

© ELECTROLUX HOME PRODUCTS
Customer Care - EMEA
Training and Operations Support
Technical Support

Publication
number

599 75 18-74

EN

Edition: 04/2012 - Rev. 00

Washing machines

**Guide to diagnostics of
electronic controls**

EWM09312

**THE
INSPIRATION RANGE**

TC4 & TC5

Index

1	INTRODUCTION.....	5
1.1	Purpose of this manual.....	5
1.2	Cautions.....	6
1.3	How to proceed.....	7
2	WM APPLIANCE CONTROL PANELS.....	8
3	DIAGNOSTICS SYSTEM.....	8
3.1	Accessing diagnostics.....	8
3.2	Quitting the diagnostics system.....	8
3.3	Phases of the diagnostics test.....	9
4	ALARMS.....	11
4.1	Displaying the alarms to the user.....	11
4.1.1	Styling TC4.....	11
4.1.2	Styling TC5.....	11
4.2	Reading the alarms.....	12
4.2.1	Viewing the TC5 aesthetic alarm.....	12
4.2.2	Example of alarm display.....	13
4.2.3	Behaviour of the alarms during diagnostic testing.....	13
4.3	Rapid reading of alarms.....	13
4.4	Deleting the last alarm.....	14
4.5	ALARM SUMMARY TABLE.....	15
4.6	Notes on the behaviour of certain alarms.....	18
5	CANNOT ACCESS THE DIAGNOSTICS PROGRAMME.....	19
5.1	None of the LEDs on the circuit board light up.....	19
6	TROUBLESHOOTING BASED ON ALARM CODES.....	20
	E11: Water fill difficulty during washing.....	20
	E13: Water leaks.....	22
	E21: Drain difficulty.....	24
	E23: Problems with the component (triac) controlling the drain pump.....	26
	E24: Sensing circuit of the component (triac) controlling the drain pump faulty.....	28
	E32: The analogue pressure switch causes an error during calibration.....	29
	E35: Water level too high.....	30
	E38: Internal pressure chamber is clogged.....	31
	E41: Door open (device with 3 connections with flange).....	32
	E41: Door open (device with 3 connections and no flange).....	34
	E42: Problems opening door (device with 3 connections with flange).....	36
	E42: Problems opening door (device with 3 connections and no flange).....	38
	E44: Door closed "sensing" circuit faulty.....	42
	E45: Problems with the "sensing" circuit of the component (triac) controlling the door delay system.....	42
	E51: Motor power TRIAC short-circuited.....	43
	E52: No signal from motor tachometric generator (<i>first part</i>).....	44
	E52: No signal from motor tachometric generator (<i>second part</i>).....	46
	E53: Problems with the "sensing" circuit of the component (Triac) powering the motor.....	48
	E54: Motor relay contacts sticking.....	49
	E62: Overheating during washing.....	50
	E66: Heating element power supply relay faulty.....	51
	E68: Washing heating element leakage.....	52
	E69: Washing heating element damaged.....	53
	E6A: Heating relay sensing faulty.....	54
	E6H: Heating element power relay faulty (incongruence between sensing and relay status).....	54
	E71: Washing NTC probe faulty.....	55
	E74: NTC probe improperly positioned.....	56
	E83: Error reading the programme selector code.....	57
	E86: Programme selector configuration error.....	57
	E87: Display board microprocessor faulty.....	57
	E91: Communication error between the display board and the main circuit board.....	58
	E92: protocol incongruence.....	59
	E93: Appliance configuration error.....	59
	E94: Incorrect configuration of washing cycle.....	59
	E97: Inconsistency between control selector version and configuration data.....	59
	E9C: Display board configuration error.....	59
	E9E: Display board sensor/touch key faulty.....	59
	EC1: Water fill solenoid valves blocked.....	60
	EC4: AGS current sensor faulty error.....	61

Guide to diagnostics of EWM09312 electronic controls

EF1: Drain hose blocked/kinked/too high; drain filter clogged/dirty	61
EF2: Excessive detergent dosing; drain hose kinked/blocked; drain filter dirty/clogged	61
EF3: Aqua Control device triggered.....	61
EF4: Water fill pressure too low and solenoid valve open	61
EF5: Unbalanced load, spin phases skipped.	62
EF6: Reset appliance.....	62
EH1: Mains frequency incorrect.....	62
EH2: Supply voltage too high	63
EH3: Supply voltage too low.....	63
7 OPERATING CIRCUIT DIAGRAM WM WITH AQUA CONTROL	64
7.1 Key to circuit diagram WM	65
7.2 Main circuit board connectors	66
7.3 Burns on the main circuit board EWM09312	67

1 INTRODUCTION

1.1 Purpose of this manual

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

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

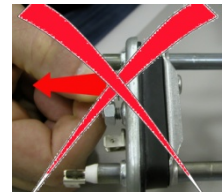
The diagnostics system is used by Service Technicians to:

- ◆ Read alarms
- ◆ delete the alarm stored,
- ◆ test the appliance operation.

1.2 Cautions



- Any work on electrical appliances must only be carried out by qualified personnel.
- Before servicing an appliance, check the efficiency of the electrical system in the home using appropriate instruments. For example: refer to the indications provided/illustrated in the <<metrater>> course at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.
When the work is finished check that the equipment's safety conditions have been reinstated, as though it were straight off the assembly line.
- If the circuit board has to be handled/replaced, use kit ESD (Cod. 405 50 63-95/4) to avoid static electricity from damaging the circuit board, see S.B. No. 599 72 08-09 or consult the course "Electrostatic charges" at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.
- This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to cut the power supply.
- 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".

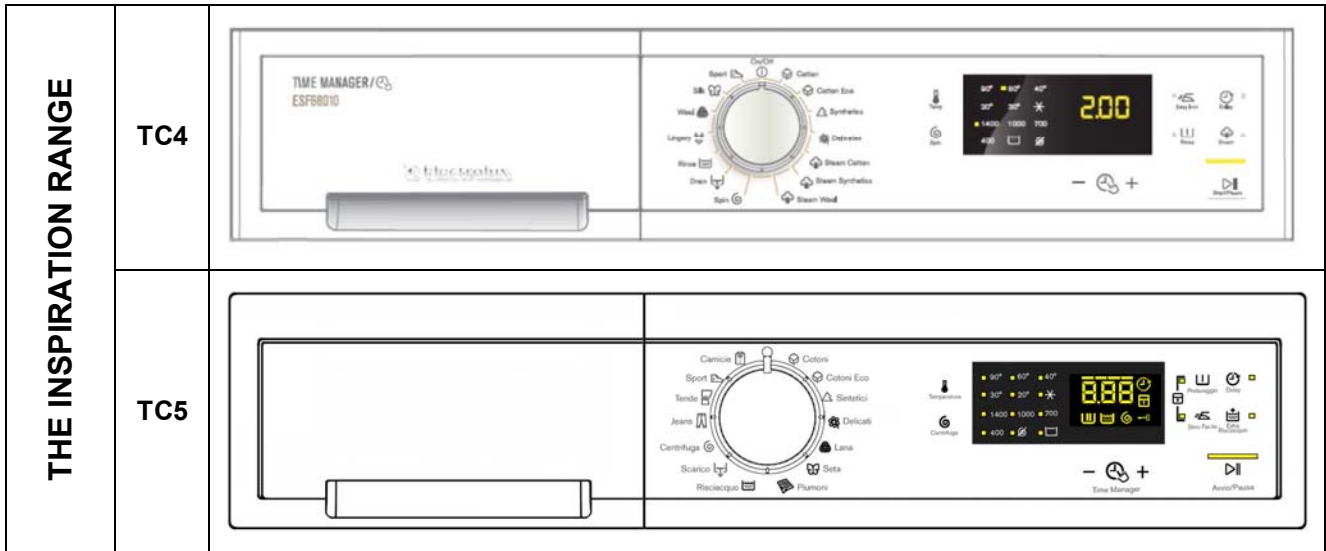


1.3 How to proceed

1. Identify the type of control in question (**page 8**) and access the diagnostic cycle. (**See page 8**)
2. Read the alarm stored (**page 12**) and consult the instructions regarding the “alarm codes”, **page 15÷17**.
3. Delete the alarms stored. (**Page 14**)
4. If you are unable to access the diagnostic mode, consult the chapter entitled “The diagnostics system cannot be accessed”. (**page 19**)
5. Should the main electronic circuit board need to be replaced, make sure there are no burns. (**See page 67**)
6. After all intervention, check the appliance is operating correctly using the diagnostic cycle (**page 8**)
7. Delete any alarm that may have been stored during the diagnostics operations (**page 14**)

2 WM APPLIANCE CONTROL PANELS



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



3 DIAGNOSTICS SYSTEM

3.1 Accessing diagnostics

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

TC4	TC5
	
<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 sensor option (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; turning the programme selector dial clockwise runs the diagnostic cycle for the operation of the various components and reads any alarms.</p>	

3.2 Quitting the diagnostics system

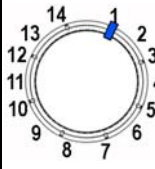

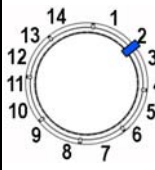

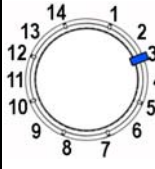

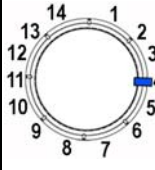

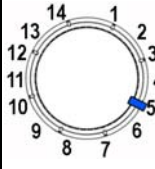

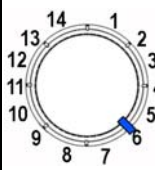



→ To exit the diagnostics system, turn the selector dial to position 0, turn the appliance back on and return the dial to position 0.



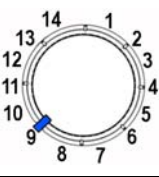

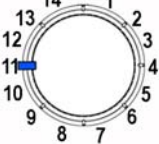

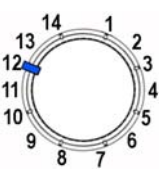
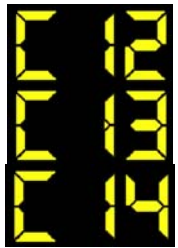
3.3 Phases of the diagnostics test

Irrespective of the type of electronic board and selector configuration, once the diagnostics system has been activated, turn the selector dial **clockwise** and you can check the various components and alarm reading.

Simultaneously, a selector control code appears on the display for **two** seconds, before showing 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 	<ul style="list-style-type: none"> - They following come on in sequence: the LEDs, in groups the display symbols and the background light that light it up, - Press a sensor to turn on the group of display icons or the corresponding LED and the buzzer sounds at the same time. 	Always active	User interface functioning	
2 	<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	 Water level in the tub (mm)
3 	<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	 Water level in the tub (mm)
4 	<ul style="list-style-type: none"> - Door safety interlock - Solenoid 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 	<ul style="list-style-type: none"> - Door safety interlock - Third solenoid valve (where featured) 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to third solenoid valve compartment	 Water level in the tub is displayed (mm)
6 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Door safety interlock - Wash solenoid, if the water in the tub is not enough to cover the heating element - Heating element - Weight sensor (if present, an extra litre of water is loaded) - Circulation pump 	Door closed Water level above the heating element. Maximum time of 10 mins or up to 90°C. (*)	Reheating Circulation	 Temperature in °C measured using the NTC probe.

8		<ul style="list-style-type: none"> - Door safety interlock - Wash solenoid, 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) 	<p>Door closed Water level above the heating element</p>	<p>Check for leaks from the tub.</p>	 Drum speed in rpm/10
9		<ul style="list-style-type: none"> - Door safety interlock - Drain pump - Motor up to 650 rpm then at maximum spin speed (**) 	<p>Door closed Water level lower than anti-boiling level for spinning.</p>	<p>Drain, calibration of analogue pressure switch and spin.</p>	 Drum speed in rpm/10
10	-----	-----	-----	-----	-----
11		<p>- Reading/Deleting the last alarm</p>	----	----	
12 ÷ 14		<ul style="list-style-type: none"> - The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence, - Press 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. 	<p>Always active</p>	<p>User interface functioning</p>	

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

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

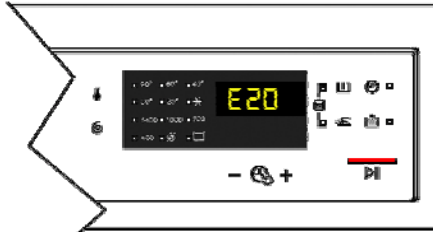
4 ALARMS

4.1 Displaying the alarms to the user

4.1.1 Styling TC4

When a problem arises with the appliance generating a “WARNING” or “ALARM” this is shown in three digits (where the remaining time for the cycle to finish is shown) and simultaneously by the yellow sensor LED flashing STOP/PAUSE and the alarm (even if the user has deactivated it) gives off three short beeps every twenty seconds for five minutes.

Once the problem has been resolved, the alarm stops ringing and the code shown disappears.



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

- ↪ **E10 - Water fill difficulty (tap closed)**
- ↪ **E20 - Drain difficulty (filter dirty)**
- ↪ **E40 - Door open**
- ↪ **EF0 – If created by an overdose of detergent (if configured)**

4.1.2 Styling TC5

The alarms are displayed by the flashing red LED of the START/PAUSE sensor and by one of the three LEDs in the lower right hand corner of the display.

As soon as a problem arises these LEDs start flashing (half a second on and half a second off), until the problem is resolved.

The table below illustrates the combinations of LED lightings.

	E10	E20	E40
Water fill difficulty (tap closed)			
Drain difficulty (filter fouled)			
Door open			

While the alarms listed below:

- ↪ **EF0 - If generated by water leaks inside the appliance (Aqua Control System)**

The intervention of a service engineer is required

For the alarm on the other hand:

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

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

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

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

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

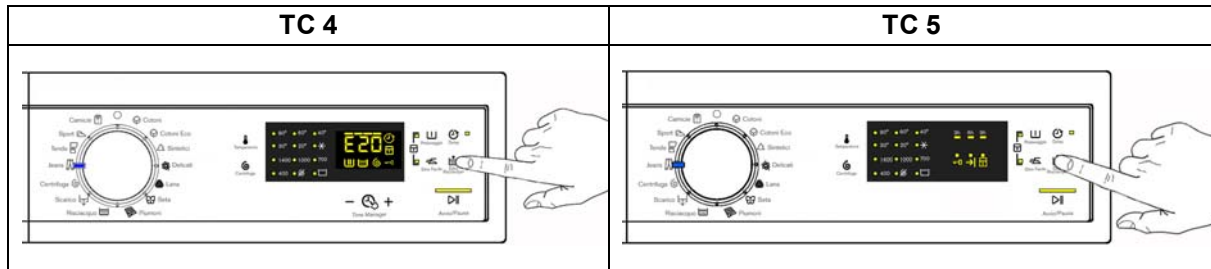
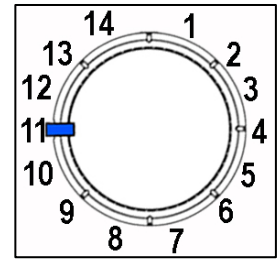
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

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

4.2 Reading the alarms

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

- Enter diagnostics mode
- Irrespective of the type of circuit board and configuration, turn the programme selector knob **clockwise** to the **eleventh position** and the last alarm is displayed.
- in order to view previous alarms, sequentially touch the sensor (as shown in the diagram below)
- To return to the last alarm, touch the START/PAUSE sensor.



4.2.1 Viewing the TC5 aesthetic alarm

The alarm is displayed by a repeated flashing sequence of the START/PAUSE sensor red and yellow lights (0.5 seconds on, 0.5 seconds off with a 2.5 second pause between sequences).

- START/PAUSE sensor indicator with red light → indicates the first digit of the alarm code (family)
- START/PAUSE sensor indicator with yellow light → indicates the second digit of the alarm code (number inside the family)

These two LEDs are present in all models.

















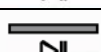
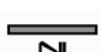
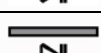
Notes:

- The first letter of the alarm code “E” (Error) is not displayed, since this letter is common to all alarm codes.
- Alarm code families are expressed in hexadecimals; and therefore the letters:
 - **A** is represented by **10** flashes
 - **B** is represented by **11** flashes
 - ...
 - **F** is represented by **15** flashes
- Configuration errors are displayed by all LEDs flashing (user interface not configured).

4.2.2 Example of alarm display

Let us take alarm E43 (problem with the door safety TRIAC) as an example; the following will be displayed:

- a sequence of four flashes of the START/PAUSE sensor red light indicates the first number **E4**3;
- the sequence of three flashes of the START/PAUSE sensor with the yellow light indicates the second number **E4****3**.

START/PAUSE sensor with red light			START/PAUSE sensor with green light		
On/off	Time (Sec.)	Value	On/off	Time (Sec.)	Value
	0.5	1		0.5	1
	0.5			0.5	
	0.5	2		0.5	2
	0.5			0.5	
	0.5	3		0.5	3
	0.5			0.5	
	0.5	4		2.5	
	0.5				0.5
	1.5	Pause			

4.2.3 Behaviour of the alarms during diagnostic testing

All alarms are enabled during diagnostic testing of the components.

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):

→ 10 seconds after turning on the appliance, simultaneously touch the **START/PAUSE** sensor and the nearest **sensor option** (as if accessing DIAGNOSTICS) for at least 2 seconds:

In the TC4 aesthetics, the display shows the last alarm.

In the TC5 aesthetics, the LEDs initially switch off, and then display the flashing sequence indicating the last alarm.

→ The alarm continues to be displayed for the required time and then returns to its normal function or until a sensor is touched.


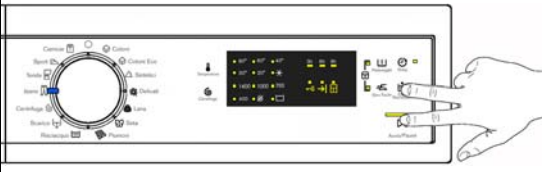
→ The alarm reading system is as described in para. 4.2.

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

4.4 Deleting the last alarm

It is good practice to cancel the alarms stored:

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

TC 4	TC 5
	
<ol style="list-style-type: none"> 1. Enter the diagnostic mode, 2. Turn the programme selector clockwise to position eleven (alarm reading) 3. Simultaneously press the START/PAUSE sensor and the nearest sensor option (as shown in the diagram). 4. Keep the buttons pressed until: In the TC4 aesthetics: "E00" appears on the LCD screen (at least 5 seconds). In the TC5 aesthetics: the LEDs stop flashing (at least 5 seconds). 	

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 is 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	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	36
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	40
E44	Faulty sensing by door delay system	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	42
E45	Faulty sensing by door delay system triac	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET	42

Guide to diagnostics of EWM09312 electronic controls

Alarm	Description	Possible fault	Machine status/action	Reset	Page
E51	Motor power triac short-circuited	Current leakage from motor or from wiring; Main PCB faulty;	Cycle stops with door open (after 5 attempts)	ON/OFF	43
E52	No signal from motor tachometric generator	Wiring faulty; Motor faulty; Main circuit board faulty.	Cycle stops with door locked (after 5 attempts)	ON/OFF	44
E53	“Sensing” faulty triac motor	Main circuit board faulty.	Cycle blocked	RESET	48
E54	Motor relay contacts sticking	Current leakage from motor or from wiring; Main PCB faulty;	Cycle blocked (after 5 attempts)	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 relay status)	Main PCB faulty;	Safety water fill Cycle stops with door closed.	ON/OFF RESET	51
E68	Current leak to the ground	Current leakage between heating element and ground.	The heating phase is skipped	START/RESET	52
E69	Heating element interrupted	Wiring faulty; Heating element for washing interrupted (thermal fuse open); Main PCB 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 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
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 Main circuit board 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	59
E93	Appliance configuration error	Main PCB faulty (incorrect configuration data)	Cycle blocked	ON/OFF	59
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data)	Cycle blocked	ON/OFF	59

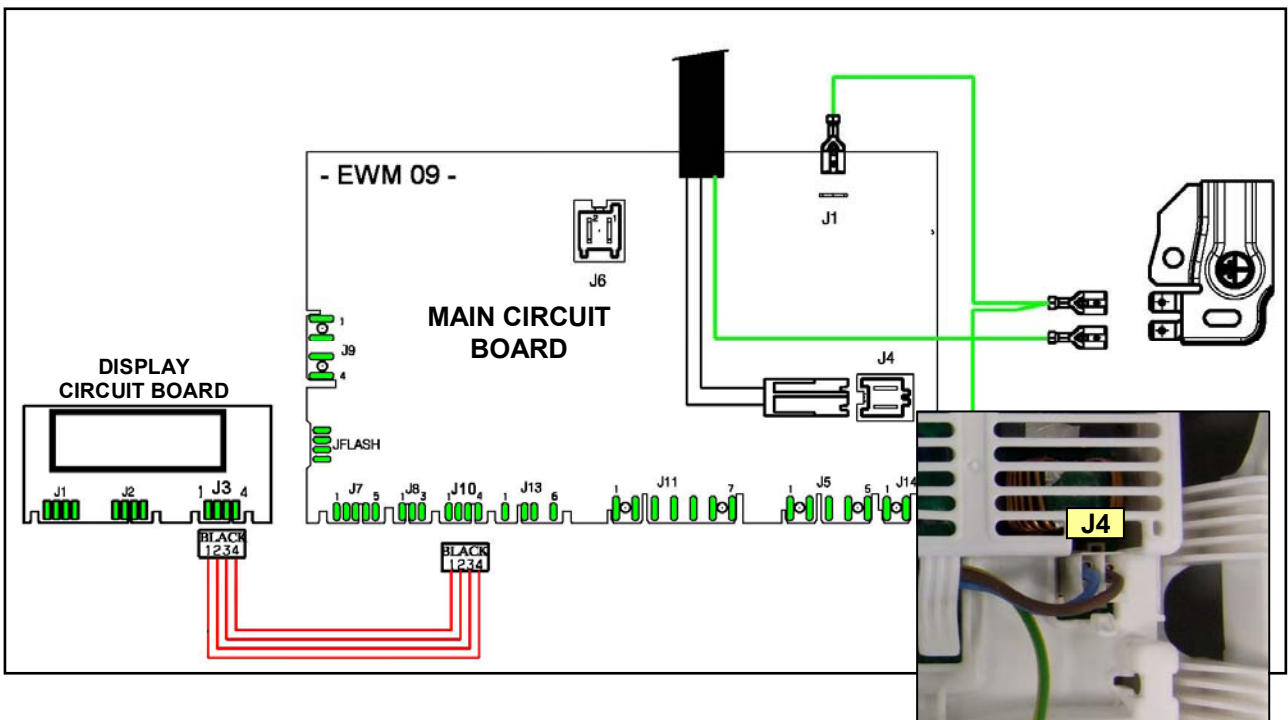
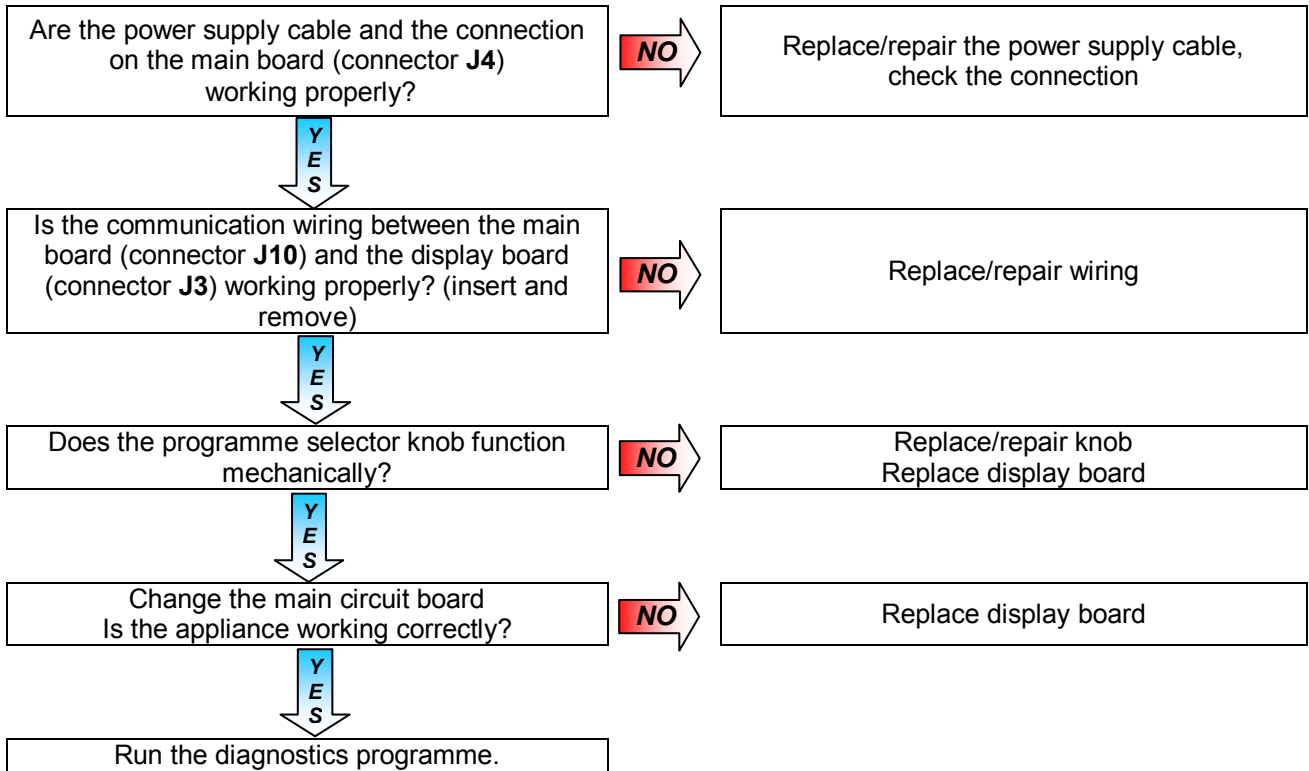
Alarm	Description	Possible fault	Machine status/action	Reset	Page
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked	RESET	59
E9C	Display board configuration error	Display board faulty	-----	START ON/OFF RESET	59
E9E	Display board sensor/touch key faulty	Display board faulty	-----	ON/OFF	59
EC1	Electronically controlled valve blocked with operating flowmeter	Faulty cabling; Faulty/blocked solenoid, PCB faulty,	Cycle stops with door locked Drain pump continues to operate (5 mins., then 5 mins. off. for 5 mins. etc.)	RESET	60
EC4	AGS current sensor faulty.	Main board faulty.	Spin speed reduced to safety speed of 150 rpm	RESET	61
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	61
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	61
EF3	Aqua control system intervention	Water leaks onto base frame; Aqua control system faulty: Drain pump winding interruption/overheating.	Appliance drains	ON/OFF RESET	61
EF4	Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open	Tap closed, water fill pressure too low	-----	RESET	61
EF5	Unbalanced load	Final spin phases skipped.	-----	START/RESET	62
EF6	Reset	If it continues, replace the main board.	No action to be taken	-----	62
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	62
EH2	Supply voltage too high	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	63
EH3	Supply voltage too low	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF	63

4.6 Notes on the behaviour of certain alarms

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

5 CANNOT ACCESS THE DIAGNOSTICS PROGRAMME

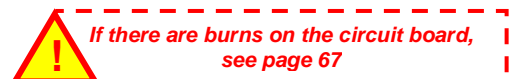
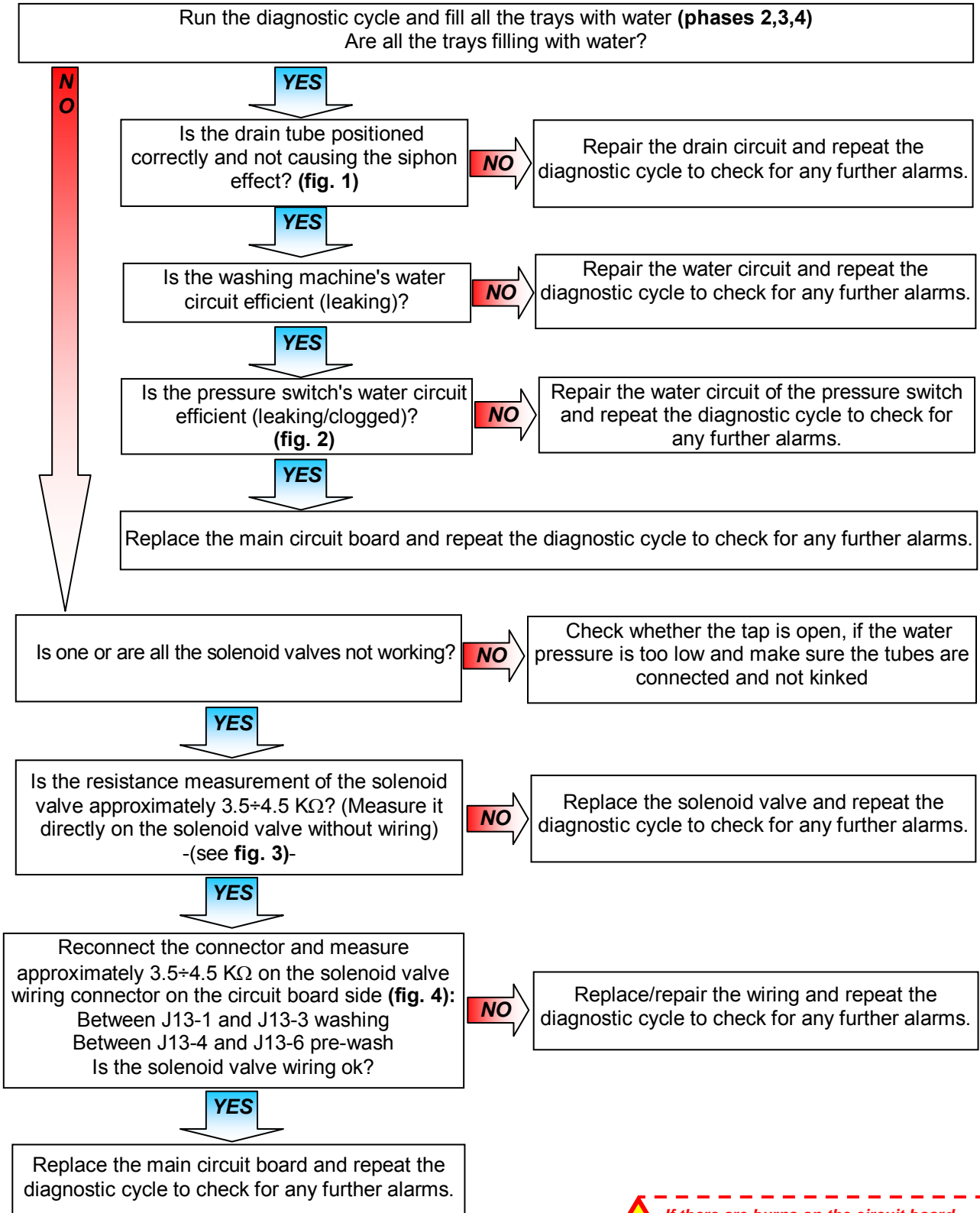
5.1 None of the LEDs on the circuit board light up



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:



E11

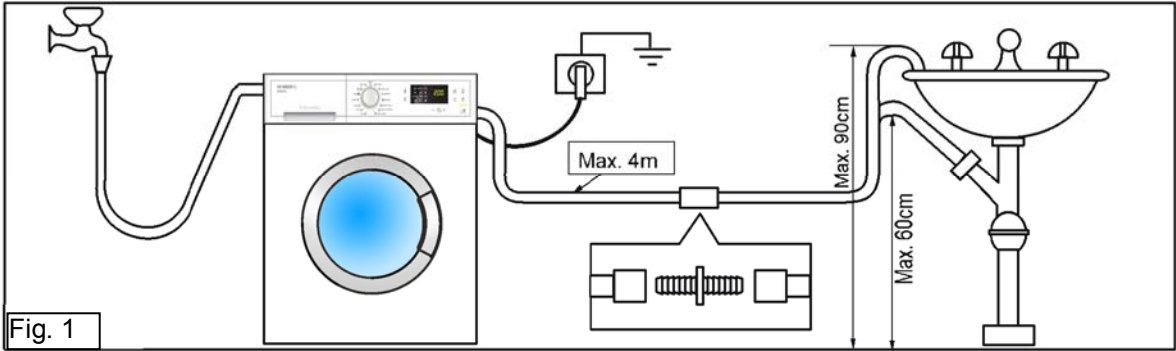


Fig. 1

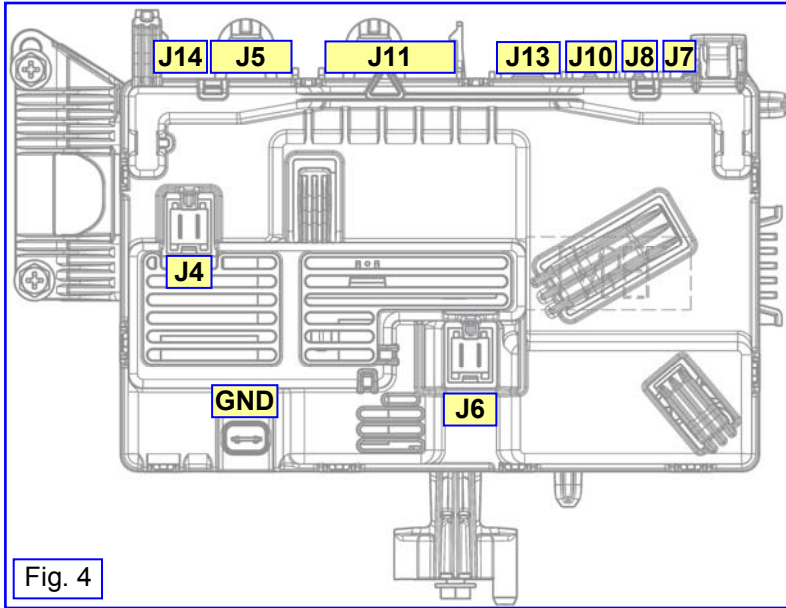


Fig. 4

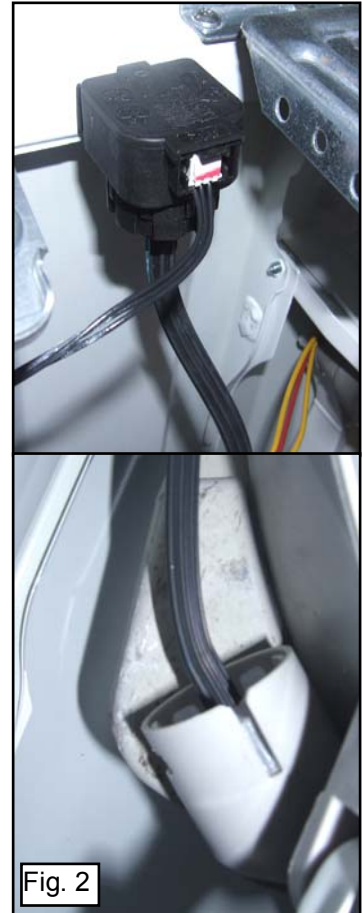
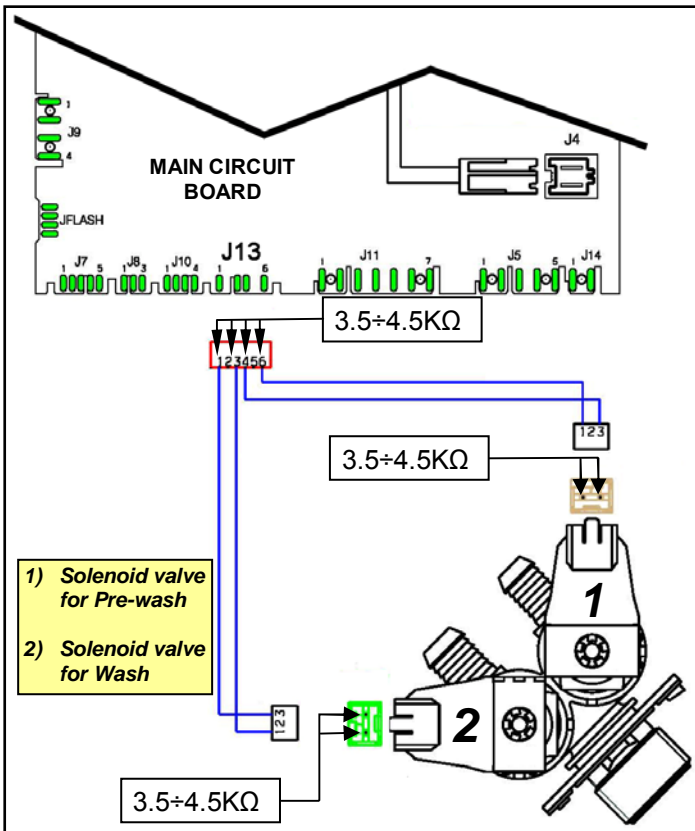


Fig. 2



- 1) Solenoid valve for Pre-wash
- 2) Solenoid valve for Wash

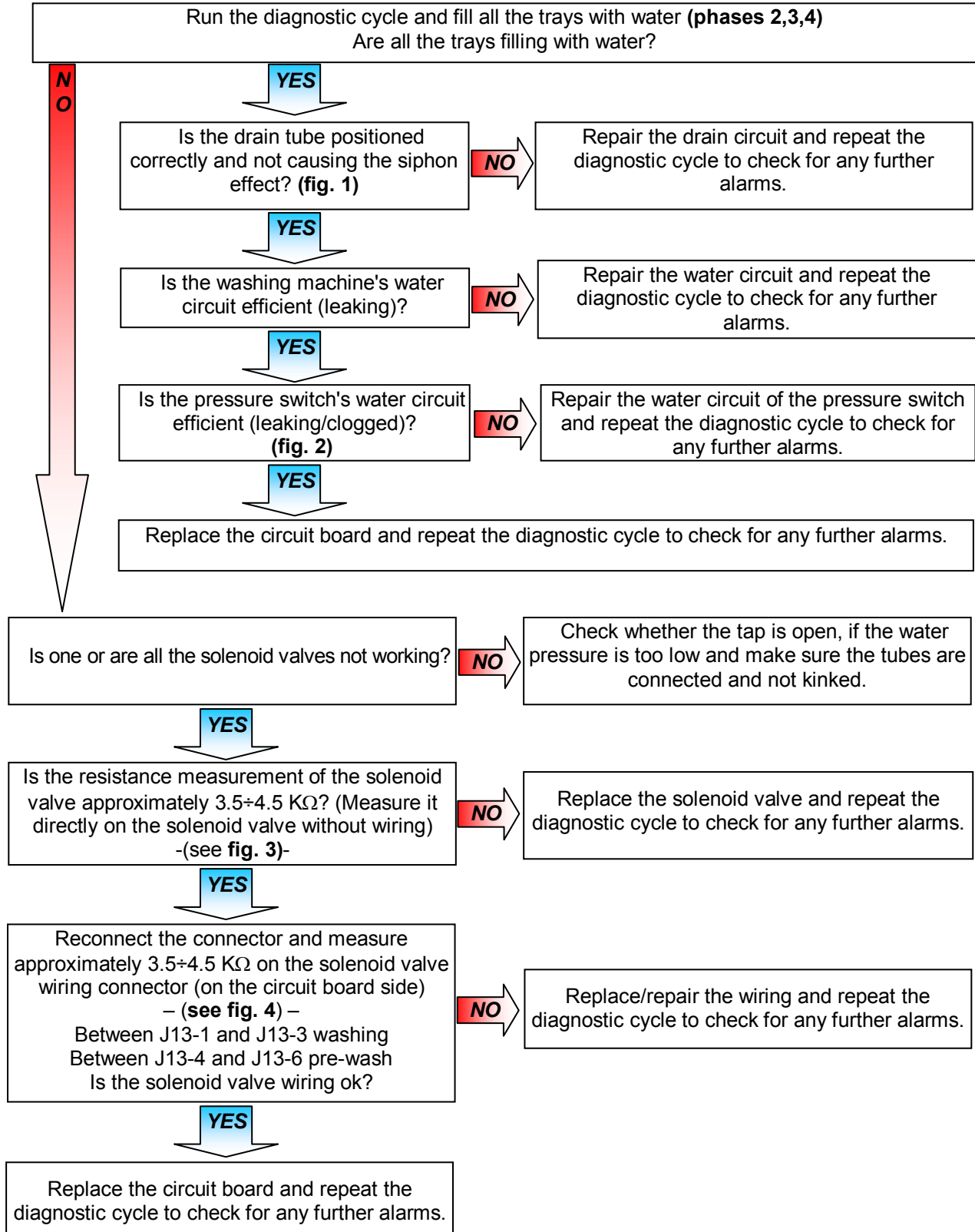


Fig. 3

! If there are burns on the circuit board, see page 67

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

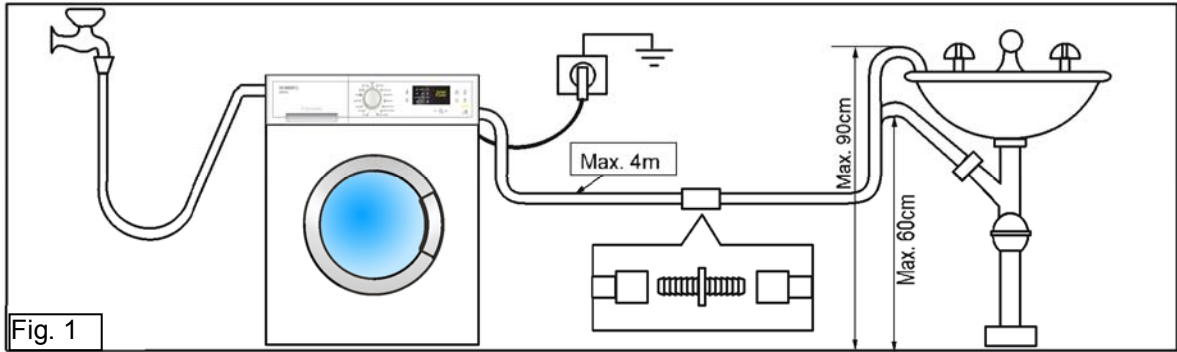


Fig. 1

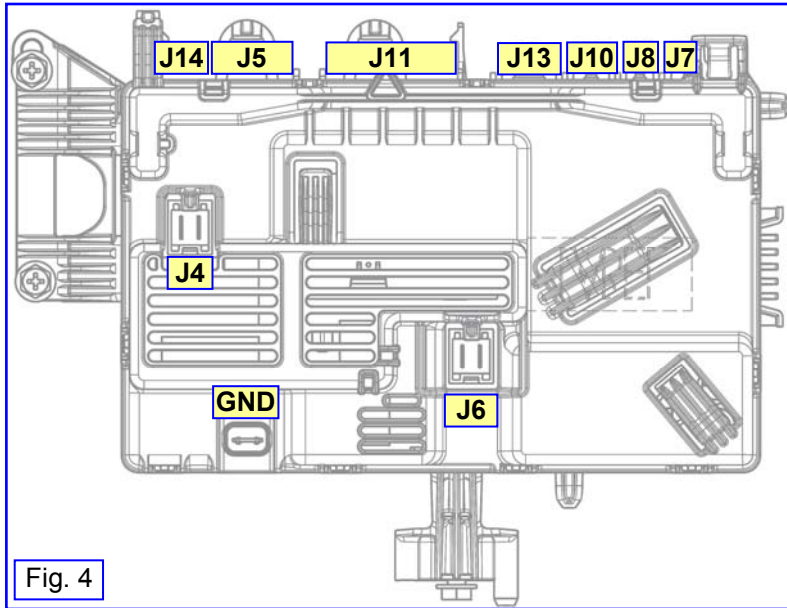


Fig. 4

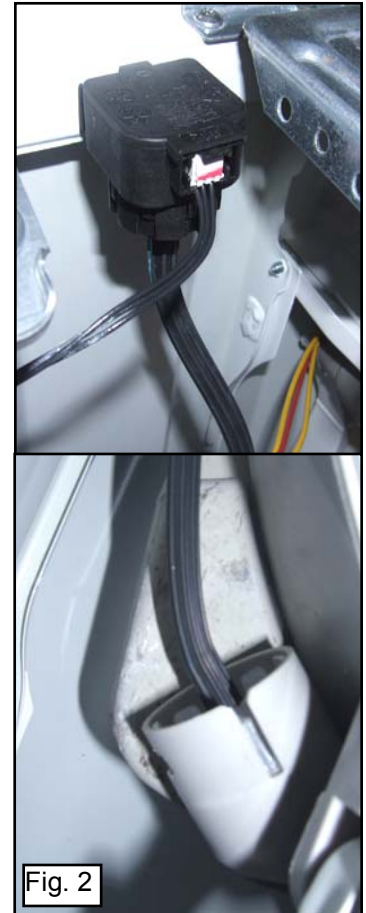


Fig. 2

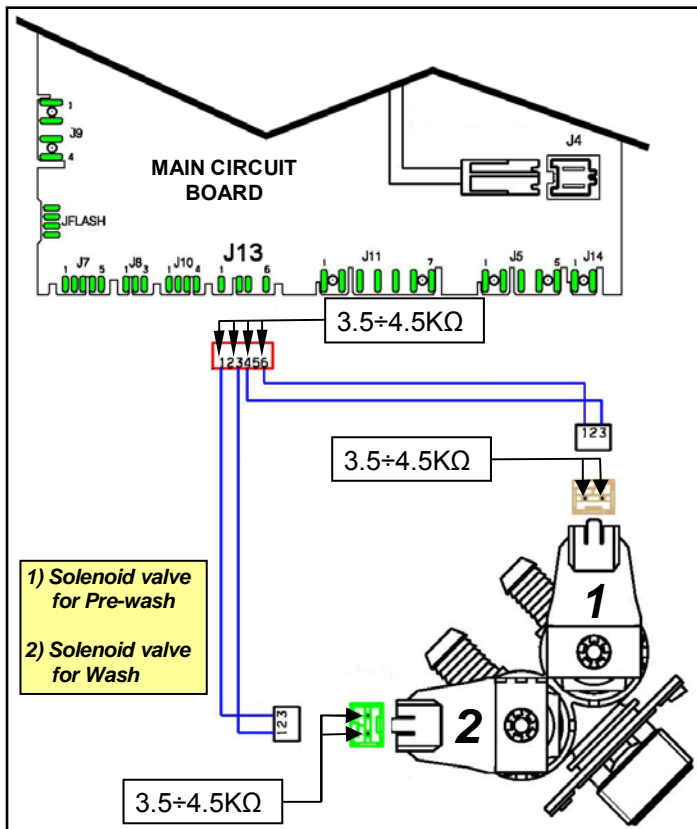
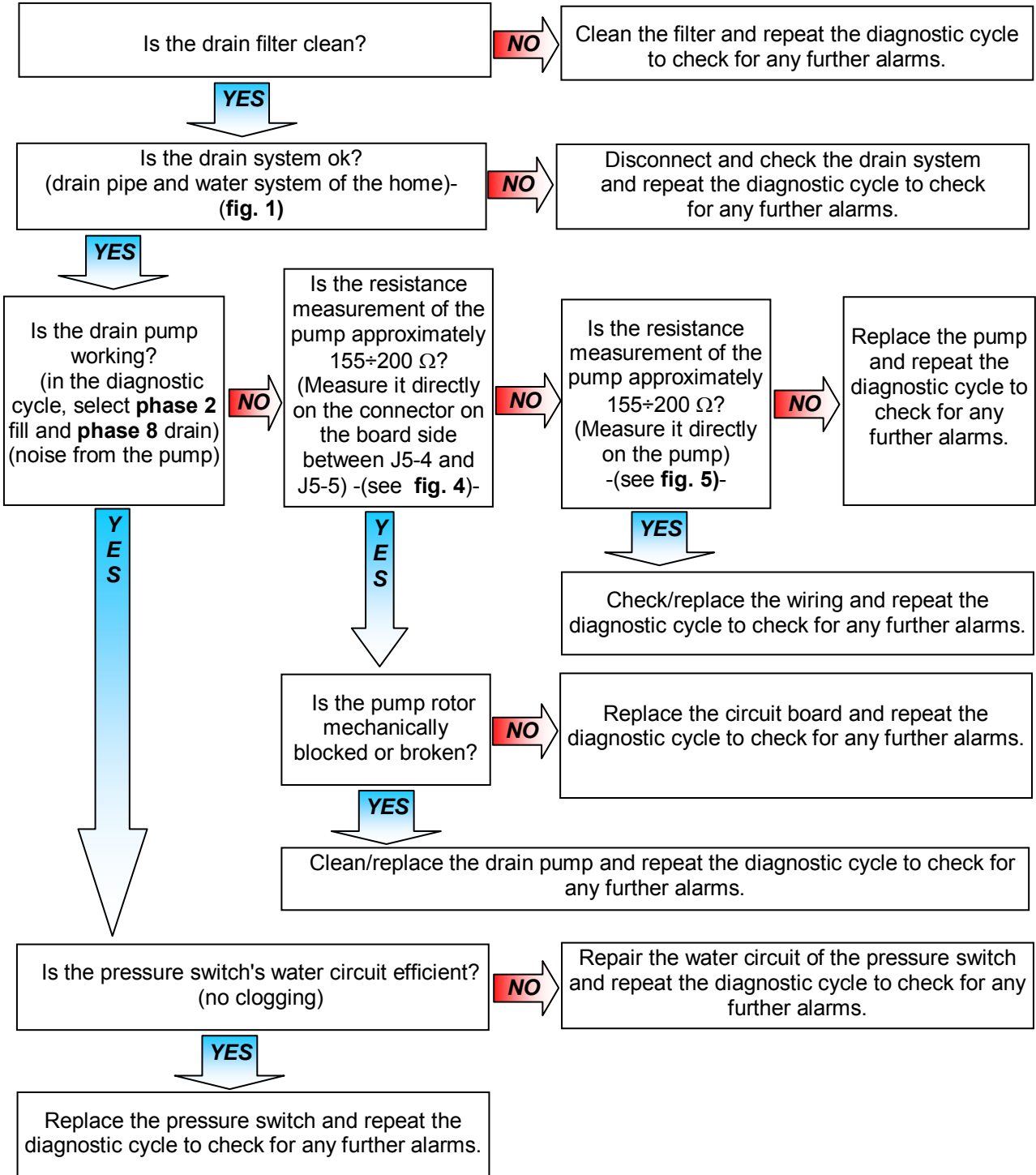


Fig.3

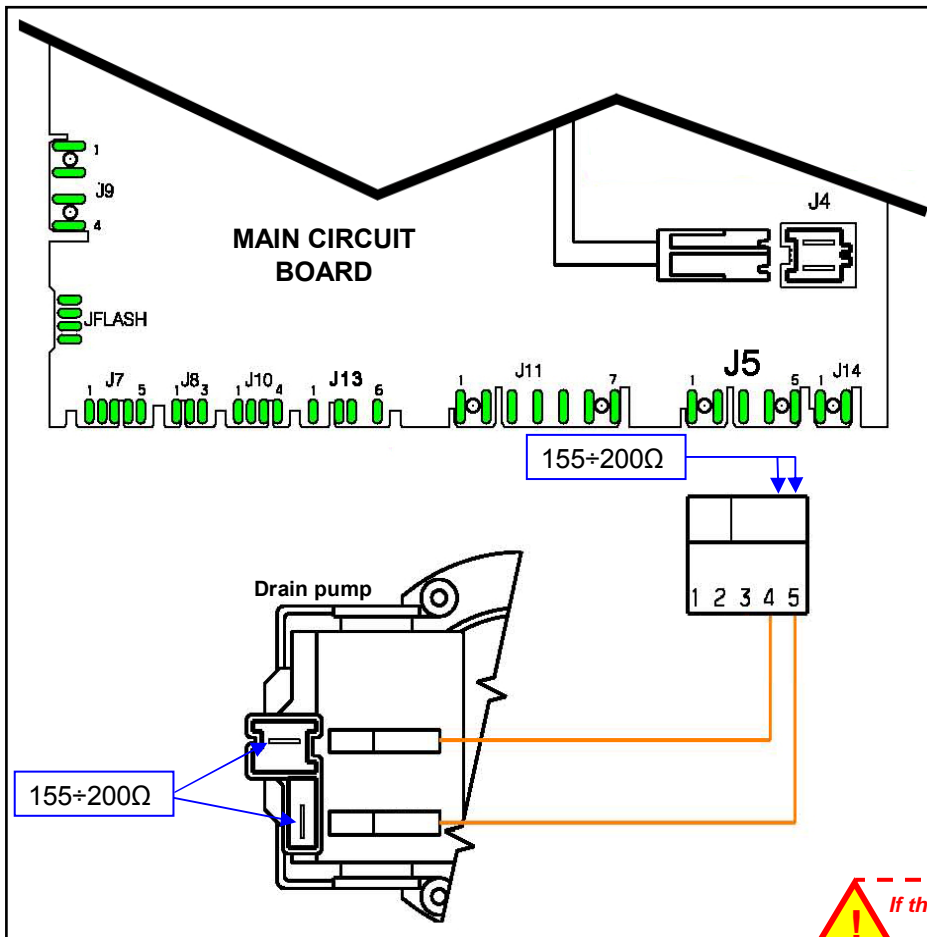
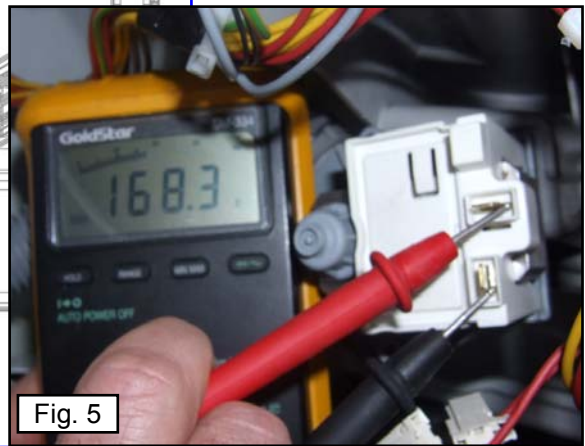
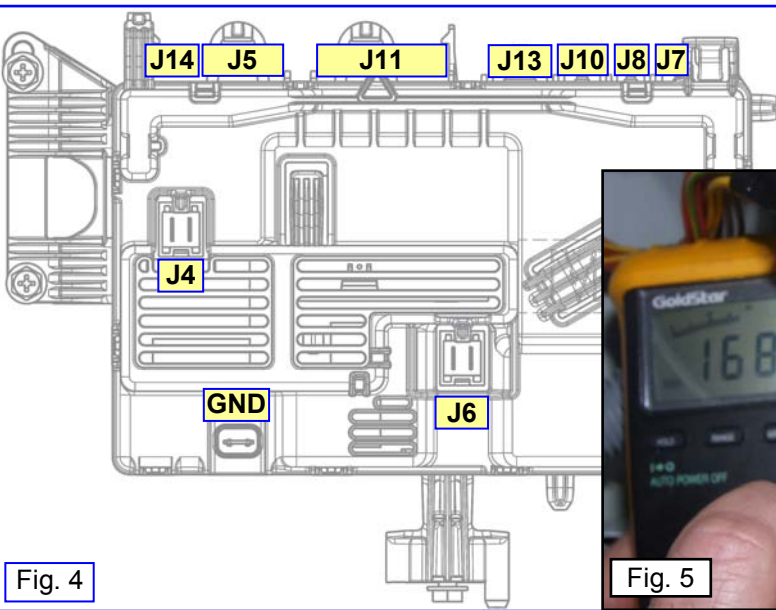
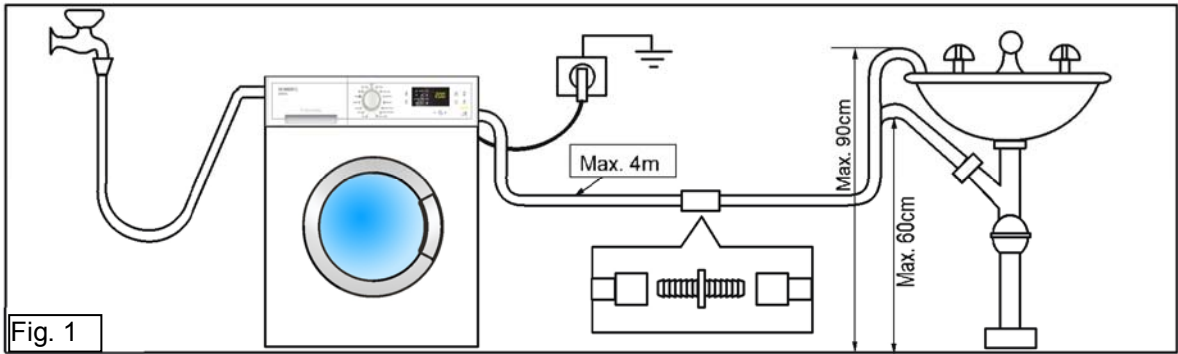
! If there are burns on the circuit board, see page 67

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

Checks to perform:



E21

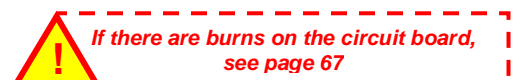
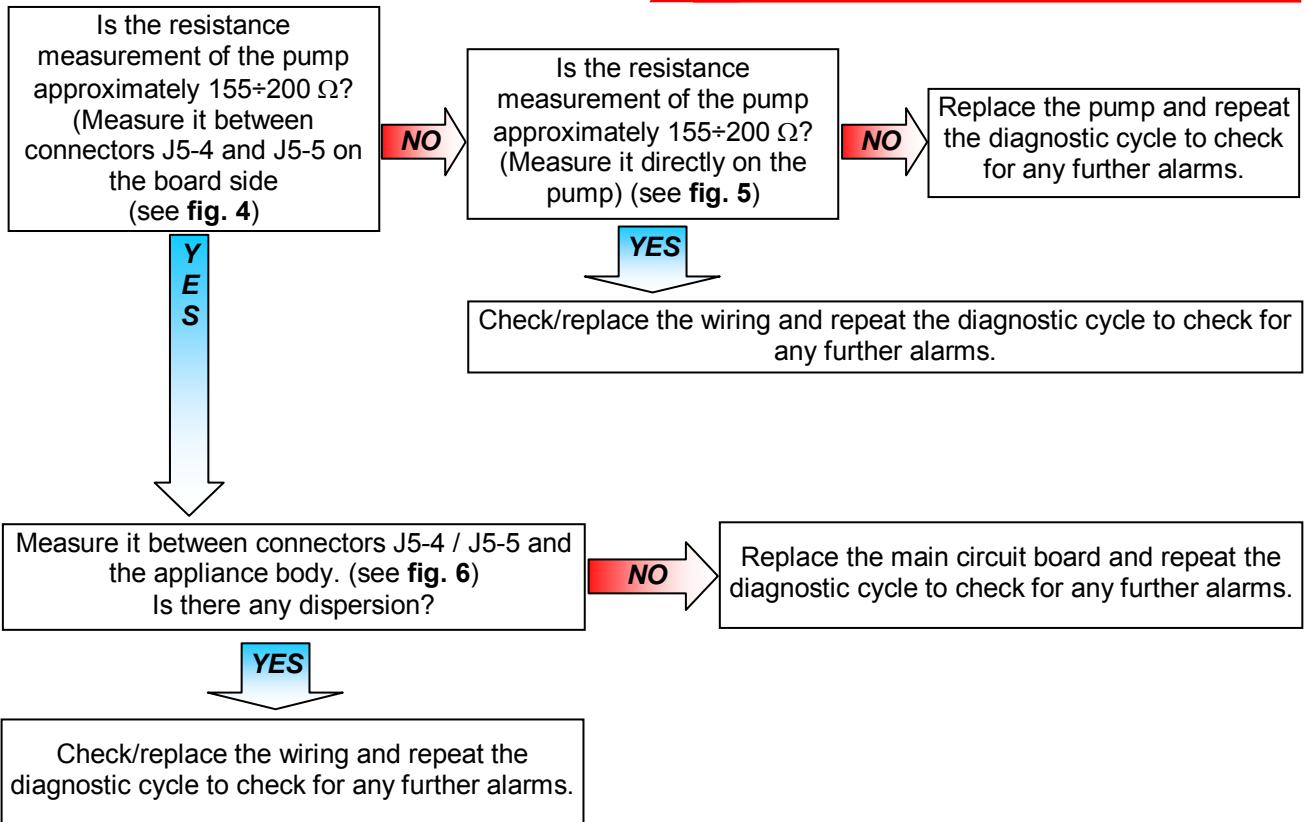


E23

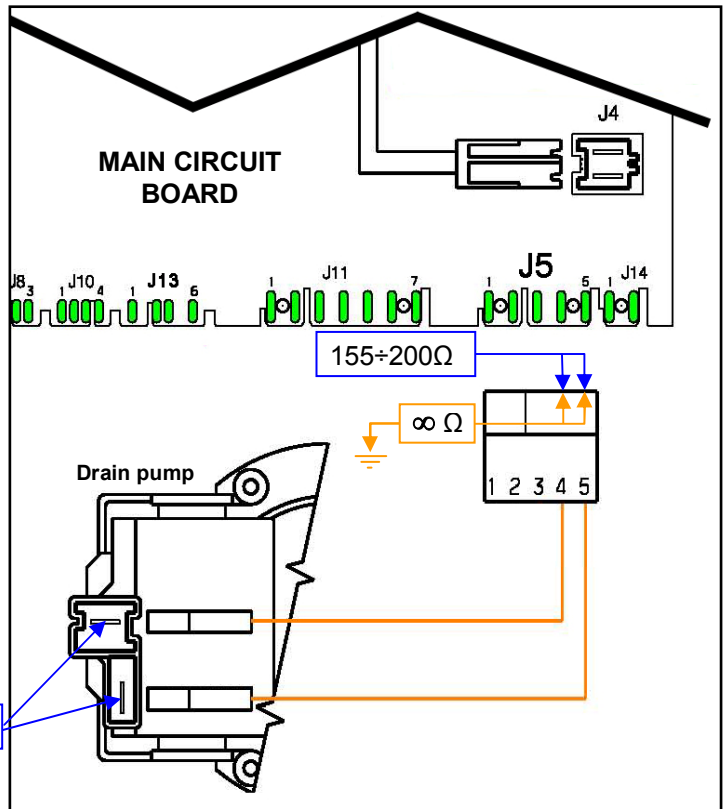
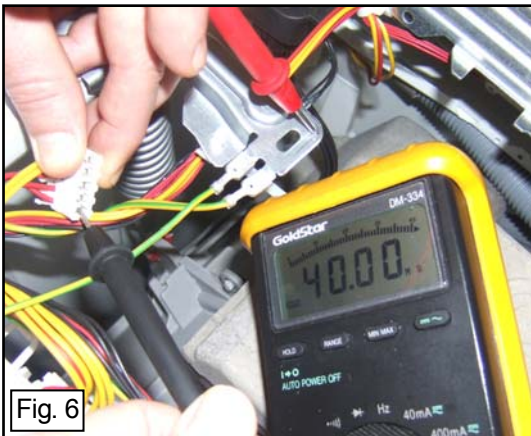
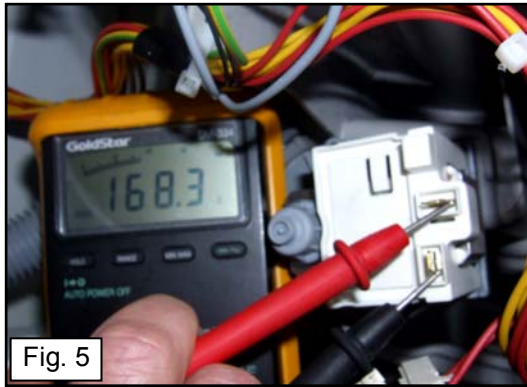
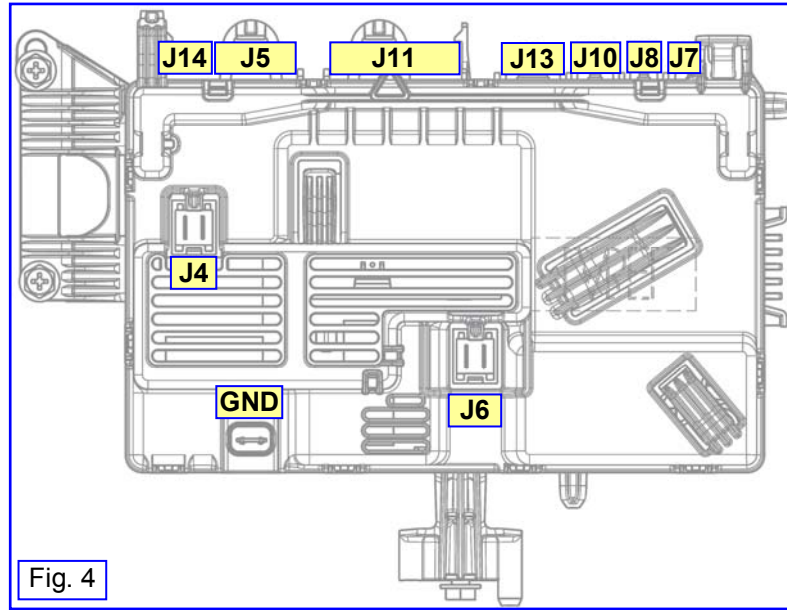
E23: Problems with the component (triac) controlling the drain pump

E23

Checks to perform:



E23



$155 \pm 200 \Omega$

! If there are burns on the circuit board, see page 67

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 67

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

NO →

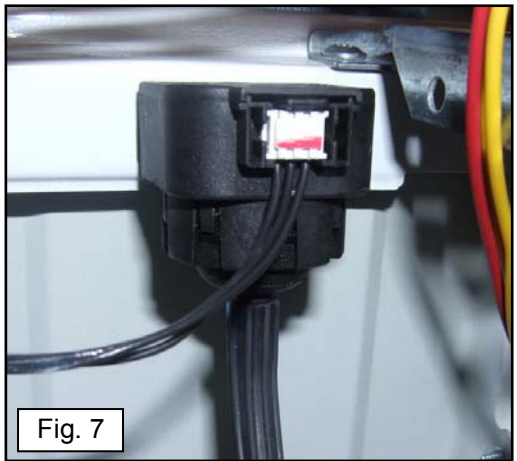
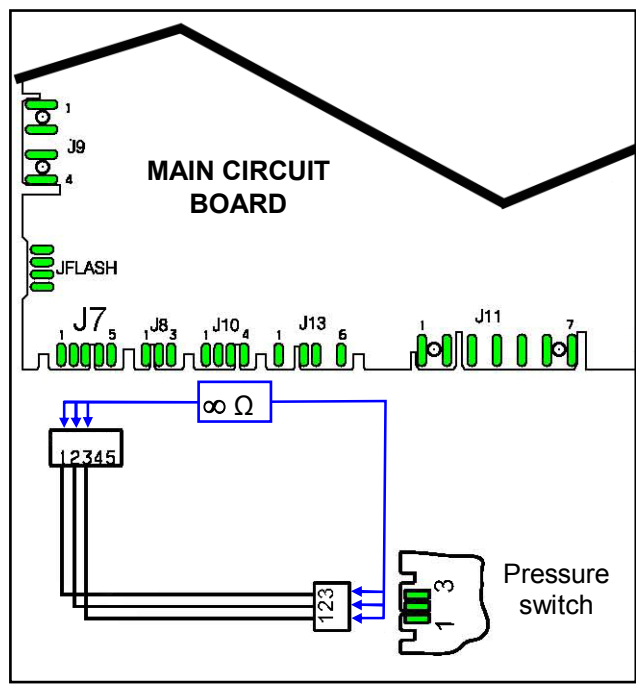
Reconnect and/or replace the wiring and repeat the diagnostic cycle to check for any further alarms.

YES ↓

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

YES ↓

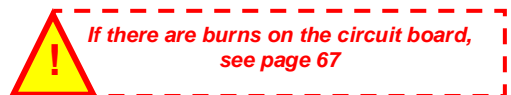
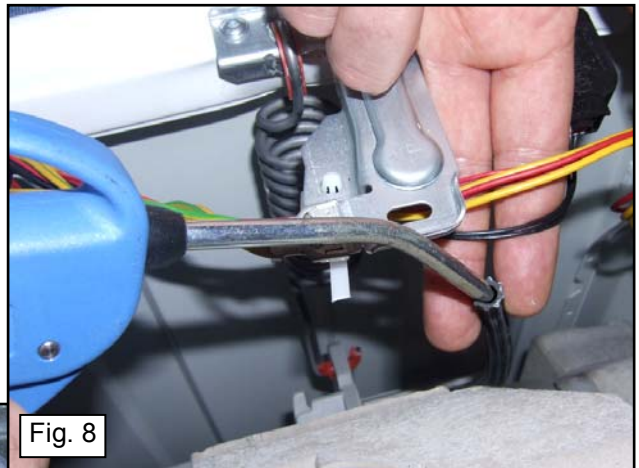
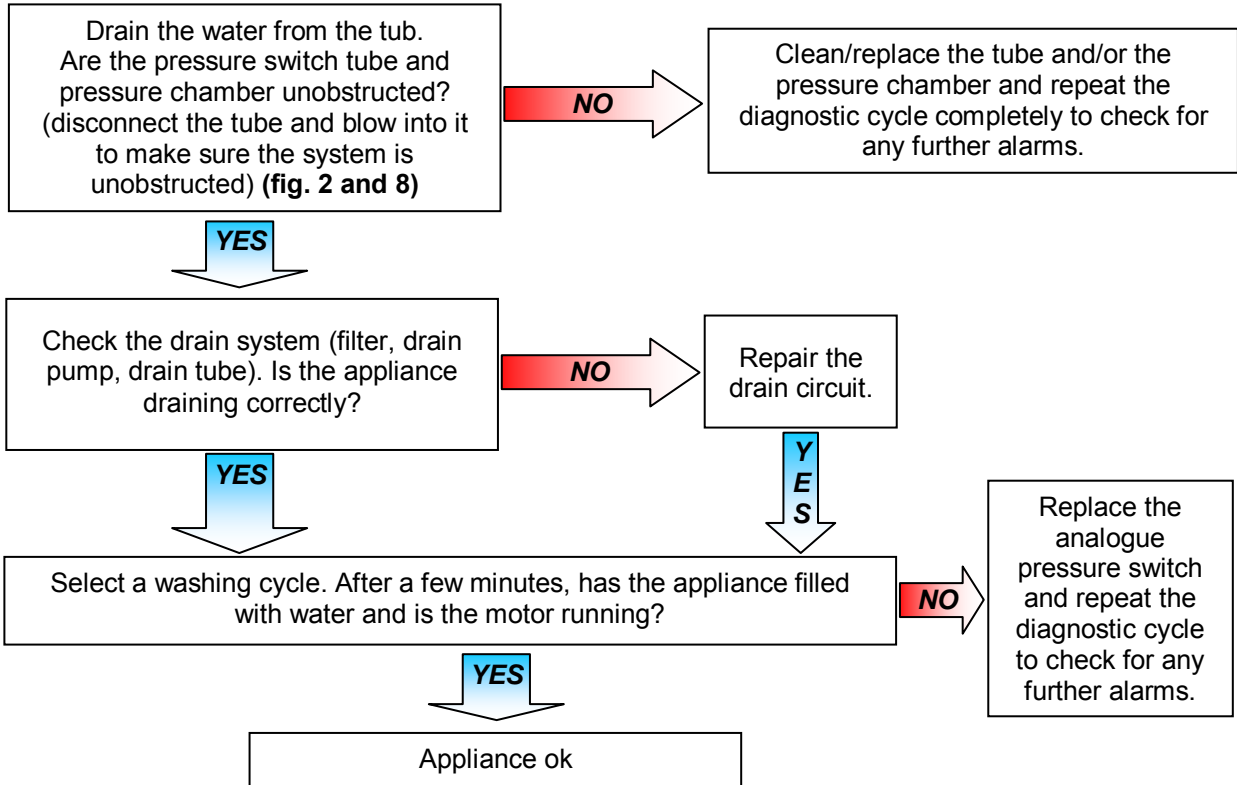
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarm codes.



If there are burns on the circuit board, see page 67

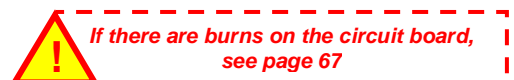
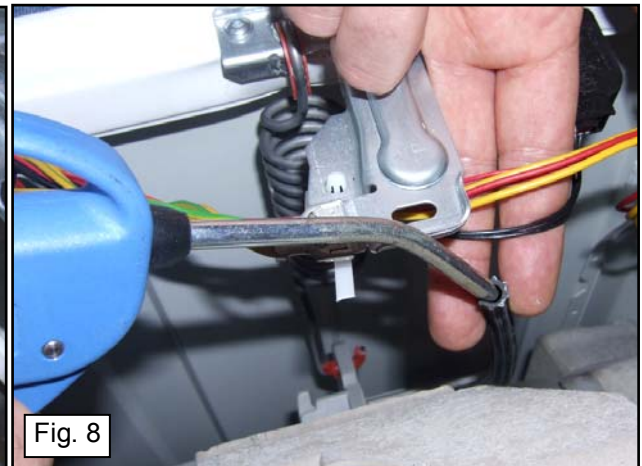
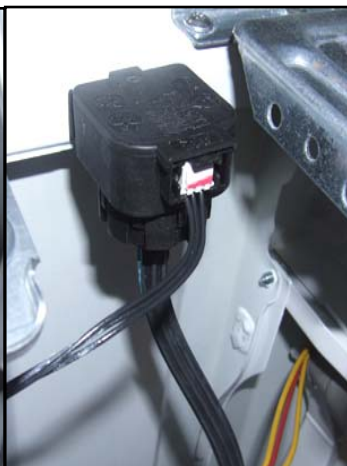
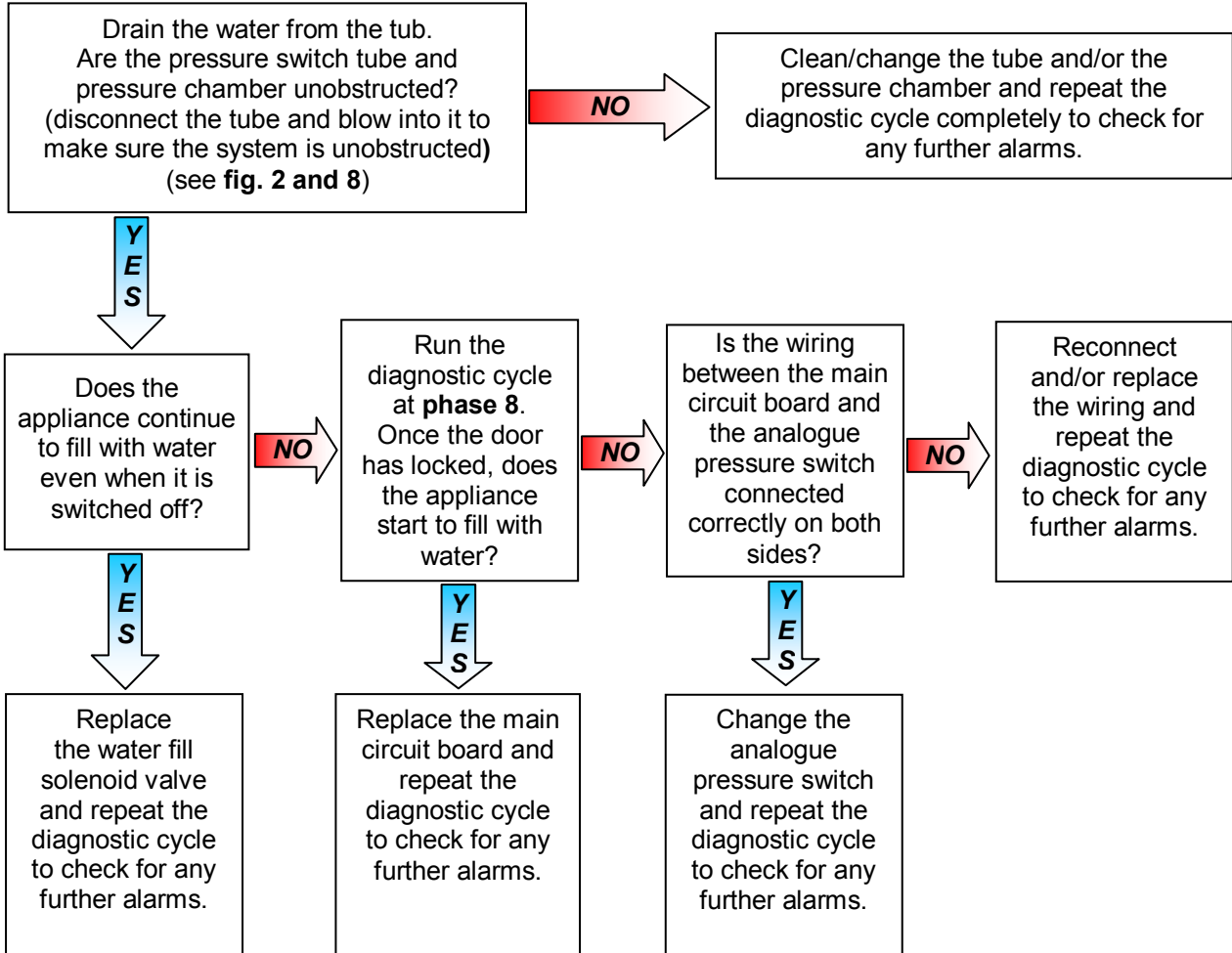
E32	E32: The analogue pressure switch causes an error during calibration (At the start of every cycle, the appliance drains to empty the tub and creates a level 0 to check the calibration of the analogue pressure switch)	E32
------------	--	------------

Checks to perform:



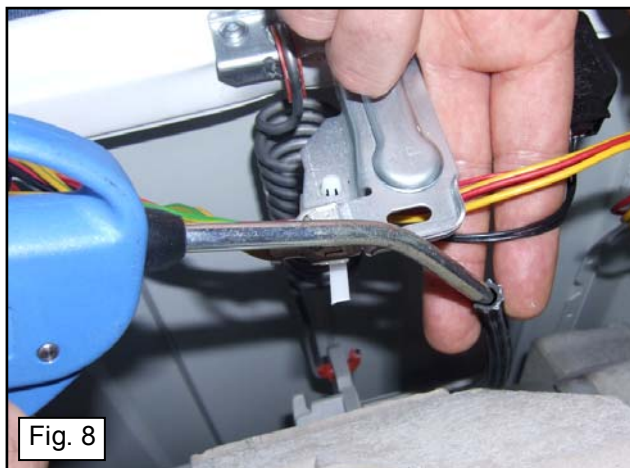
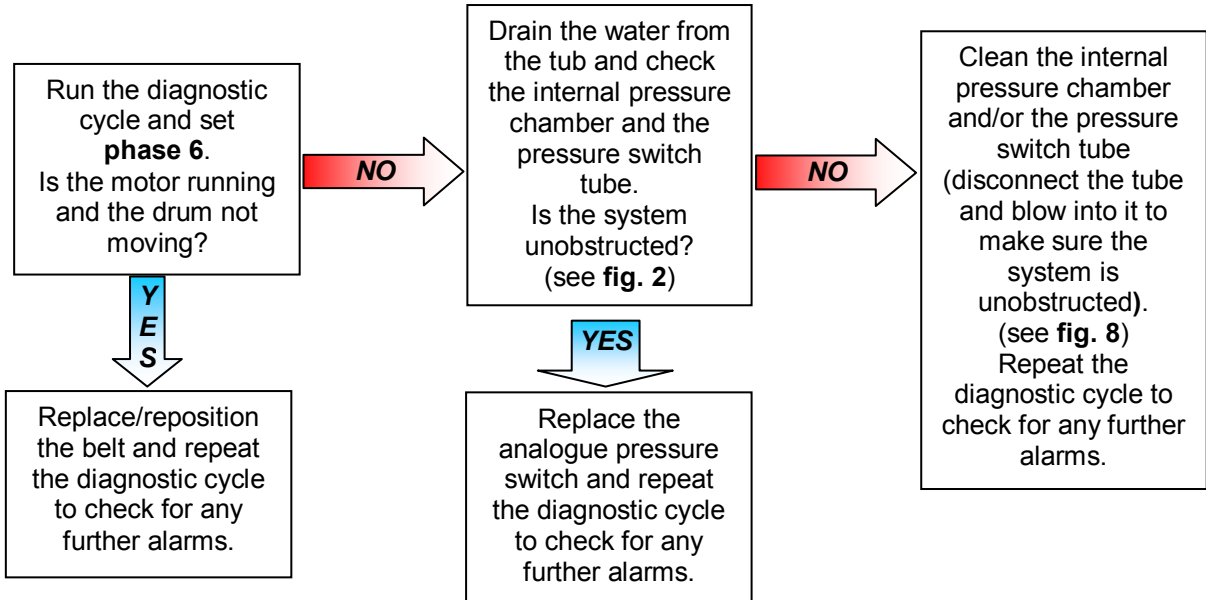
E35	E35: Water level too high	E35
	The main circuit board measures a water level, using the electronic pressure switch, of more than 300 mm for longer than 15 secs.	

Checks to perform:



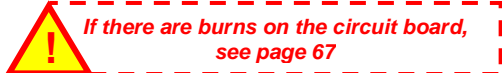
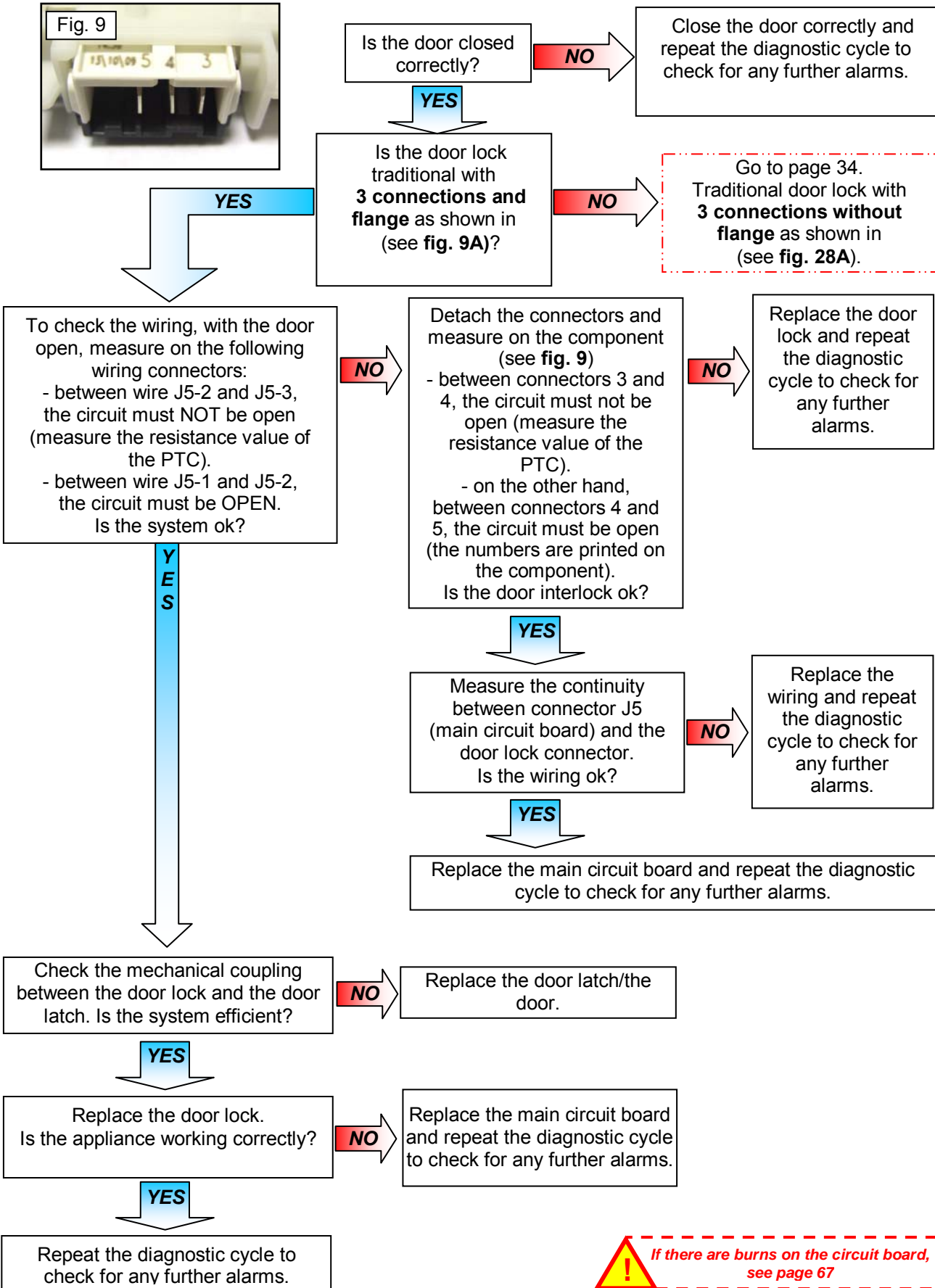
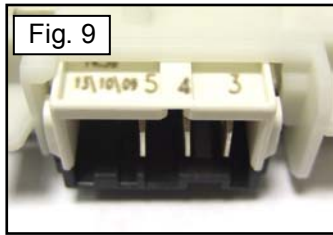
E38	E38: Internal pressure chamber is clogged	E38
	The analogue pressure switch is not able to measure any variation in the water level for at least 30 secs during drum rotation.	

Checks to perform:

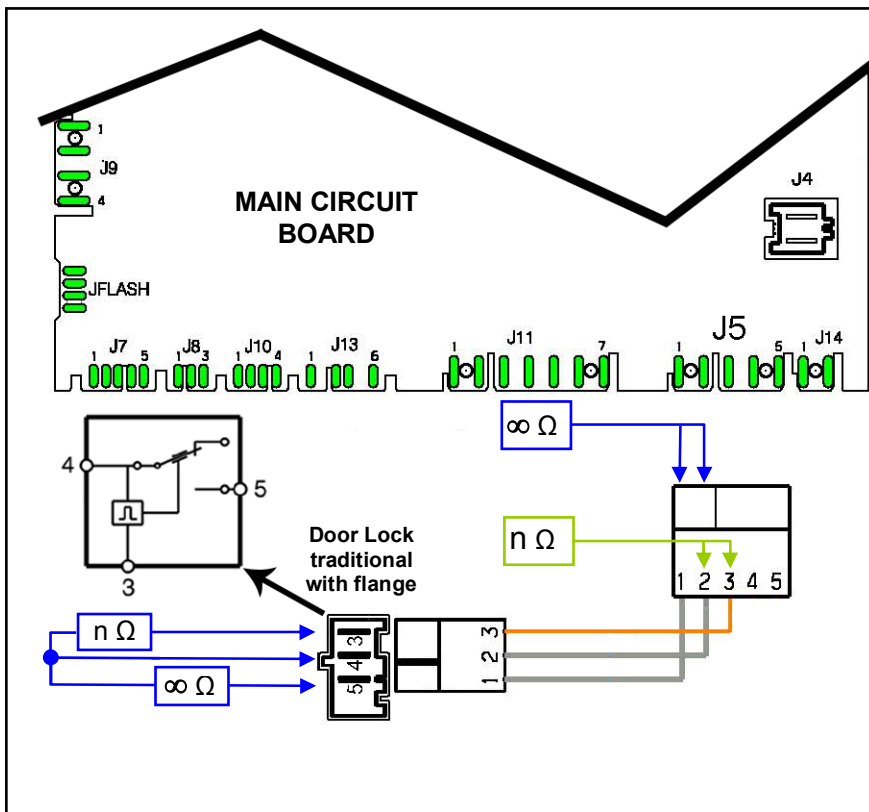
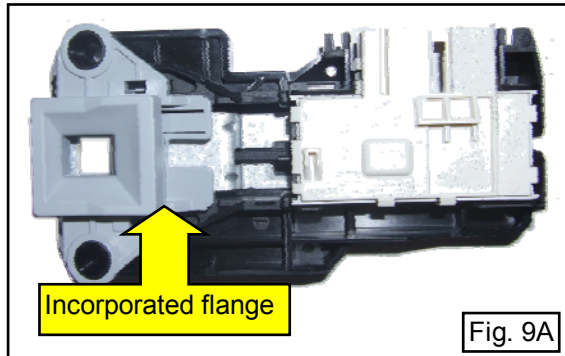
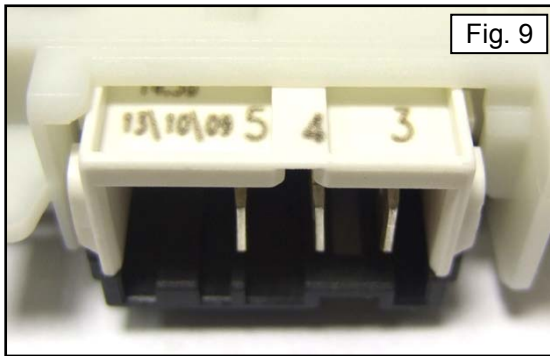
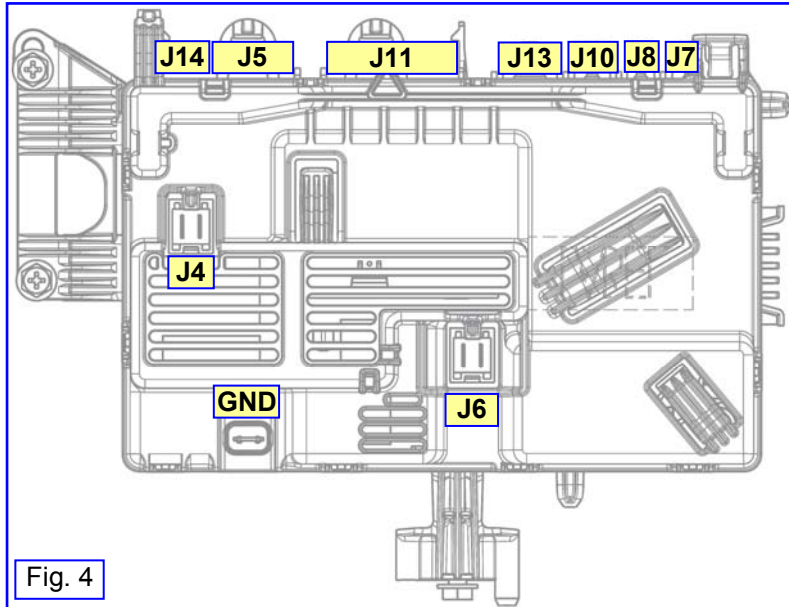


E41	E41: Door open (device with 3 connections with flange)	E41
	Maximum time exceeded (PTC = 15 seconds)	

Checks to perform:



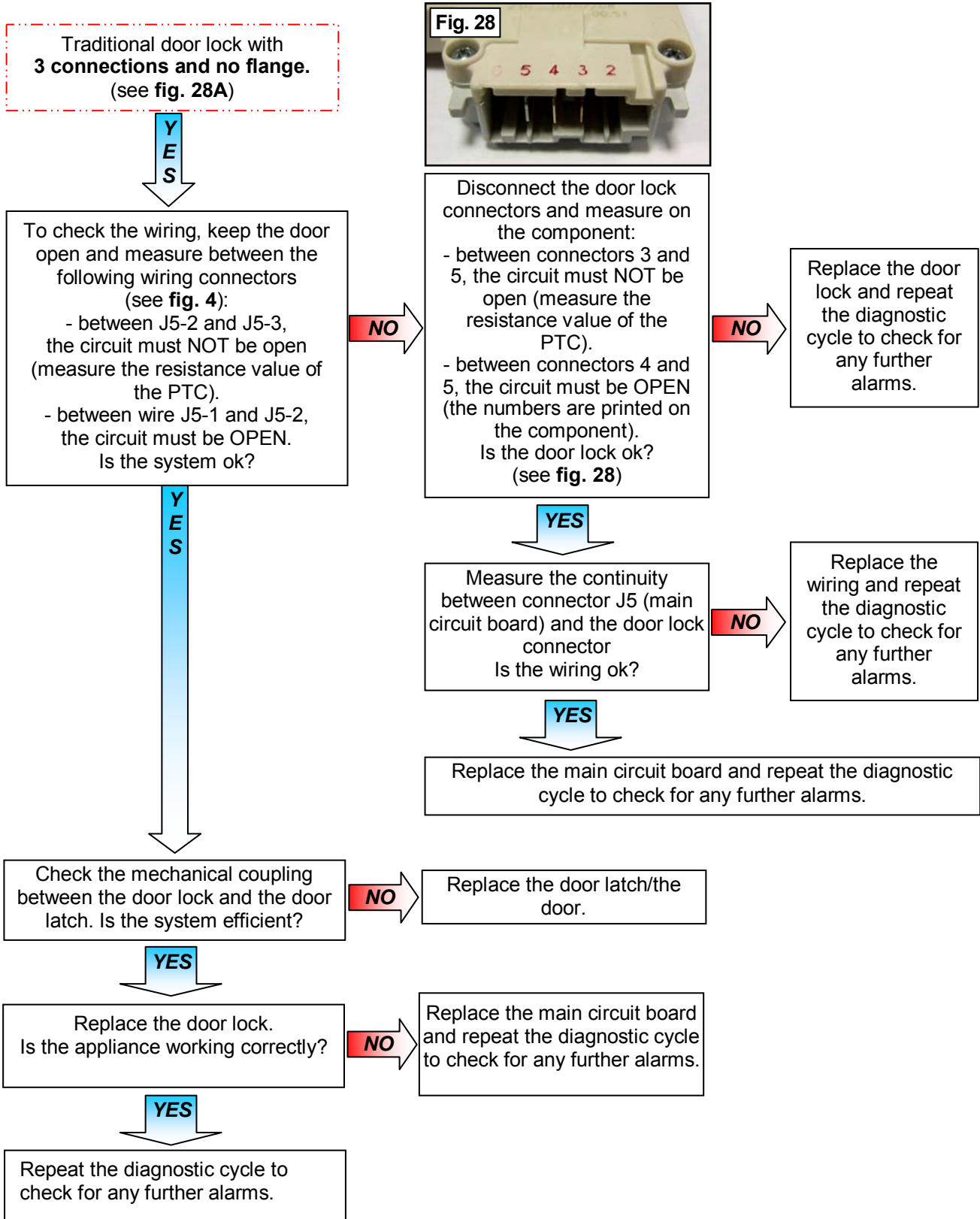
E41 (device with 3 connections with flange)



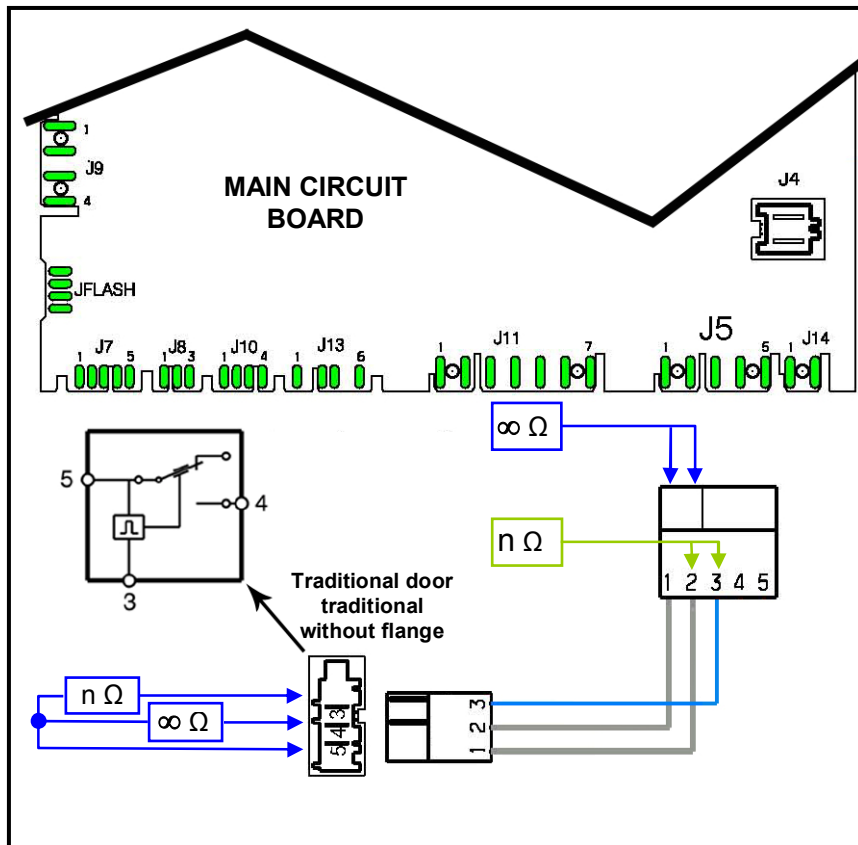
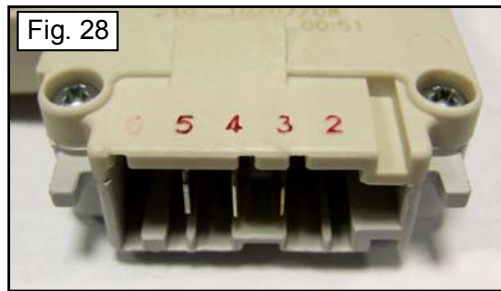
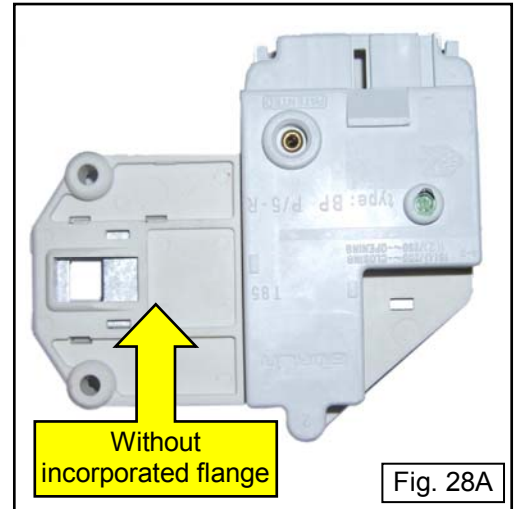
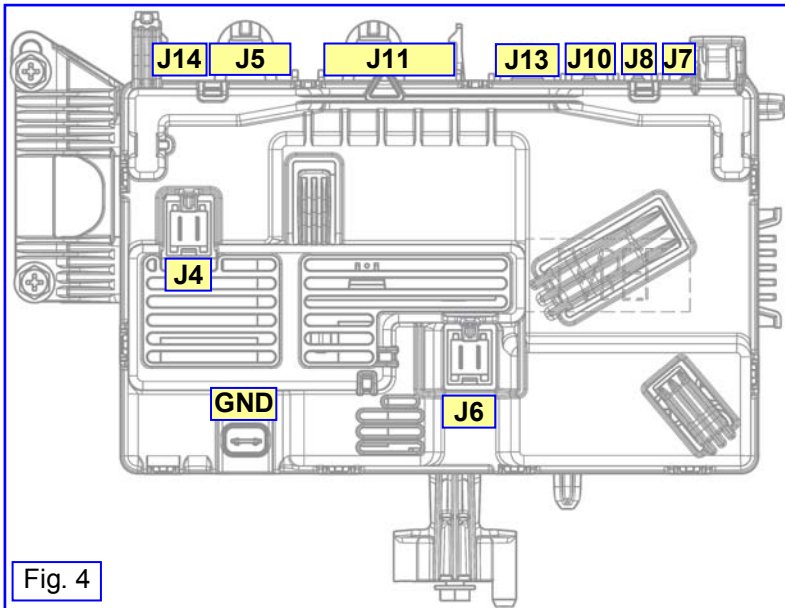
! If there are burns on the circuit board, see page 67

E41	E41: Door open (device with 3 connections and no flange)	E41
	Maximum time exceeded (PTC = 15 seconds)	

Checks to perform:



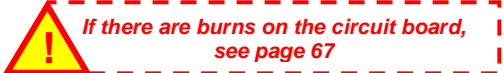
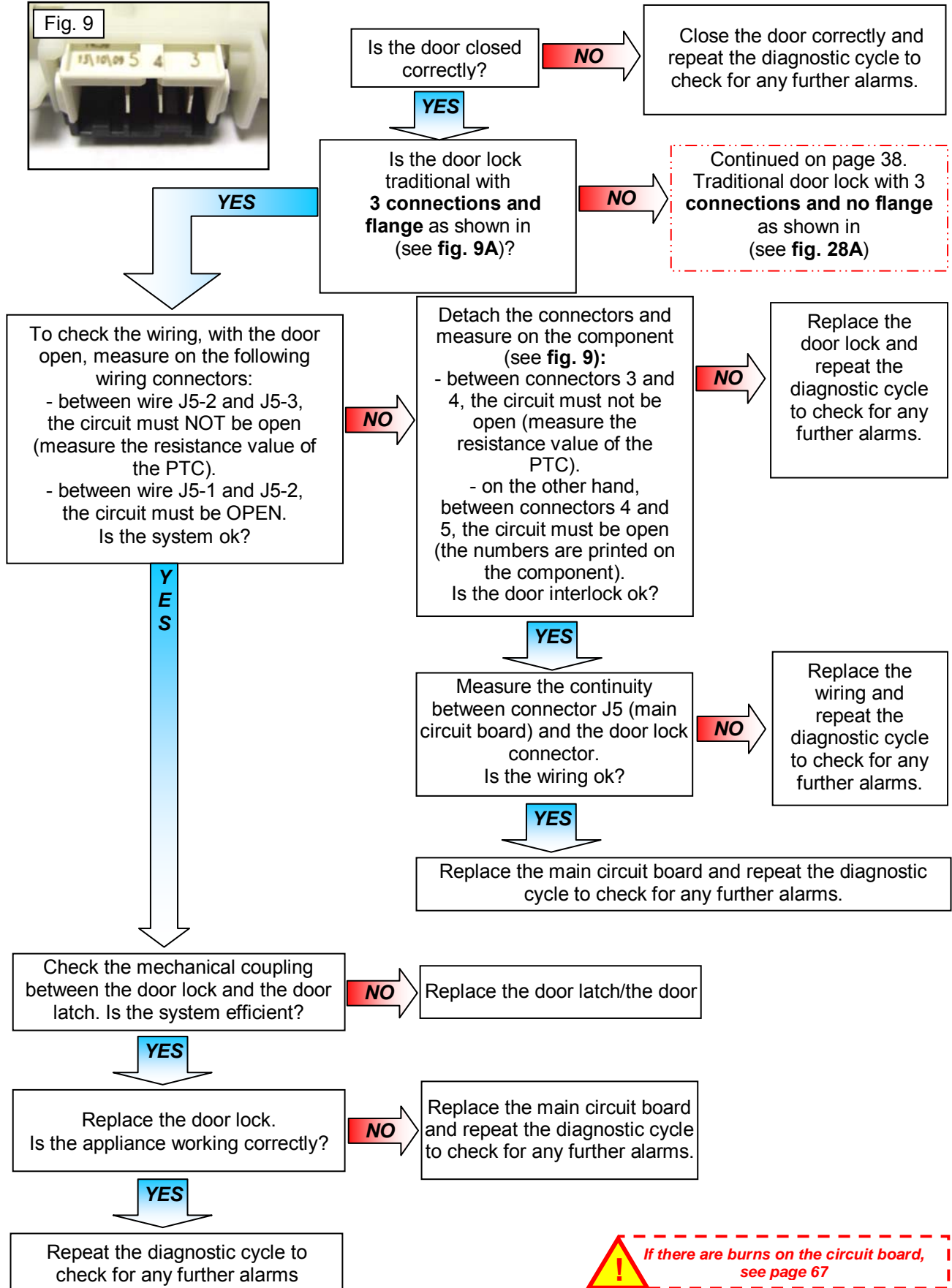
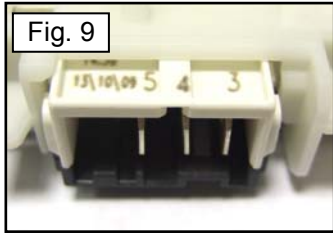
E41 (device with 3 connections and no flange)



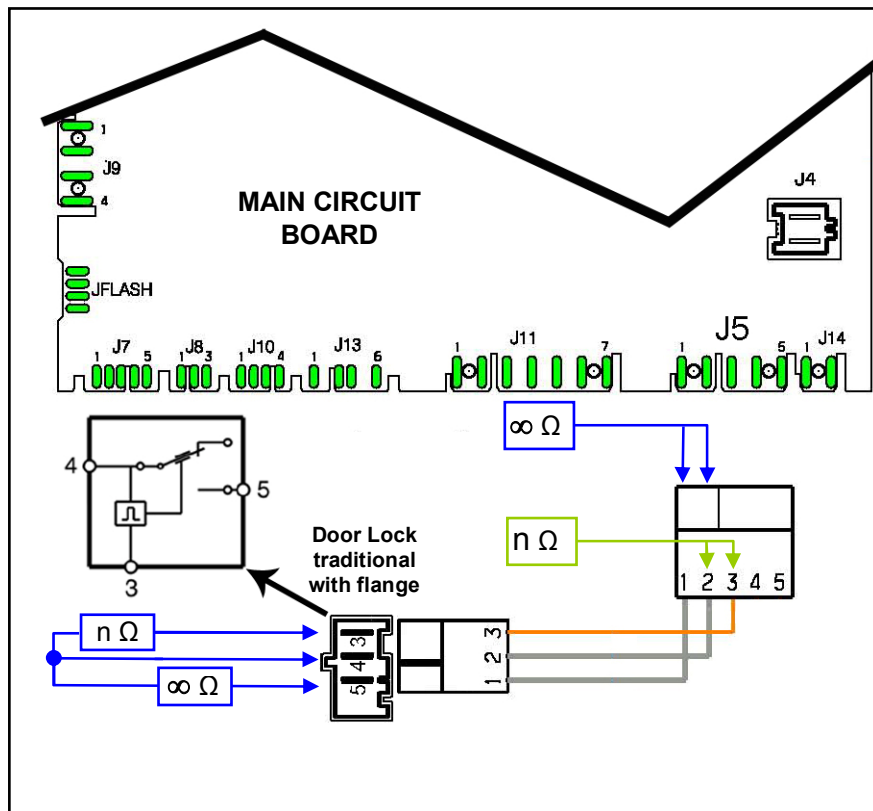
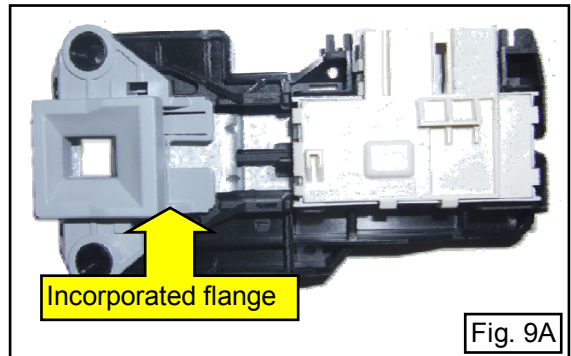
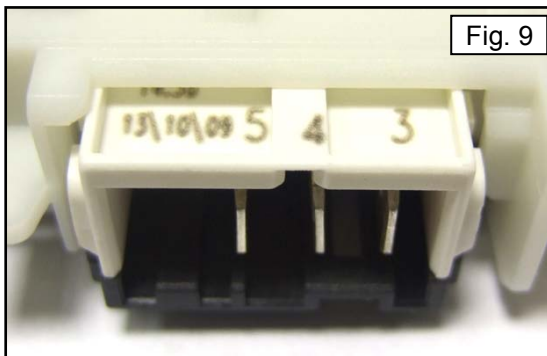
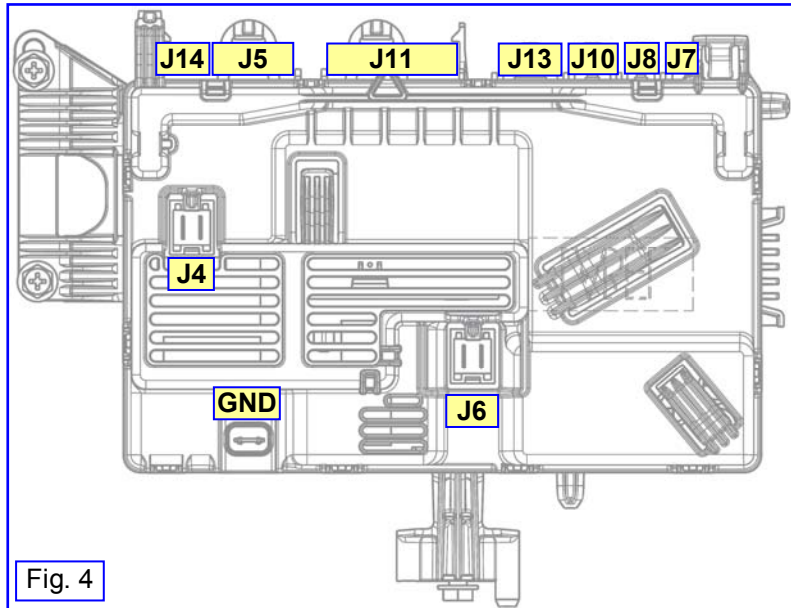
! If there are burns on the circuit board, see page 67

E42	E42: Problems opening door (device with 3 connections with flange)	E42
Maximum time exceeded (255 seconds)		

Checks to perform:



E42 (device with 3 connections with flange)



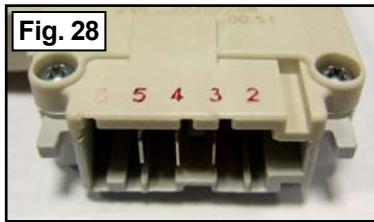
! If there are burns on the circuit board, see page 67

E42	E42: Problems opening door (device with 3 connections and no flange)	E42
	Maximum time exceeded (255 seconds)	

Checks to perform:



Traditional door lock with **3 connections and no flange.**
(see **fig. 28A**)



YES

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

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

Is the system ok?

Disconnect the door lock connectors and measure on the component:

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

Is the door lock ok?
(see **fig. 28**)

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?

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

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

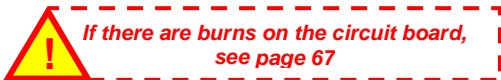
Check the mechanical coupling between the door lock and the door latch. Is the system efficient?

Replace the door latch/the door.

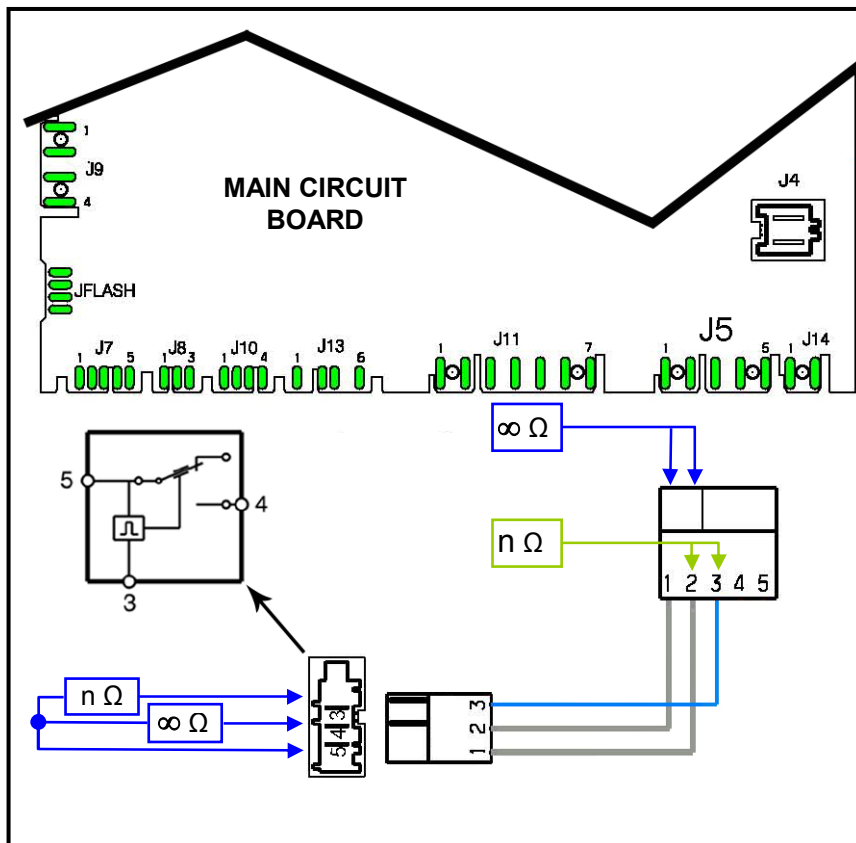
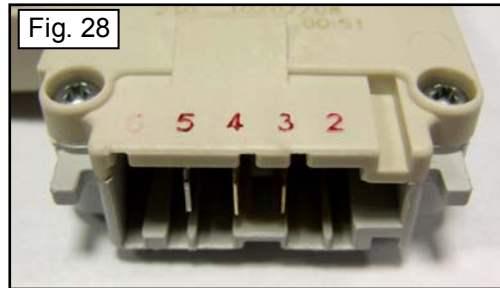
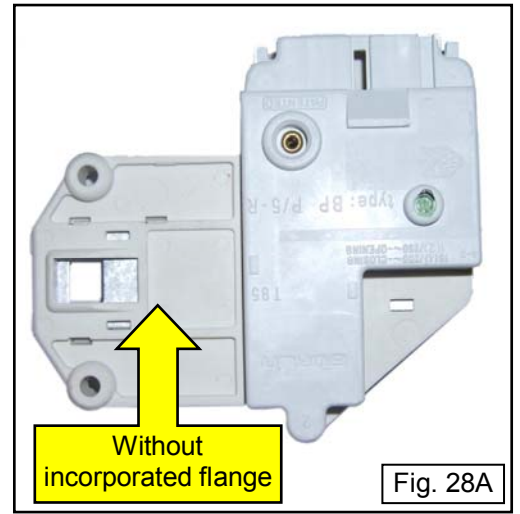
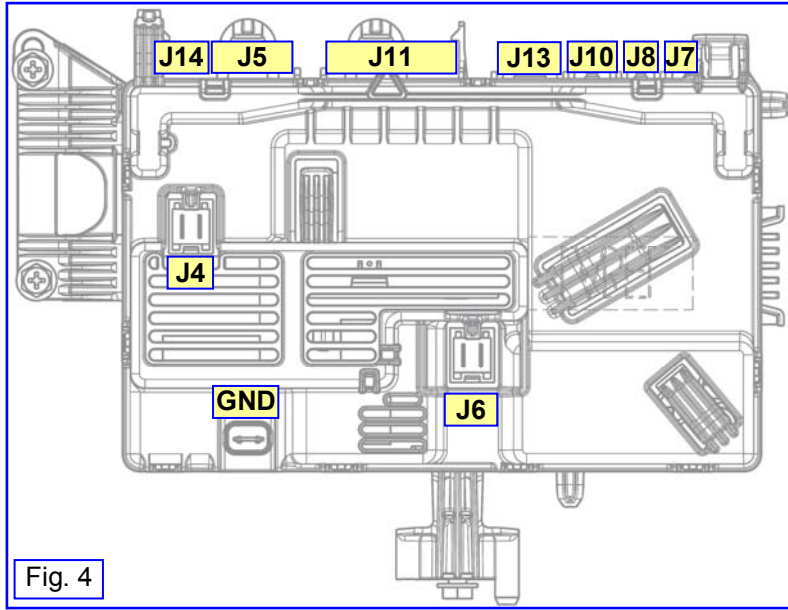
Replace the door lock. Is the appliance working correctly?

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

Repeat the diagnostic cycle to check for any further alarms.



E42 (device with 3 connections and no flange)



! If there are burns on the circuit board, see page 67

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

Checks to perform:

! Check that all the connectors are correctly inserted

To check the wiring, keep the door open and measure on the following wiring connectors (see **fig. 4**):

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

Is the system ok?

NO

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

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

Is the door interlock ok?

NO

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

YES

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

YES

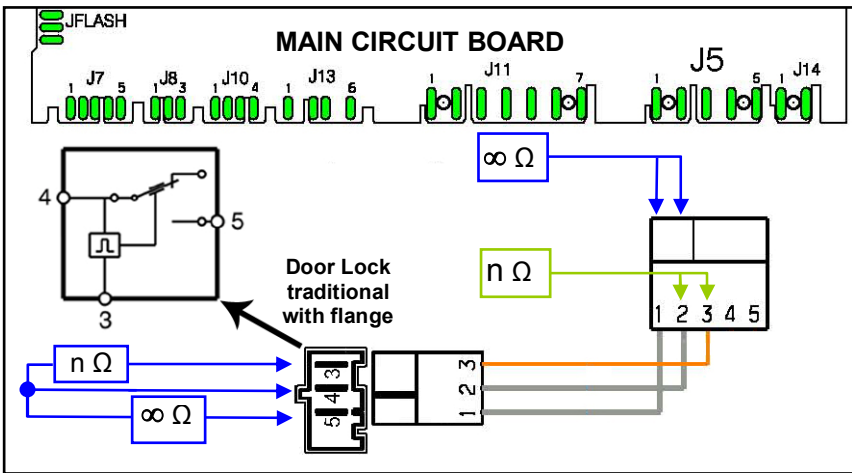
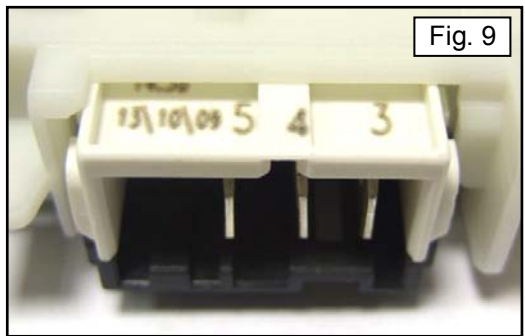
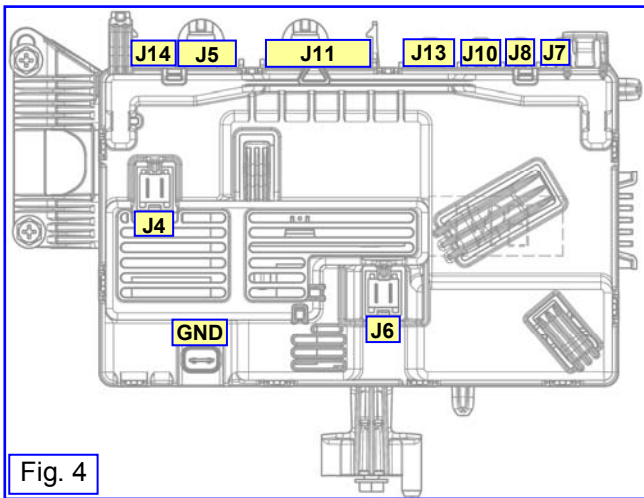
Measure the continuity between connector J5 (main circuit board) and the door lock connector. Is the wiring ok?

NO

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

YES

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



! If there are burns on the circuit board, see page 67

E43	E43: Problems with the component (Triac) controlling the door delay system (device with 3 connections and no flange)	E43
------------	---	------------

Checks to perform:

! Check that all the connectors are correctly inserted

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

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

Is the system ok?

YES

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

Disconnect the door lock connectors and measure on the component (see **fig. 28**):

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

Is the door interlock ok?

YES

Measure the continuity between connector J5 (main circuit board) and the door lock connector

Is the wiring ok?

YES

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

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

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

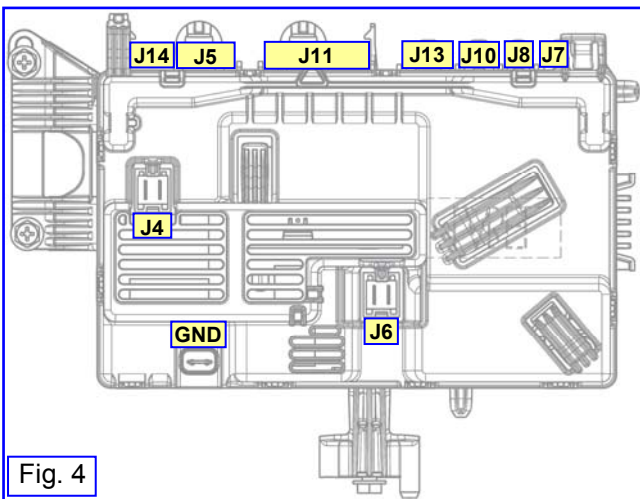


Fig. 4

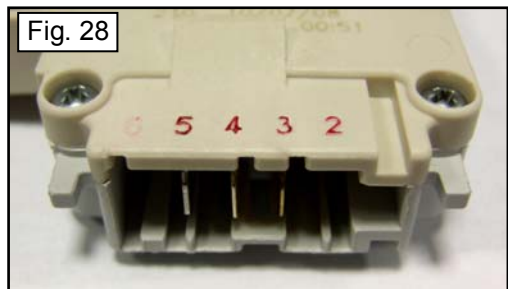
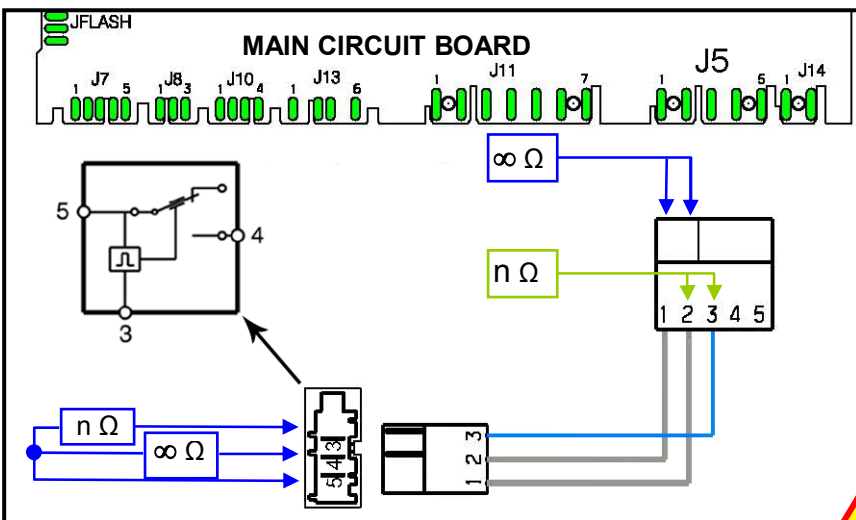


Fig. 28



! If there are burns on the circuit board, see page 67

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 67

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

Checks to perform:

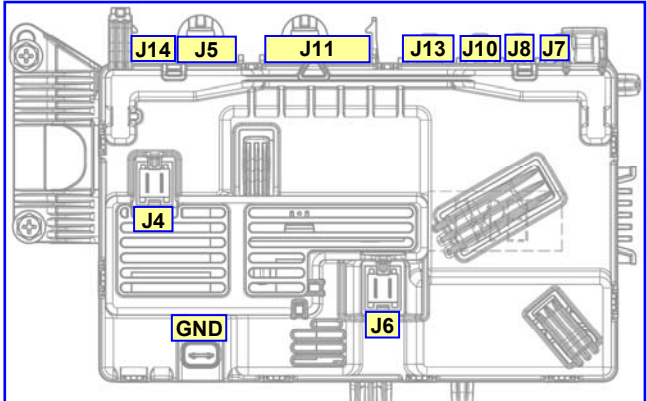
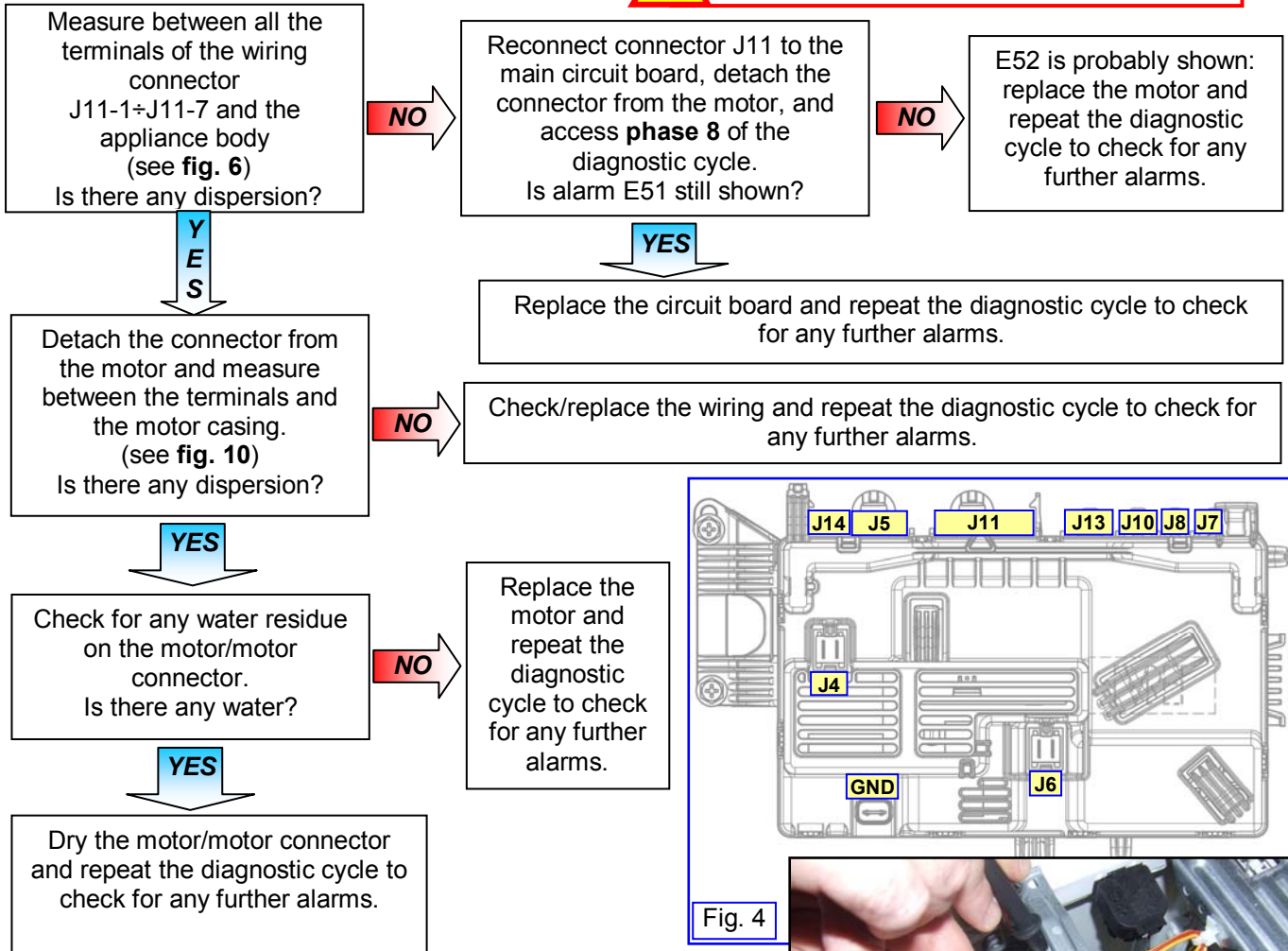


Fig. 4

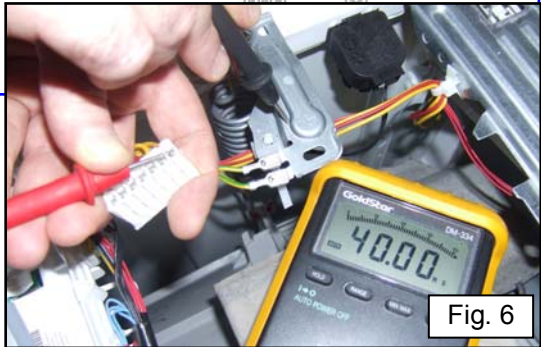
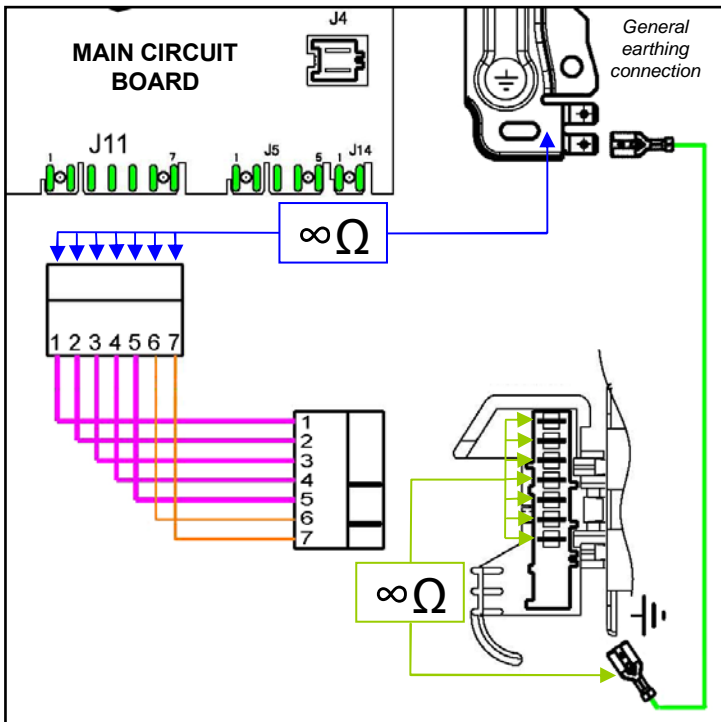


Fig. 6

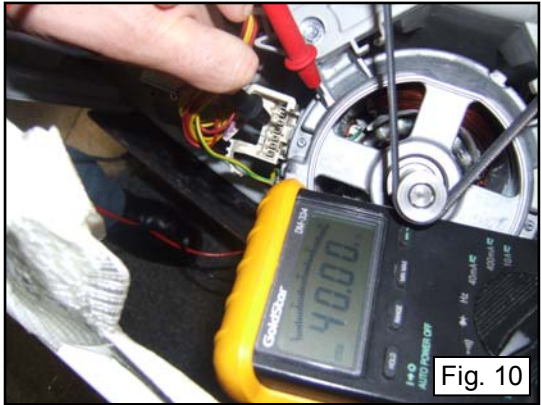
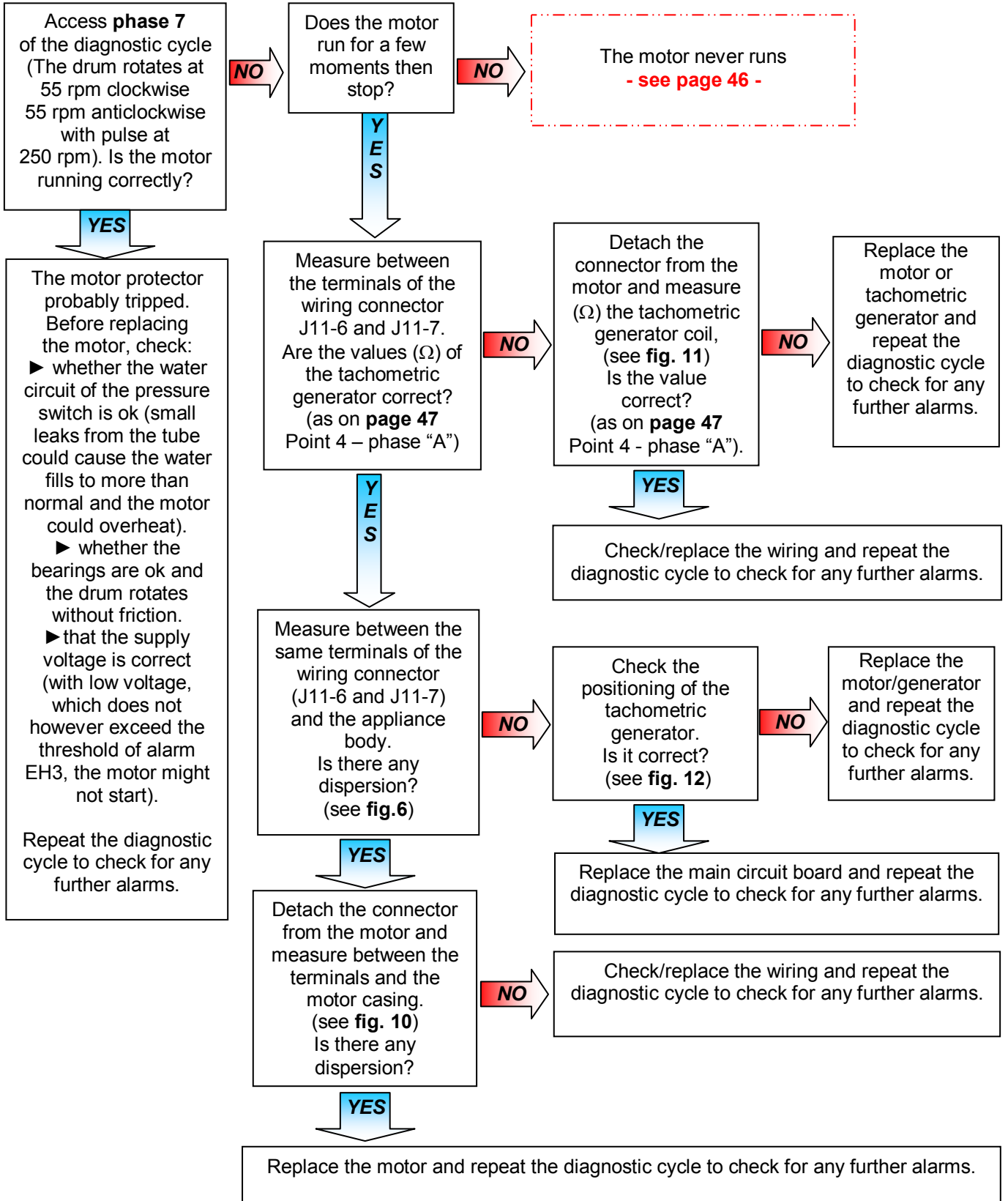


Fig. 10



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

Checks to perform:



E52

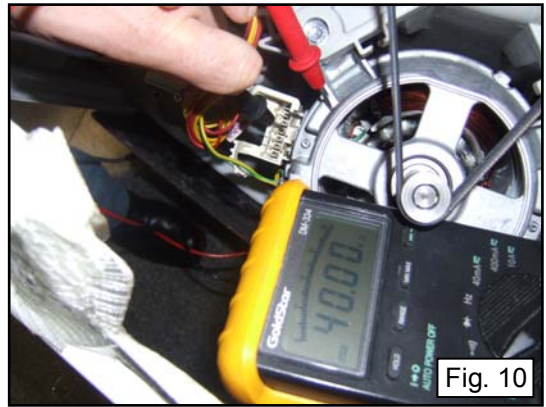
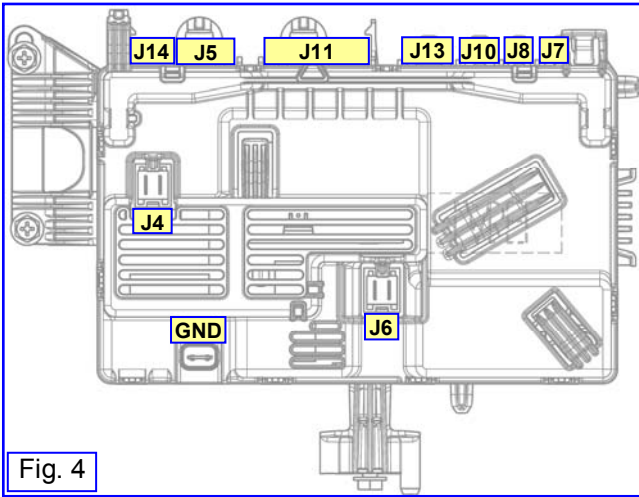


Fig. 10

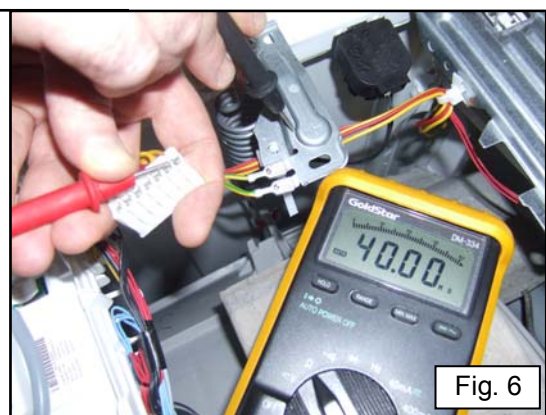
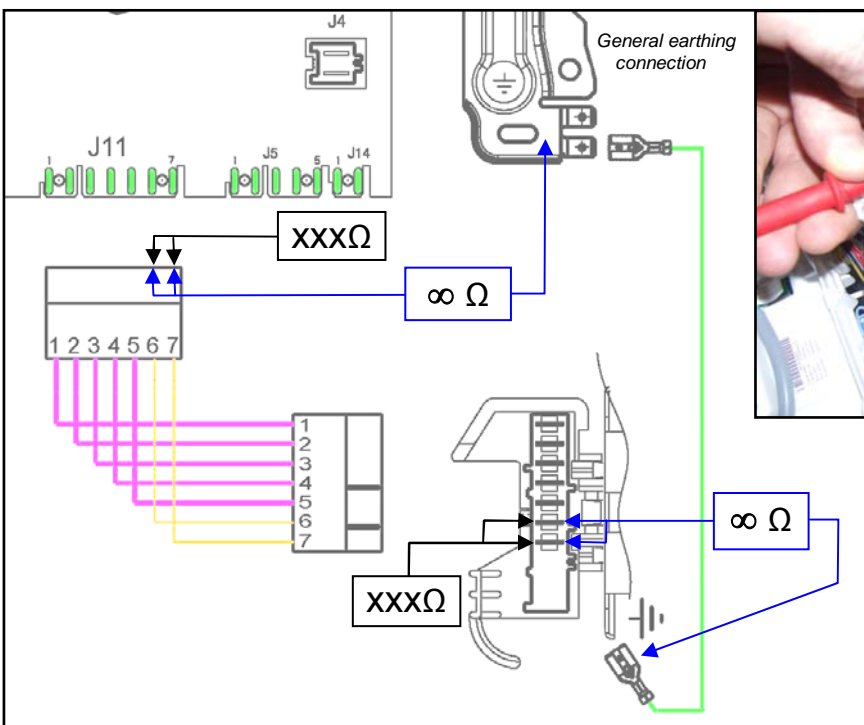


Fig. 6

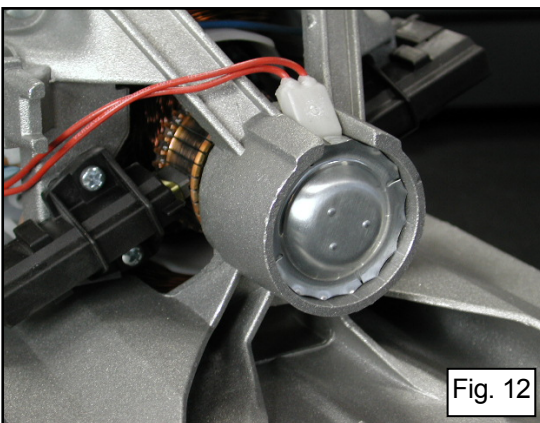


Fig. 12

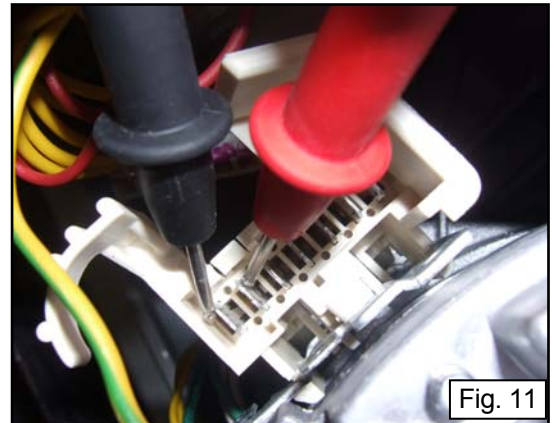


Fig. 11

! If there are burns on the circuit board, see page 67

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

Checks to perform:



The motor never runs

To check the wiring, measure (Ω) between the following wiring connectors of the main circuit board (see **fig. 4**) and compare them with the correct ones (see **pag. 47**: point 4 - motor parameters)

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

Are the values correct?

NO

Check the motor as on **page 47**.
Is the motor ok?

NO

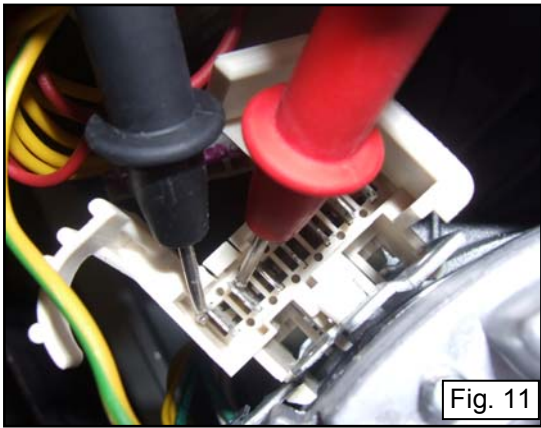
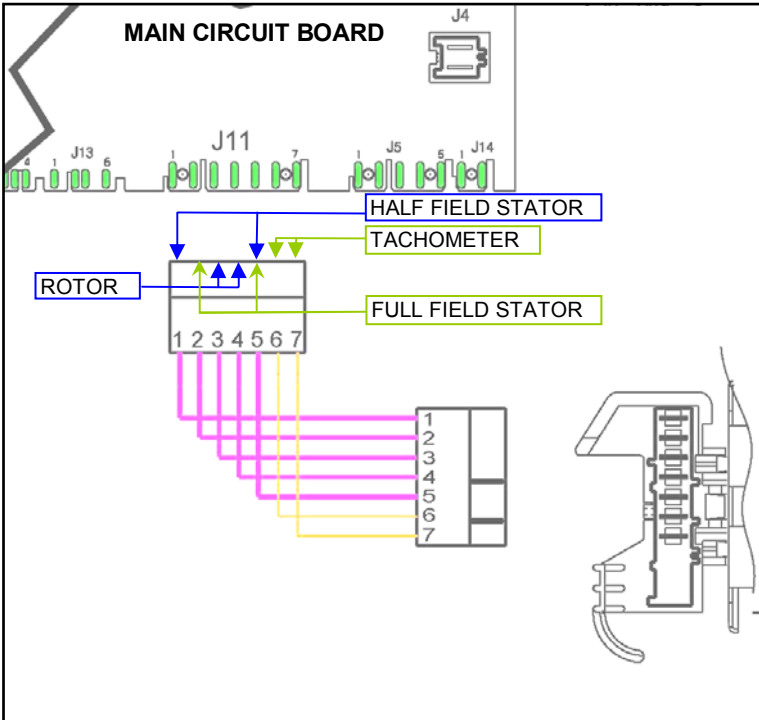
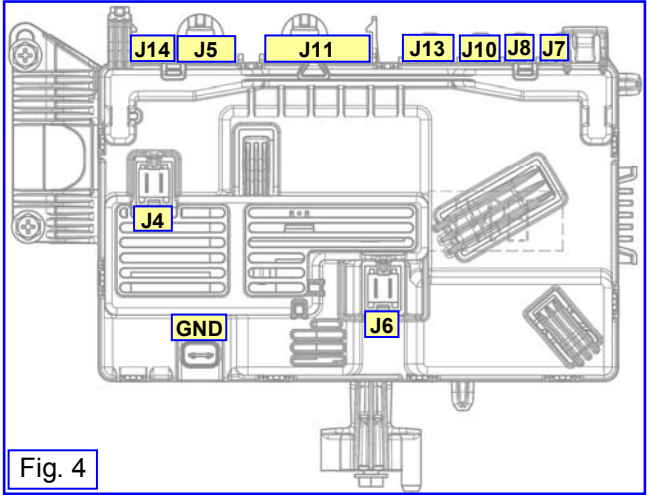
Replace the motor and repeat the diagnostic cycle to check for any further alarms.

YES

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

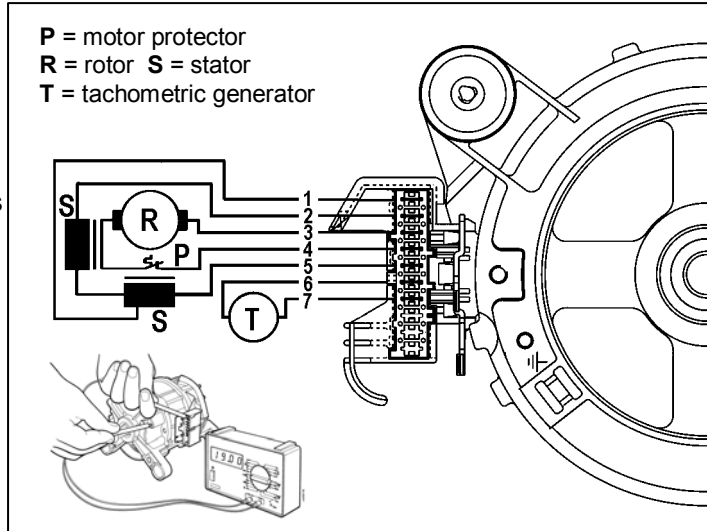
YES

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



How to check collector motors

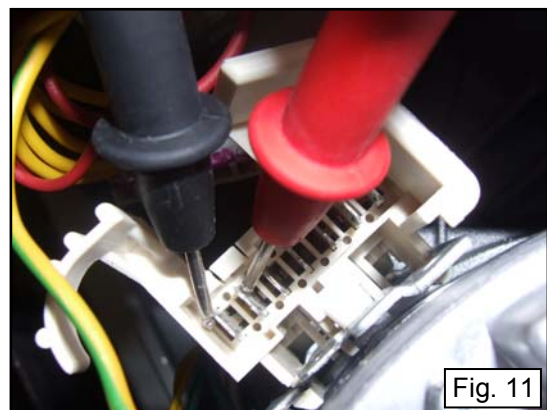
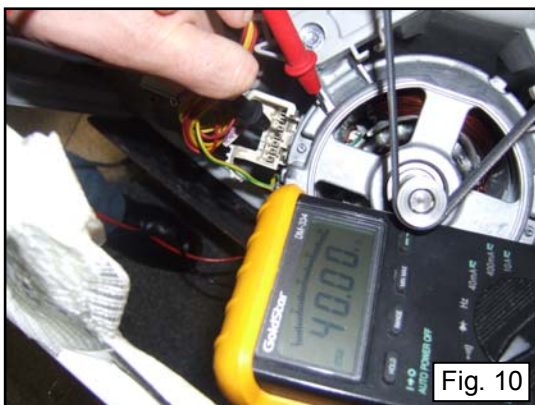
- 1) Check the connection blocks (wiring) and for the presence of any protruding/kinked terminals.
- 2) Check for the presence of any marks/residue/water or detergent deposits on the motor and where these come from.
- 3) Proceed by checking for any windings/earthed parts or parts with poor earthing insulation.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



		MOTORS			
	MOTOR TERMINAL BOARD TERMINALS	CHECK:	NMSC	AP&C	ECM
A	6-7	Tachometric generator winding	184 Ω	68,7 Ω	91Ω
B	2-5	Stator winding (all fields)	1.1÷2.2 Ω	1.62÷2.12 Ω	1.46÷1.95 Ω
C	3-4	Rotor winding (plus thermal cutout)	1.6÷1.8 Ω	1.9÷2.42 Ω	2÷2.3 Ω
D	1-5	Stator winding (half field, terminal 1 present)	0.55÷0.56 Ω	0.67 Ω	0.68 Ω

The tolerance of the resistance of windings is ± 7%

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



E53	E53: Problems with the “sensing” circuit of the component (Triac) powering the motor	E53
------------	---	------------

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 67

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

Checks to perform:

! Check that all the connectors are correctly inserted

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

NO →

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

YES ↓

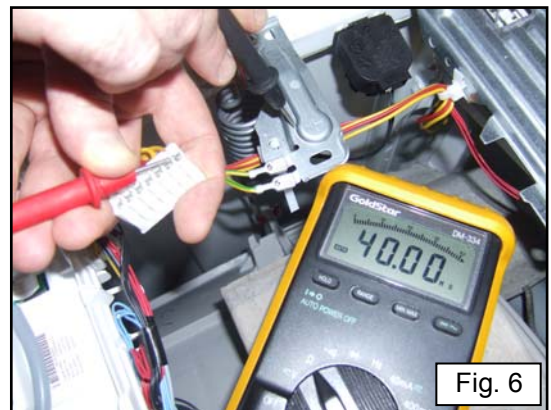
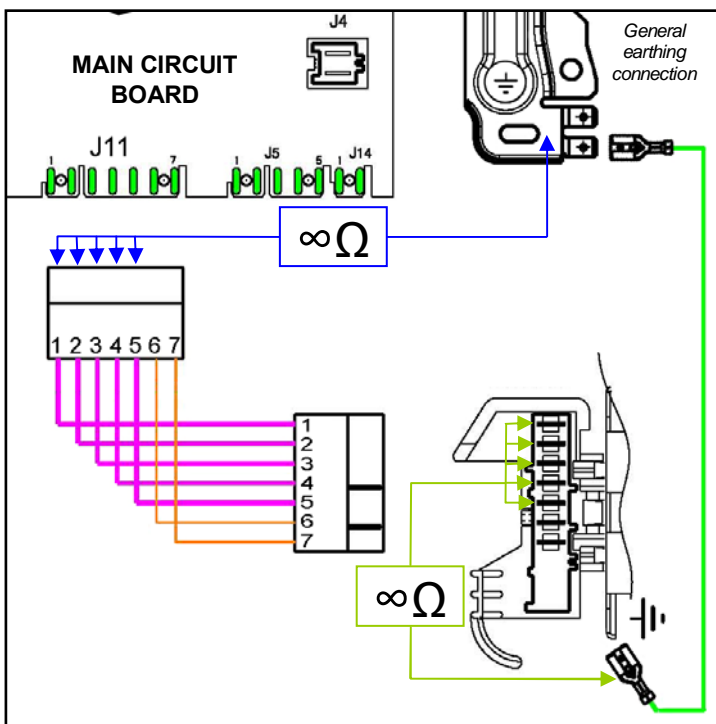
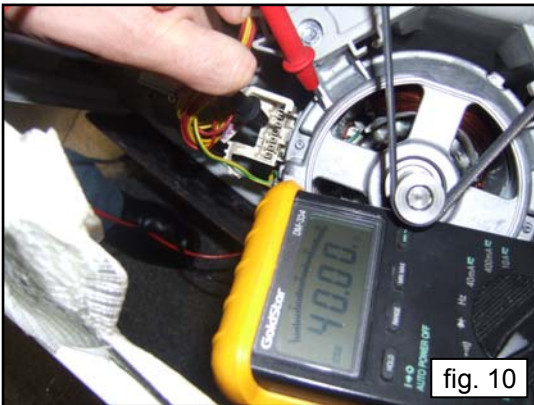
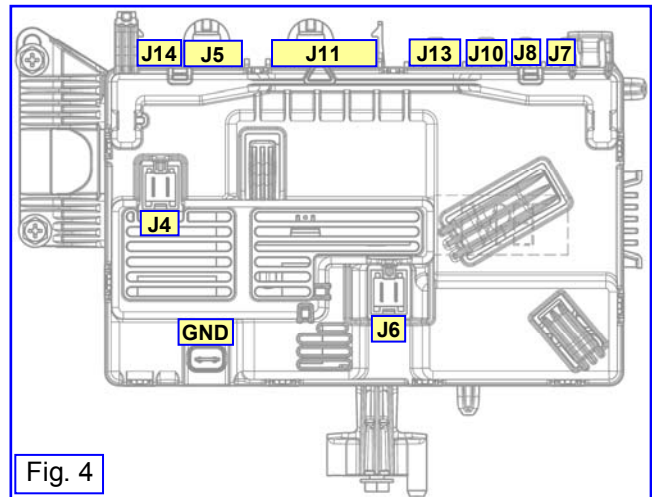
Detach the connector from the motor and measure between the terminals and the motor casing. (see fig. 10)
Is there any dispersion?

NO →

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

YES ↓

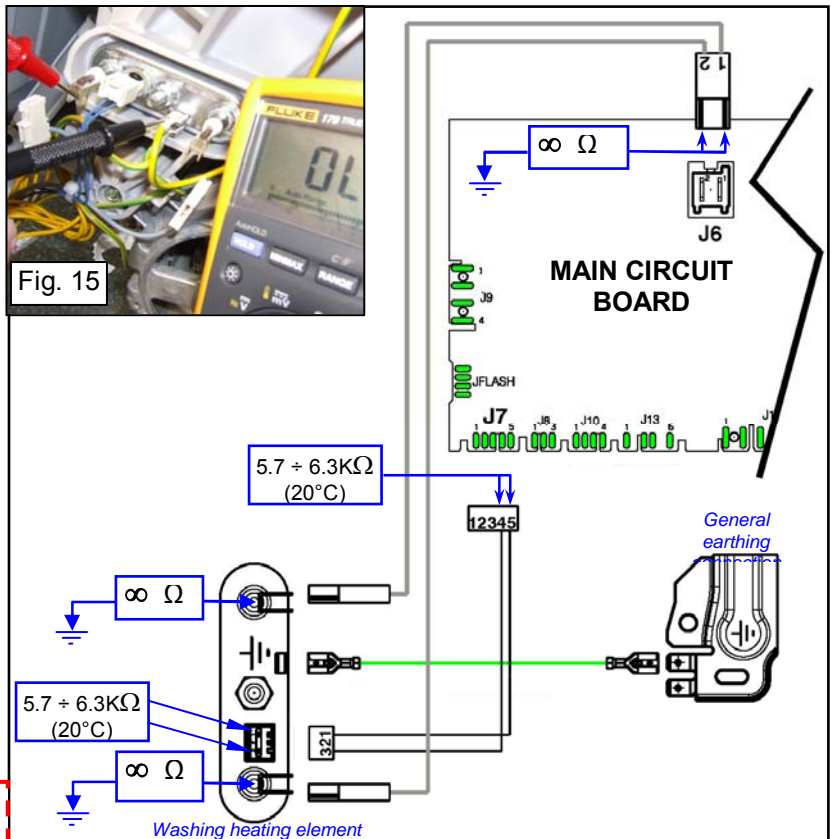
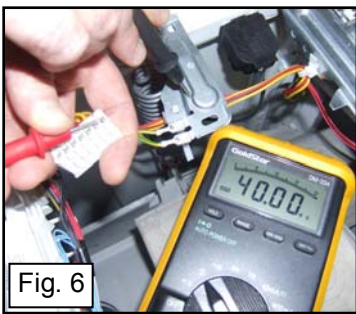
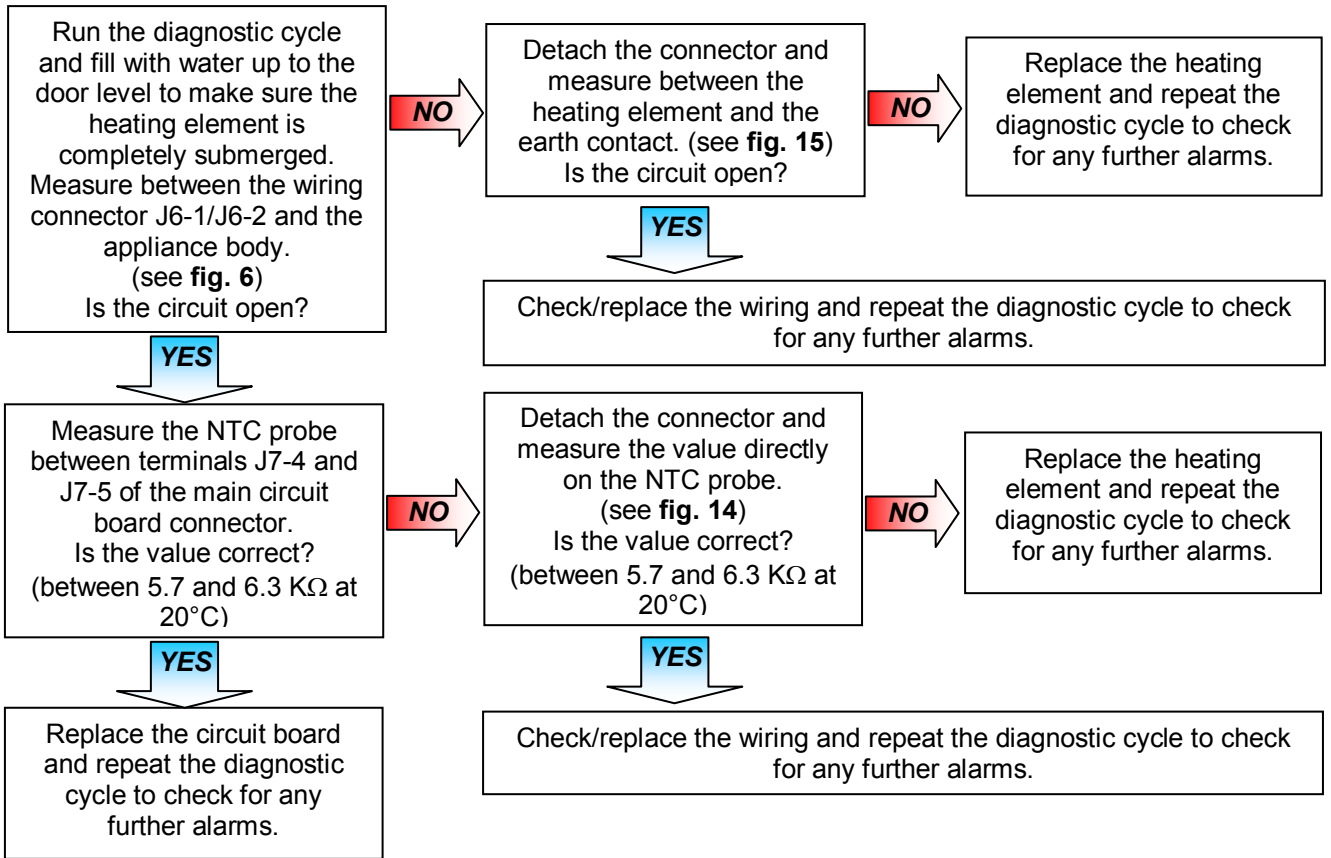
Replace the motor and repeat the diagnostic cycle to check for any further alarms.



! If there are burns on the circuit board, see page 67

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

Checks to perform:



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

Checks to perform:

! Check that all the connectors are correctly inserted

Measure between the connector J6-1/J6-2 of the main circuit board 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

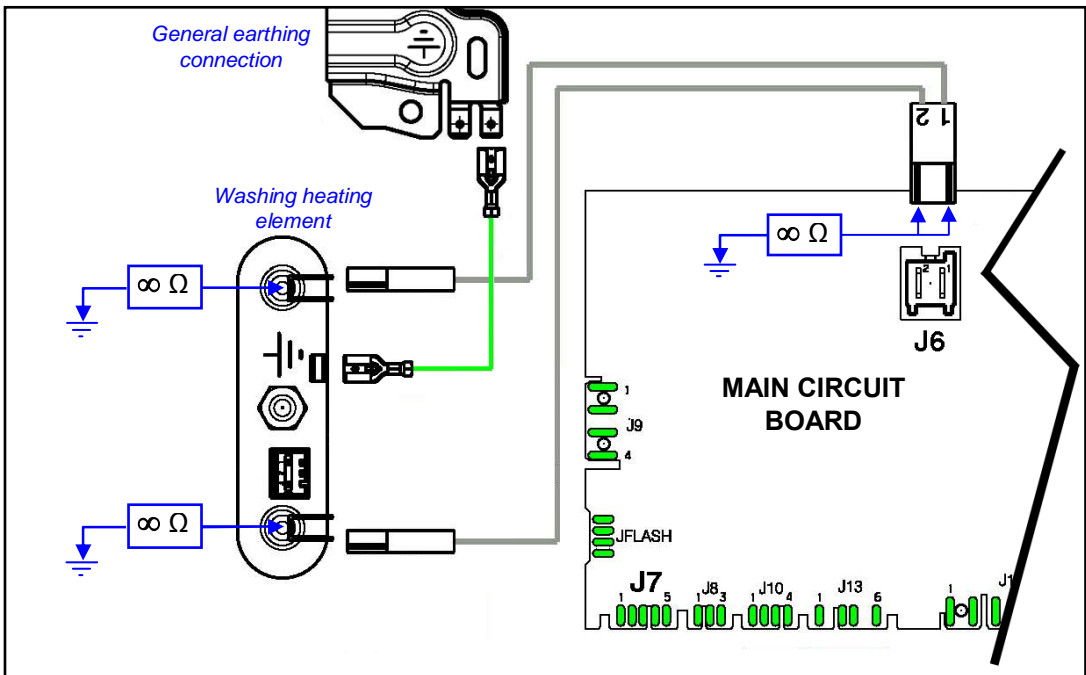
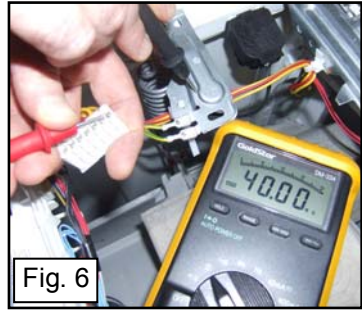
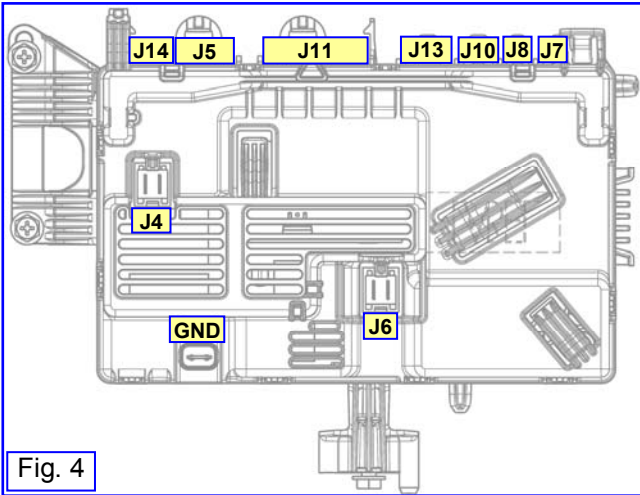
Detach the connector J6 and measure between the heating element and the earth contact. (see fig. 15) Is the circuit open?

NO

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

YES

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



! If there are burns on the circuit board, see page 67

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

NO

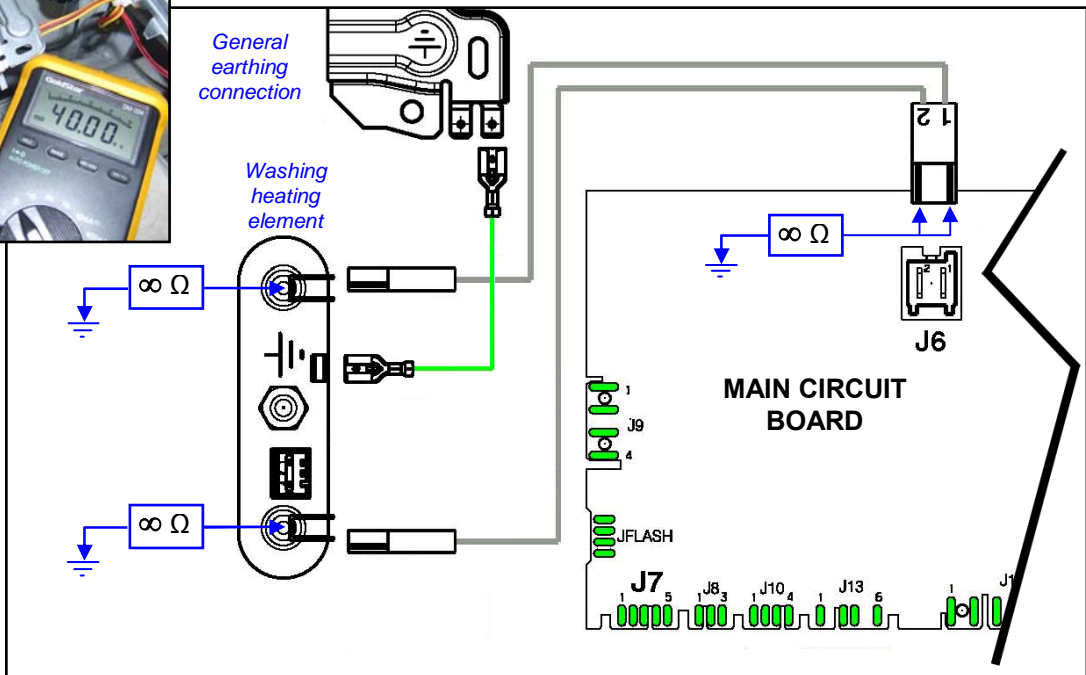
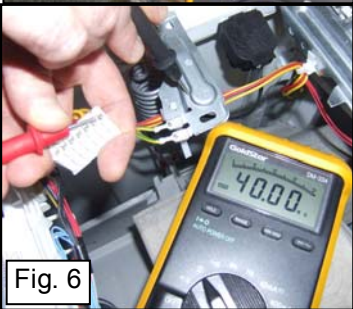
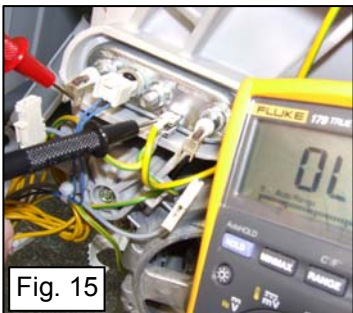
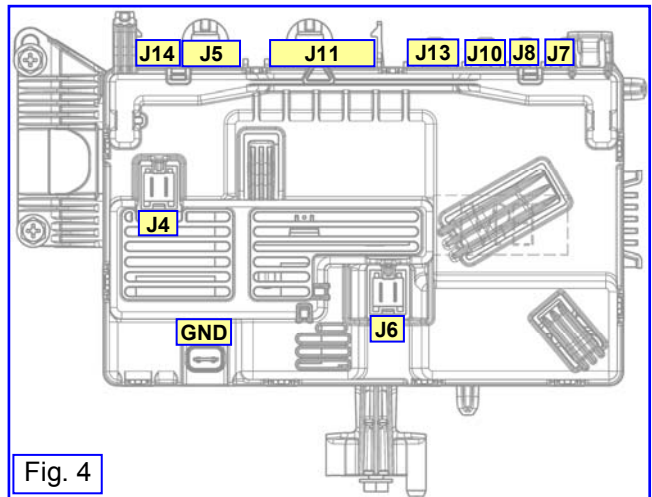
Run phase 8 of the diagnostic cycle, drain water from the tub. Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

YES

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

YES

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

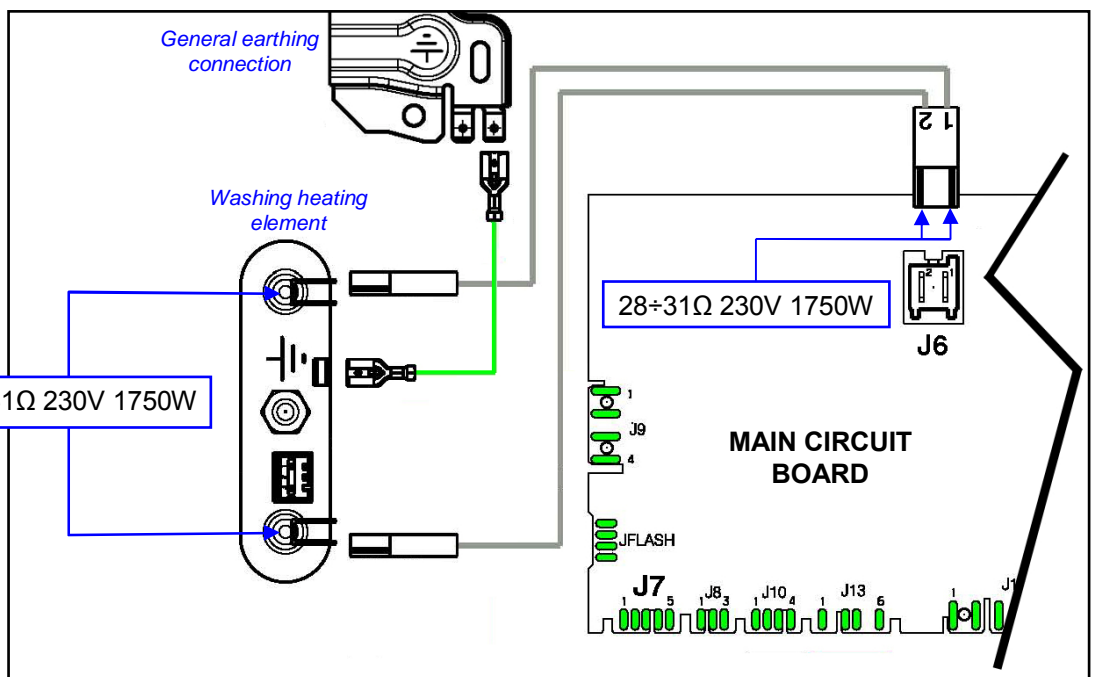
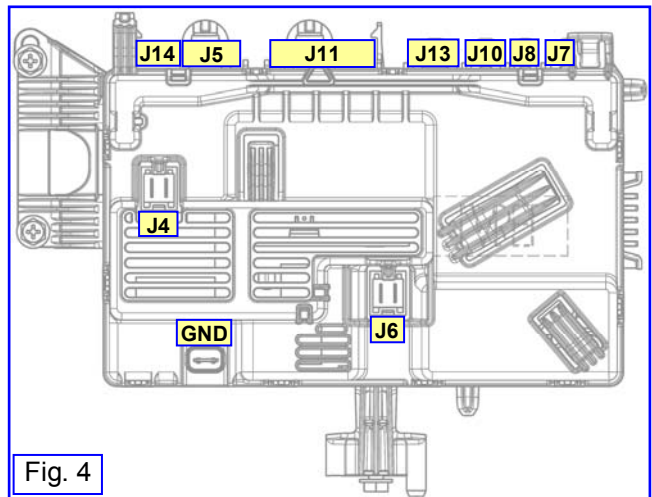
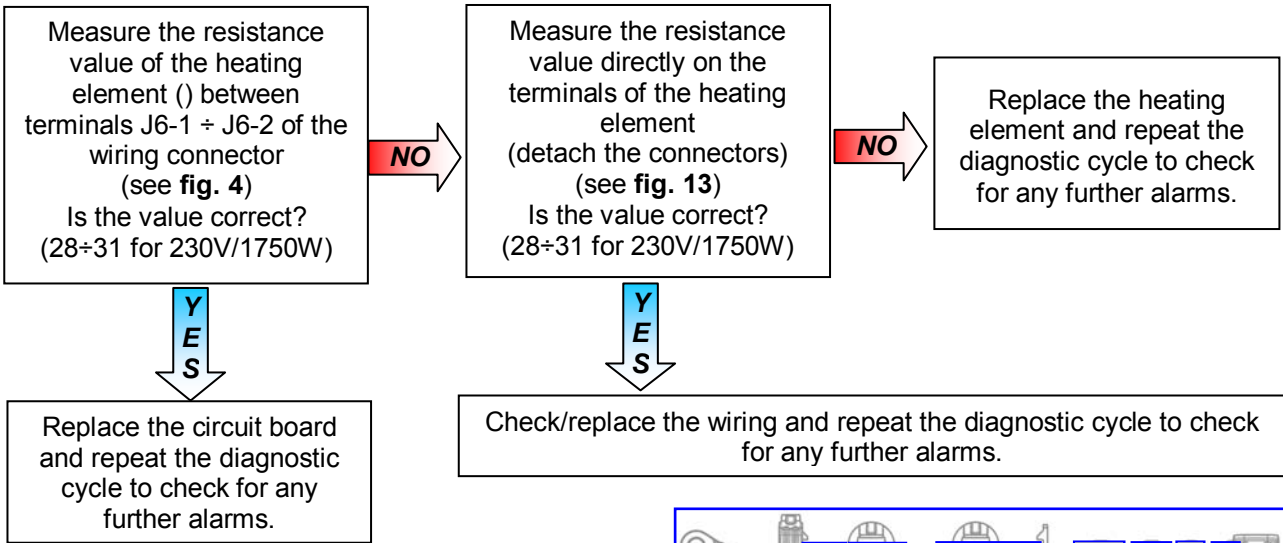


! If there are burns on the circuit board, see page 67

E69 **E69: Washing heating element damaged** **E69**

Checks to perform:

! Check that all the connectors are correctly inserted



! If there are burns on the circuit board, see page 67

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 67

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 J6-1/J6-2 and the appliance body. (see fig. 6) Is the circuit open?

NO

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

NO

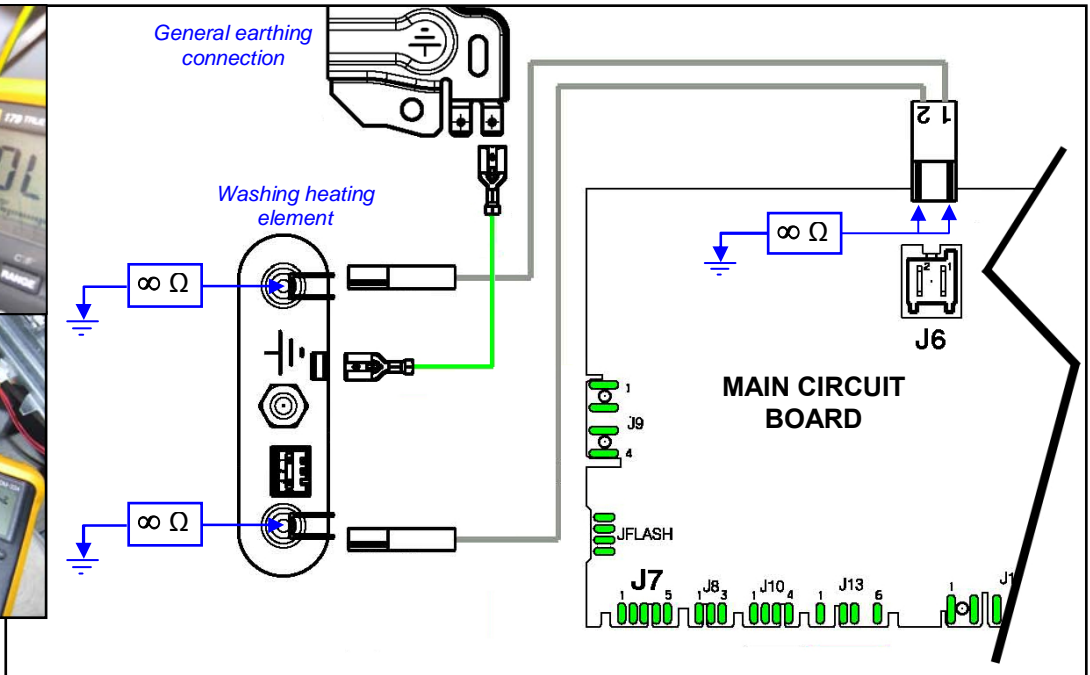
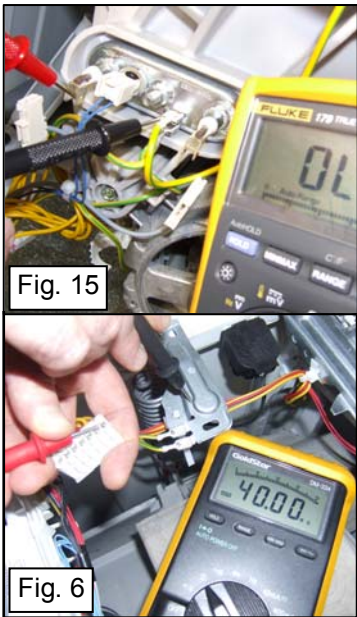
Run phase 8 of the diagnostic cycle, drain water from the tub. Replace the heating element and repeat the diagnostic cycle to check for any further alarms.

YES

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

YES

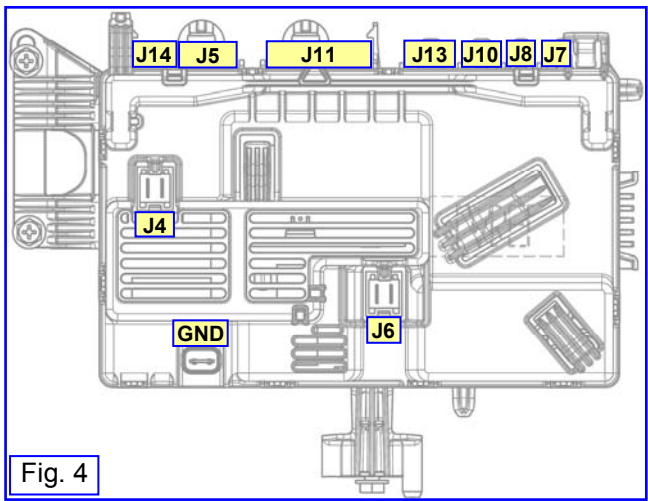
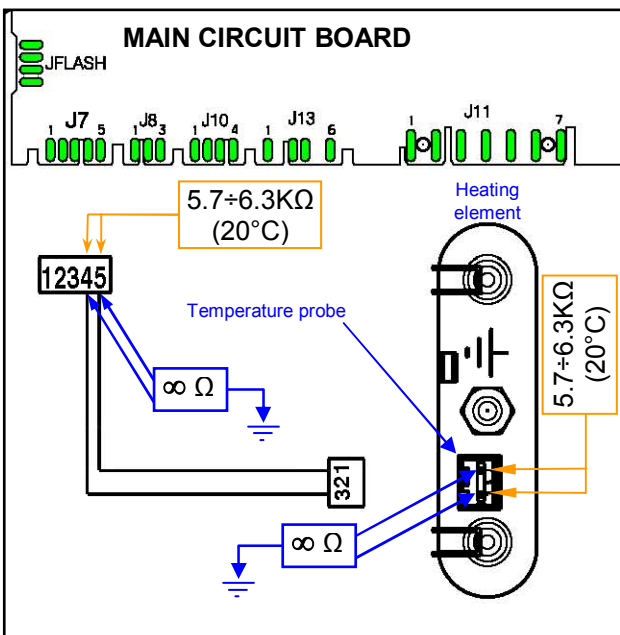
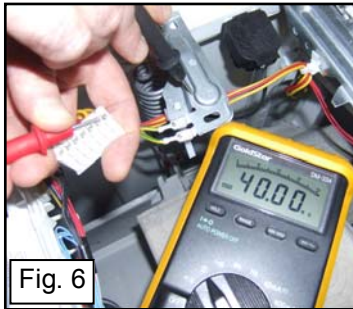
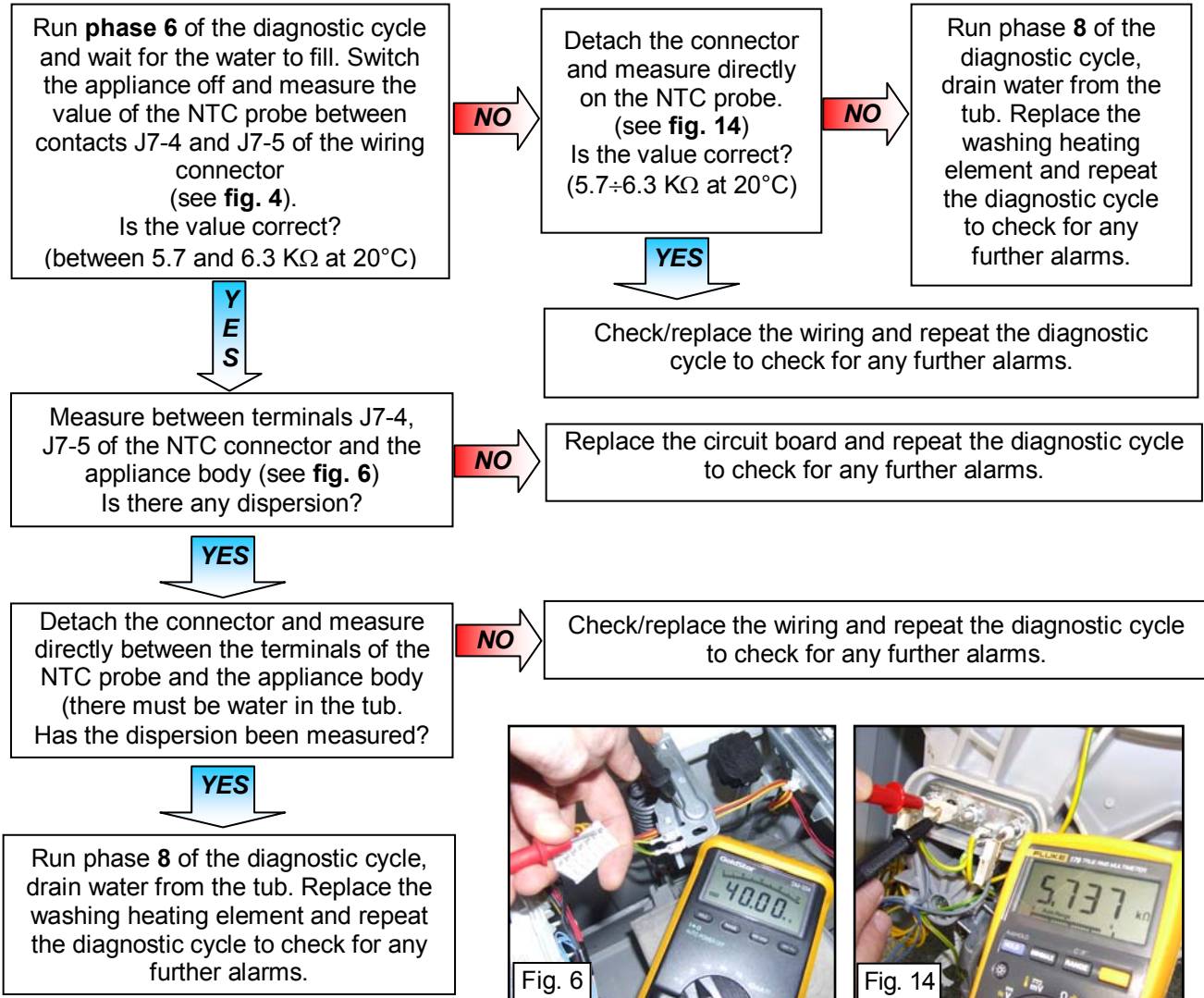
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms.



If there are burns on the circuit board, see page 67

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

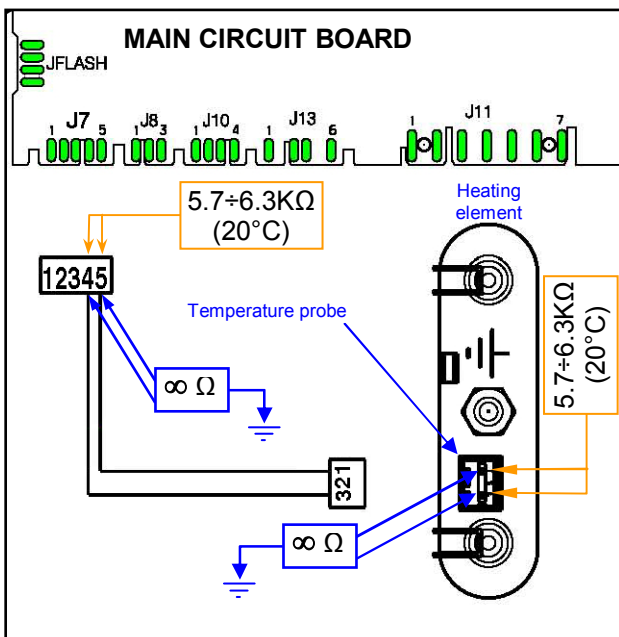
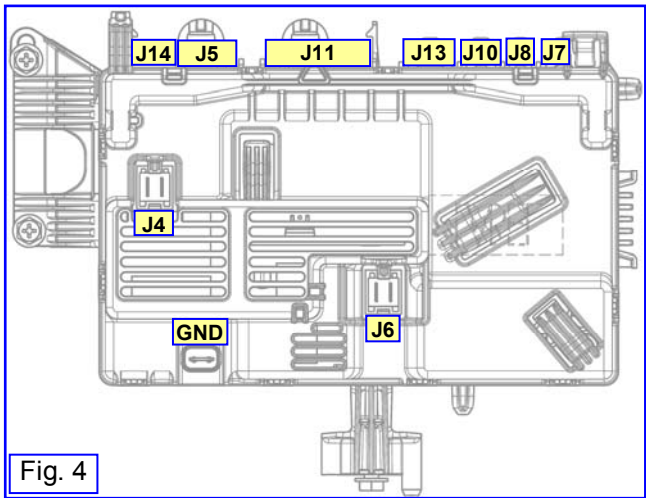
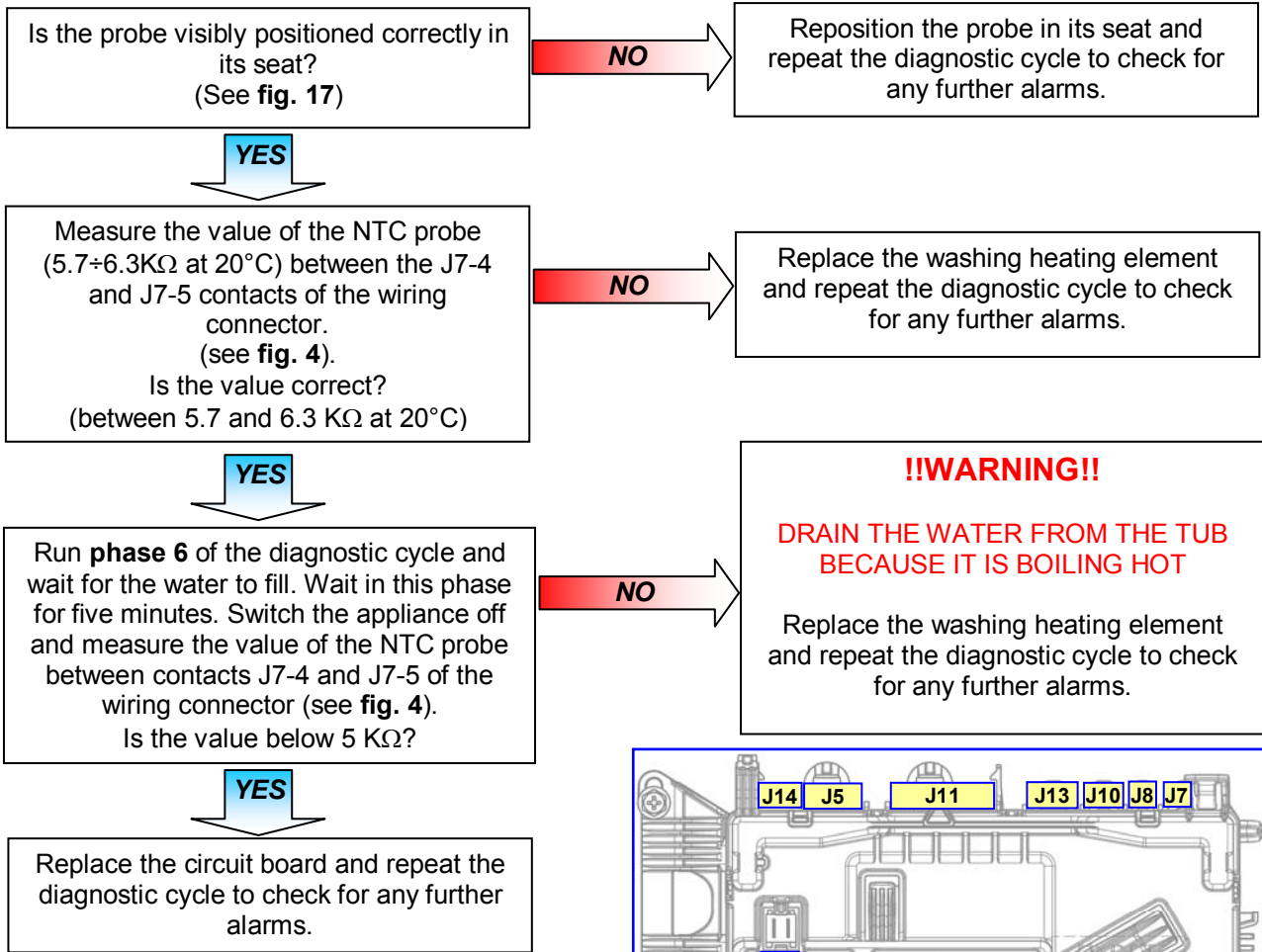
Checks to perform:



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

Checks to perform:

! Check that all the connectors are correctly inserted



! If there are burns on the circuit board, see page 67

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

Checks to perform:



Turn the appliance on, turn the programme selector to every setting: wait at least 10 seconds on each of the settings before moving on to the next one. Is alarm E83 shown again?



Repeat the diagnostic cycle to check for any further alarms.



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



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



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



E86	E86: Programme selector configuration error	E86
------------	--	------------

Checks to perform:



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

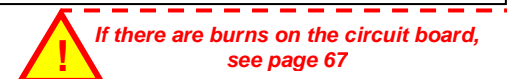


E87	E87: Display board microprocessor faulty	E87
------------	---	------------

Checks to perform:



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



E91	E91: Communication error between the display board and the main circuit board	E91
	Inconsistency between configuration values on starting the appliance	

Checks to perform:



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

- ▶ Detach and reconnect the connectors on both boards several times.
- ▶ Measure the continuity between connector J10 (main circuit board) and J13 (display board). Is the wiring ok?



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



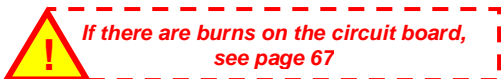
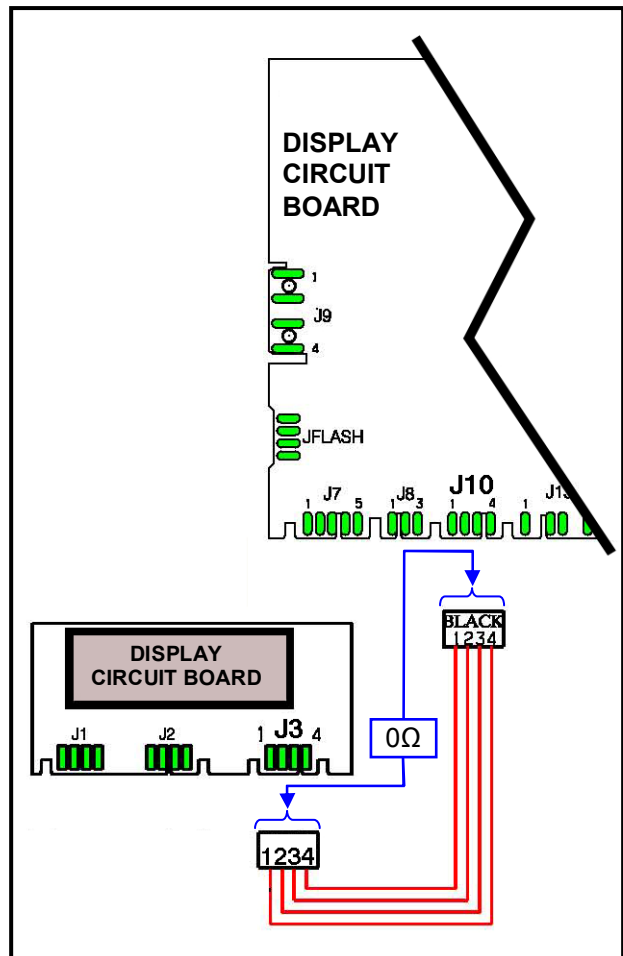
Replace the main circuit board and repeat the diagnostic cycle to check for any further alarms. Is the appliance still displaying E91?



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:



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:



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:



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:



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

E9C	E9C: Display board configuration error	E9C
------------	---	------------

Checks to perform:



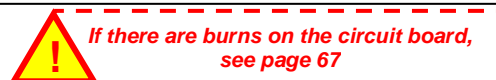
Incorrect configuration possible.
Replace the circuit board and repeat the diagnostic cycle to check for any further alarms.

E9E	E9E: Display board sensor/touch key faulty	E9E
------------	---	------------

Checks to perform:



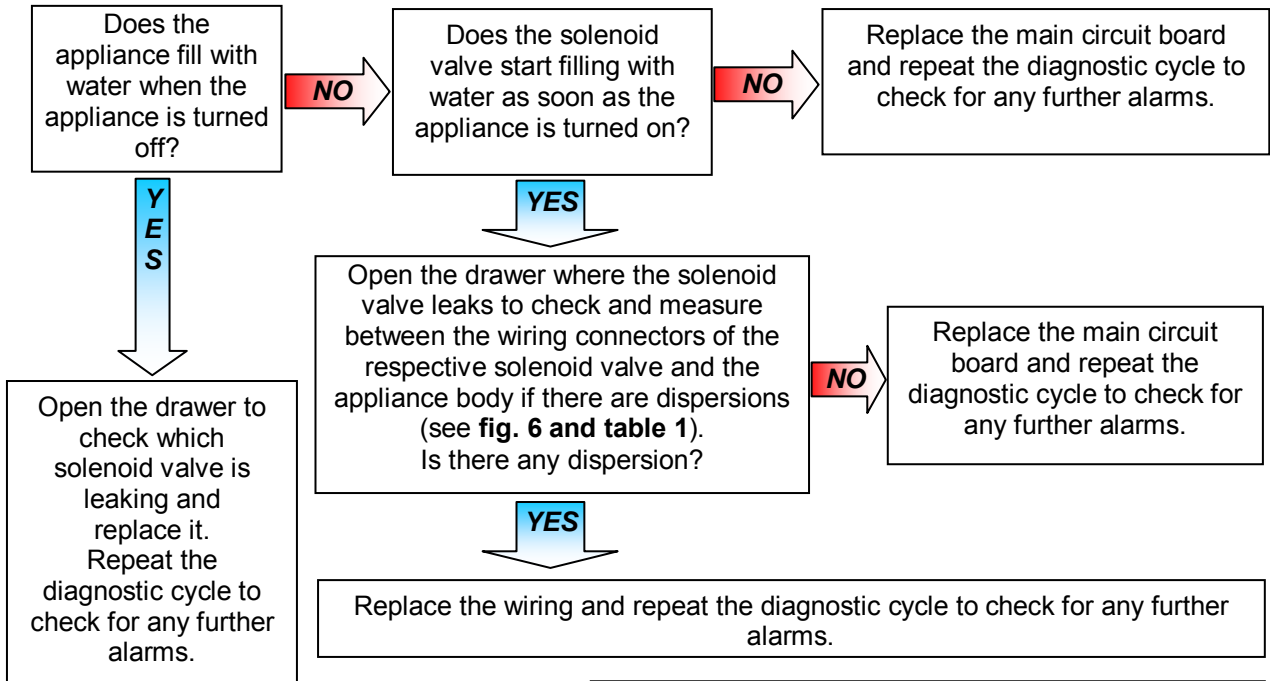
Display board faulty
Replace the display board and repeat the diagnostic cycle to check for any further alarms



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



Tab. 1

Between J 13-1 and J 13-3 wash solenoid valve
Between J 13-4 and J 13-6 prewash solenoid valve

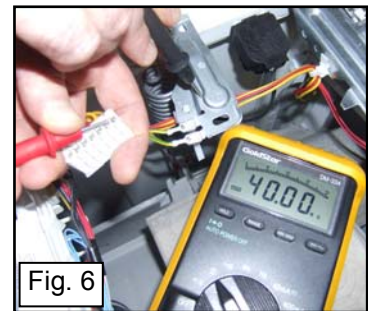
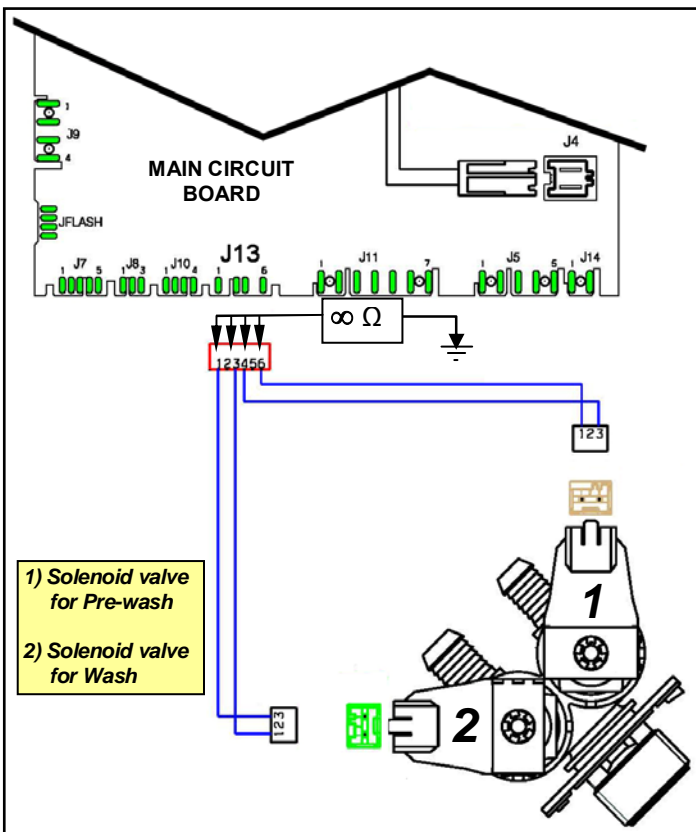


Fig. 6

! If there are burns on the circuit board, see page 67

EC4	EC4: AGS current sensor faulty error	EC4
	Spin speed reduced to safety speed of 150 rpm	

Checks to perform:



Check that all the connectors are correctly inserted

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



If there are burns on the circuit board, see page 67

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 correct, check: the wiring of the flowmeter and the Flowmeter.



If there are burns on the circuit board, see page 67

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.

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	EH1
	Power supply frequency out of configured range	

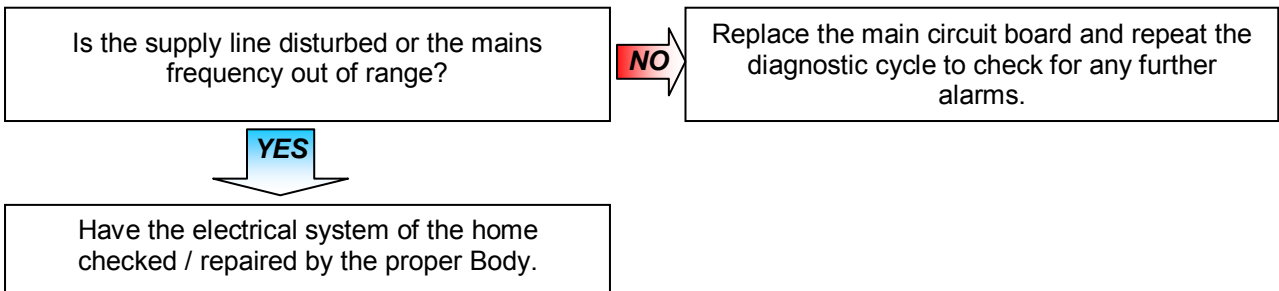
Checks to perform:



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.





If there are burns on the circuit board, see page 67

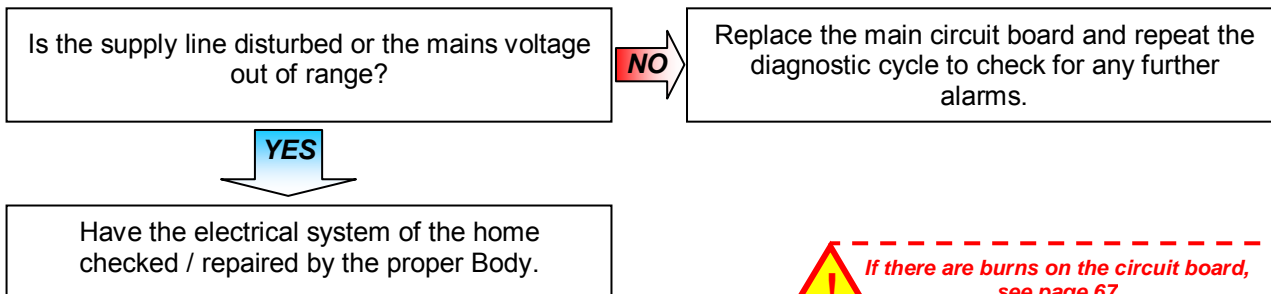
EH2	EH2: Supply voltage too high	EH2
	Supply voltage value higher than the one configured (for more than 10 seconds)	

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. 





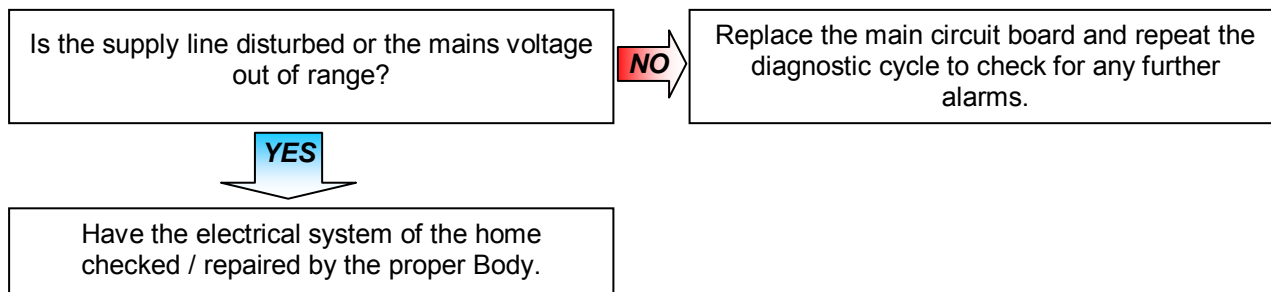
EH3	EH3: Supply voltage too low	EH3
	Supply voltage value higher than the one configured	

Checks to perform:

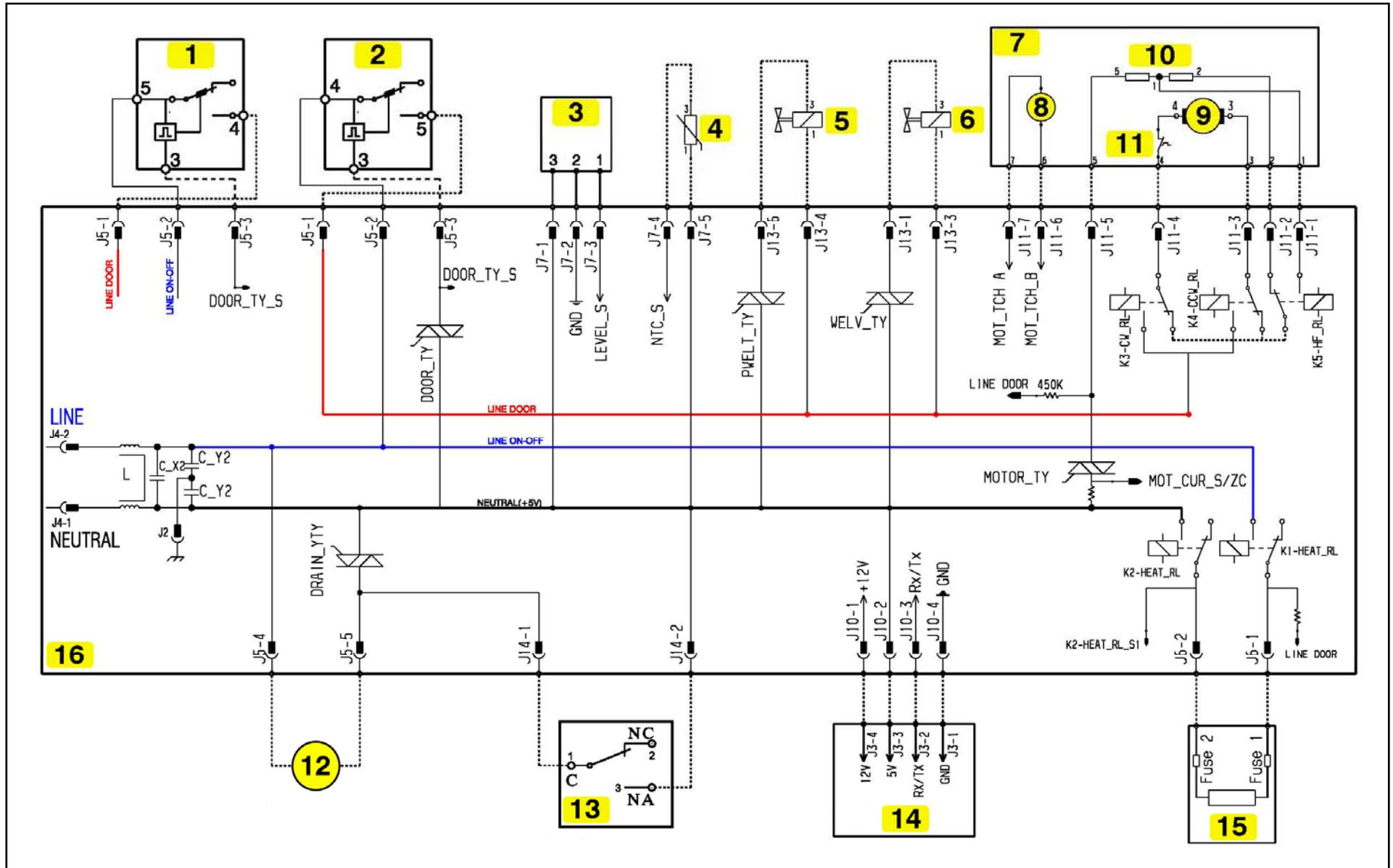
 **Check that all the connectors are correctly inserted**

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. 



7 OPERATING CIRCUIT DIAGRAM WM WITH AQUA CONTROL

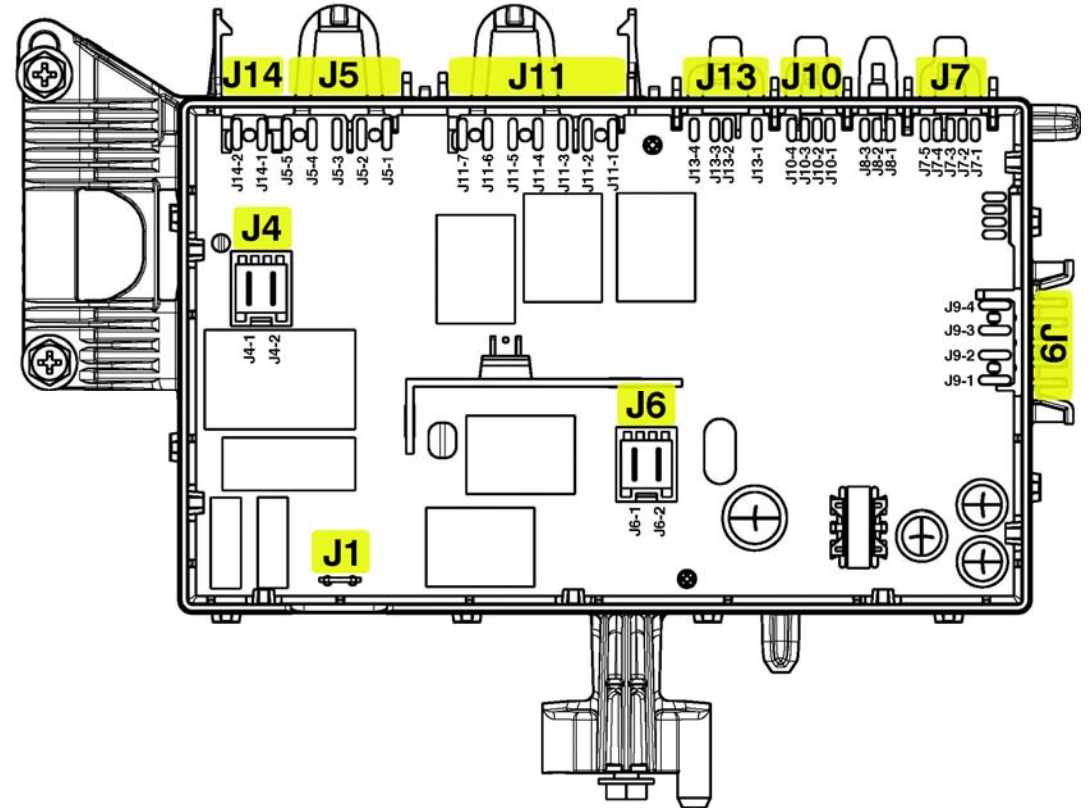


7.1 Key to circuit diagram WM

Appliance electrical components	PCB components		
<ol style="list-style-type: none"> 1. Traditional door lock without incorporated flange 2. Traditional door lock with incorporated flange 3. Analogue pressure switch 4. NTC temperature probe 5. Pre-wash solenoid 6. Wash solenoid 7. Motor with half-range 8. Motor tachometric generator 9. Rotor (motor) 10. Stator (motor) 11. Thermal cut-out (motor) 12. Drain pump 13. Water control 14. Display board 15. Heating element (with thermal fuses) 16. Main circuit board 	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> DOOR_TY DRAIN_YTY PWELT_TY WELV_TY K1 K2 K3 K4 K5 </td> <td style="width: 50%; vertical-align: top;"> Door interlock Triac Drain pump Triac Pre-wash solenoid Triac Wash solenoid Triac Heating element relay (Line) Heating element relay (Neutral) Motor relay: clockwise rotation Motor relay: anti-clockwise rotation Motor relay: half-range power supply (some models) </td> </tr> </table>	DOOR_TY DRAIN_YTY PWELT_TY WELV_TY K1 K2 K3 K4 K5	Door interlock Triac Drain pump Triac Pre-wash solenoid Triac Wash solenoid Triac Heating element relay (Line) Heating element relay (Neutral) Motor relay: clockwise rotation Motor relay: anti-clockwise rotation Motor relay: half-range power supply (some models)
DOOR_TY DRAIN_YTY PWELT_TY WELV_TY K1 K2 K3 K4 K5	Door interlock Triac Drain pump Triac Pre-wash solenoid Triac Wash solenoid Triac Heating element relay (Line) Heating element relay (Neutral) Motor relay: clockwise rotation Motor relay: anti-clockwise rotation Motor relay: half-range power supply (some models)		

7.2 Main circuit board connectors

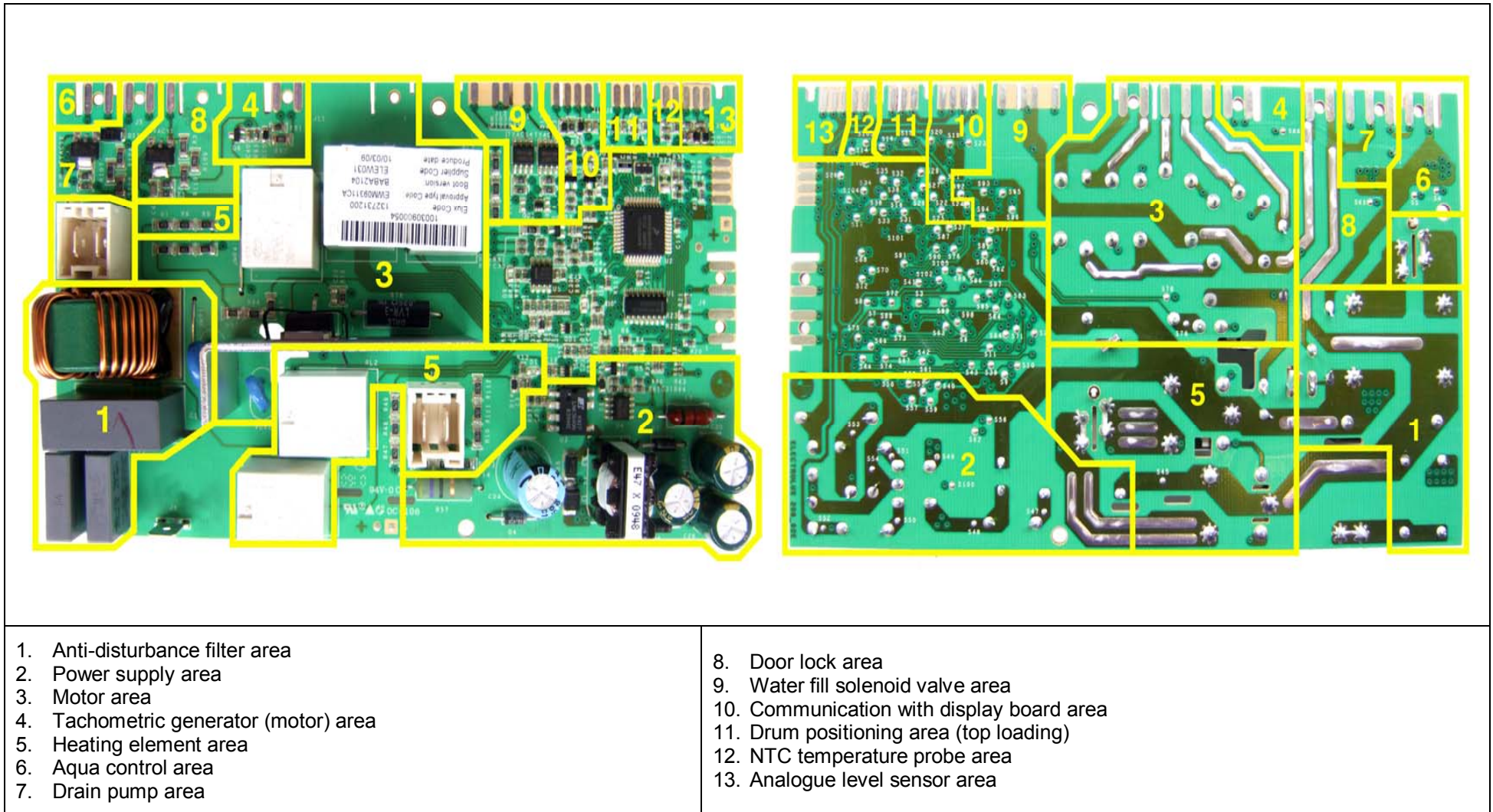
J9	J7
Serial interface: J9-1 ASY_IN J9-2 ASY_OUT J9-3 +5V J9-4 GND	J7-1 Analogue pressure switch (+5V) J7-2 Analogue pressure switch (GND) J7-3 Analogue pressure switch (signal) J7-4 NTC temperature probe J7-5 NTC temperature probe
J10	J13
Communication with display board: J10-1 Vee 12V J10-2 5V J10-3 Rx/Tx J10-4 GND	J13-1 Wash solenoid valve (Triac) J13-3 Solenoid valves (line) J13-4 Solenoid valves (line) J13-6 Pre-wash solenoid valves (Triac)
J11	J5
J11-1 Motor (stator - half range) J11-2 Motor (stator full range) J11-3 Motor (rotor) J11-4 Motor (rotor) J11-5 Motor (Triac) J11-6 Motor (tachometric generator) J11-7 Motor (tachometric generator)	J5-1 Door lock (Sensing Line) J5-2 Door lock (Line) J5-3 Door lock (Triac) J5-4 Drain pump (Line) J5-5 Drain pump (Triac)
J14	J4
J14-1 Pump J14-2 line (neutral)	J4-1 line (neutral) J4-2 line
J6	J1
J6-1 heating element (Line Relay) J6-2 heating element (Neutral Relay)	J1 GND



7.3 Burns on the main circuit board EWM09312

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

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



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