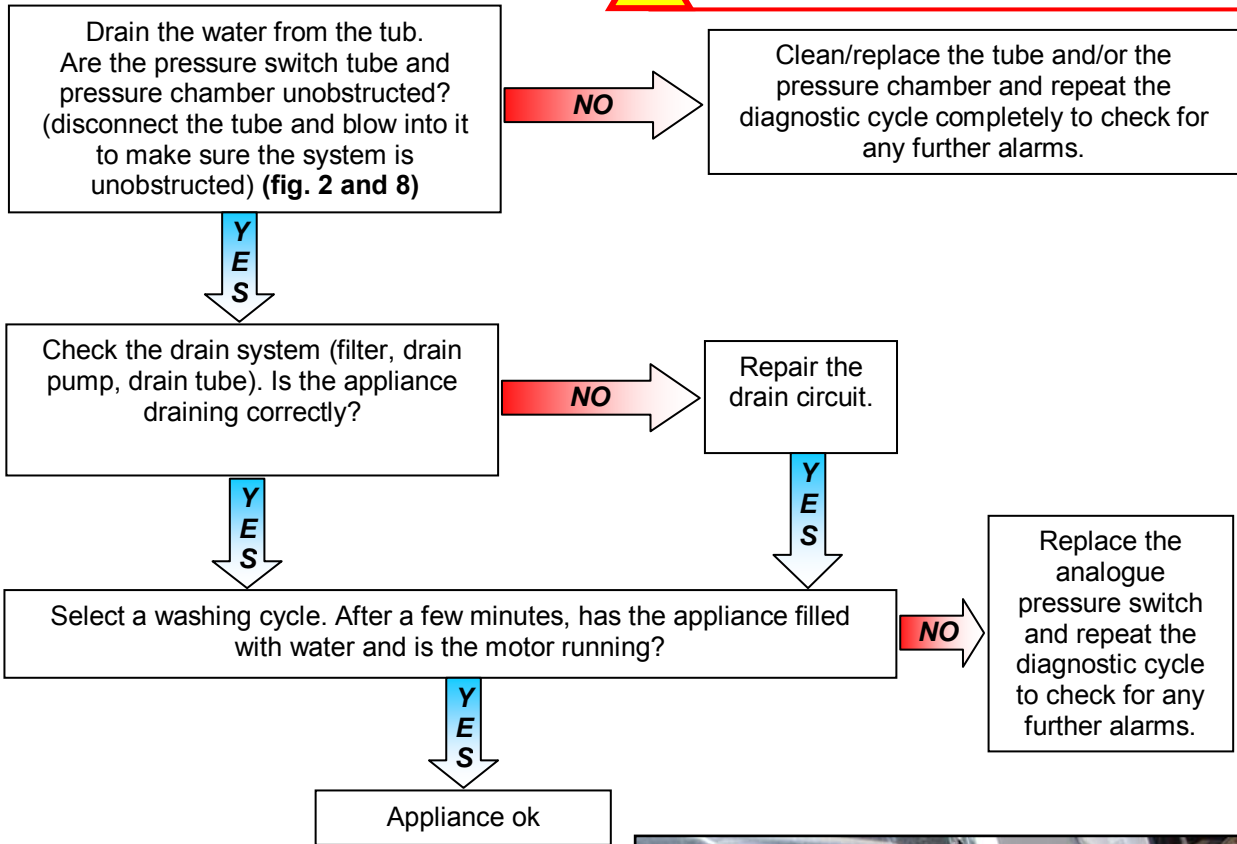


If there are burns on the circuit board, see page 69

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
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Checks to perform:

! Check that all the connectors are correctly inserted

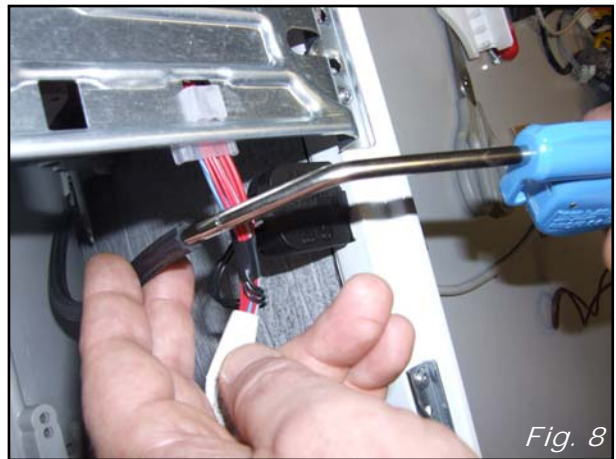
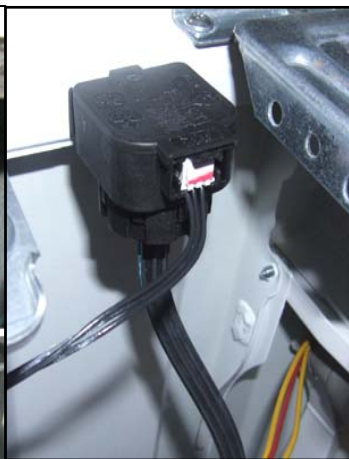
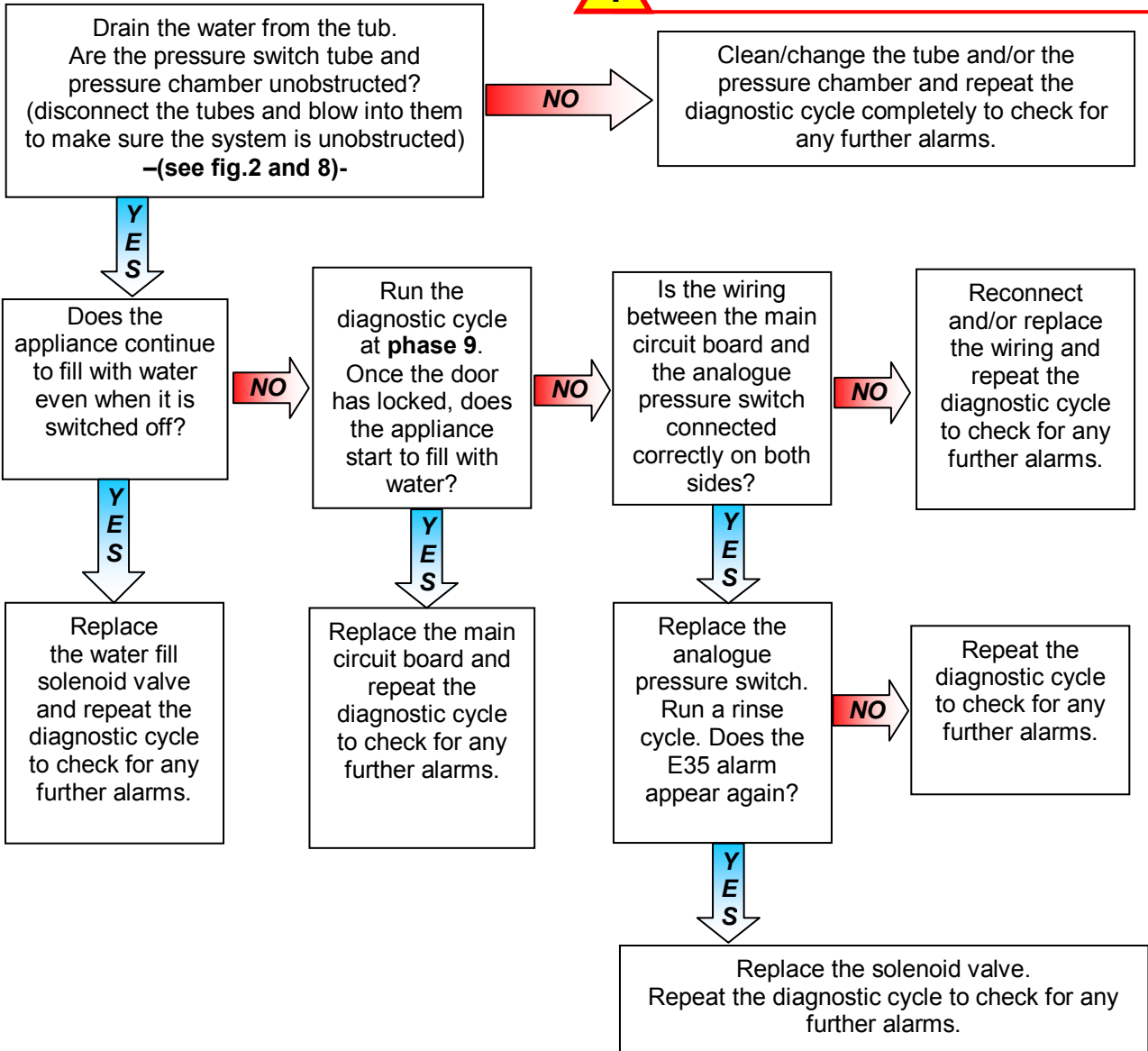


! If there are burns on the circuit board, see page 69

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:

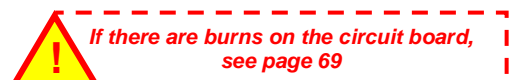
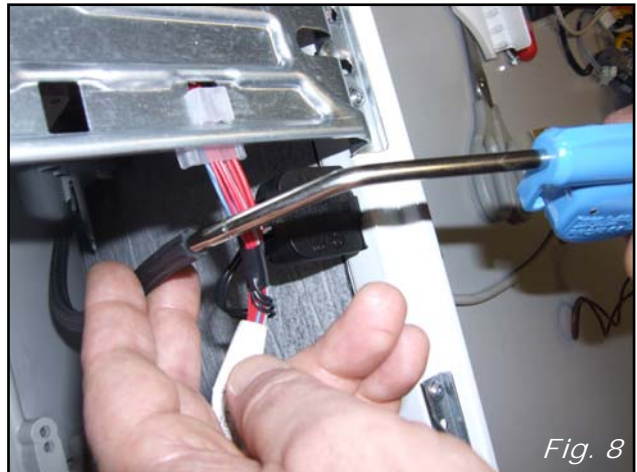
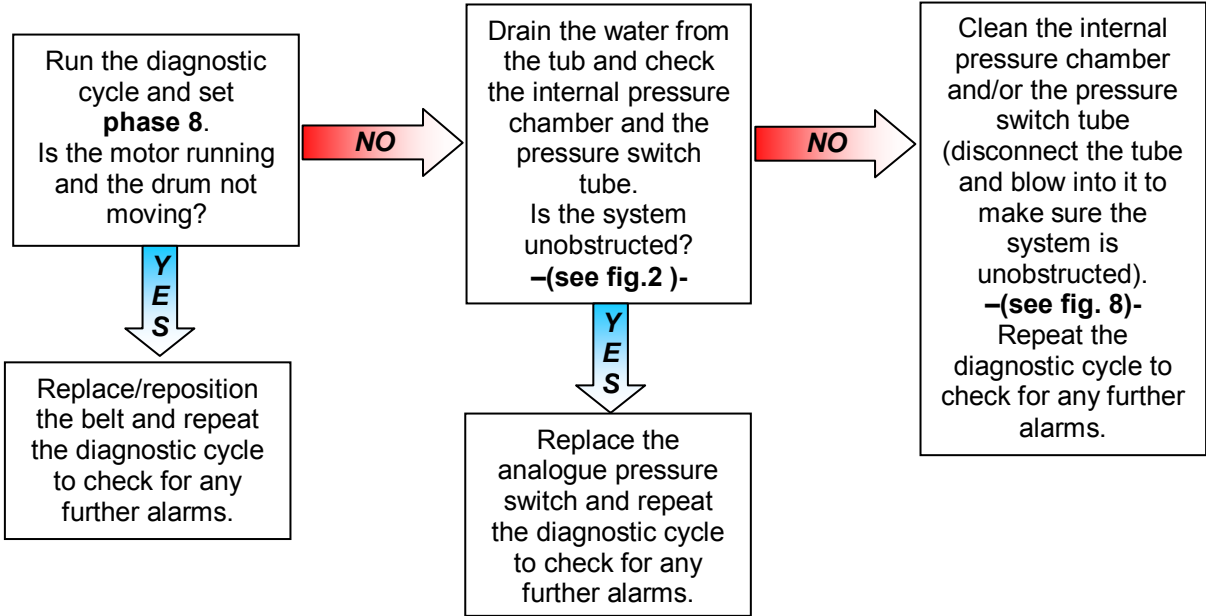
! Check that all the connectors are correctly inserted



! If there are burns on the circuit board, see page 69

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:



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

Checks to perform:

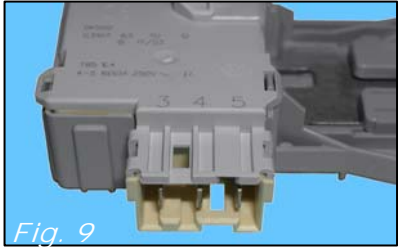
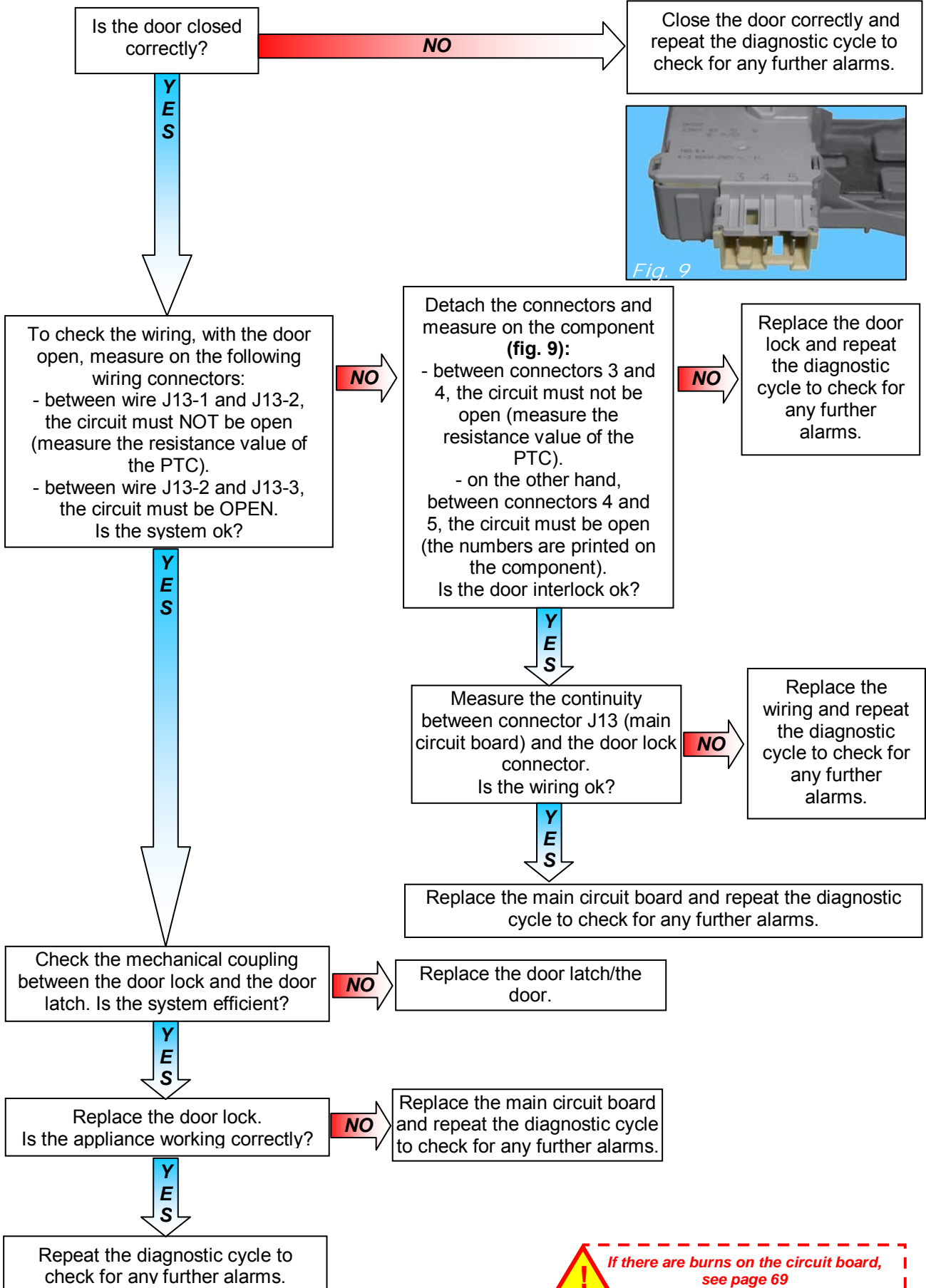
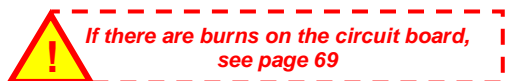
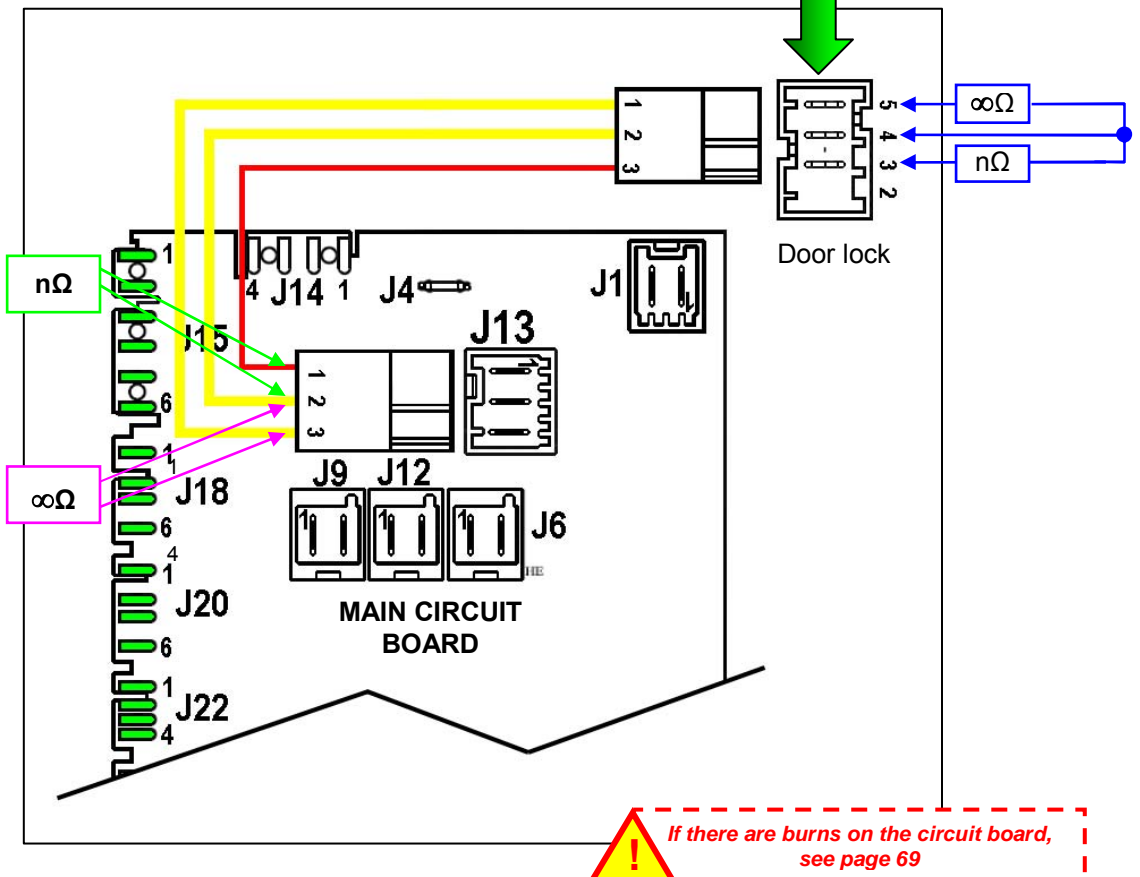
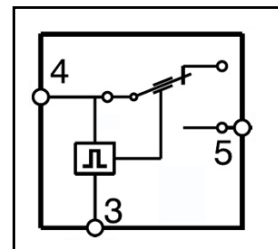
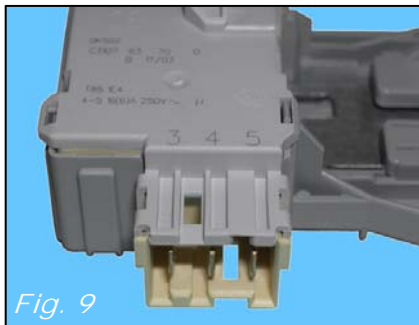
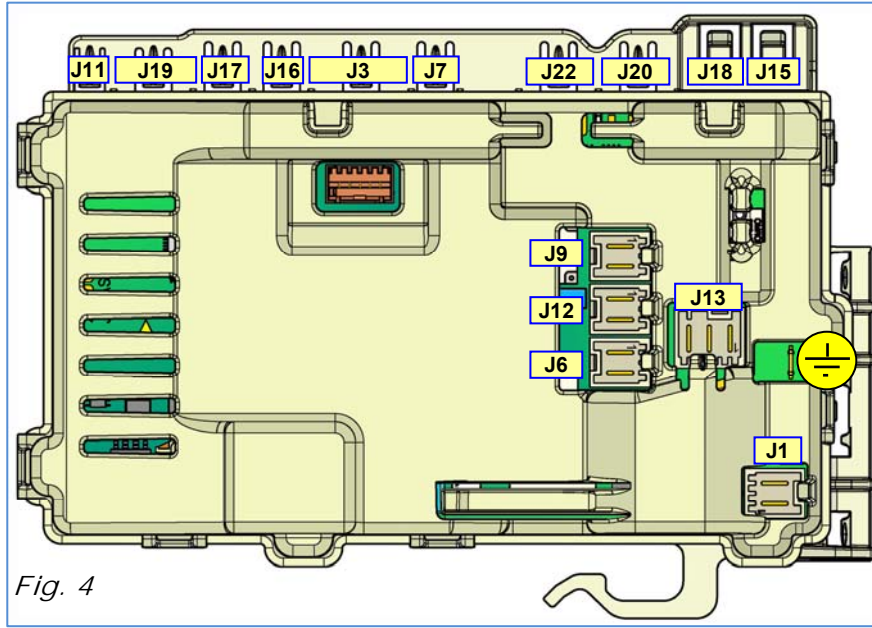


Fig. 9

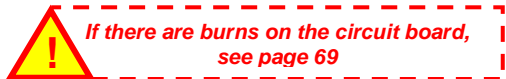
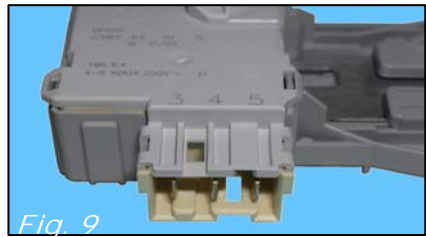
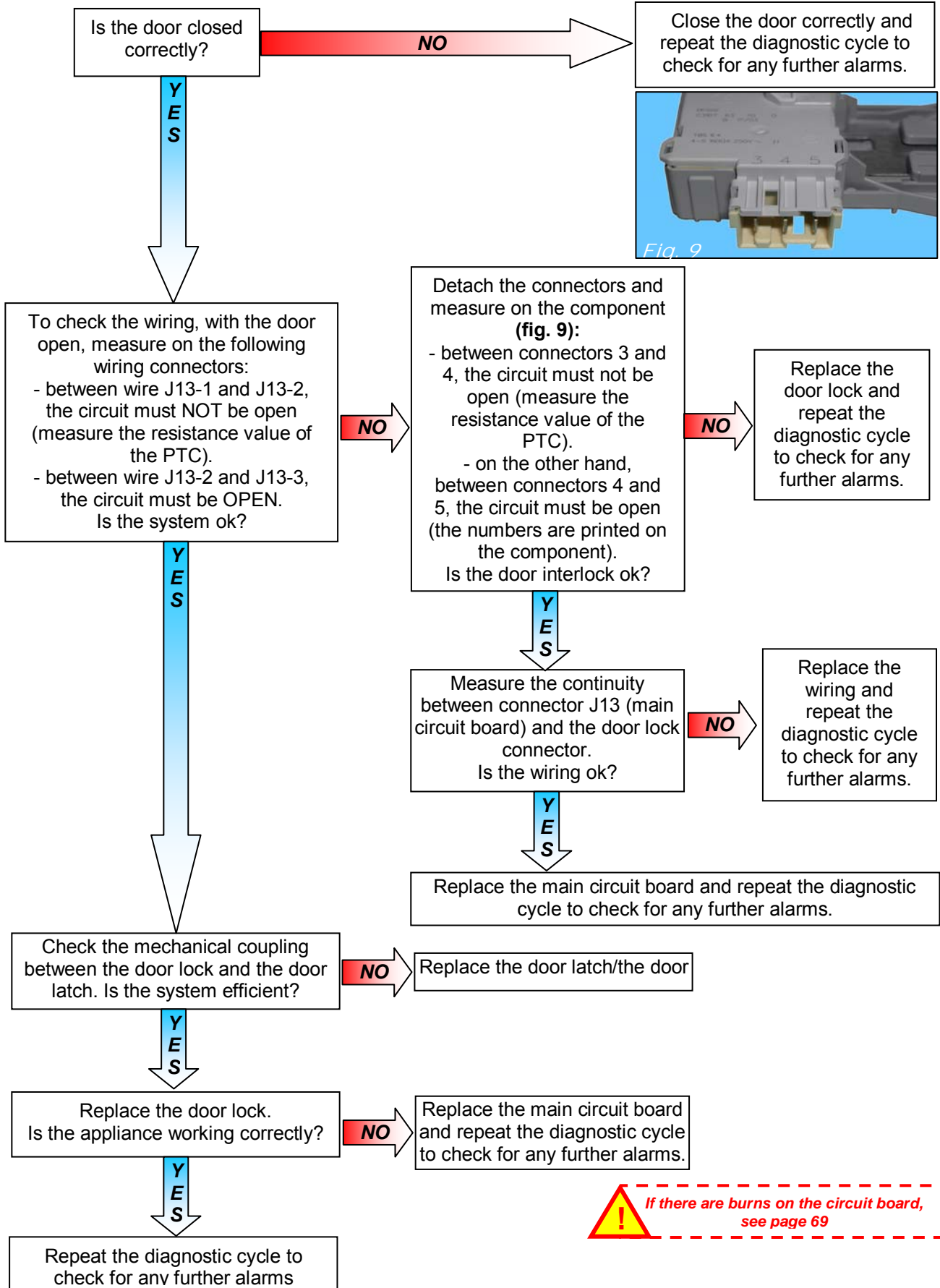


E41 (device with 3 connections)

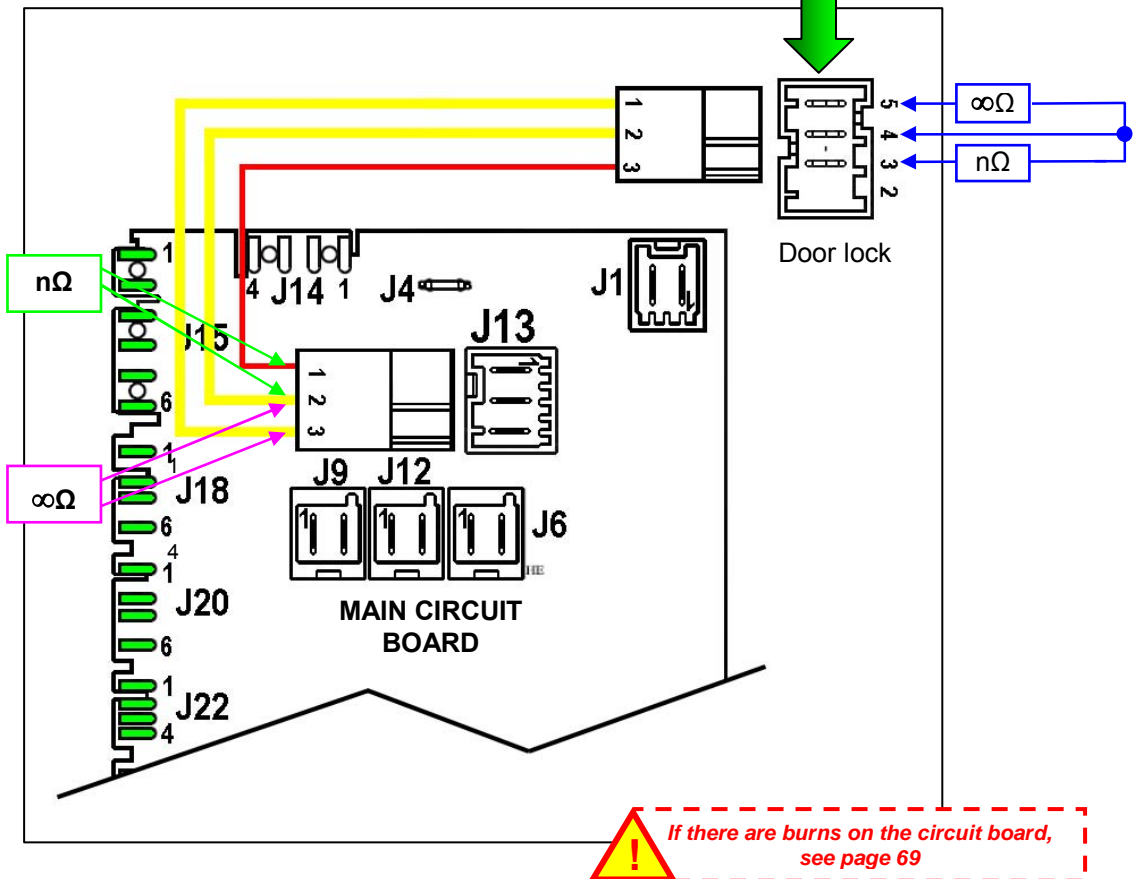
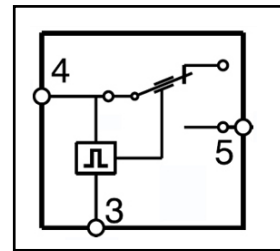
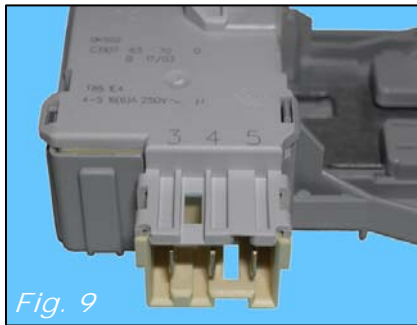
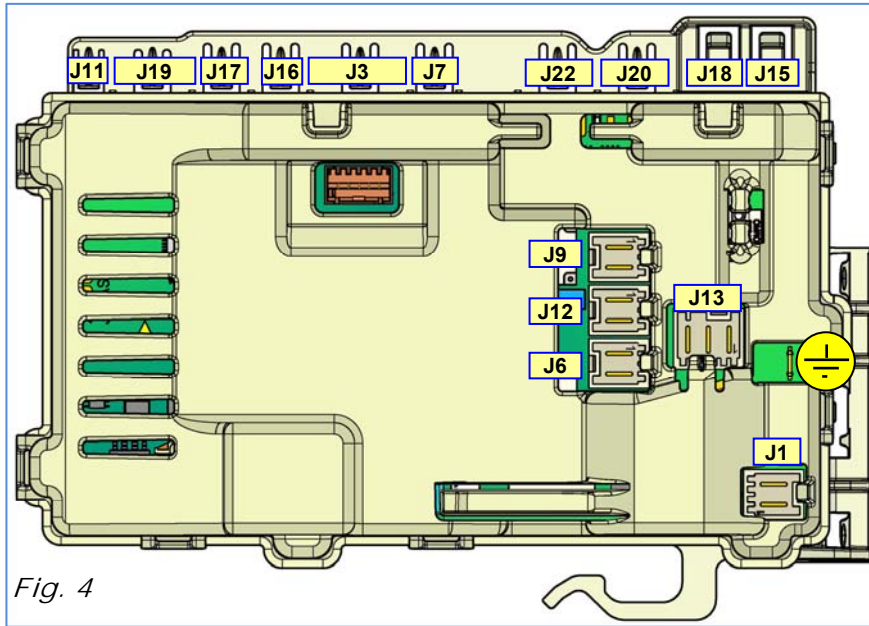


E42	E42: Problems opening door Maximum time exceeded (255 seconds)	E42
------------	--	------------

Checks to perform:

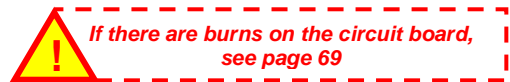
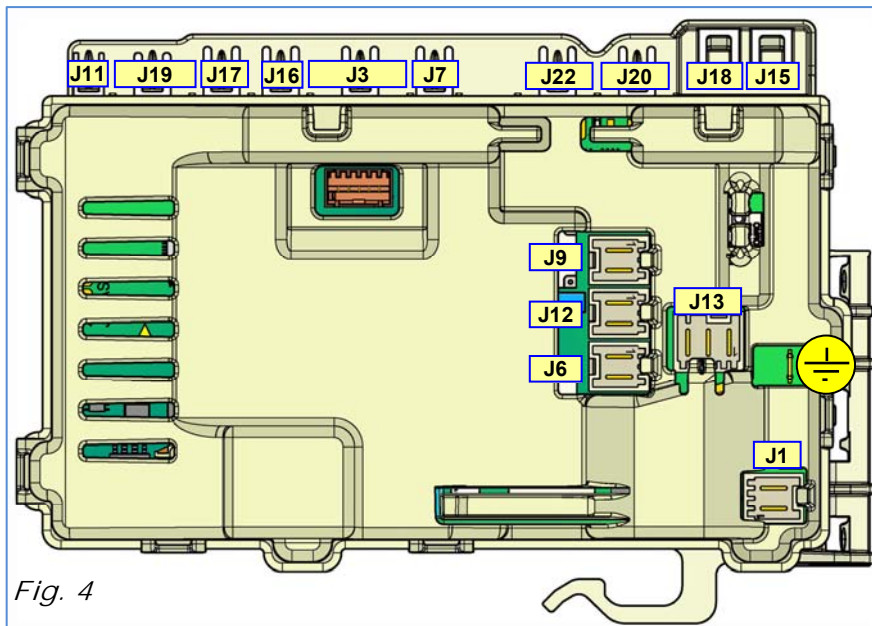
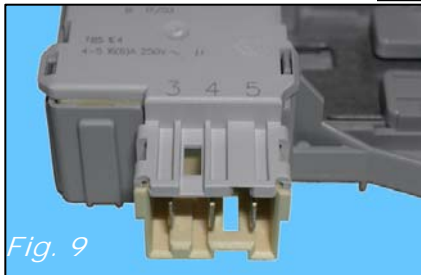
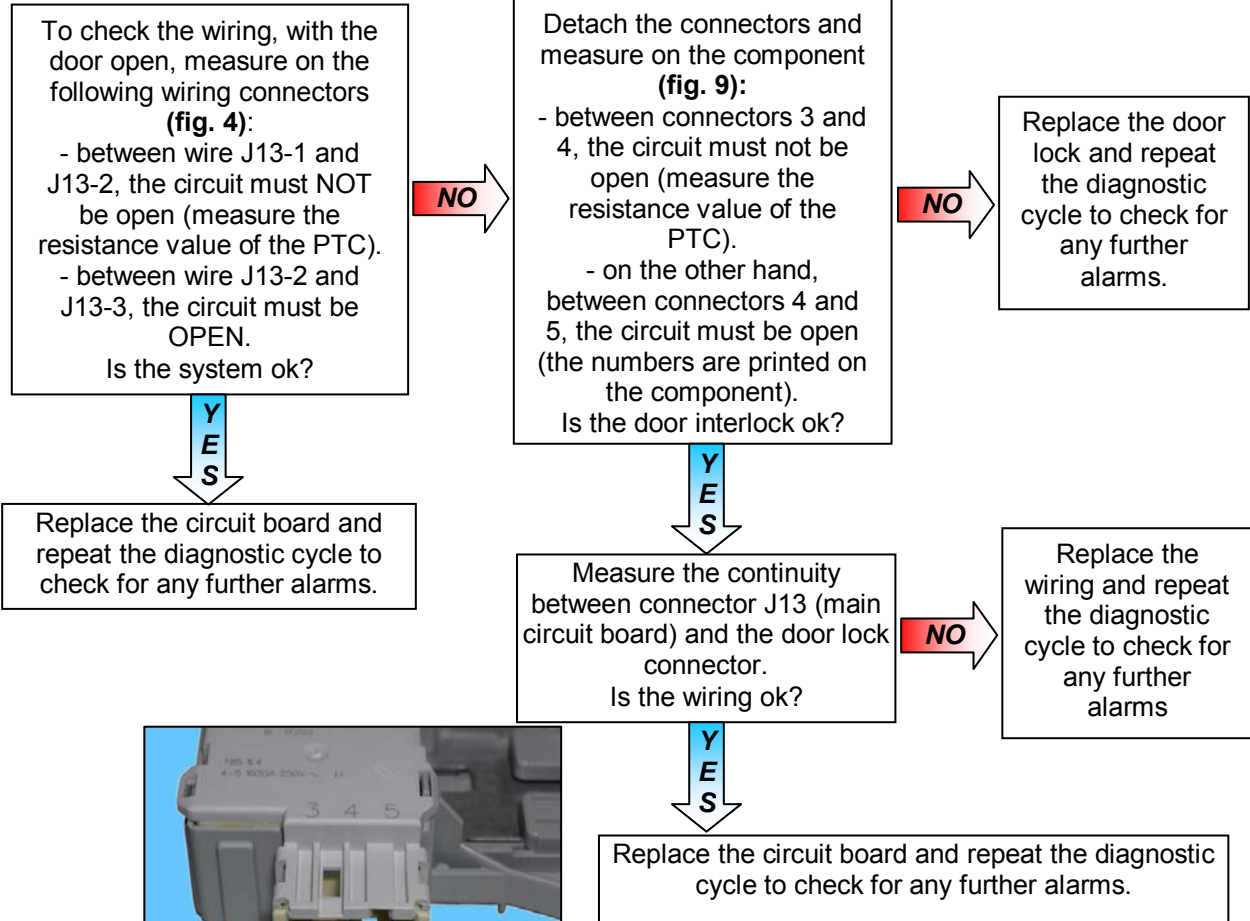


E42 (device with 3 connections)

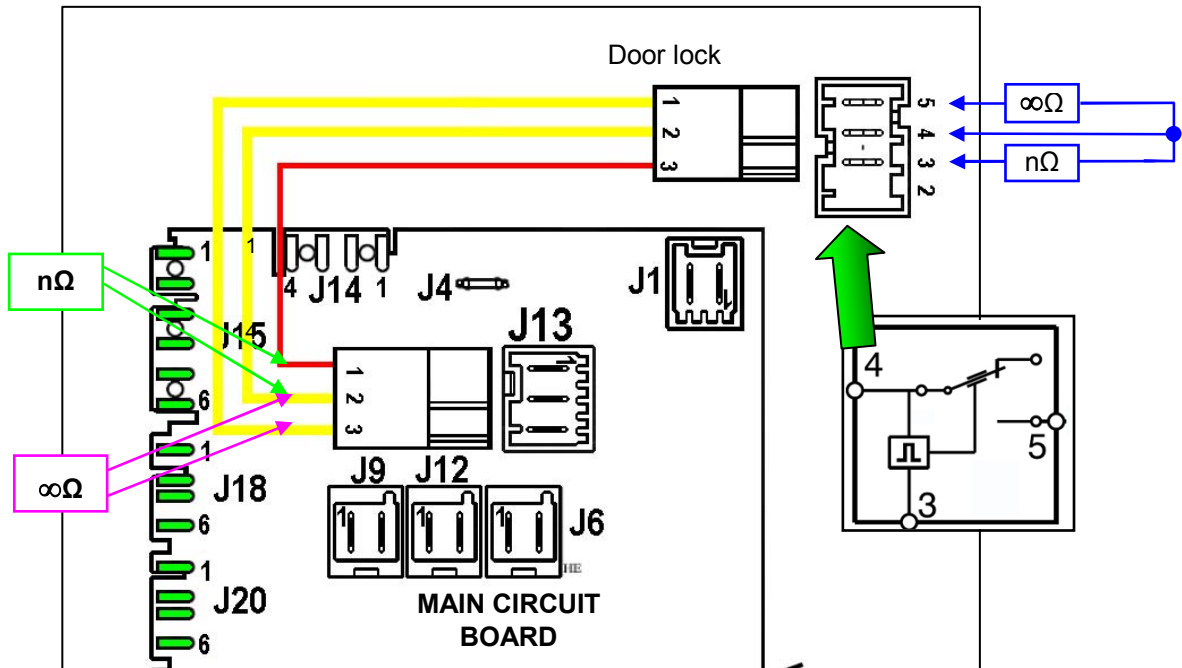


E43	E43: Problems with the component (triac) controlling the door delay system (device with 3 connections)	E43
------------	---	------------

Checks to perform:



E43



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:

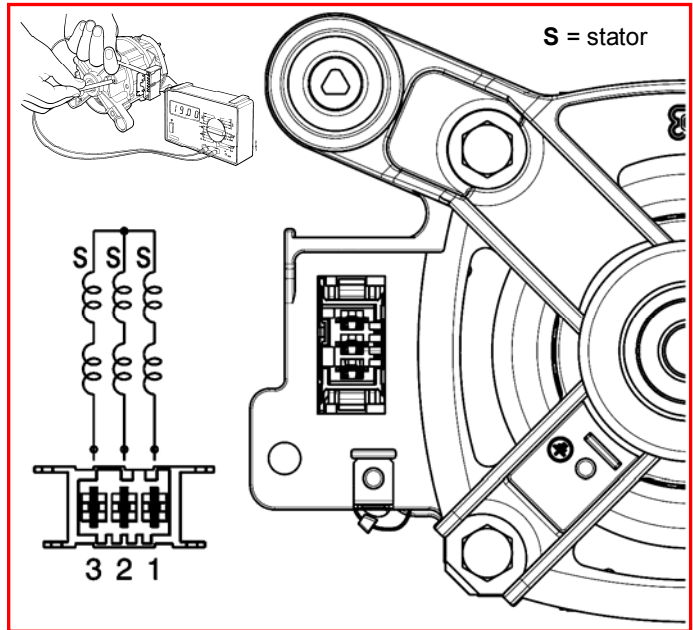
Check that all the connectors are correctly inserted

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

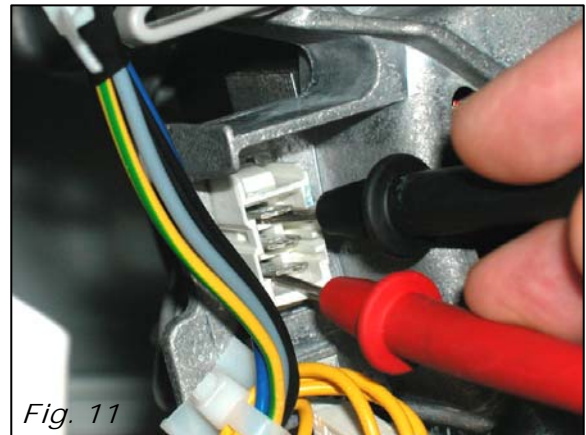
If there are burns on the circuit board, see page 69

How to check three-phase motors

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



	MOTOR BOARD TERMINALS	CONTROLLING	MOTOR ECM
B	1-2	Stator winding	9.10±7%
C	2-3	Stator winding	9.10±7%
D	3-1	Stator winding	9.10±7%



! If there are burns on the circuit board, see page 69

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 all the terminals of wiring connector J2CB-2, J2CB-3, J2CB-4 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

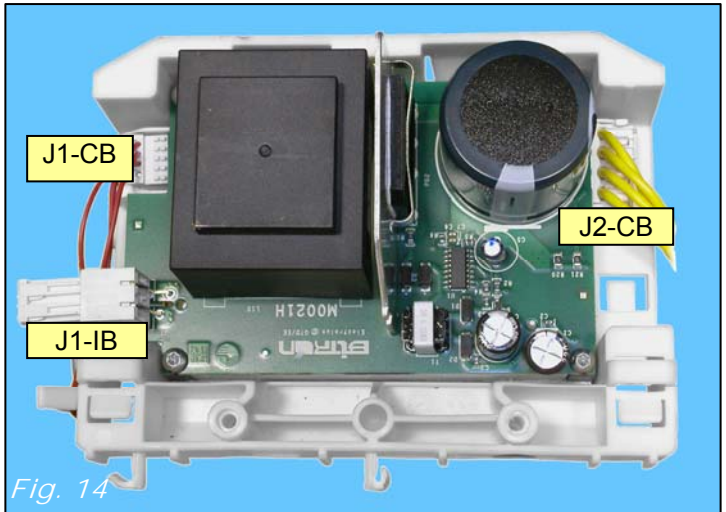
Detach the connector from the motor and measure between the terminals and the motor casing.-(see fig. 10) - Is there any dispersion?

NO

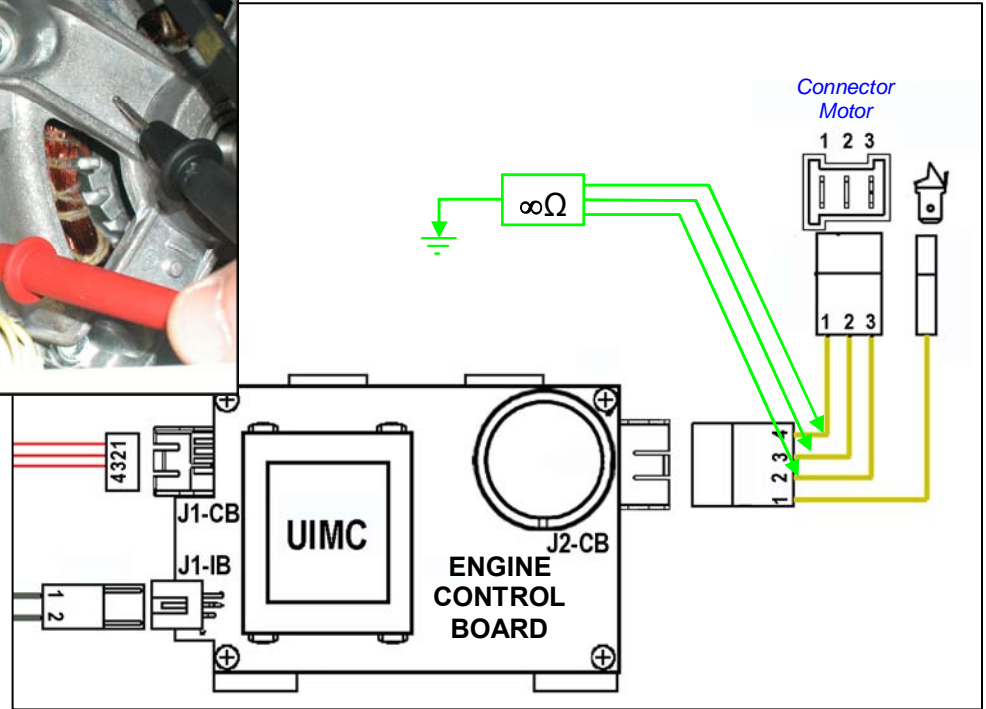
Check/replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES

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



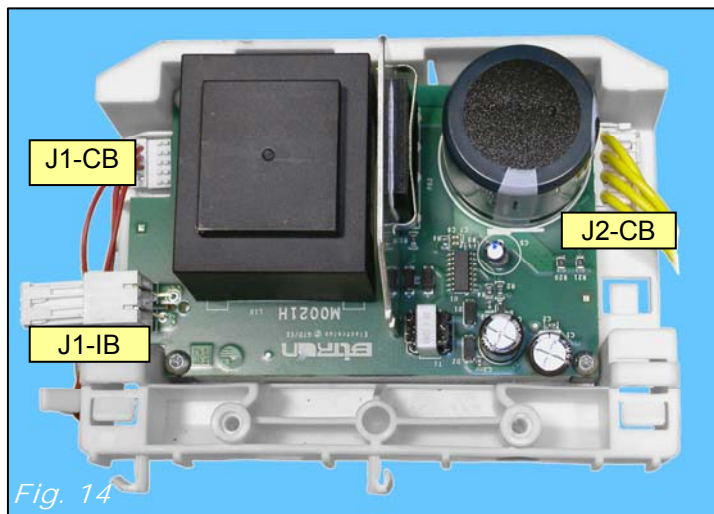
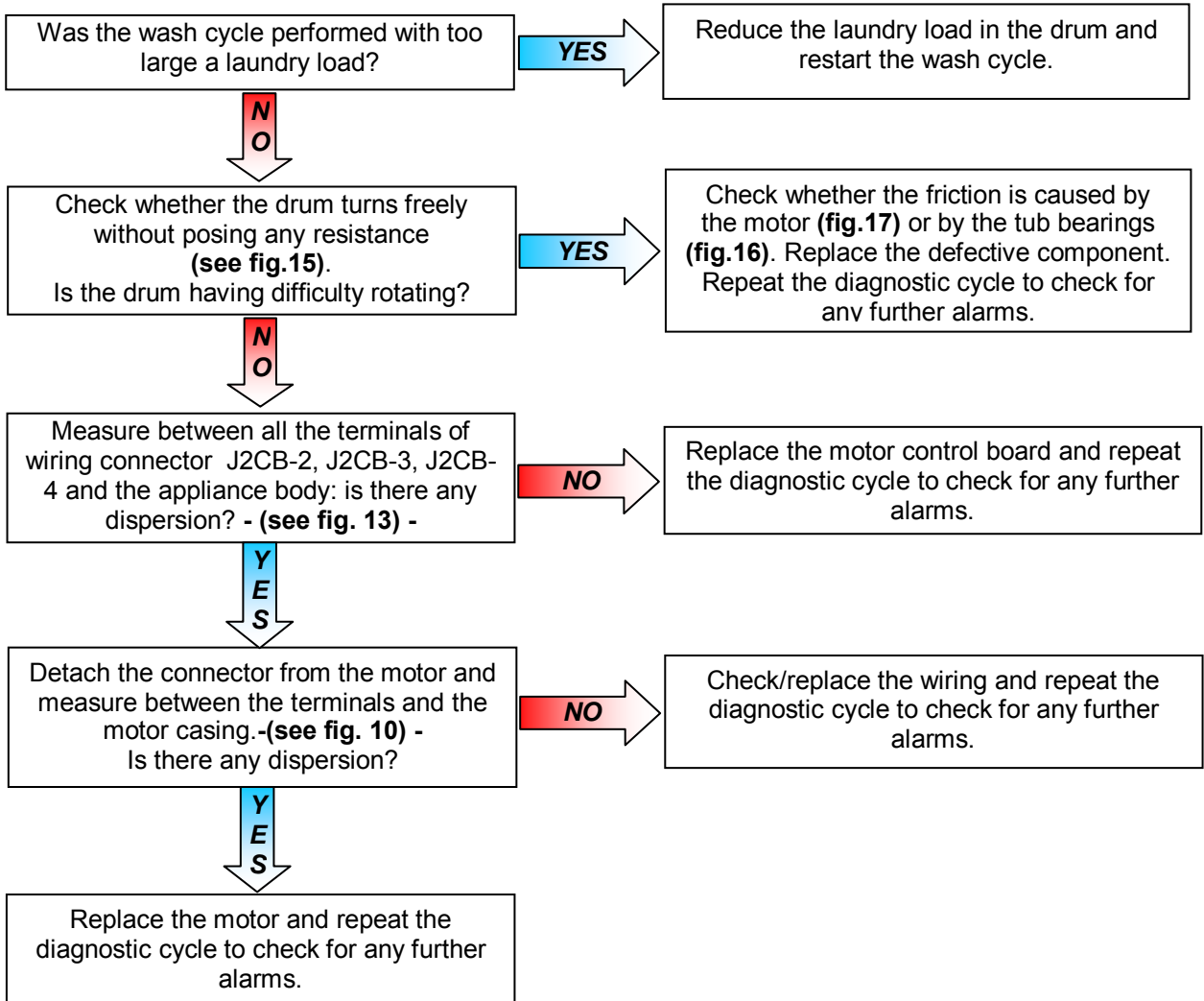
! If there are burns on the circuit board, see page 69



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



If there are burns on the circuit board, see page 69

E58



Fig. 15



Fig. 16



Fig. 17

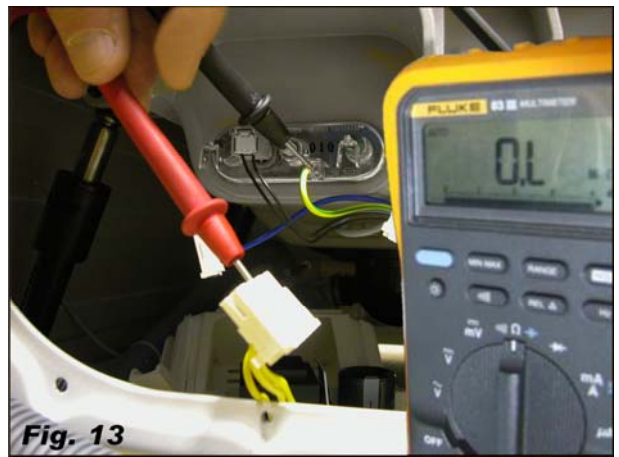
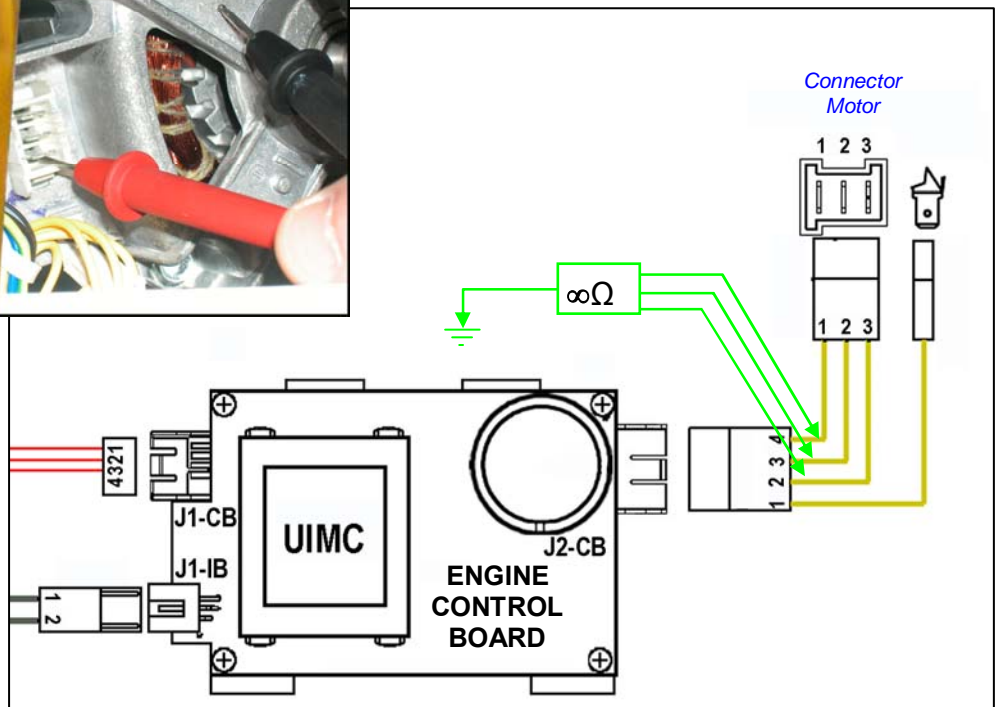


Fig- 13



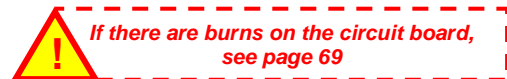
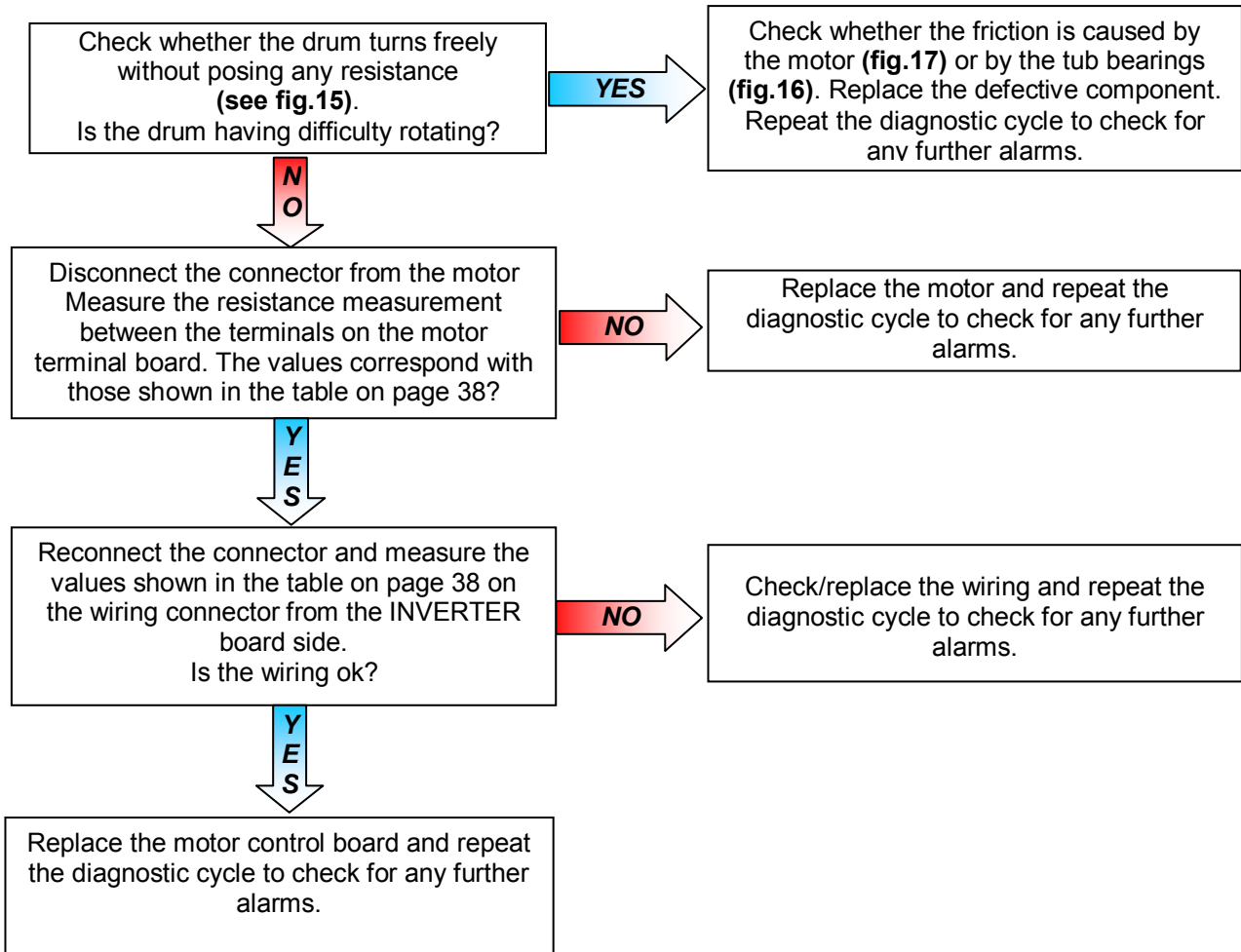
Fig. 10



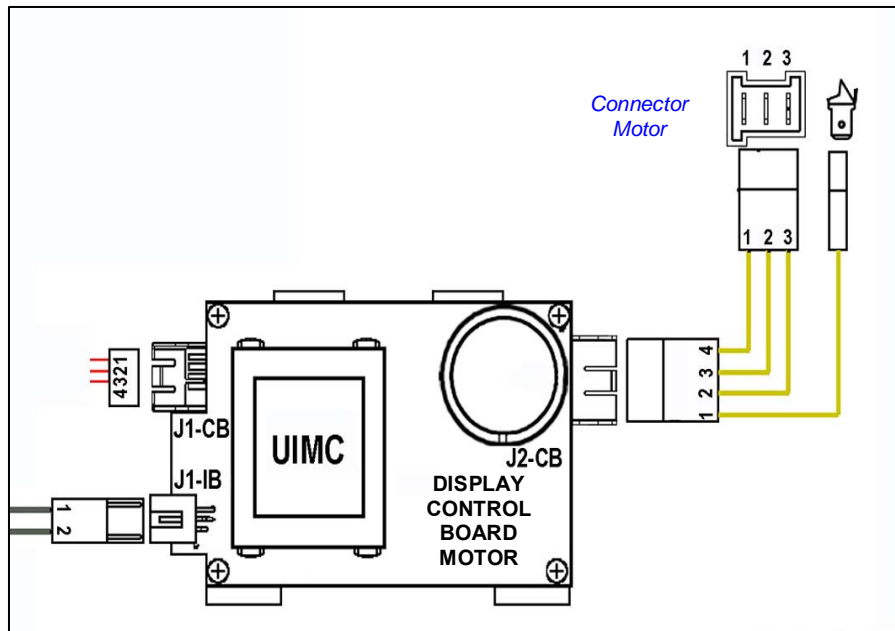
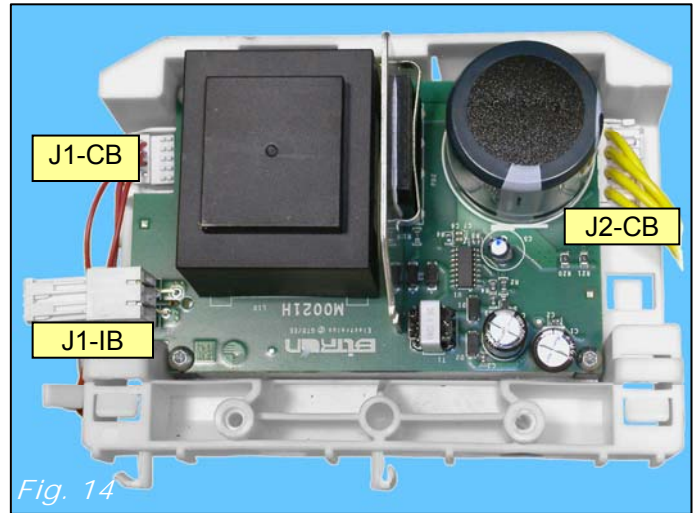
! If there are burns on the circuit board, see page 69

E59	E59: No rotation of the motor	E59
	The lack of motor rotation should last at least 3 seconds	

Checks to perform:



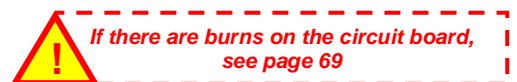
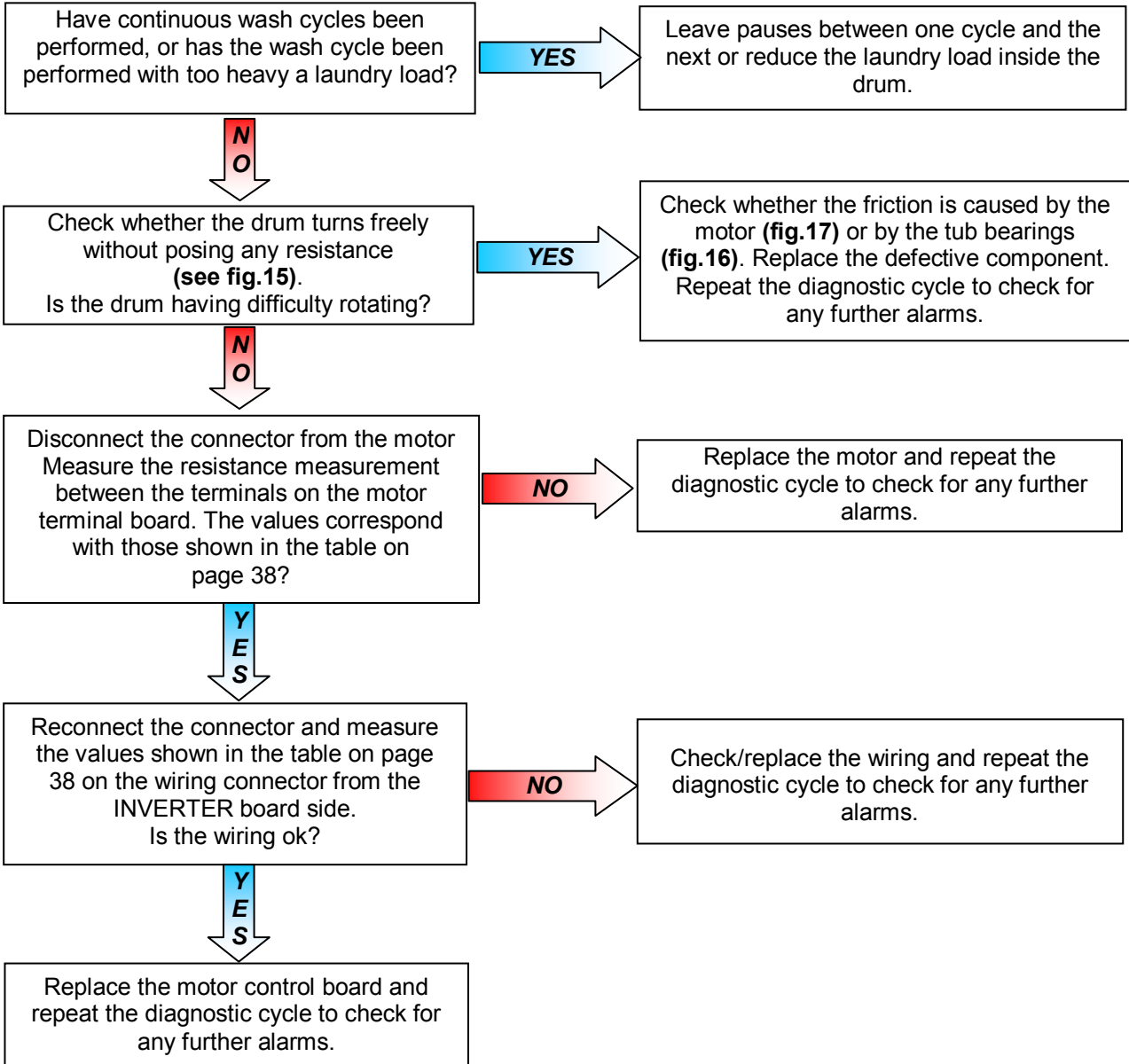
E59



! If there are burns on the circuit board, see page 69

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

Checks to perform:



E5A



Fig. 15

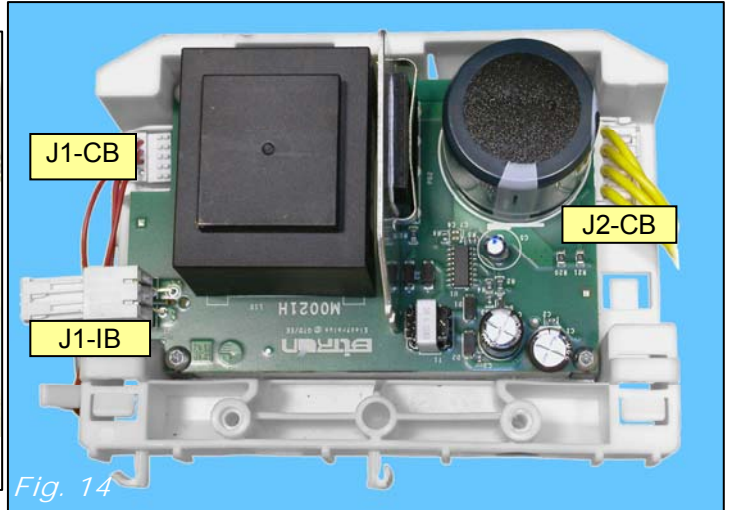


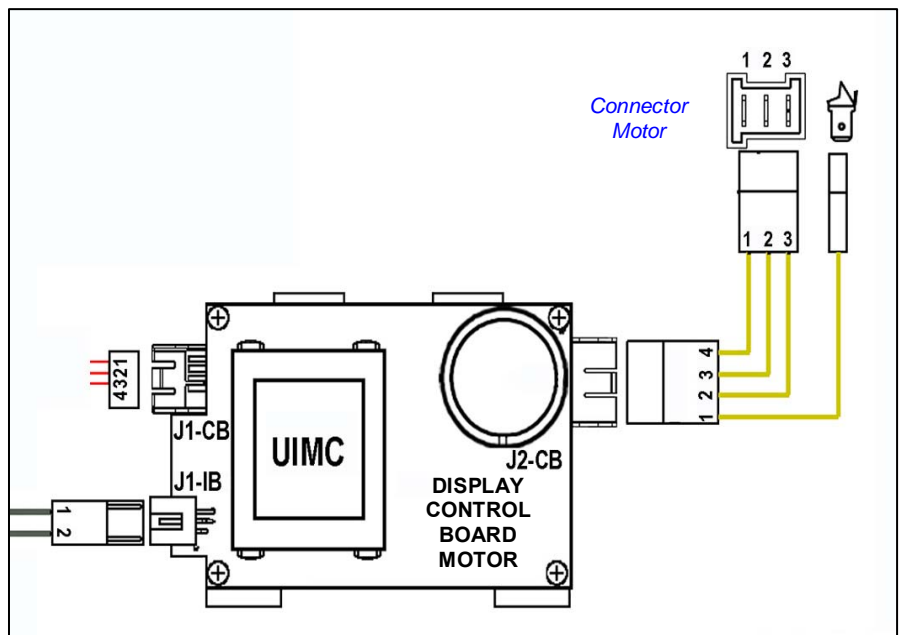
Fig. 14



Fig. 16



Fig. 17



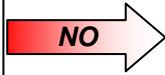
! If there are burns on the circuit board, see page 69

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

Checks to perform:



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



Wait for the mains voltage to return to nominal conditions and repeat the diagnostic cycle to check for any further alarms.



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



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 J1CB (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 J16-2, J16-4 (main circuit board) and connector J1CB-1, J1CB-3 (motor control board). Is the wiring ok?

NO

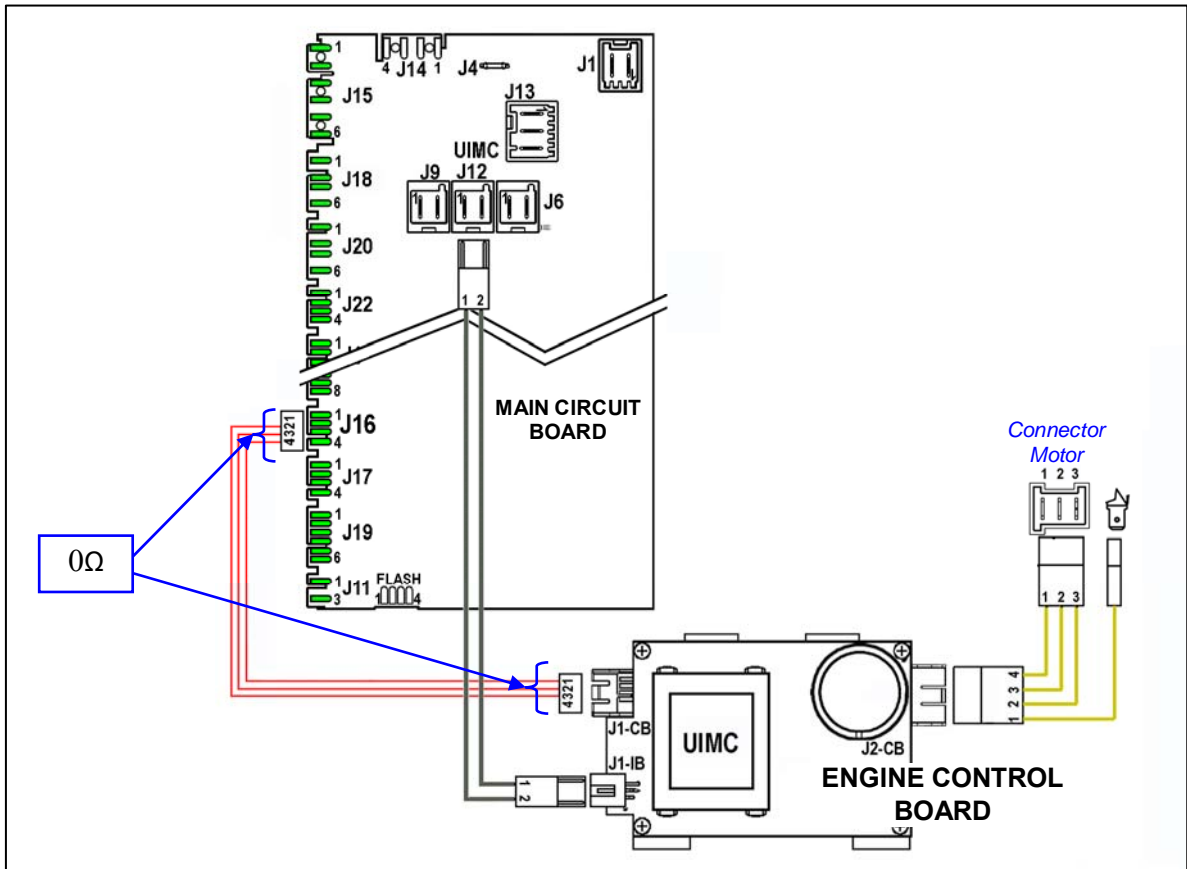
Replace the wiring and repeat the diagnostic cycle to check for any further alarms.

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 69

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

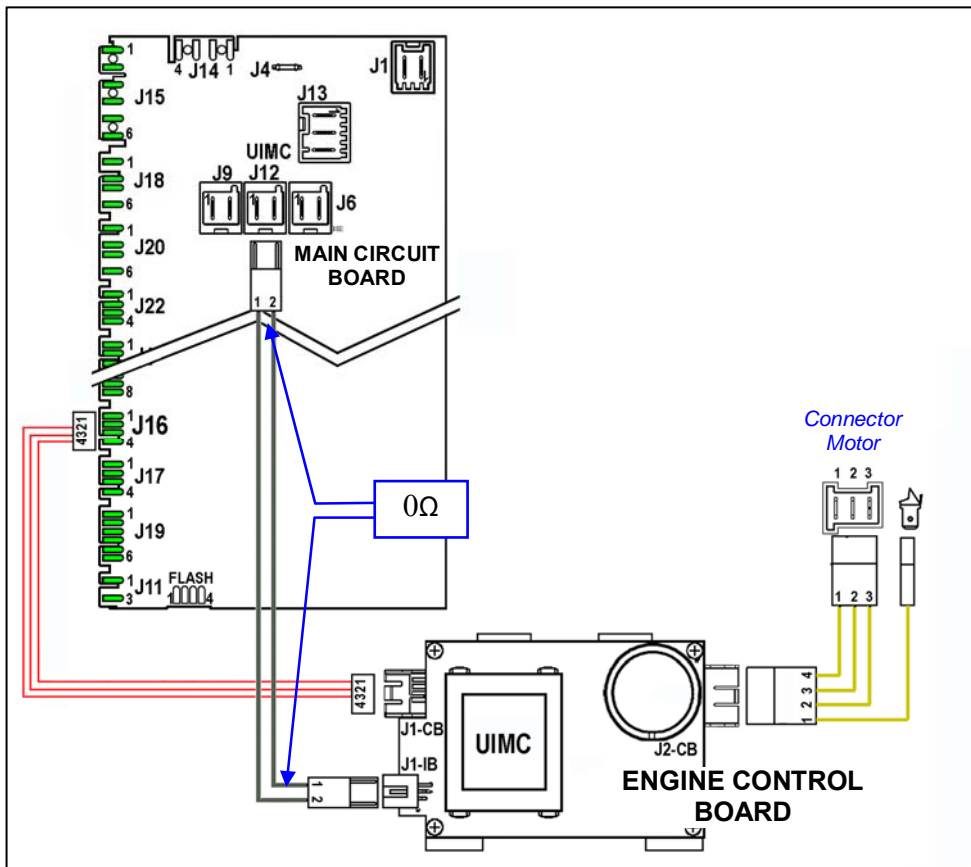
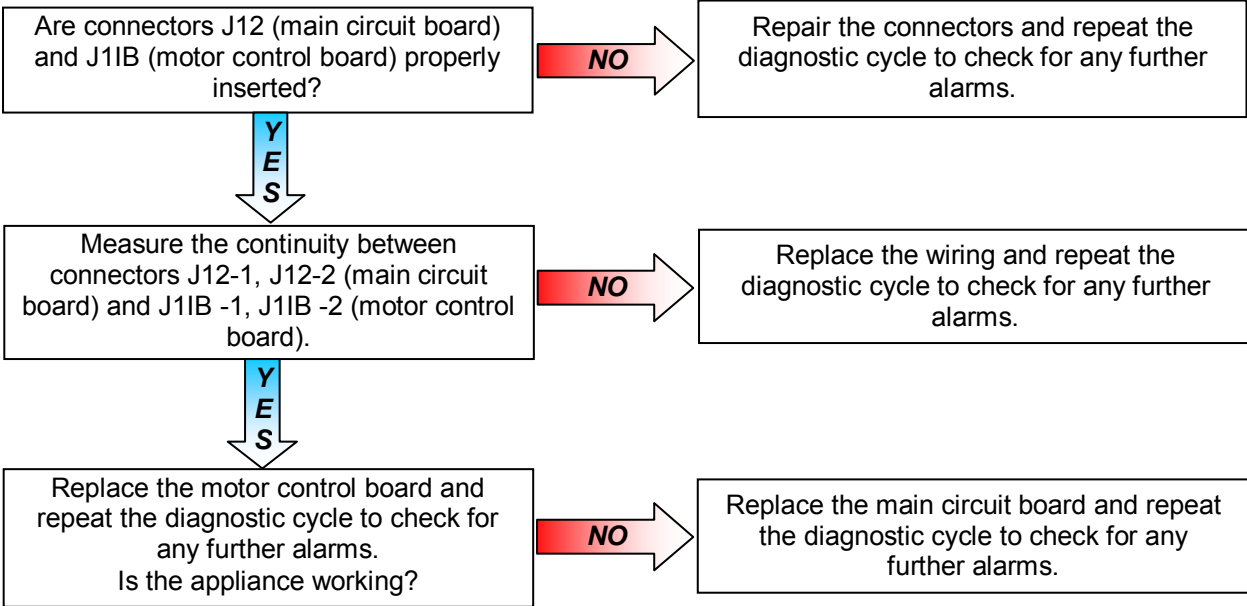
Replace the motor control board and repeat the diagnostic cycle to check for any further alarms.



If there are burns on the circuit board, see page 69

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

Checks to perform:



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

Checks to perform:



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

NO

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

Measure the NTC probe between terminals J3-4 and J3-5 of the main circuit board connector. Is the value correct? (between 5.7 and 6.3KΩ 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 6.3KΩ at 20°C)

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.

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



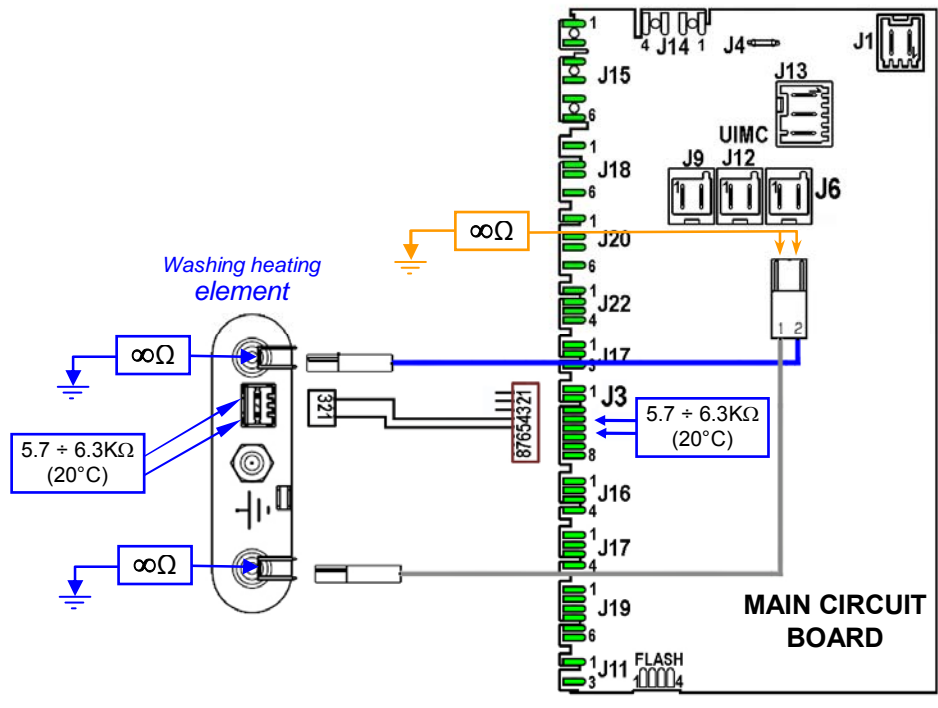
Fig. 6



Fig. 18



Fig. 19



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

Checks to perform:

! Check that all the connectors are correctly inserted

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

NO

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

YES

Detach the 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.

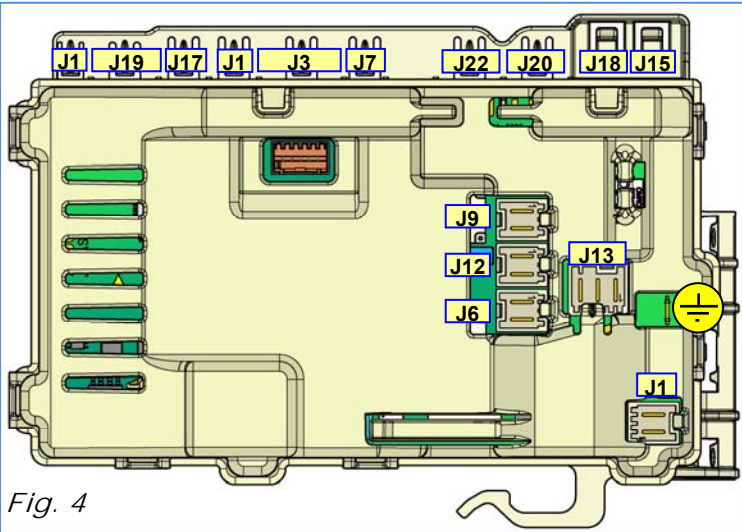
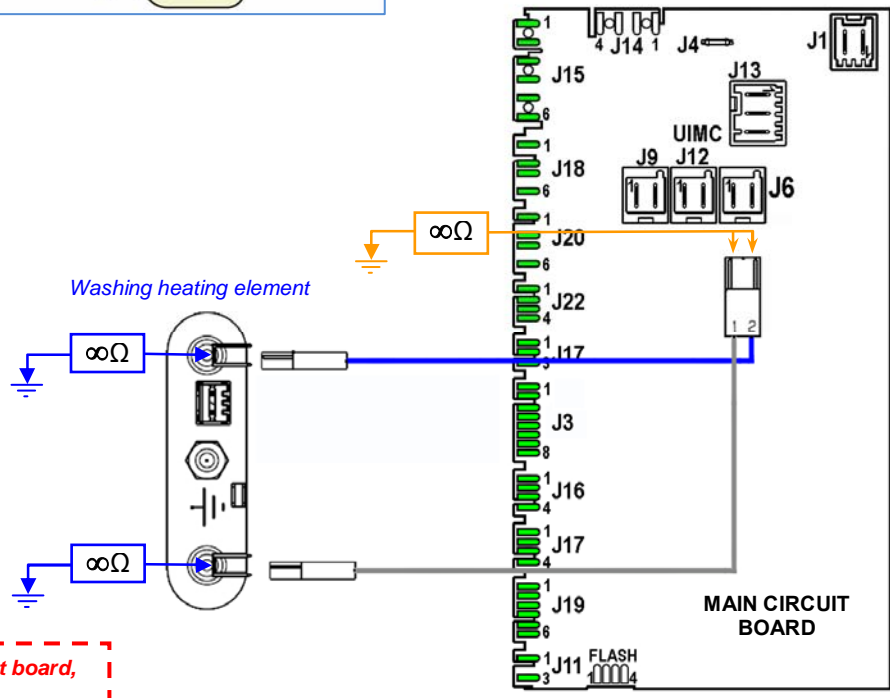


Fig. 4



! If there are burns on the circuit board, see page 69

E68 **E68: Washing heating element leakage** **E68**

Checks to perform:

! Check that all the connectors are correctly inserted

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

NO

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

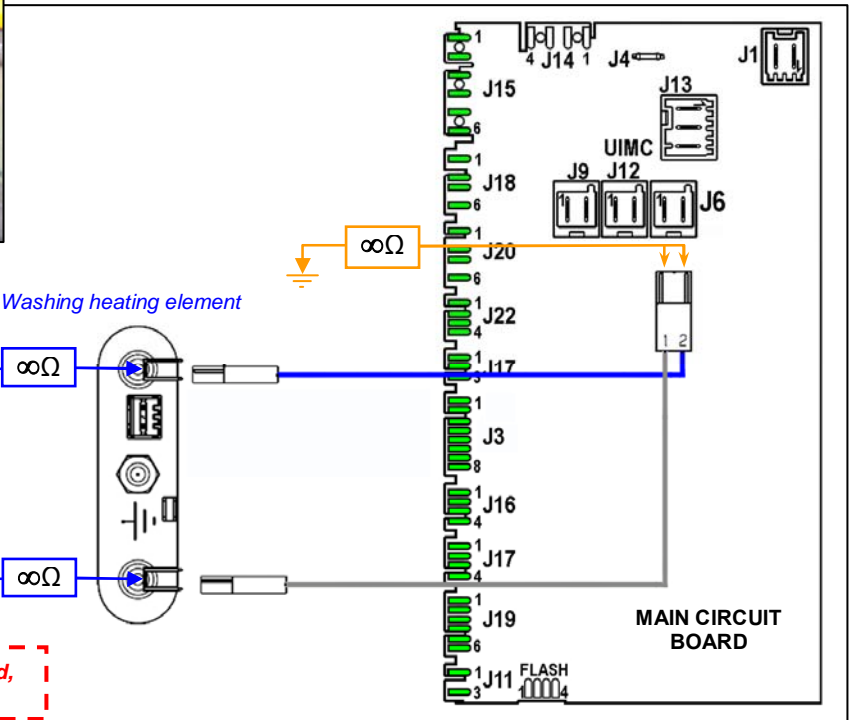
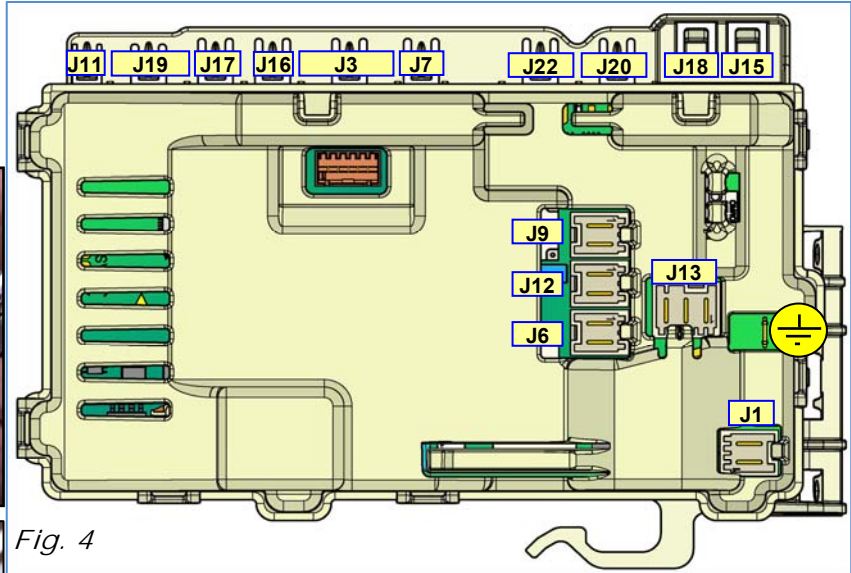
NO

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.



! If there are burns on the circuit board, see page 69

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 (\wedge) between terminals J6-1 / J6-2 of the wiring connector **-(see fig. 4)-**
Is the value correct?
($28\div 31\wedge$ for 230V/1750W)

NO

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

NO

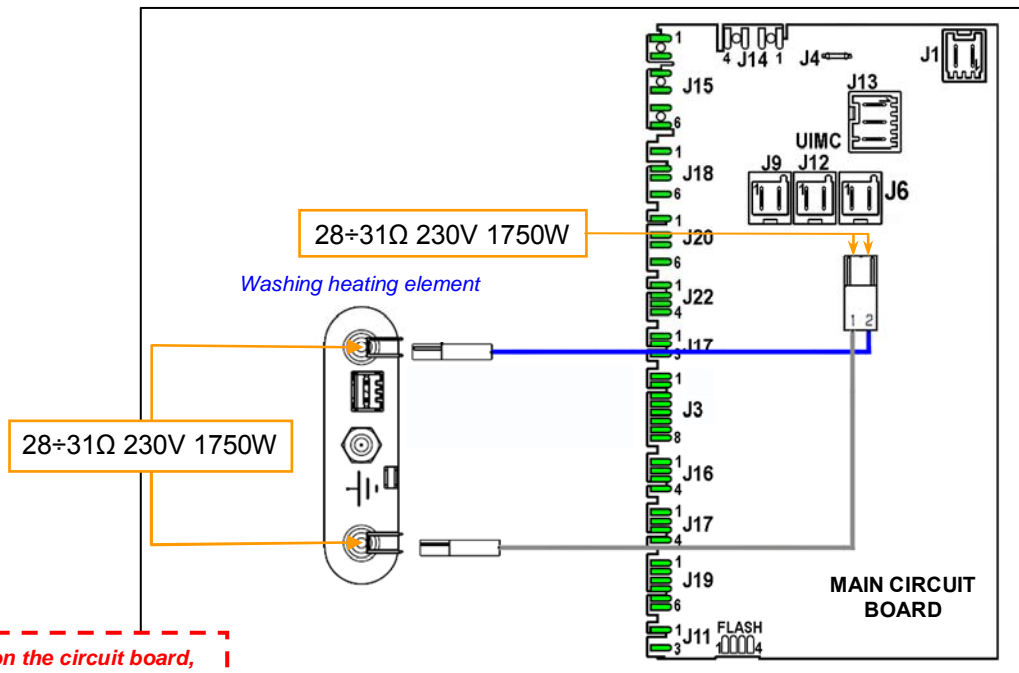
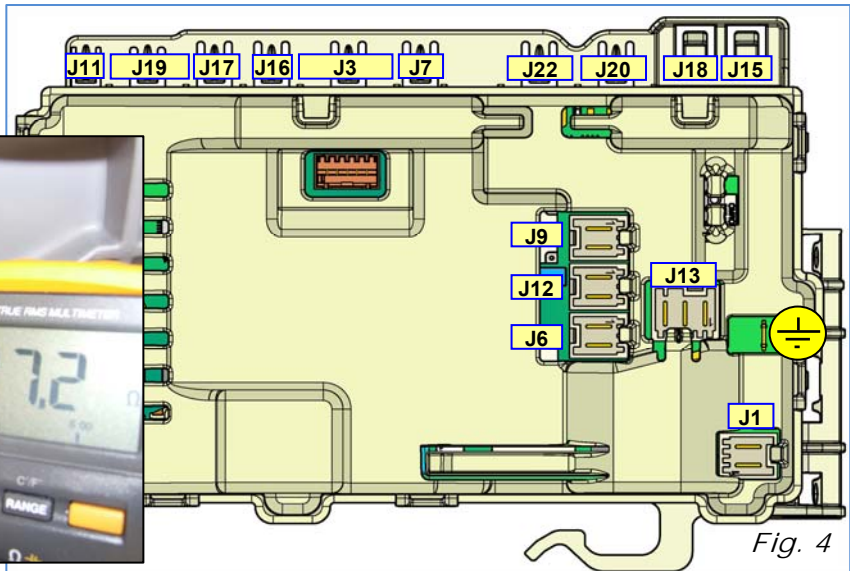
Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

YES

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

YES

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




! If there are burns on the circuit board, see page 69

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

Checks to perform:

 Check that all the connectors are correctly inserted

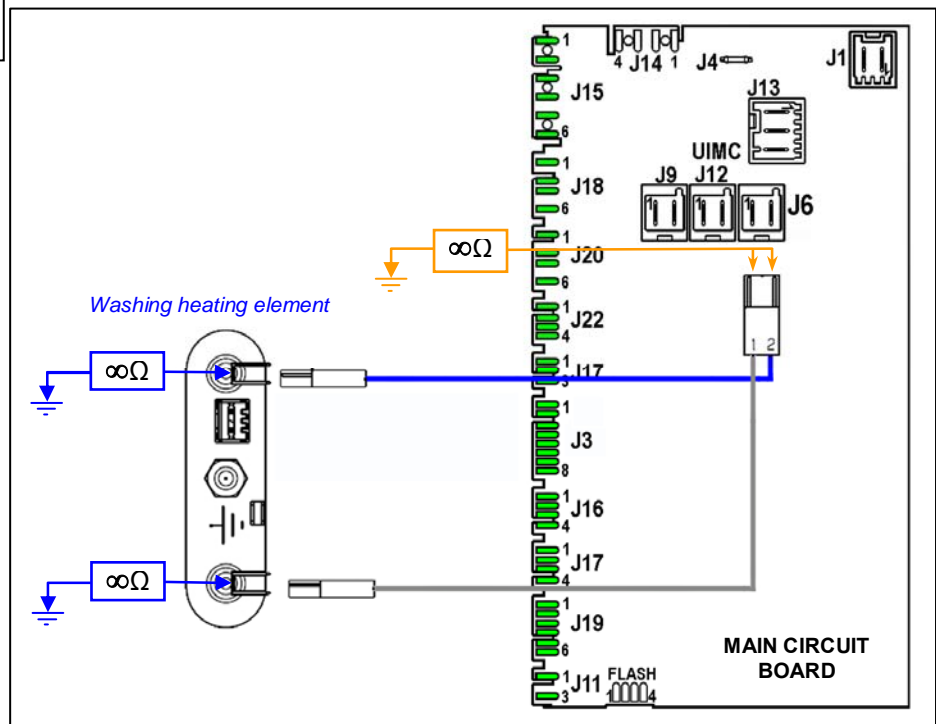
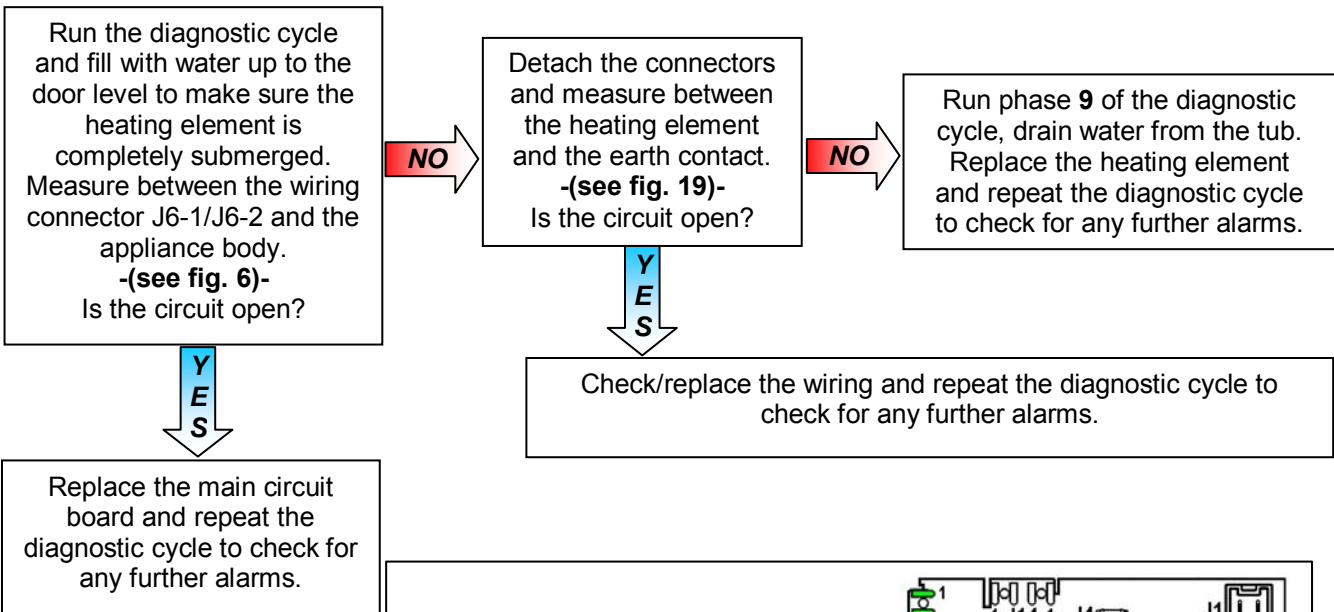
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.


 If there are burns on the circuit board, see page 69

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

Checks to perform:

 Check that all the connectors are correctly inserted

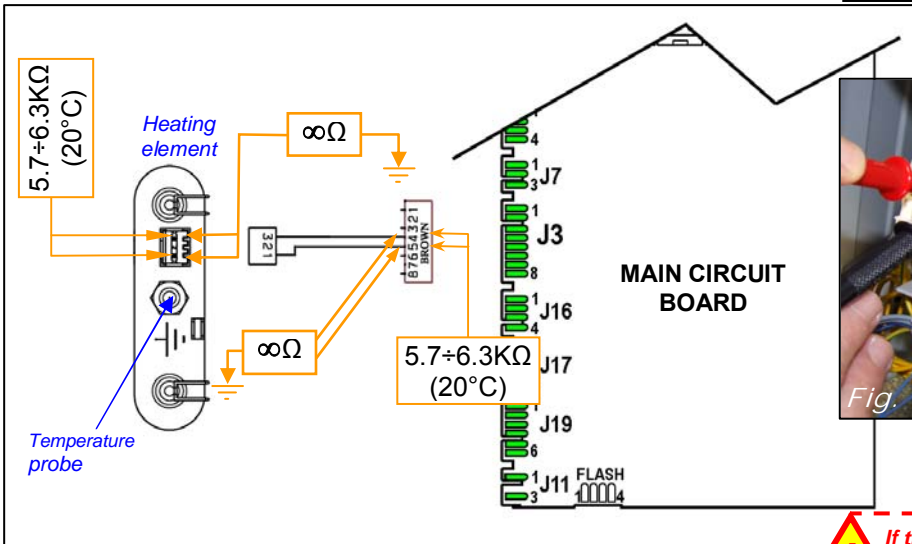
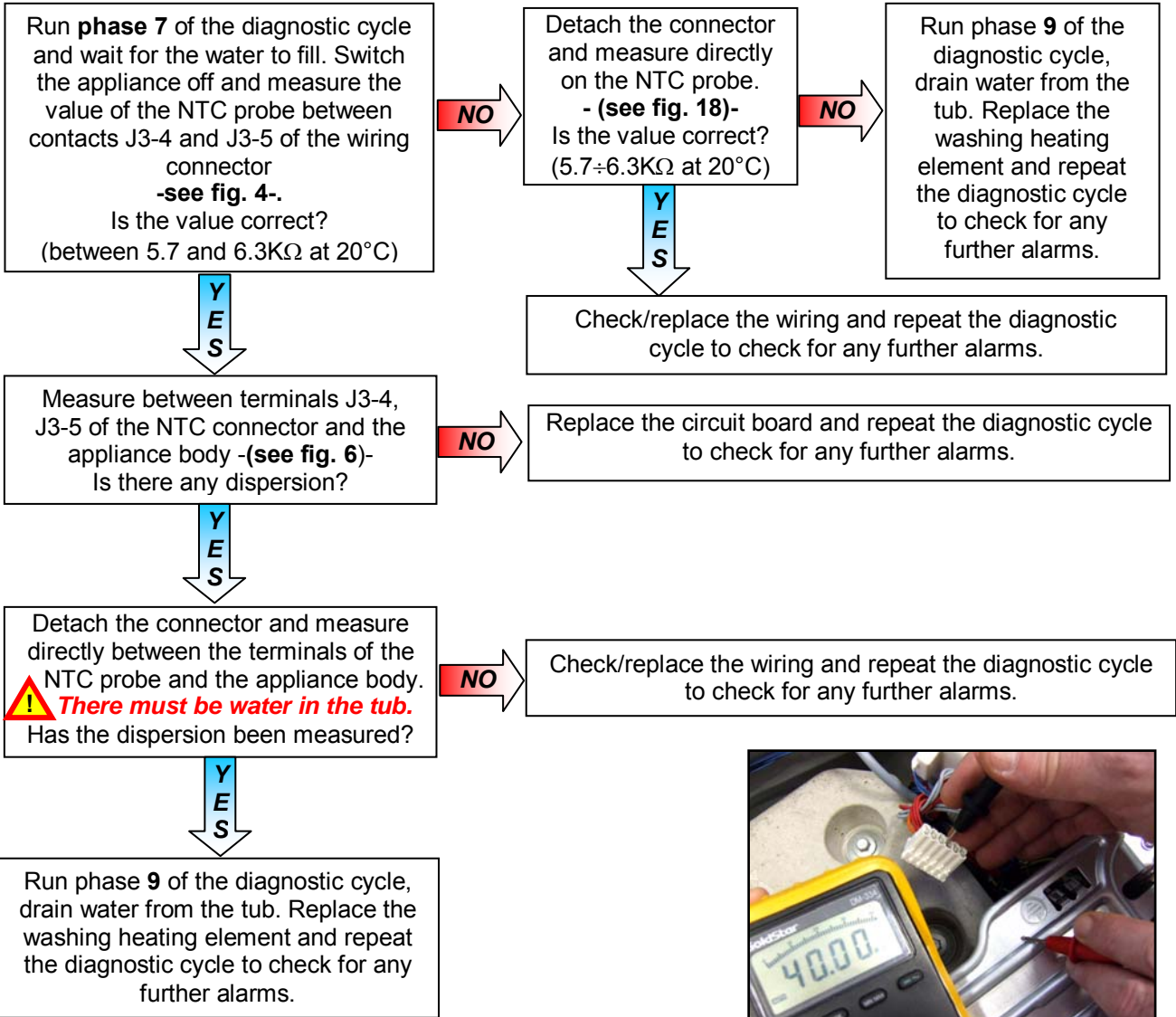


 If there are burns on the circuit board, see page 69

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

Checks to perform:

! Check that all the connectors are correctly inserted



! If there are burns on the circuit board, see page 69

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 ($5.7 \pm 6.3K\Omega$ at $20^\circ C$) between contacts J3-4 and J3-5 of the wiring connector (fig. 4). Is the value correct? (between 5.7 and $6.3K\Omega$ at $20^\circ C$)

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

YES

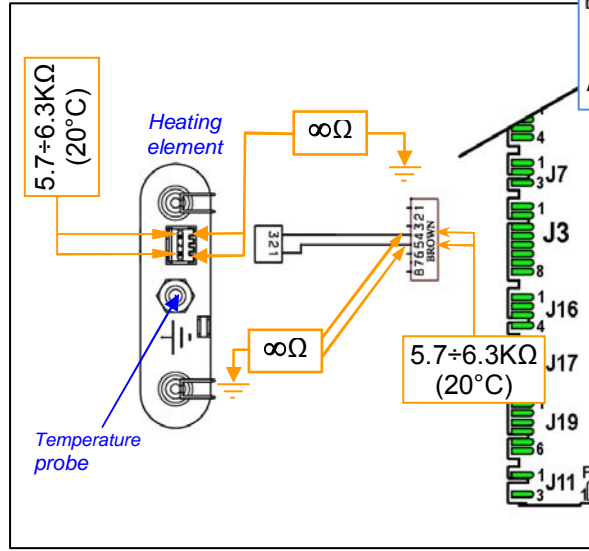
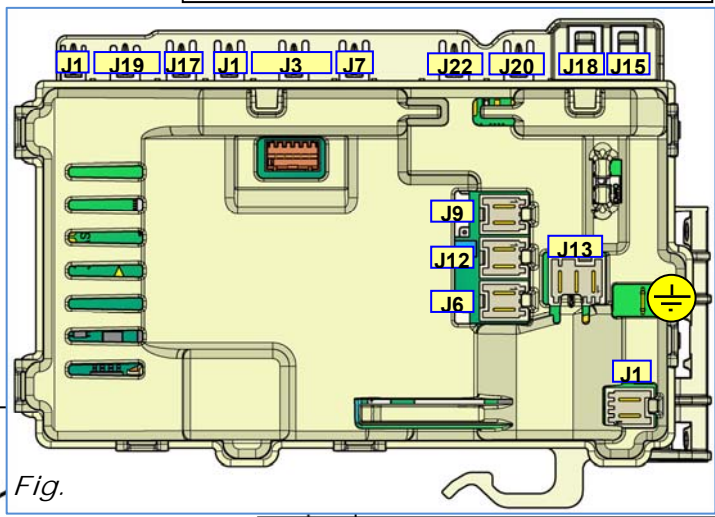
Run **phase 7** of the diagnostic cycle and wait for the water to fill. Wait in this phase for five minutes. Switch the appliance off and measure the value of the NTC probe between contacts J3-4 and J3-5 of the wiring connector (fig. 4). Is the value below $5K\Omega$?

NO → **!!CAUTION: THE WATER COULD BE SCALDING HOT!!**

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

YES

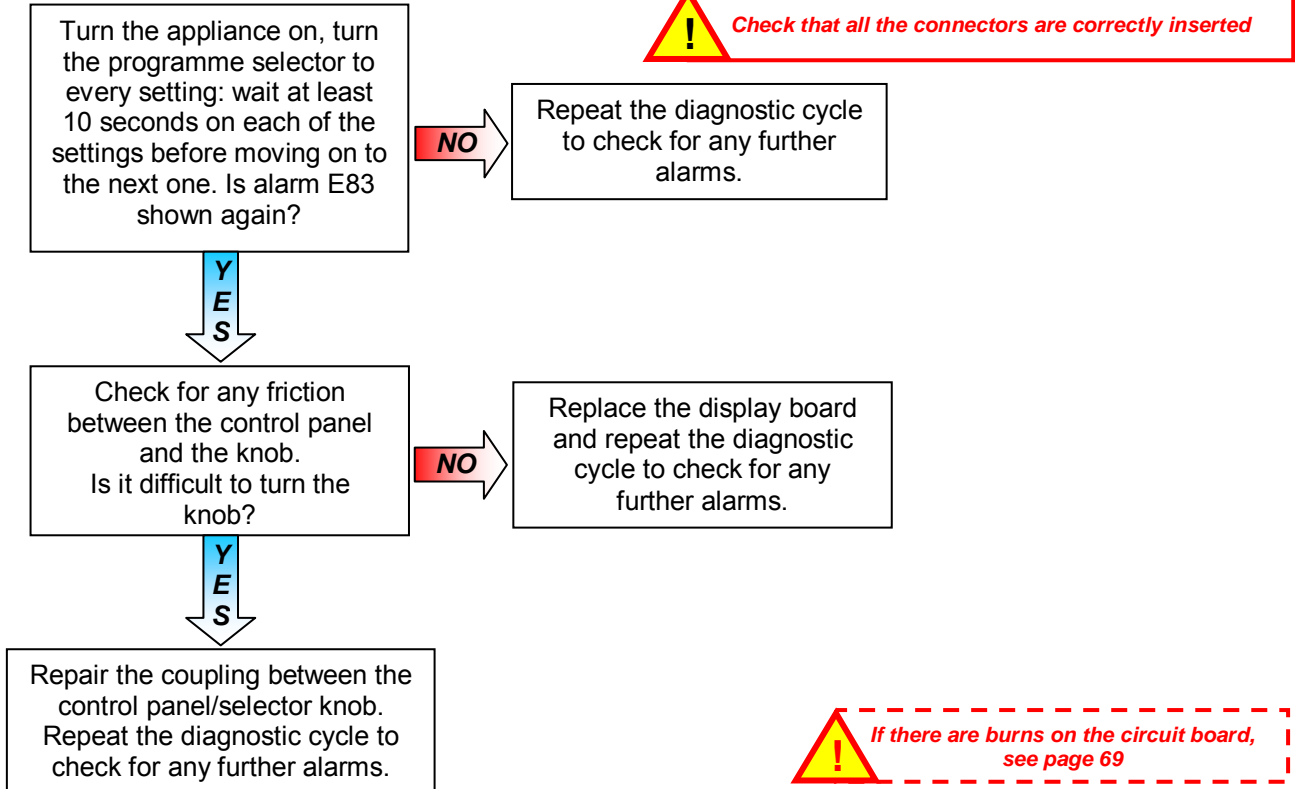
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.



! If there are burns on the circuit board, see page 69

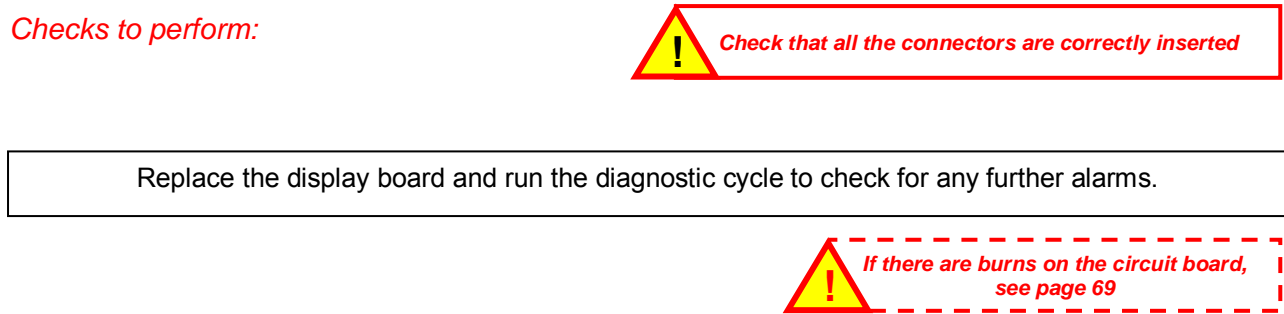
E83	E83: Error reading the programme selector code	E83
Selector position code not envisaged by the configuration data or configuration error		

Checks to perform:



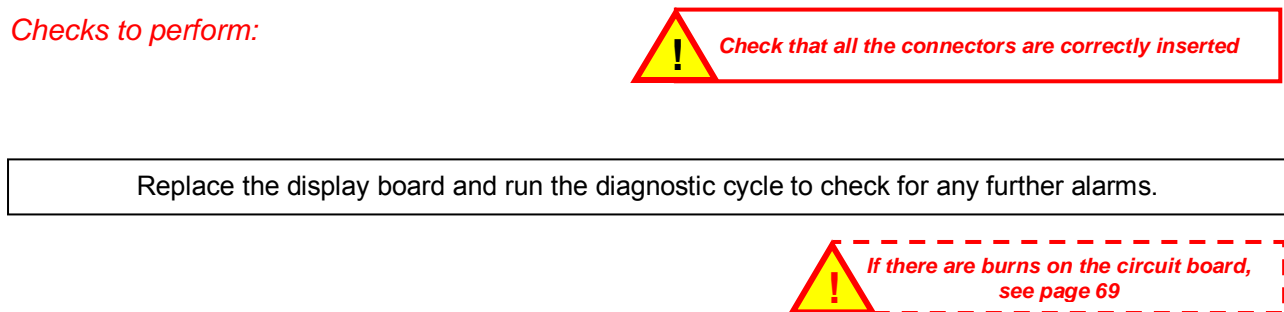
E86	E86: Programme selector configuration error	E86
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Checks to perform:



E87	E87: Display board microprocessor faulty	E87
------------	---	------------

Checks to perform:



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

Checks to perform:



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

YES →

See page 59

**N
O** ↓

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 J1-CB (motor control board).

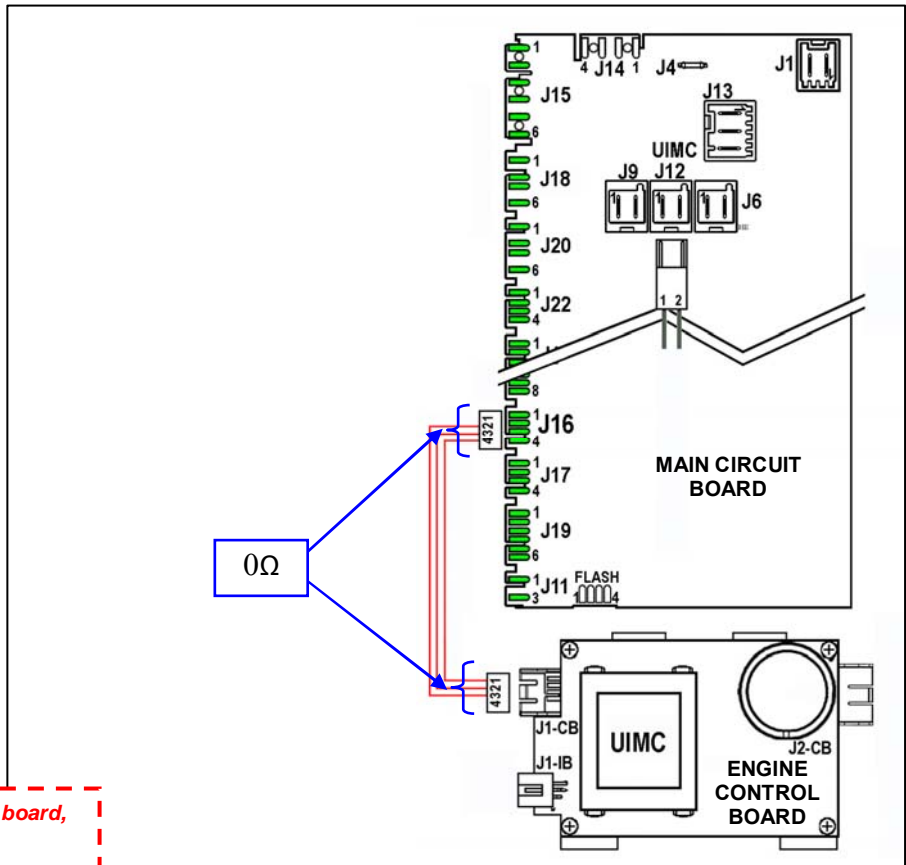
Is the wiring ok?

NO →

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

**Y
E
S** ↓

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



E91	E91: Communication error between the display board and the main circuit board (2st part)	E91
	Inconsistency between configuration values on starting the appliance	

Checks to perform:



Follow from page 58

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 J19 (main circuit board) and J2 (display board).
Is the wiring ok?



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



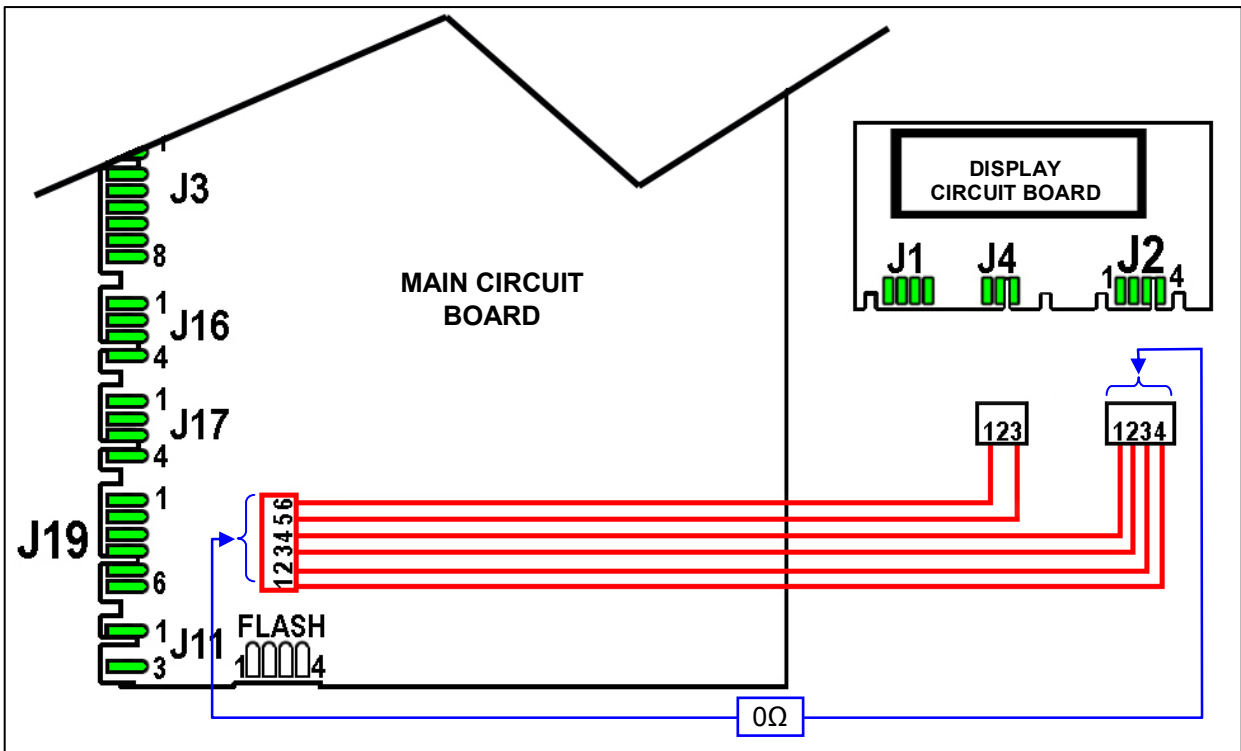
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.
Is the appliance still displaying E91?



Appliance ok



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



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

Checks to perform:



Check that all the connectors are correctly inserted

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

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

Checks to perform:



Check that all the connectors are correctly inserted

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

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

Checks to perform:



Check that all the connectors are correctly inserted

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

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

Checks to perform:



Check that all the connectors are correctly inserted

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

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 69

E9C	E9C: Display board configuration error	E9C
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Checks to perform:



Check that all the connectors are correctly inserted

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

E9E	E9E: Display board sensor/touch key faulty	E9E
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Checks to perform:



Check that all the connectors are correctly inserted

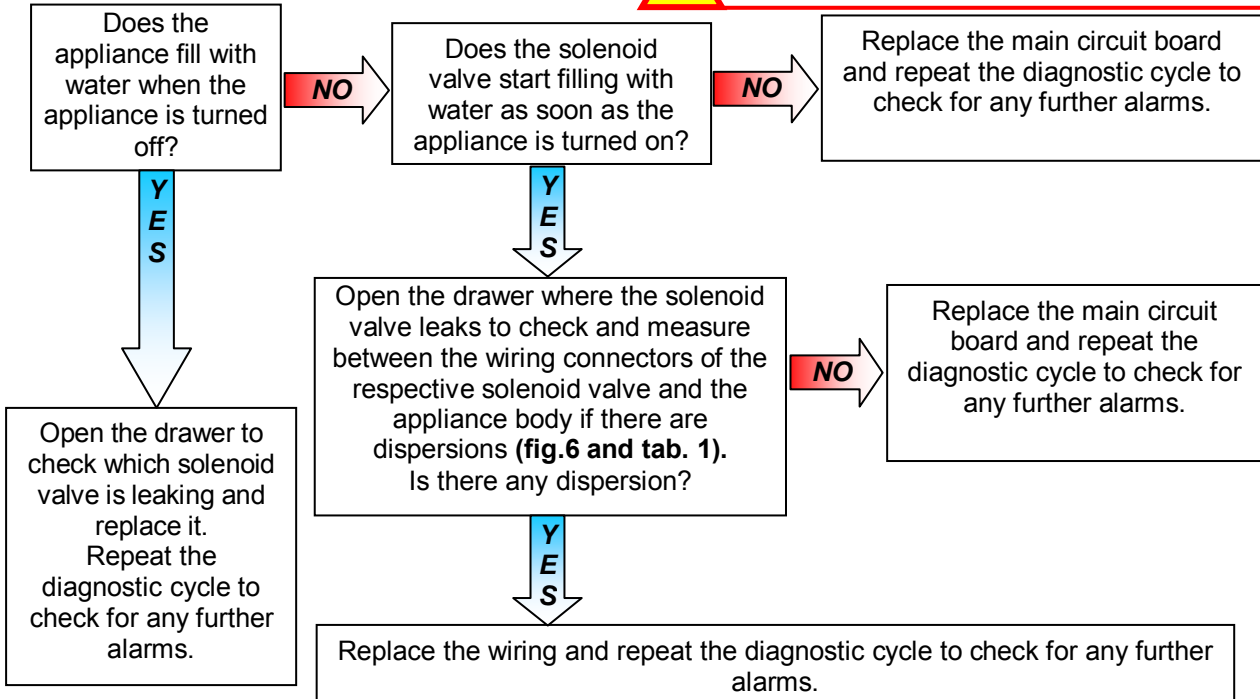
Display board faulty
Replace the display board and repeat the diagnostic cycle to check for any further alarms.



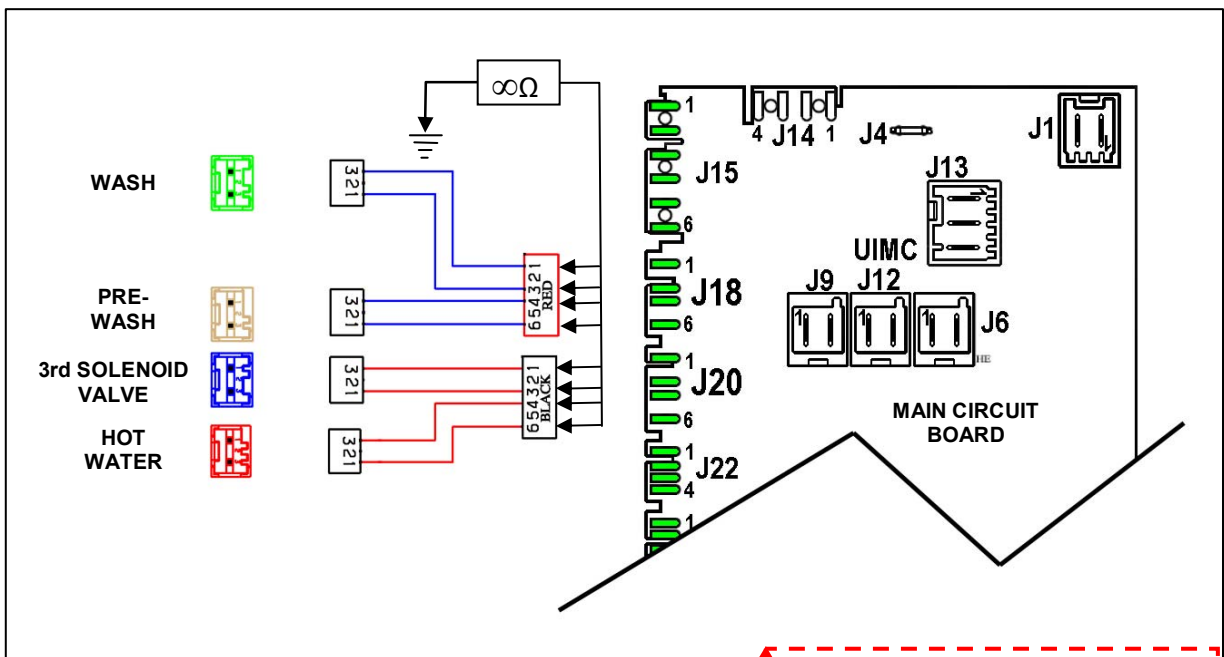
EC1	EC1: Water fill solenoid valves blocked	EC1
	The flowmeter has to fill water even with the solenoid valve not piloted	

Checks to perform:

Check that all the connectors are correctly inserted



<i>Tab. 1</i>
Between J18-1 and J18-3 wash solenoid valve
Between J18-4 and J18-6 pre-wash solenoid valve
Between J20-1 and J20-3 third solenoid valve
Between J20-4 and J20-6 hot water solenoid valve



If there are burns on the circuit board, see page 69

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 69

EF6	EF6: Reset appliance.	EF6
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Checks to perform:

Check that all the connectors are correctly inserted

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

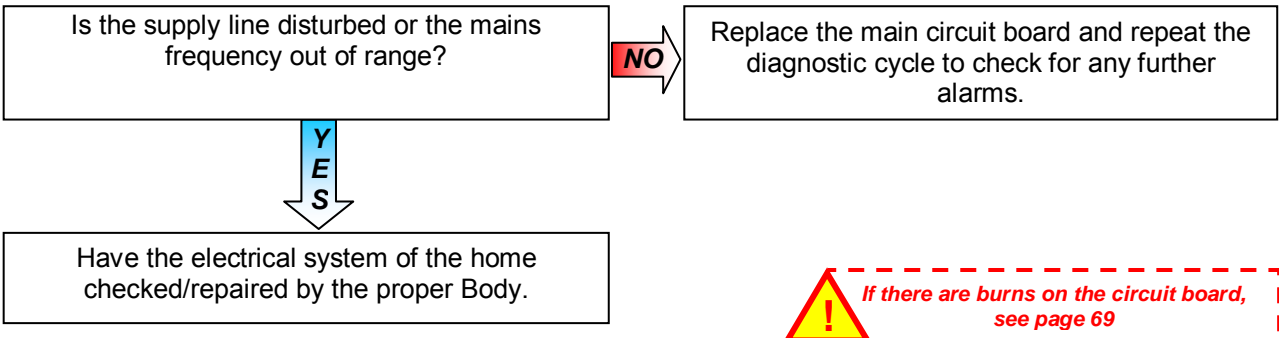
EH1	EH1: Mains frequency incorrect	EH1
Power supply frequency out of configured range		

Checks to perform:

Check that all the connectors are correctly inserted

Important!

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



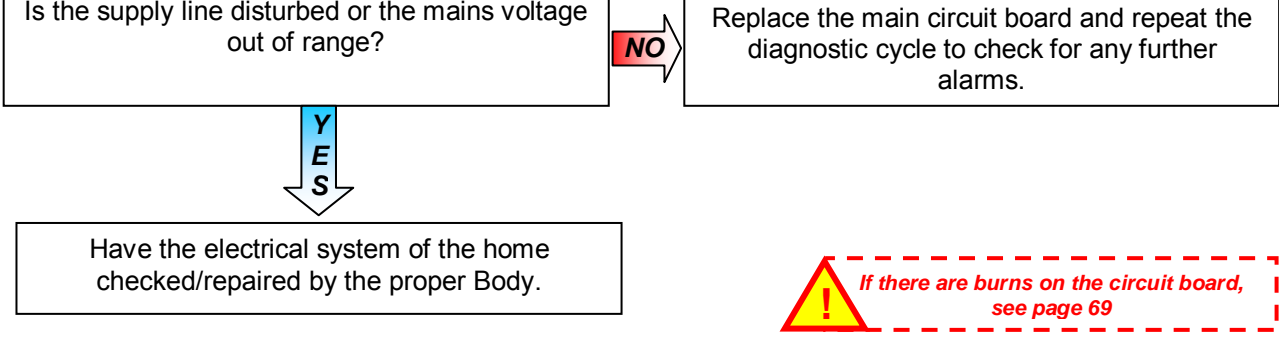
EH2	EH2: Supply voltage too high	EH2
Supply voltage value higher than the one configured (for more than 10 seconds)		

Checks to perform:

Check that all the connectors are correctly inserted

Important!

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



EH3	EH3: Supply voltage too low	EH3
	Supply voltage value higher than the one configured	

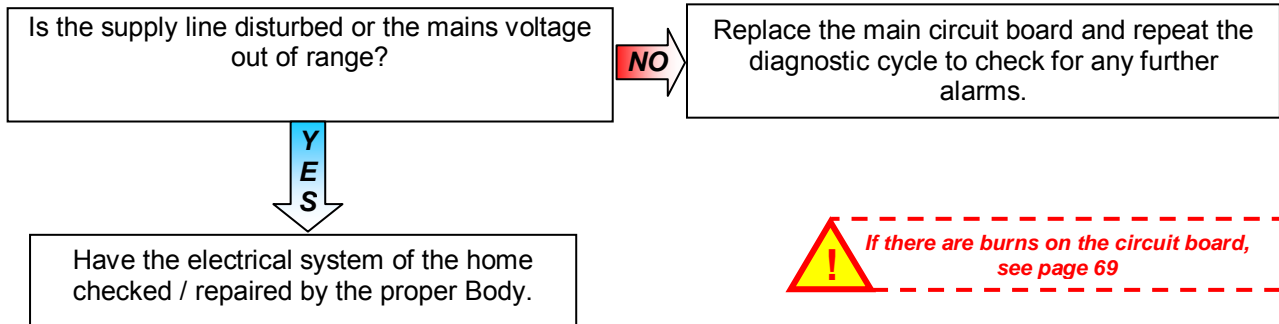
Checks to perform:



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.



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 69

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 69

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

Checks to perform:



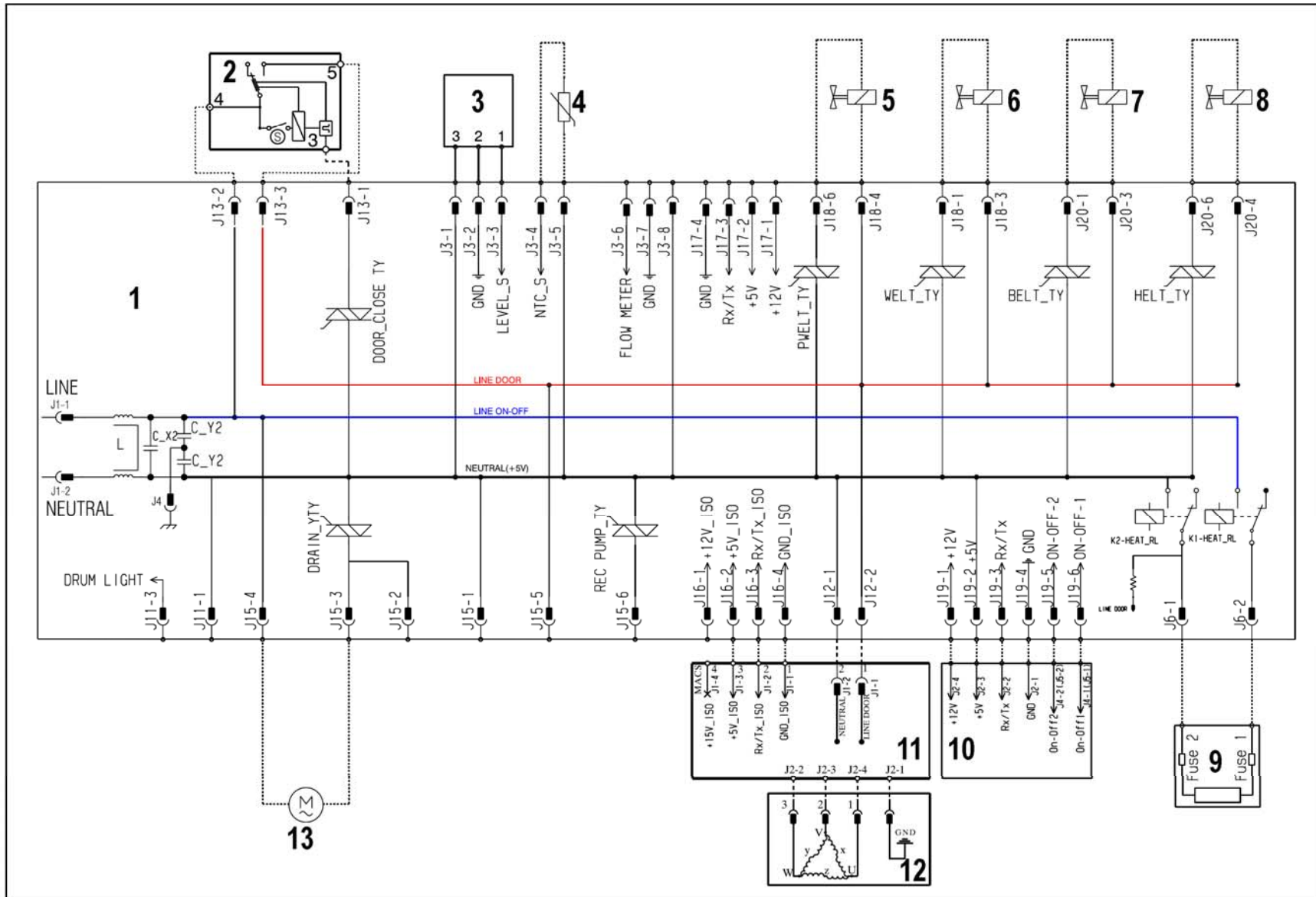
Check that all the connectors are correctly inserted

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 69

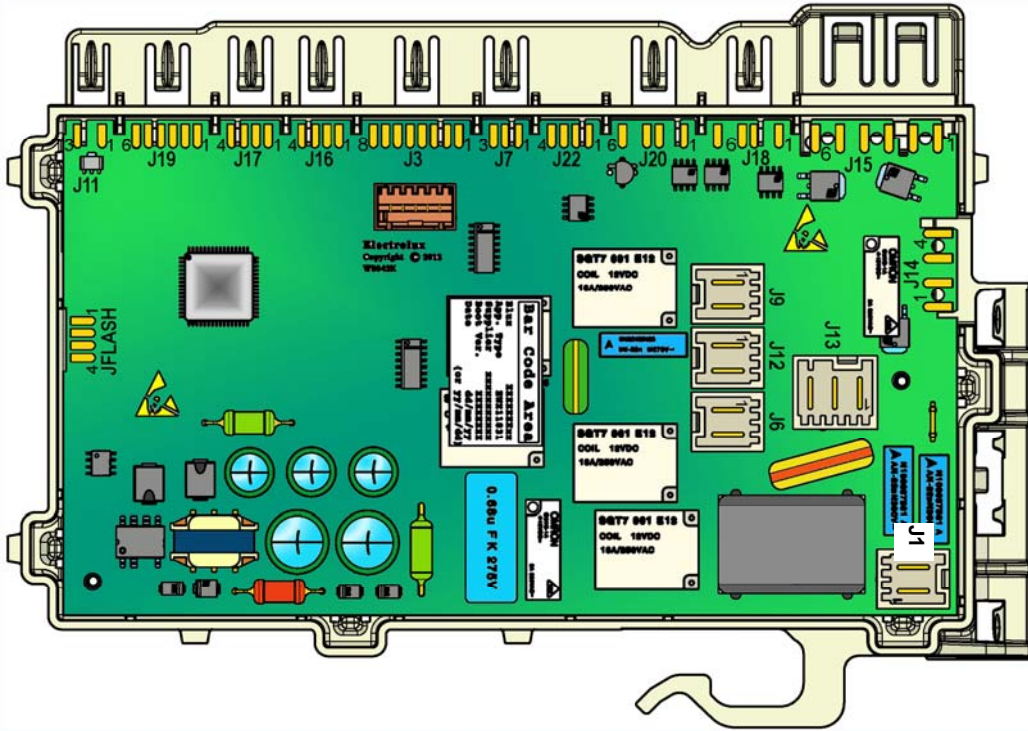
7 WM OPERATING CIRCUIT DIAGRAM



7.1 Key to circuit diagram WM

Appliance electrical components	PCB components		
<ol style="list-style-type: none"> 1. Main electronic circuit board 2. Door safety interlock 3. Electronic pressure switch 4. NTC (washing) 5. Pre-wash solenoid 6. Wash solenoid 7. Bleach solenoid valve 8. Hot water solenoid 9. Heating element 10. Display board 11. Motor control board (Inverter) 12. Triple-phase motor 13. Drain pump 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> DRAIN_YTY DOOR_CLOSE_TY REC_PUMP_TY PWELT_TY WELT_TY BELT_TY HELT_TY K1 K2 </td> <td style="width: 50%; vertical-align: top;"> Drain pump Triac Door interlock Triac Circulation pump TRIAC switch Pre-wash solenoid Triac Wash solenoid Triac Electronically controlled TRIAC bleach valve Hot water solenoid triac Heating element relay Heating element relay </td> </tr> </table>	DRAIN_YTY DOOR_CLOSE_TY REC_PUMP_TY PWELT_TY WELT_TY BELT_TY HELT_TY K1 K2	Drain pump Triac Door interlock Triac Circulation pump TRIAC switch Pre-wash solenoid Triac Wash solenoid Triac Electronically controlled TRIAC bleach valve Hot water solenoid triac Heating element relay Heating element relay
DRAIN_YTY DOOR_CLOSE_TY REC_PUMP_TY PWELT_TY WELT_TY BELT_TY HELT_TY K1 K2	Drain pump Triac Door interlock Triac Circulation pump TRIAC switch Pre-wash solenoid Triac Wash solenoid Triac Electronically controlled TRIAC bleach valve Hot water solenoid triac Heating element relay Heating element relay		

7.2 Main circuit board connectors

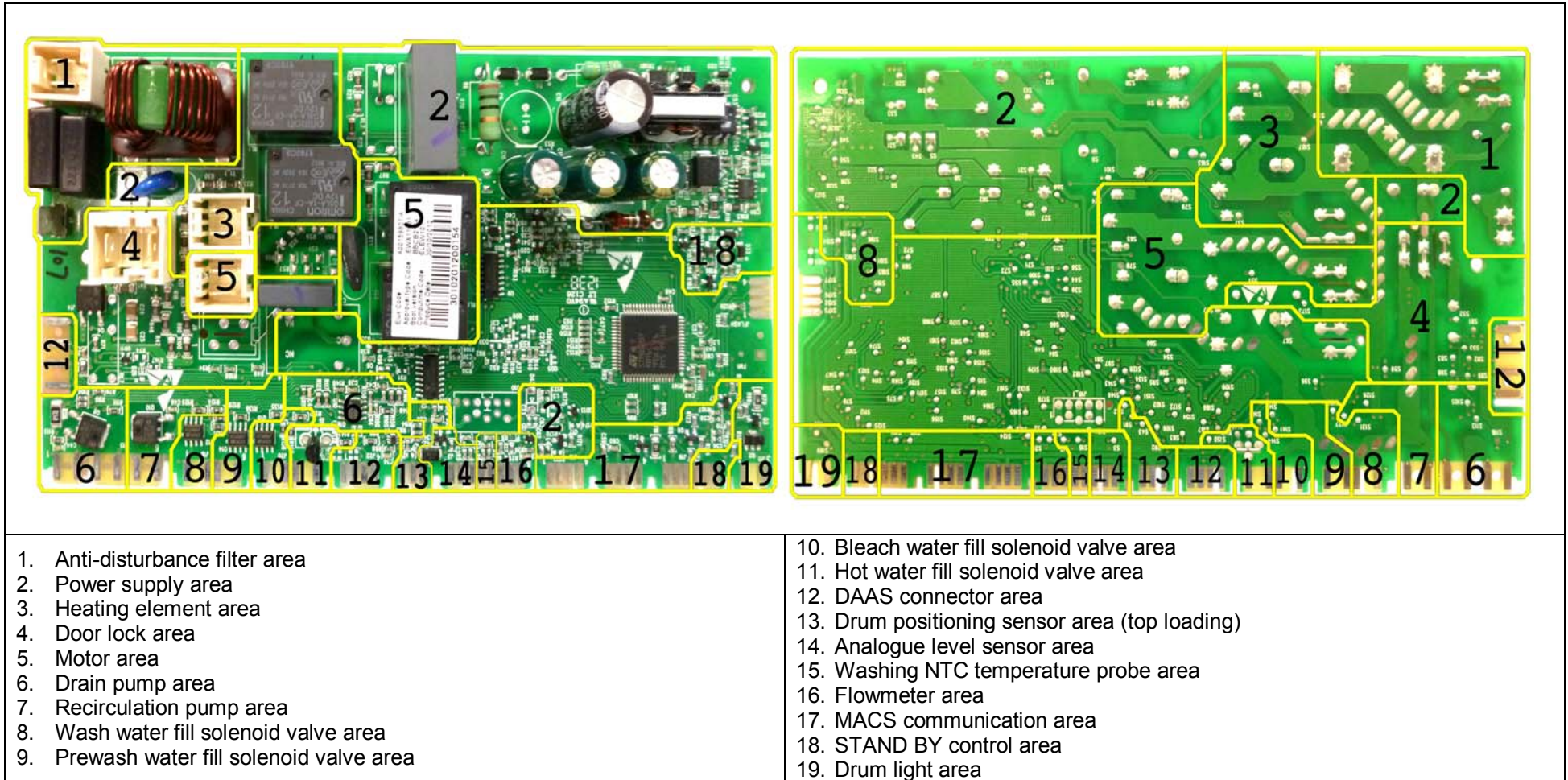


J1	J15
J1-1 line (neutral) J1-2 line	J15-1 Aqua control device (Neutral) J15-2 Aqua control device (Line) J15-3 Drain pump (Triac) J15-4 Drain pump (Line) J15-5 J15-6
J3	J16
J3-1 Analogue pressure switch (+5V) J3-2 Analogue pressure switch (GND) J3-3 Analogue pressure switch (signal) J3-4 NTC temperature probe (signal) J3-5 NTC temperature probe (+5V) J3-6 Flowmeter (signal) J3-7 Flowmeter (GND) J3-8 Flowmeter (+5V)	MACS communication J16-1 Vee 12V J16-2 5V J16-3 Rx/Tx J16-4 GND
J4	J17
J4 Ground	MACS communication J17-1 Vee 12V J17-2 5V J17-3 Rx/Tx J17-4 GND
J6	J18
J6-1 heating element (Neutral Relay) J6-2 heating element (Line Relay)	J18-1 Wash solenoid valve (Triac) J18-3 Wash solenoid valve (Line) J18-4 Pre-wash solenoid valve (Line) J18-6 Pre-wash solenoid valve (Triac)
J13	J19
J13-2 Door lock (Line) J13-3 Door lock (Line) J13-1 Door lock (PTC Triac)	J19-1 Vee 12V J19-2 5V J19-3 Rx/Tx J19-4 GND J19-5 ON/OFF 2 J19-6 ON/OFF 1
J14	J20
Serial interface: J14-1 ASY_IN J14-2 ASY_OUT J14-3 +5V J14-4 GND	J20-1 Bleach solenoid valve (Triac) J20-3 Wash solenoid valve (Line) J20-4 Hot water solenoid valve (Triac) J20-6 Hot water solenoid valve (Line)

7.3 Burns on the main circuit board EWX11831

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

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



REVISION:

Revision	Date	Description	Author	Approved by
00	09/2013	Document Creation	DMM	XX – 0X/201X
01	10/2013	Changed table with diagram and legend	DMM	XX – 0X/201X