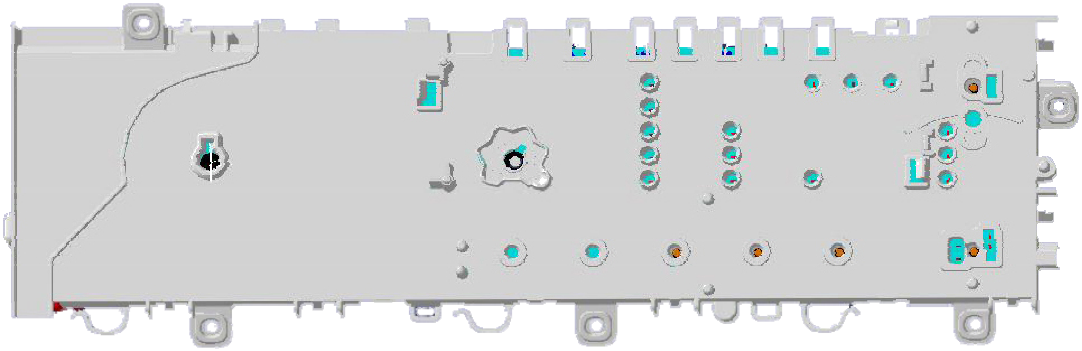
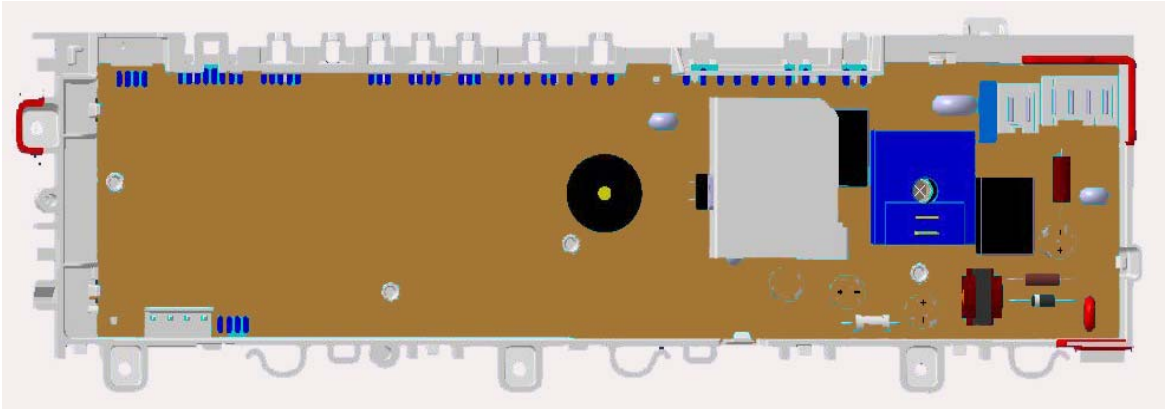
Electrolux

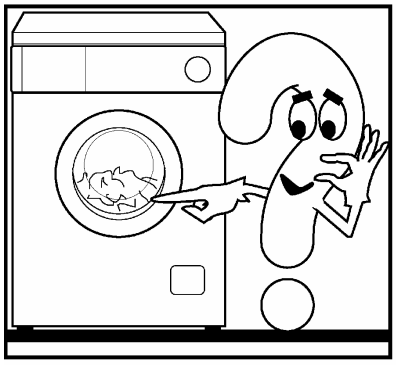
Distriparts

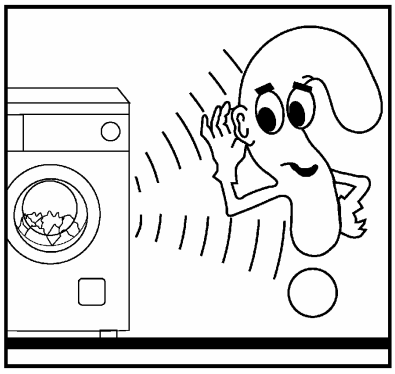
SERVICE MANUAL

WASHING









Spares Operations Italy
Corso Lino Zanussi, 30
I - 33080 PORCIA /PN (ITALY)

Fax +39 0434 394096

Edition: 03-2009 Rev. 01

Publication no.

599 70 56-70

EN

Washing machines & Washer-dryers

Guide to diagnostics ENV06 of electronic controls

EWM2100

Contents

INTRODUCTION

1.1 Purpose of this manual

The purpose of this Service Manual is to provide a simple and clear description of the procedure to be followed by service engineers when confronted by problems identified by the various alarm codes generated by appliances with the EWM2100 electronic control system.

Depending on the configuration of the appliance, the alarm codes may be displayed partially or completely to the user (the alarm codes are generally displayed partially).
The diagnostic system can be used by service engineers for the following purposes:

- To read the alarms
- To cancel alarm conditions stored in memory
- To test the operation of the appliance

1.2 Procedure

1. Identify the type of control system **(page 6/7)** and access the diagnostic cycle **(See page 8)**.

2. Read the alarm code stored in memory **(page 12)** and refer to the instructions for the corresponding alarm code, **page 15-19**.

3. Cancel the alarm stored in memory **(page 14)**.

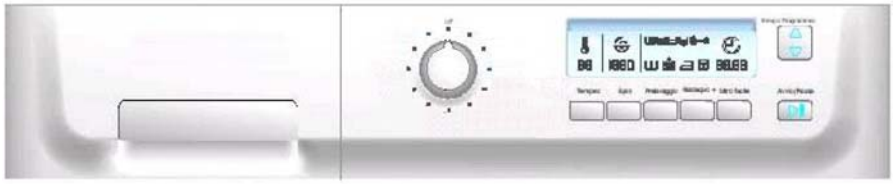
4. If access to the diagnostic cycle is not possible, refer to the section “Access to diagnostic system impossible” **(page 20)**.

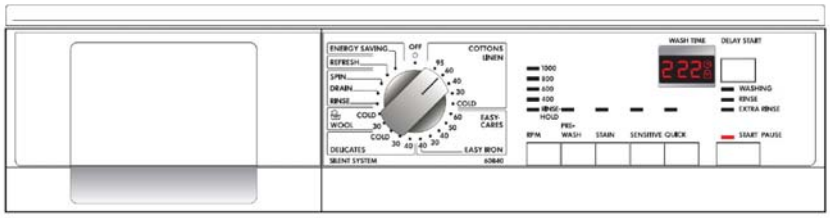
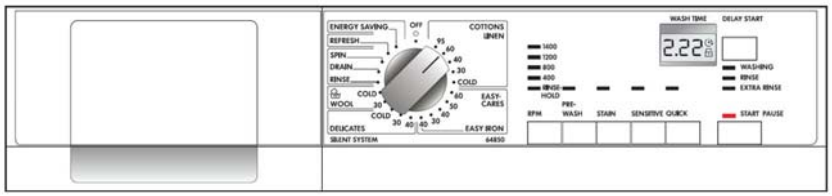
5. If the main PCB is replaced, check that there are no burned parts **(see page 91)**.

6. After any repair, always check the operation of the appliance using the diagnostic cycle **(page 9)**.

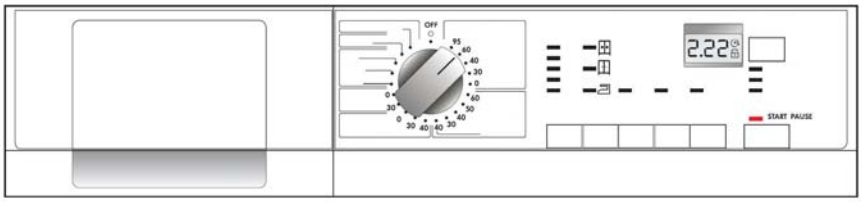
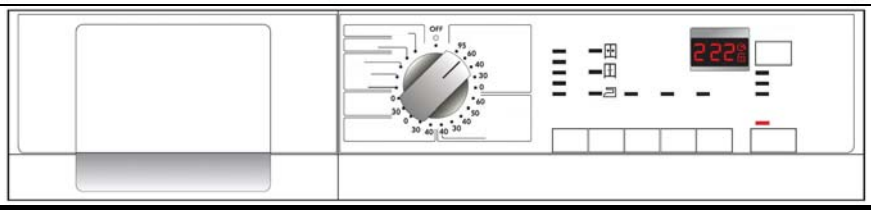
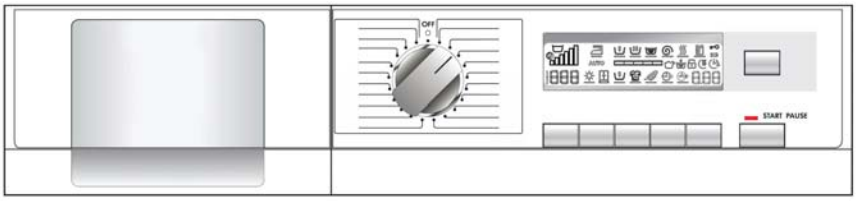
7. Cancel any alarms stored in memory during the diagnostic procedure **(page 14)**.

2 WM APPLIANCES CONTROL PANELS

ELECTROLUX	TC4	
	TC3	
	TC2	
	TC3 ICON	
	TC2 ICON	
SMART ACTION	A3 AF3-A4.2	
SMART CATALOGUE	C3 CF3	
INPUT		
SMART ZANUSSI	Z3	

AEG	Series 6 SPECIAL	
	Series 6	

3 WD APPLIANCES CONTROL PANELS

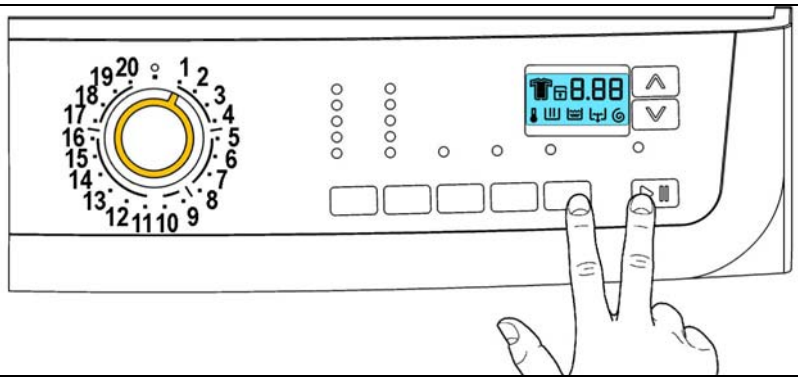
ELECTROLUX	TC4 PROPORTIONAL	
	TC4 TIME MANAGER	
AEG	Series 6	
	Series 6 SPECIAL	
	Series 7	

These are the available stylings at the moment in this Service Manual, in future some others could be developped.

4 DIAGNOSTIC SYSTEM

4.1 ACCESS TO THE DIAGNOSTIC CYCLE

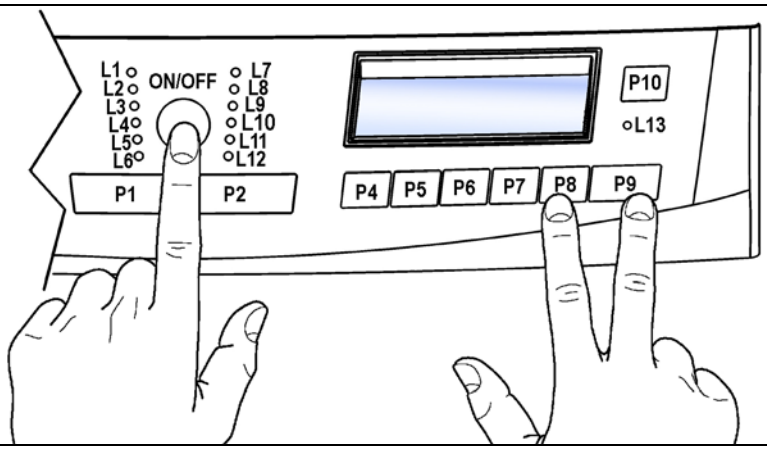
All versions



1. Switch off the appliance.
2. Press and hold down the **START/PAUSE** button and the nearest **OPTION button** simultaneously (as represented in figure).
3. Holding down both buttons, switch the appliance on by turning the programme selector **one position clockwise**.
4. Continue to hold down the buttons until the LEDs begin to flash (at least 2 seconds).

In the first position, the cycle tests the operation of the buttons and the relative LEDs. If the selector is turned **clockwise**, the cycle performs the diagnostics for the various components and reads the alarm codes.

INPUT Version



5. Switch off the appliance.
6. Press and hold down **START/PAUSE** button and the nearest **option button** (as represented in figure).
1. Holding down both buttons, switch the appliance on pushing button **ON/OFF.**
2. The test of the display board starts immediately.

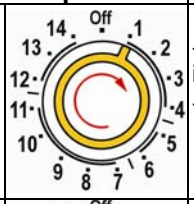
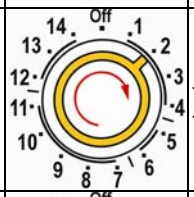
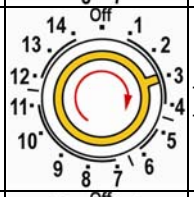
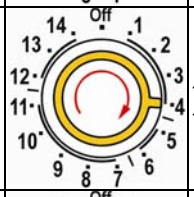
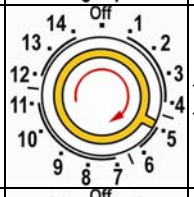
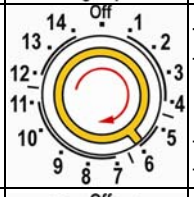
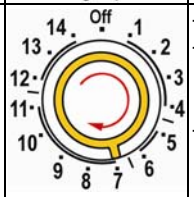
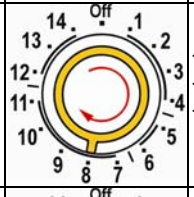
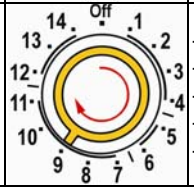
Pushing sequentially button P1 positions from 2 to 10 are analysed in an increasing way, on the contrary push button P2.
Each position is confirmed by the switching on of the corresponding LED.

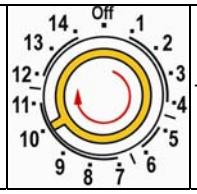
4.2 Exiting diagnostics mode

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

4.3 PHASES OF THE DIAGNOSTIC CYCLE

Irrespective of the type of PCB and the configuration of the programme selector it is possible, after entering diagnostic mode, turning the programme selector **clockwise or pushing the buttons P1 or P2** (INPUT version), to perform diagnostics on the operation of the various components and to read the alarms.
All the alarms are enabled during the diagnostic cycle.

Selector position		Components actioned	Operating conditions	Function checked	LCD
1		- All the LEDs and symbols light in sequence. - When a button is pressed, the corresponding LED or symbol light.	Always activated	Operation of the user interface	All symbols are activated in sequence, the backlight lights up and then switches off.
2		- Door interlock - Wash solenoid	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through washing compartment	Displays the water level in tub
3		- Door interlock - Pre-wash solenoid	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through pre-wash compartment (bleach)	Displays the water level in tub
4		- Door interlock - Pre-wash and wash solenoids	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through conditioner compartment	Displays the water level in tub
5		- Door interlock - Bleach/stains solenoids	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through conditioner/stains compartments	Displays the water level in tub
6		- Door interlock - Wash solenoid if the level of water in the tub does not cover the heater - Heating element - Recirculation pump	Door locked Water level above the heater Maximum time 10 minutes or up to 90°C (*)	Heating Recirculation	Wash water temperature
7		- Door interlock - Wash solenoid if the level of water in the tub does not cover the heater - Motor (55 rpm clockwise, 55 rpm counter-clockwise, 250 rpm impulse)	Door locked Water level above the heater	Check for leaks from the tub	Displays the drum speed (the real value divided by ten)
8		- Door interlock - Drain pump - Motor up to 650 rpm then at maximum spin speed (**)	Door locked Water level lower than anti-boiling level for spinning	Drain and spin; control of congruence in closure of level pressure switches	Displays the drum speed (the real value divided by ten)
9		- Door interlock - Drain pump - Motor fan - Condensation solenoid valve - Drying heating element	Door locked Water level lower than anti-boiling level	Drying	Displays the air temperature

10		- Reading/Cancellation of the last alarm	-----	----	

(*) 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 FUCS and no clothes have to be inserted inside the appliance.

5 ALARMS

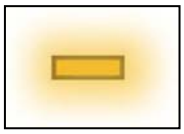
5.1 Displaying the alarms to the user

The alarms displayed to the user are listed below:

- ***Door open***
- ***Drain difficulty (dirty filter)***
- ***Water fill difficulty (closet tap)***

AEG Version

The alarms are represented through the flashing of the yellow LED, which is above the START-PAUSE button, and can be solved directly by the end user;



Other versions

The alarms are represented through the flashing of the red LED, which is inside the START-PAUSE button its shape depends on the styling) and can be solved directly by the user;

The alarm listed below:

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

for its solution it is necessary the intervention of the Service.

While for the alarm:

- ***EH0 – Voltage or frequency out of nominal values***

It is necessary to wait that the voltage and/or the frequency of the electric line reset the nominal conditions.

The alarms are enabled during the execution of the washing programme, with the exception of alarms associated with 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
- Water temperature lower than 55°C
- Motor stopped

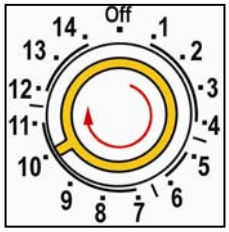
Certain alarm conditions require that a drain phase be performed before the door can be opened for safety reasons:

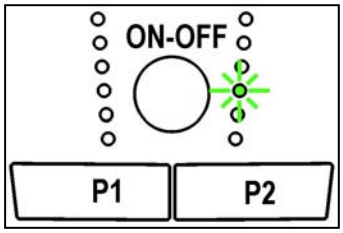
- Cooling water fill if the temperature is higher than 65°C
- Drain until the analogue pressure switch is on empty, during a max. 3-minute time.

5.2 Reading the alarm codes

It is possible to display the last three memorised alarms in the FLASH memory of the electronic board:

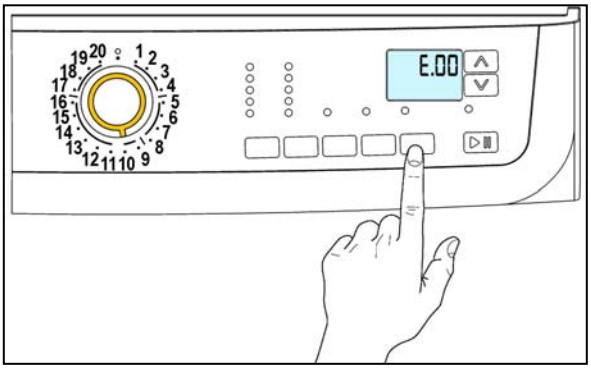
- Enter diagnostic mode (par. 4.1)
- Irrespective of the type of PCB and configuration:
  turn the programme selector **clockwise** (version with knob) pushing button **P1** (version INPUT) to the **tenth position.**

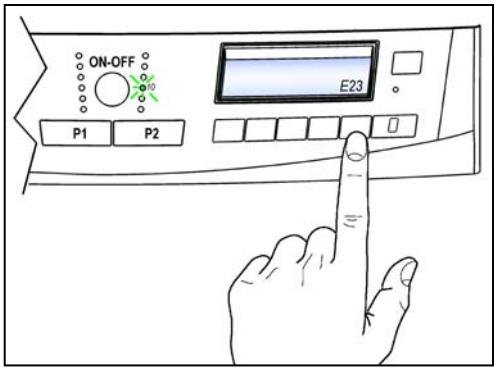




- The last alarm is displayed.

- To display the previous alarms, press sequentially the left button of the START/PAUSE button (as represented in figure).



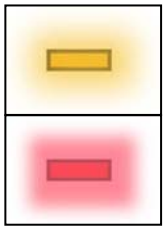


- To return to the last alarm, press the START/PAUSE button.

5.2.1 Alarm displaying

AEG Version:

The alarm is displayed by a repeated flashing sequence of the LED placed above the button START / PAUSE with yellow and red light (0,5 seconds on, 0,5 seconds off with a 2,5 second pause between the sequences).

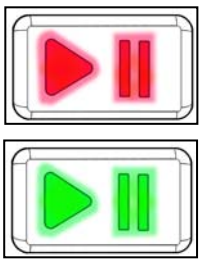


- LED indicator START / PAUSE with yellow light → indicates the first digit of the alarm code (family).
- LED indicator START / PAUS with red light → indicates the second digit of the alarm code (internal number of the family).

These two LEDs are featured in all models.

Other versions:

The alarm is displayed by a repeated flashing sequence of the START / PAUSE button with red and green light (0,5 seconds on, 0,5 seconds off with a 2,5 second pause between the sequences).



- LED indicator START / PAUSE with red light → indicates the first digit of the alarm code (family)
- LED indicator START / PAUSE with green light → indicates the second digit of the alarm code (internal number of the family)

These two LEDs are featured 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.
- The alarm code "families" are shown in hexadecimal; in other words:

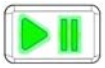
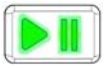
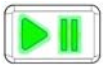
→ **A** is represented by **10** flashes
→ **B** is represented by **11** flashes
→ ...
→ **F** is represented by **15** flashes

- Configuration errors are shown by the flashing of all the LEDs (user interface not configured).

5.2.2 Examples of alarm display

Example: Alarm E43 (problems with the door interlock Triac) will display the following:

- the sequence of four flashes of the START / PAUSE button with red light (version AEG LED yellow light), indicates the first number E**4**3;
- the sequence of three flashes of the START / PAUSE button with green light (version AEG LED red light), indicates the second number E4**3**;

START / PAUSE button with red light				START / PAUSE button with green light			
ON/OFF	**On/Off (Ver. AEG)**	**Time (Sec.)**	**Value**	**ON/OFF**	**On/Off (Ver. AEG)**	**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	Pause
		0.5					
		1.5	Pause				

5.2.3 Operation of alarms during diagnostics

All alarms are enabled during the components diagnostic phase.

5.3 Rapid reading of alarm codes

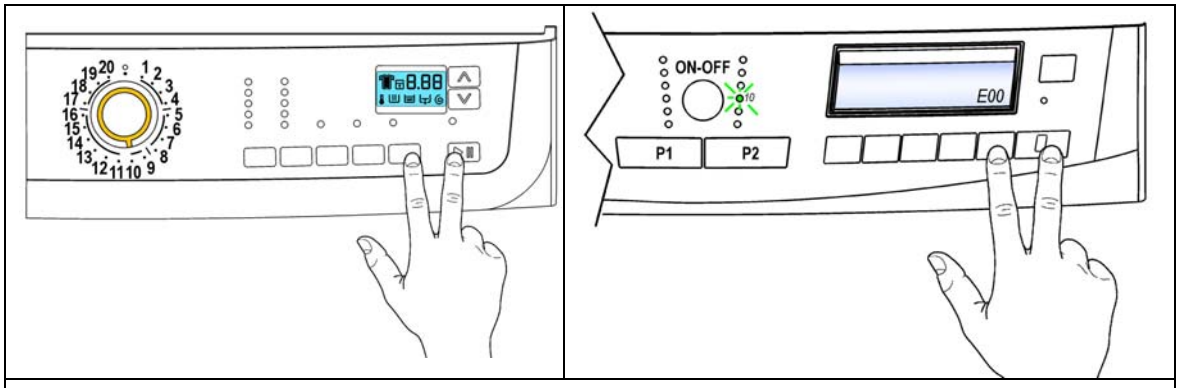
The last three alarm codes can be displayed even if the programme selector is not in the tenth position (diagnostics) or if the appliance is in normal operating mode (e.g. during the execution of the washing programme):

→ Press and hold down **START/PAUSE** and the nearest **option button** (as to enter the DIAGNOSTICS), for at least two seconds: the LEDs initially switch off, and then display the flashing sequence indicating the last alarm.
→ To display the previous alarms press the left button of the START/PAUSE button sequentially.
→ To return to the last alarm, press the START/PAUSE button.
→ The alarm sequence continues as long as the two buttons are held down.
→ The alarm reading system is as described in paragraph 5.2.
→ While the alarms are displayed, the appliance continues to perform the cycle or, if in the programme selection phase, maintains the previously-selected options in memory.

5.4 Cancelling the last alarm

It is good practice to cancel the last alarm:

- after reading the alarm code, to check whether the alarm re-occurs during diagnostics;
- after repairing the appliance, to check whether it re-occurs during testing.



1. Select diagnostic mode.
2. Turn the selector (version with knob) or push button **P2** (version INPUT) to the **tenth** position (reading of alarm).
3. Press and hold down **START/PAUSE** and the nearest **option button** (as represented in figure).
4. Hold down the buttons till the LEDs stop to flash (at least 5 seconds).

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

5.5 TABLE OF ALARMS

Alarm	Possible fault	Action/machine status	Reset	Alarm	Pag.
E00	No alarm	----------	----------	----------	----------
E11	Difficulties in water fill for washing	Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve is faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; PCB faulty.	Cycle is paused with door locked.	START/RESET	21
E12	Difficulties in water fill for drying	Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve is faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; PCB faulty.	Cycle is paused with door locked.	START/RESET	23
E13	Water leakage	Drain hose incorrectly positioned; mains pressure insufficient; water fill solenoid faulty; leakage/blockage of pressure switch hydraulic circuit; pressure switch faulty.	Cycle is paused with door locked.	START/RESET	24
E21	Difficulties in draining for washing	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Pressure switch faulty; Wiring faulty; PCB faulty.	Cycle is paused (after 2 attempts).	START/RESET	26
E22	Difficulties in draining for drying	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Pressure switch faulty; Wiring faulty; PCB faulty.	Cycle is paused.	START/RESET	28
E23	Drain pump triac faulty	Drain pump faulty; Wiring faulty; PCB faulty.	Safety drain cycle - Cycle stops with door unlocked.	RESET	30
E24	Fault in “sensing” circuit of drain pump triac (wrong input signal to microprocessor)	PCB faulty.	Safety drain cycle - Cycle stops with door unlocked.	RESET	31
E31	Electronic pressure switch circuit faulty (frequency of pressure switch signal out of limits)	Electronic pressure switch; Wiring; PCB faulty.	Cycle blocked with door closed.	RESET	31
E32	Incorrect calibration of electronic pressure switch (The electronic pressure switch generates a signal with instable frequency during the drain phase)	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Leaks from water circuit on pressure switch; Pressure switch; Wiring faulty; PCB faulty.	Cycle is paused.	START/RESET	32
E35	Water overflow	Water fill solenoid faulty; Leaks from water circuit on pressure switch; pressure switch faulty; wiring faulty; PCB faulty.	Cycle blocked. Safety drain cycle. Drain pump always in operation (5 minutes on, 5 minutes off etc.).	RESET	33
E38	Pressure chamber blocked (water level does not vary for at least 30 sec. during drum rotation	Motor drive belt broken; Hydraulic circuit pressure switch clogged.	Heating phase skipped.	ON/OFF RESET	34
E3A	Heating elem. relay sensing faulty (input signal to microprocessor always 0V or 5V)	PCB faulty.	Cycle blocked with door closed.	RESET	35
E41	Door open (after 15 sec.)	Door interlock faulty; wiring faulty; PCB faulty.	Cycle paused.	START/RESET	36÷38

Alarm	Possible fault	Action/machine status	Reset	Alarm	Pag.
E42	Problems of door closure	Door interlock faulty; wiring faulty; PCB faulty.	Cycle paused.	START/RESET	40÷42
E43	Interlock power supply triac faulty	Door interlock faulty; wiring faulty; PCB faulty.	(Safety drain cycle) Cycle blocked.	ON/OFF RESET	44÷45
E44	Door interlock sensing circuit triac faulty	PCB faulty.	(Safety drain cycle) Cycle blocked.	ON/OFF RESET	46
E45	Door interlock sensing circuit triac faulty (wrong input signal to microprocessor)	PCB faulty.	(Safety drain cycle) Cycle blocked.	ON/OFF RESET	46
E51	Motor power supply triac short-circuited	PCB faulty; current leakage from motor or from wiring.	Cycle blocked, door locked (after 5 attempts).	RESET	47
E52	No signal from motor tachometric generator	Motor faulty; wiring faulty; PCB faulty.	Cycle blocked, door locked (after 5 attempts).	RESET	48÷50
E53	Motor triac sensing circuit faulty (input signal to microprocessor wrong)	PCB faulty.	Cycle blocked, door locked.	RESET	52
E54	Motor relay contacts sticking (high voltage level when the relay changes to OFF)	PCB faulty; current leakage from motor or from wiring.	Cycle blocked, door locked (after 5 attempts).	RESET	53
E61	Insufficient heating during washing	NTC sensor faulty; heating element faulty; wiring faulty; PCB faulty.	The heating phase is skipped.	START/RESET	54
E62	Overheating during washing (temperature higher than 88°C for a time higher than 5 min.)	NTC sensor faulty; heating element faulty; wiring faulty; PCB faulty.	Safety drain cycle – Cycle stopped with door open.	RESET	55÷56
E66	Heating element power relay faulty (incongruence between sensing and relay)	PCB faulty.	Safety drain cycle – Cycle stopped with door open.	RESET	57÷58
E68	Current dispersion to earth (value of mains voltage different from main value)	Current dispersion between between heating element and earth.	Cycle blocked with door open.	RESET	59÷60
E69	Heating element interrupted	Wiring faulty; Heating element for washing interrupted (thermofuse open).	----------	START/RESET	61÷62
E71	Washing NTC sensor faulty (short-circuited or open)	Wiring faulty; Washing NTC sensor faulty; PCB faulty.	The heating phase is skipped.	START/RESET	63
E72	Drying condenser NTC sensor faulty (voltage value out of limits, sensor short-circuited or open)	Wiring faulty; Drying NTC sensor (condenser) badly positioned or faulty; WD board faulty.	The drying heating phase is skipped.	START/RESET	64
E73	Drying duct NTC sensor faulty (voltage value out of limits, sensor short-circuited or open)	Wiring faulty; Drying NTC sensor (duct) badly positioned or faulty; WD board faulty.	The drying heating phase is skipped.	START/RESET	65
E74	Washing NTC sensor badly positioned	Wiring faulty; Washing NTC sensor badly positioned; NTC sensor faulty; PCB faulty.	The heating phase is skipped.	START/RESET	66
E82	Error in selector reset position	PCB faulty (Wrong configuration data).	----------	RESET	67
E83	Error in selector reading	PCB faulty (Wrong configuration data.	Cycle cancelled.	START/RESET	68

Alarm	Possible fault	Action/machine status	Reset	Alarm	Pag.
E91	Communication error between PCB and display board	Wiring faulty; Control/display board faulty: PCB faulty.	----------	RESET	69
E92	Communication incongruence between main PCB- display board (versions not compatible)	Wrong control/display board; Wrong PCB (do not correspond to the model).	Cycle interrupted.	OFF/ON	69
E93	Incorrect configuration of appliance	PCB faulty; (Incorrect configuration data).	Cycle interrupted.	OFF/ON	69
E94	Incorrect configuration of washing cycle	PCB faulty; (Incorrect configuration data).	Cycle interrupted.	OFF/ON	69
E95	Communication error between microprocessor and EEPROM	PCB faulty.	Cycle interrupted.	RESET	69
E97	Incongruence between programme selector and cycle configuration	Faulty PCB (Wrong configuration data).	Cycle interrupted.	RESET	69
EA1	Drum positioning (DSP) faulty	Motor belt broken; Wiring faulty; PCB faulty; DSP sensor faulty.	Positioning phase skipped.	ON/OFF RESET	70
EA6	DSP door opening faulty	Motor belt broken; Wiring faulty; Drum cover open. Motor faulty; PCB faulty.	Cycle paused.	ON/OFF RESET	71
EH1	Frequency power of appliance out of limits	Power supply problems (incorrect / disturbance); PCB faulty.	Wait for frequency nominal conditions.	OFF/ON	72
EH2	Voltage too high	Power supply problems (incorrect / disturbance); PCB faulty.	Wait for frequency nominal conditions.	OFF/ON	72
EH3	Voltage too low	Power supply problems (incorrect / disturbance); PCB faulty.	Wait for frequency nominal conditions.	OFF/ON	72
EF1	Drain filter blocked (drain phase too long)	Drain tube blocked/kinked/too high; Drain filter dirty/blocked.	Warning displayed at the end of cycle (specific LED).	START/RESET	73
EF2	Excessive detergent dosing (excessive foam during draining)	Excessive detergent dosing; drain tube kinked/blocked; Drain filter dirty/blocked.	Warning displayed after 5 attempts or by the specific LED.	RESET	73
EF3	Aqua control intervention	Water leaks onto base frame; water control system defective.	Water drain.	ON/OFF RESET	73
EF4	Water fill pressure low, no signal of flowmeter and solenoid valve open	Tap closed; water fill pressure low.	----------	RESET	73
EF5	Unbalanced load	Final spin phases skipped.	----------	RESET	73
EF6	Reset	----------	No action to be performed, if continues replace the PCB.	----------	73
EC1	Solenoid valve blocked with flowmeter working	Wiring faulty; Solenoid valve faulty/blocked, PCB faulty.	Cycle blocked with door closed. Drain pump always works (5 min., then it stops for 5 min. ecc.).	RESET	74
Ed1	Data communication error between WD board and PCB	Wiring faulty between PCB and WD board; WD board faulty; PCB faulty.	Cycle interrupted.	OFF/ON	75
Ed2	Drying heating element relay 1 faulty	Wiring faulty between WD board and thermostats; thermostats faulty; WD board faulty, PCB faulty.	Cycle blocked with door open.	RESET	76
Ed3	Drying heating element relay 2 faulty	Wiring faulty between WD board and thermostats; thermostats faulty; WD board faulty, PCB faulty.	Cycle blocked with door open.	RESET	79

Alarm	Possible fault	Action/machine status	Reset	Alarm	Pag.
Ed4	**Relay which commutates power between washing heating element and drying (in the WD board)**	Wiring faulty; WD board faulty; PCB faulty.	Cycle blocked with door open.	RESET	80
Ed6	**No communication between PCB and display board (INPUT)**	Wiring faulty between PCB and programme display board; PCB faulty.	----------	OFF/ON	81

5.6 Notes concerning certain alarm codes

- **Configuration alarms E93:** If this alarm is generated (when the appliance is switched on), operation of the appliance is blocked, the LEDs placed above or inside the START/PAUSE button start to flash displaying the complete codification (family plus alarm), the display shows the alarm code on condition that the configuration part of the display is ok.
  The diagnostic procedure cannot be accessed; the only option is to switch the appliance OFF.

- **Configuration alarm E94:** all LEDs placed above or inside the START/PAUSE button start to flash displaying the complete codification (family plus alarm) and the code is displayed.
  It is not possible to enter the diagnostics or to use the mode “rapid displaying of the alarm”.

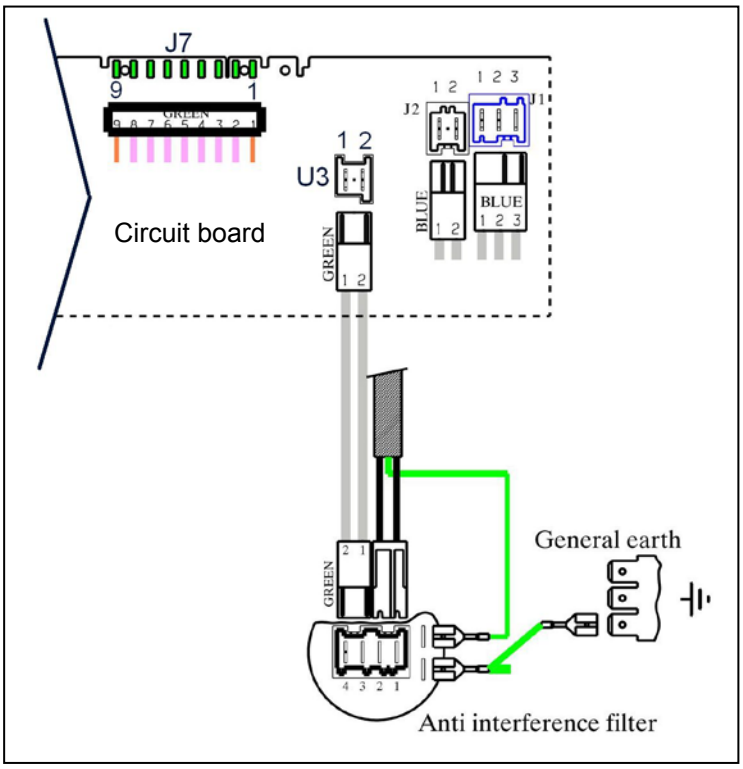
- **Alarms EH1(Eb1)-EH2(Eb2)-EH3(Eb3):** In the event of problems with the mains power supply, the appliance remains in alarm mode until the mains frequency or voltage are restored to the correct value or the appliance is switched off (programme selector on “0”). The family of alarm **“b or H”** only is displayed if the problem occurs during the normal operation of the appliance, while the family plus the alarm are displayed if the problem occurs at the switching on, through the flashing of the LEDs placed above or inside the START/PAUSE button. At the same time the code is represented also in the display.
  It is not possible to enter the diagnostics or to use the mode “rapid displaying of the alarm”: the complete alarm can be read only when the abnormal situation has terminated.

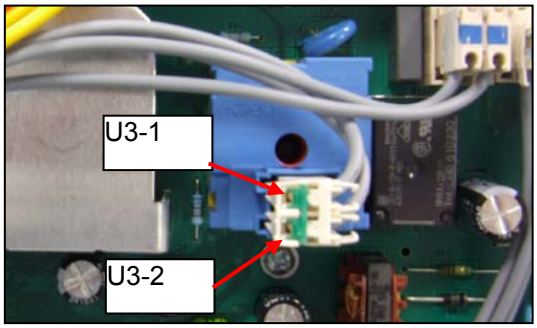
- **Alarms E51- E52:** During the diagnostic test, all the alarms are displayed. Normally, when the programme selector is turned from one test phase to another, the appliance exits the alarm condition and performs the phase selected. This does not take place in the case of alarms E51 (power triac on motor short-circuited) and E52 (no signal from the tachometric generator on the motor): in these cases, the only option to exit the alarm condition is to switch the appliance OFF by turning the selector to position “0” (reset) or pushing the ON/OFF button (INPUT styling).

6 THE DIAGNOSTIC PROGRAMME CANNOT BE ACCESSED

6.1.1 All LEDs on the circuit are board switched off

Are the power cable and connection OK?	No →	Replace or repair the power cable, check the connector.
Yes ↓		
Does the suppressor function correctly?	No →	Replace the suppressor.
Yes ↓		
Is the wiring from the suppressor to the circuit board (connectors **U3.1-U3.2**) OK?	No →	Replace or repair the wiring.
Yes ↓		
Does the programme selector function correctly?	No →	Replace or repair the knob or knob spindle.
Yes ↓		
Replace the circuit board and perform the diagnostic programme.		





6.1.2 Some of the LEDs of the circuit board light

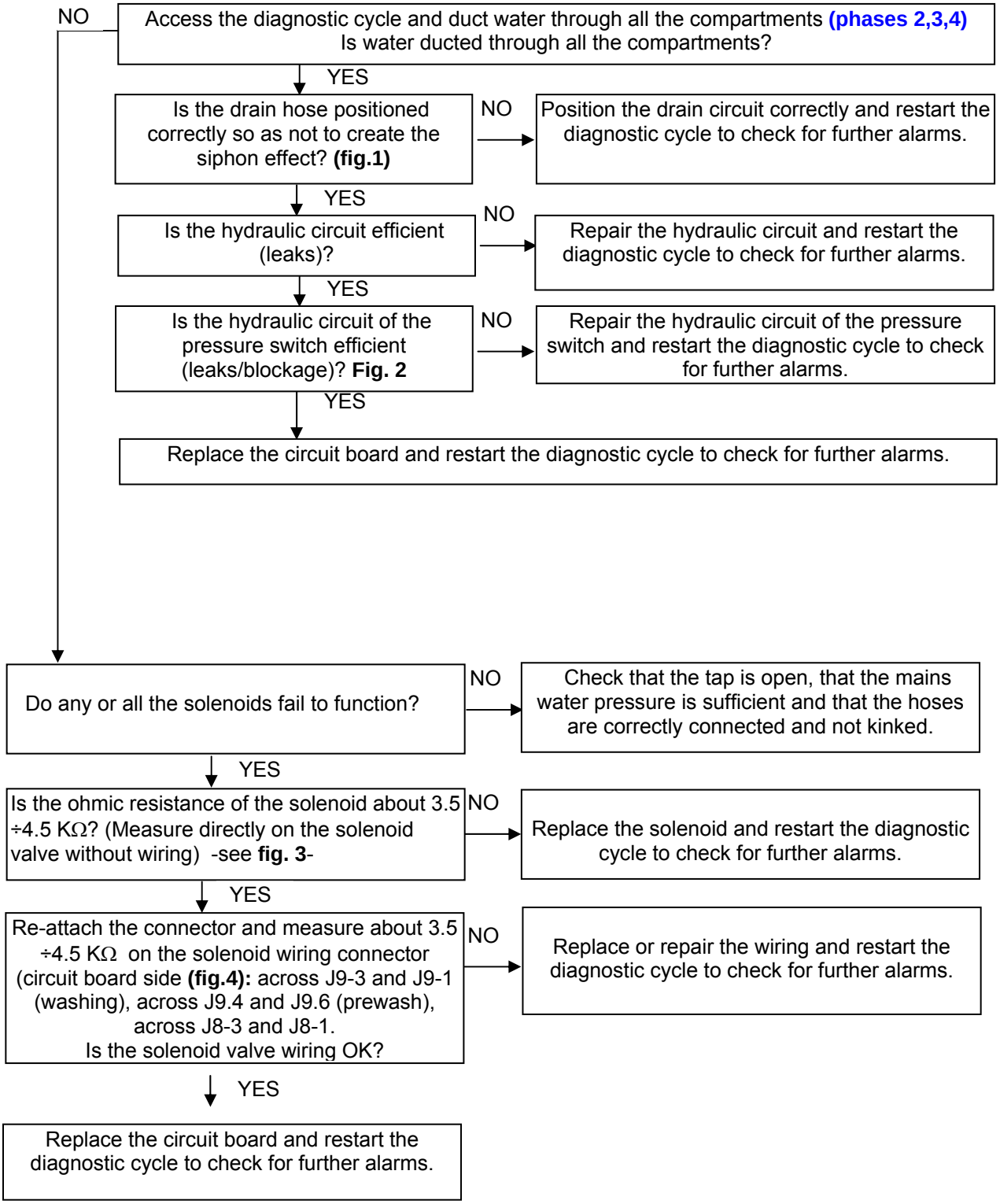
Do the keys move without hindrance in the housings in the control panel and correctly action the corresponding buttons?	No →	Solve the mechanical problems (control panel / keys / spindles).
Yes ↓		
Replace the circuit board and perform the diagnostic programme.		

If there are traces of burning on the circuit board, refer to page 90

7 TROUBLESHOOTING ACCORDING TO ALARM CODES

E11	E11: Difficulty in filling water during washing phase	E11
	Maximum water fill time for each pressure switch level (this time is reset to zero each time the level is reached)	

Tests to be performed:



If there are traces of burning on the circuit board, refer to page 90

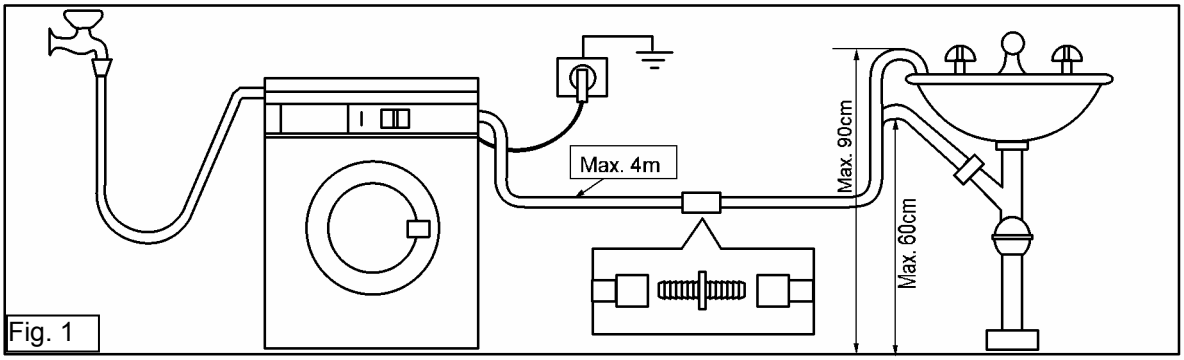


Fig. 1

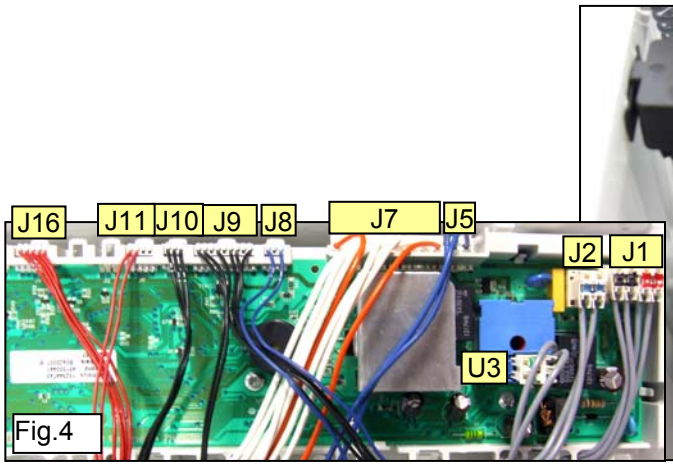
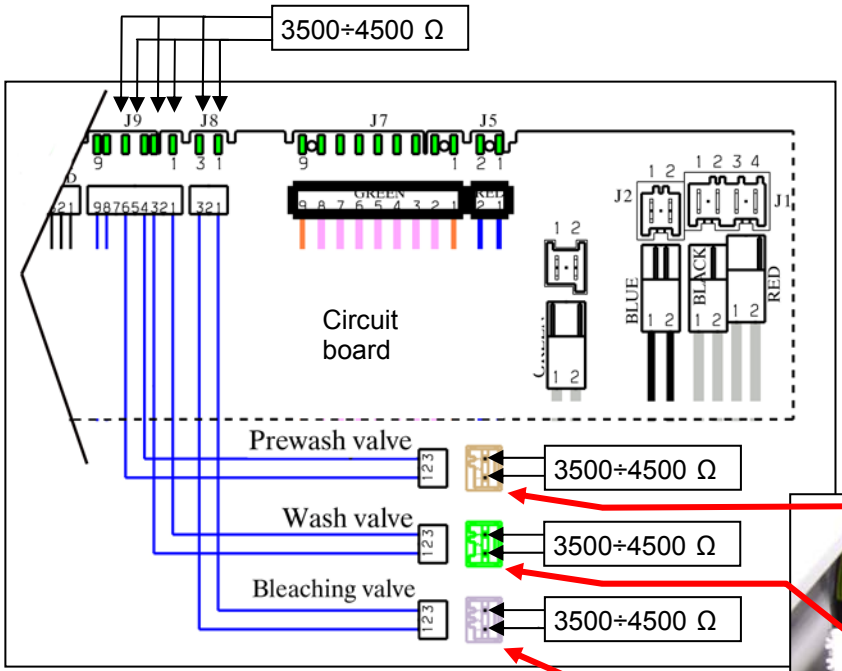


Fig.4


Fig.2



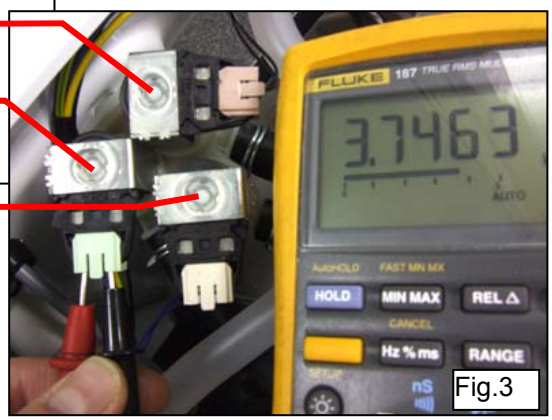


Fig.3

If there are traces of burning on the circuit board, refer to page 90

E12	E12: Difficulty in filling water during drying phase	E12
	To check if the condensation valve is working, machine measures the increasing water level at the beginning of the drying phase. (Alarm appears after 10 min. of filling without reaching the level).	

Tests to be performed:

Start the diagnostic cycle and perform the **phase 9** drying.

YES

Is a small quantity of water going through the hose that connects the condenser to the detergent compartment? **(see fig. 27)-**

NO

Are the tap and hoses letting the water coming in? (tap open, hoses connected and not kinked).

NO

Open the tap / position the hoses and restart the diagnostic cycle to check for further alarms.

YES

Restart the diagnostic cycle to check for further alarms.

YES

Is the Ohm value of the valve about 3,5÷4,5 kΩ? (Measure directly on the solenoid valve without cable). – (**see fig. 26)**-

NO

Replace the valve and restart the diagnostic cycle to check for further alarms.

YES

Reconnect the connector and measure about 3,5÷4,5 KΩ on the valve wiring connector on the PCB side: across J8-3 and J8-1. Is the solenoid valve wiring ok?

NO

Replace/reset wiring and restart the diagnostic cycle to check for further alarms.

YES

Replace the electronic board and restart the diagnostic cycle to check for further alarms.

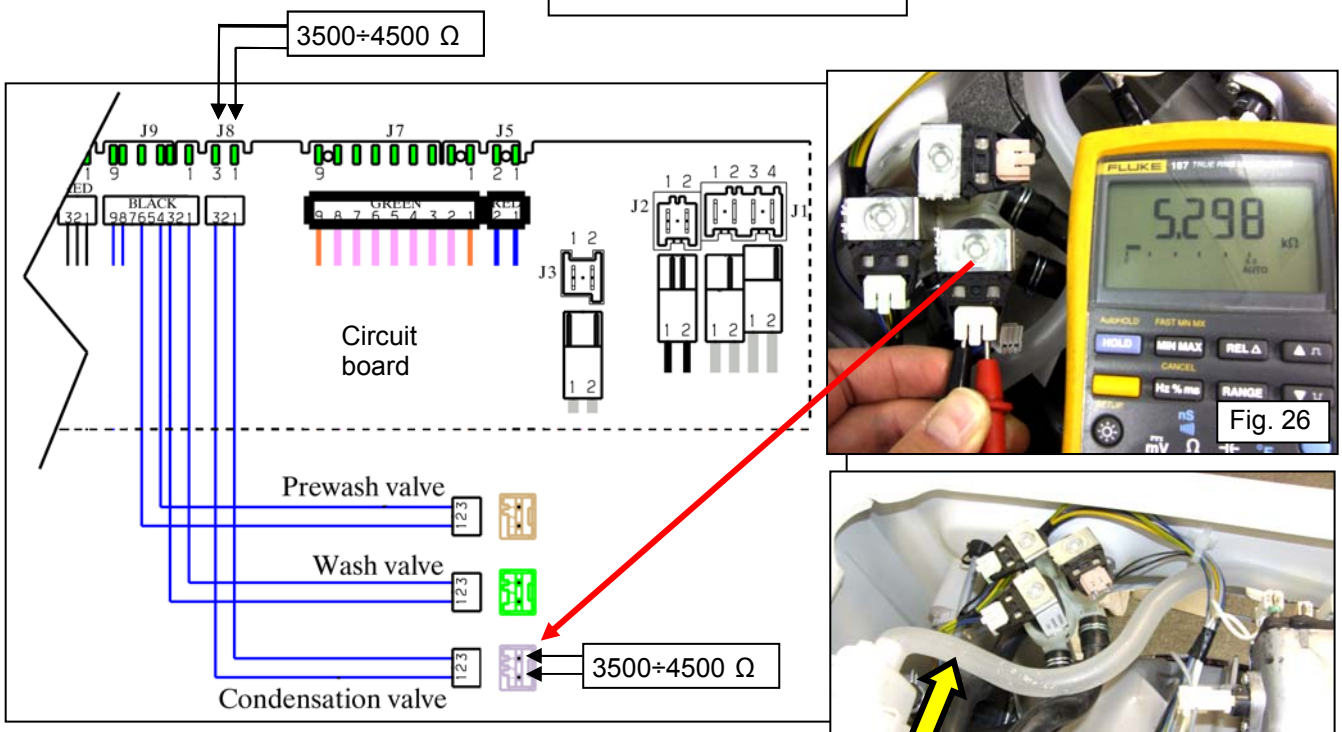


Fig. 26

Little hose which connects the condenser to the detergent compartment

Fig. 27

If there are traces of burning on the circuit board, refer to page 90

E13	E13: Water leakage	E13
	Overall maximum water fill time exceeded (the sum of all the water fills between one drain phase and the next, to avoid exceeding the maximum volume)	

Tests to be performed:

Access the diagnostic cycle and duct water through all the compartment **(phases 2,3,4,5)**
Is water ducted through all the compartments?

NO → Position the drain circuit correctly and restart the diagnostic cycle to check for further alarms.

YES

Is the drain hose positioned correctly so as not to create the siphon effect? **(fig.1)**

NO → Repair the hydraulic circuit and restart the diagnostic cycle to check for further alarms.

YES

Is the hydraulic circuit efficient (leaks)?

NO → Repair the hydraulic circuit of the pressure switch and restart the diagnostic cycle to check for further alarms.

YES

Is the hydraulic circuit of the pressure switch efficient (leaks/blockage)? **fig.2**

YES

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

NO

Do any or all the solenoids fail to function?

NO → Check that the tap is open, that the mains water pressure is sufficient and that the hoses are correctly connected and not kinked.

YES

Is the ohmic resistance of the solenoid about 3.5÷4.5 KΩ? (Measure directly on the solenoid valve without wiring) -see **fig. 3**-

NO → Replace the solenoid and restart the diagnostic cycle to check for further alarms.

YES

Re-attach the connector and measure about 3.5 –4.5 KΩ on the solenoid wiring connector (circuit board side) see **fig. 4**-: across J9-3 and J9-1 (washing) and across J9-6 and J9-4 (prewash). Is the solenoid valve wiring OK?

NO → Replace or repair the wiring and restart the diagnostic cycle to check for further alarms.

YES

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

If there are traces of burning on the circuit board, refer to page 90

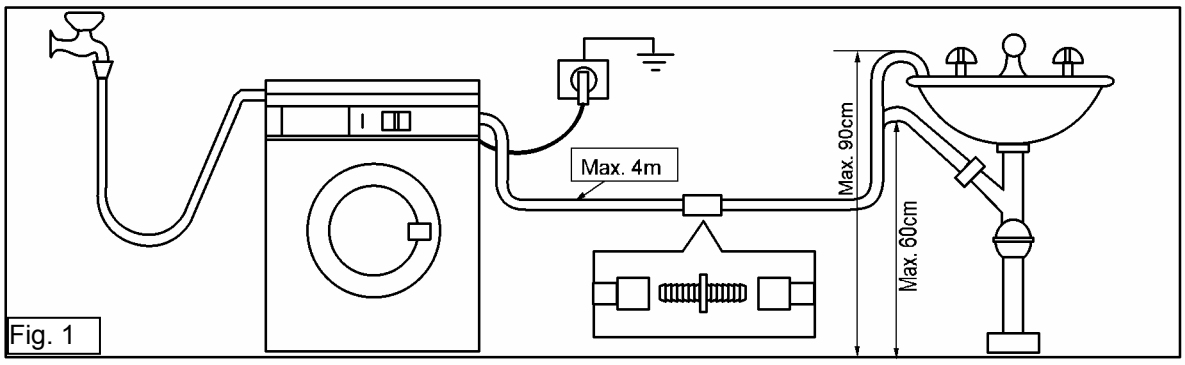


Fig. 1

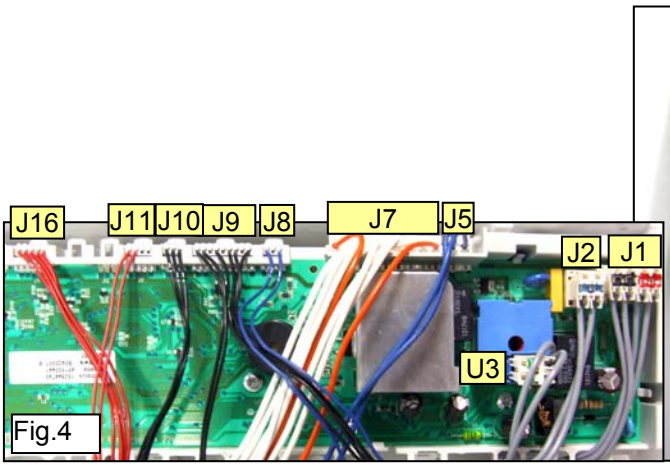


Fig.4

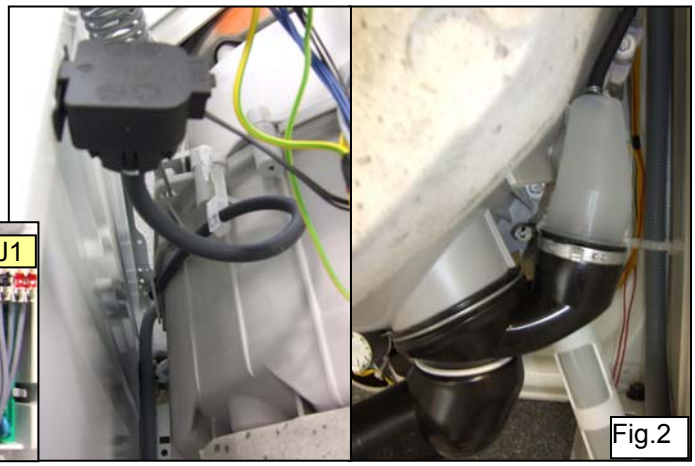
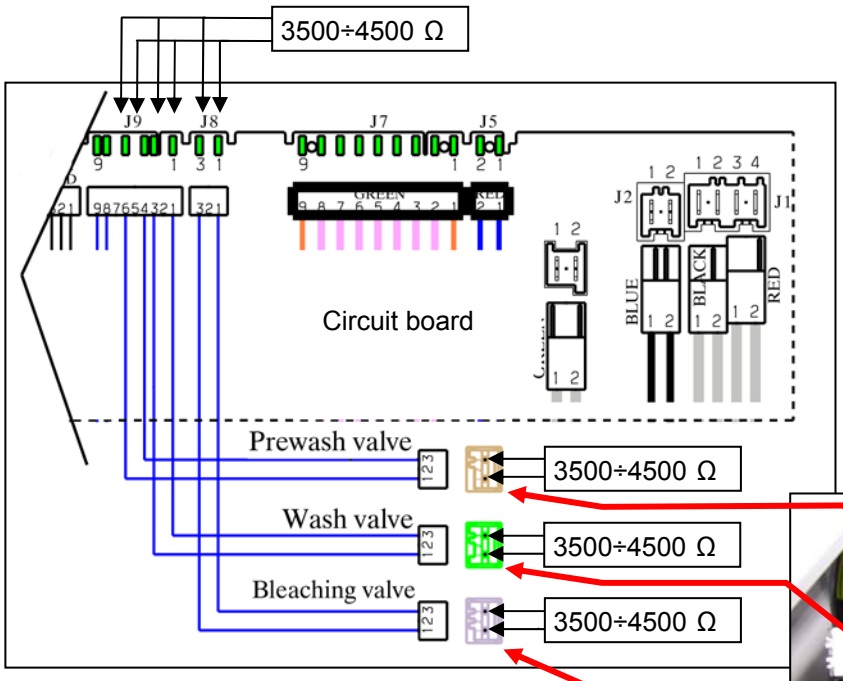


Fig.2



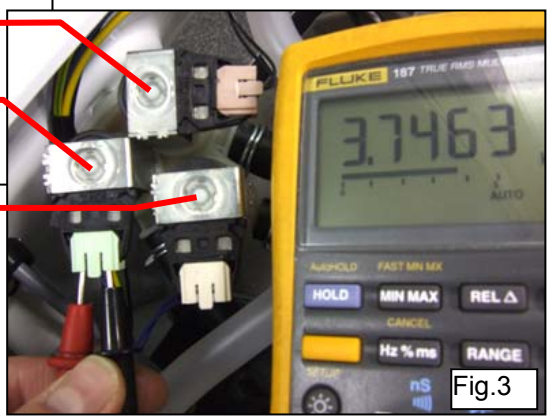


Fig.3

E21	E21: Difficulty in draining	E21
	Maximum drain time exceeded (measured for each phase of the cycle)	

Tests to be performed:

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

Is the drain system OK? (drain hose and domestic hydraulic circuit)-**fig.1**
NO → Disconnect and check the drain system.
YES ↓

Does the drain pump function? (in the diagnostic cycle, select **phase 2** fill and **phase 8** drain) (noise from the pump)
NO → Is the ohmic resistance of the pump about 155÷200Ω? (measure directly on the connector on the circuit board side across J7-9 and J7-1) **-fig. 4-**
NO → Is the ohmic resistance of the pump about 155÷200Ω? (measure directly on the pump) -see **fig.5**-
NO → Replace the pump and restart the diagnostic cycle to check for further alarms.
YES ↓

Check and if necessary replace the wiring and restart the diagnostic cycle to check for further alarms.

YES ↓ (from ohmic resistance)

Is the pump impeller jammed or broken?
NO → Replace the circuit board and restart the diagnostic cycle to check for further alarms.
YESI ↓

Clean or replace the drain pump and restart the diagnostic cycle to check for further alarms.

YES ↓ (from drain pump function)

Is the hydraulic circuit of the pressure switch efficient? (i.e. not obstructed)
NO → Repair the hydraulic circuit of the pressure switch and restart the diagnostic cycle to check for further alarms.
YES ↓

Replace the pressure switch and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

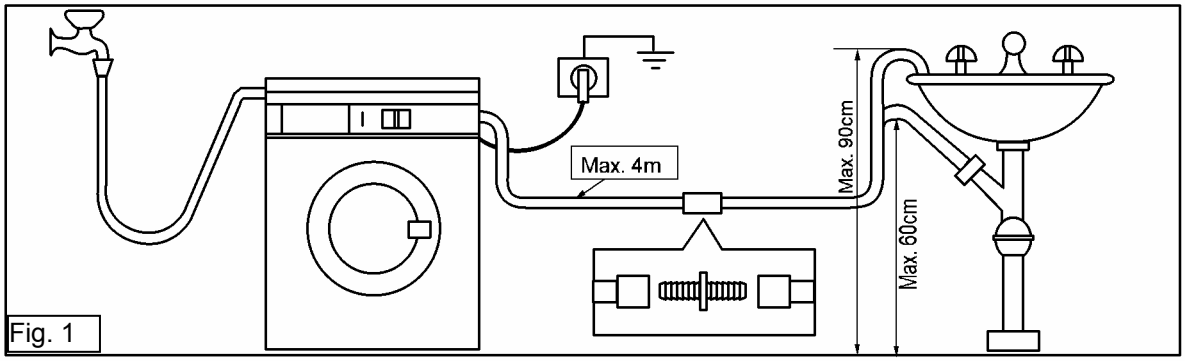


Fig. 1

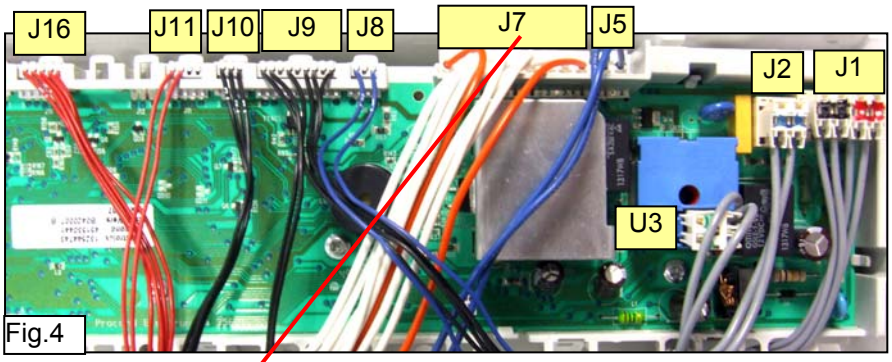
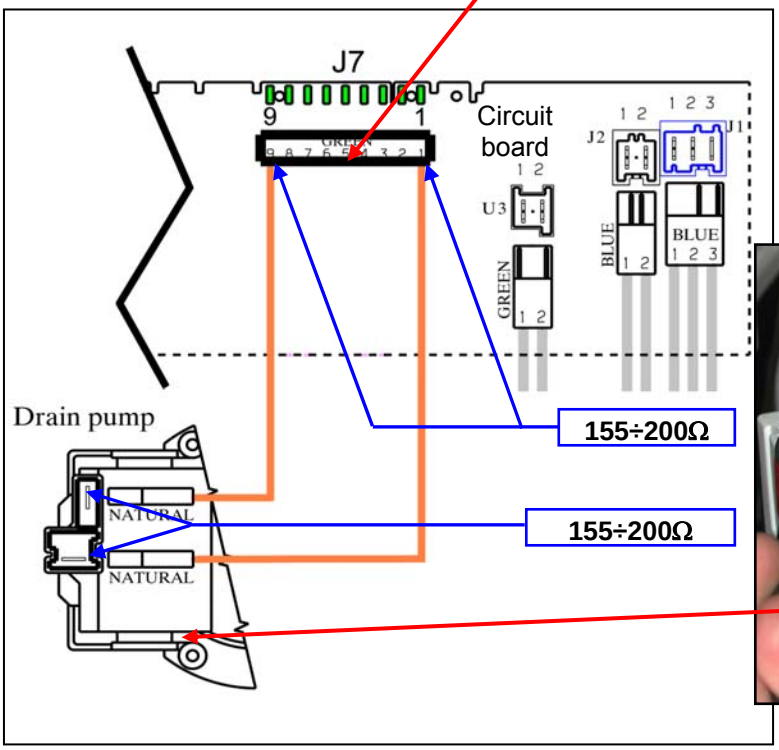


Fig.4



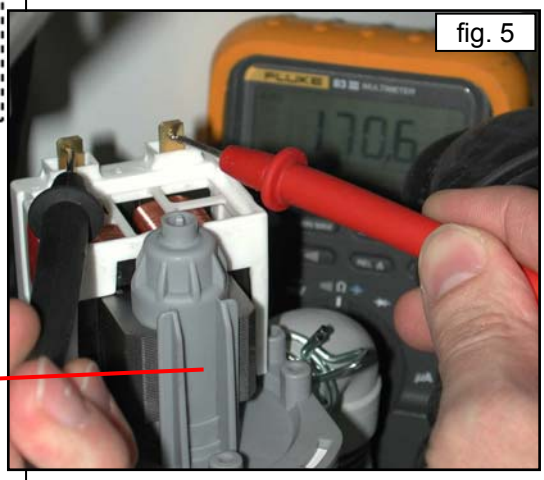
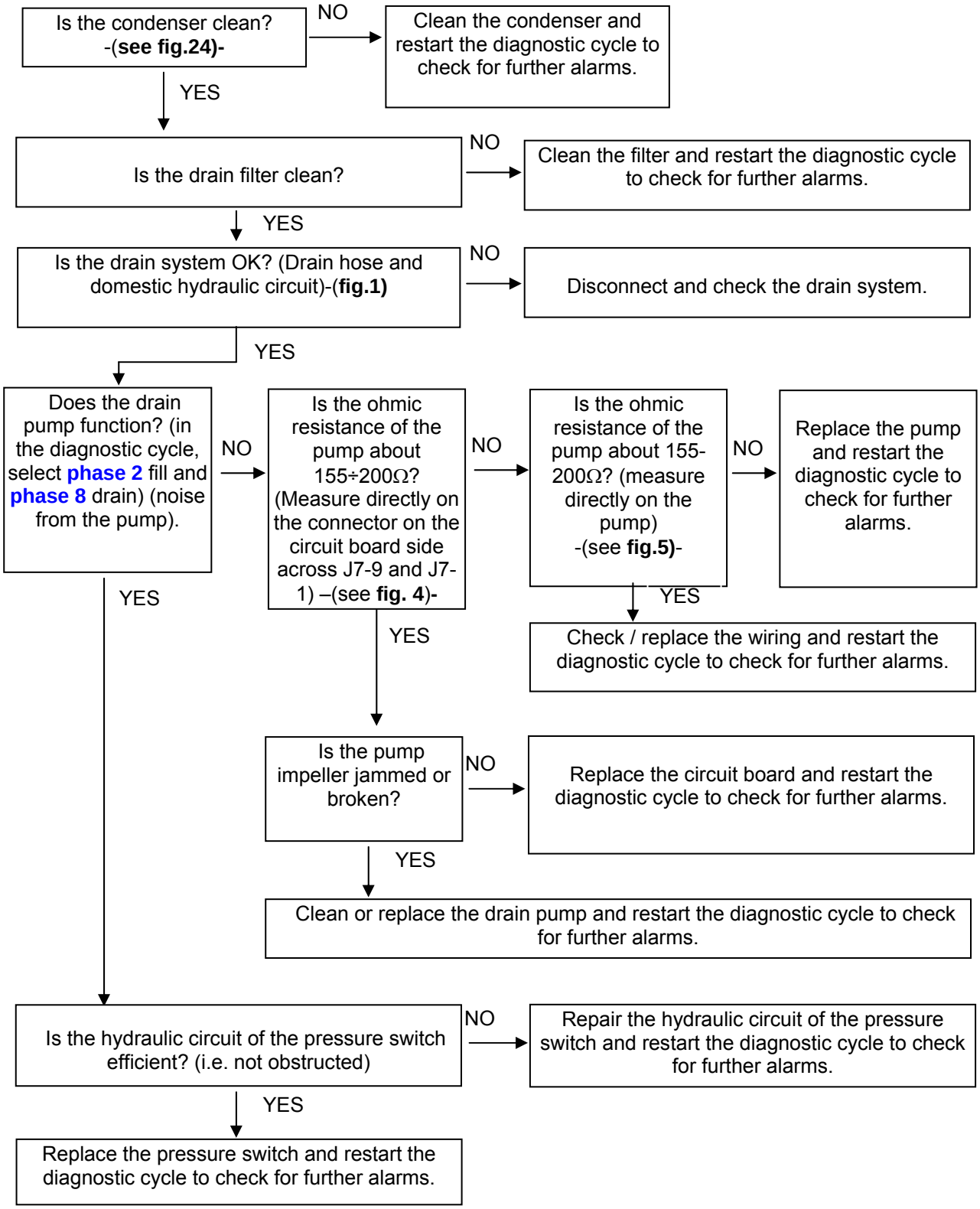


fig. 5

E22	E22: Difficulty in draining water during drying phase	E22

Tests to be performed:



If there are traces of burning on the circuit board, refer to page 90

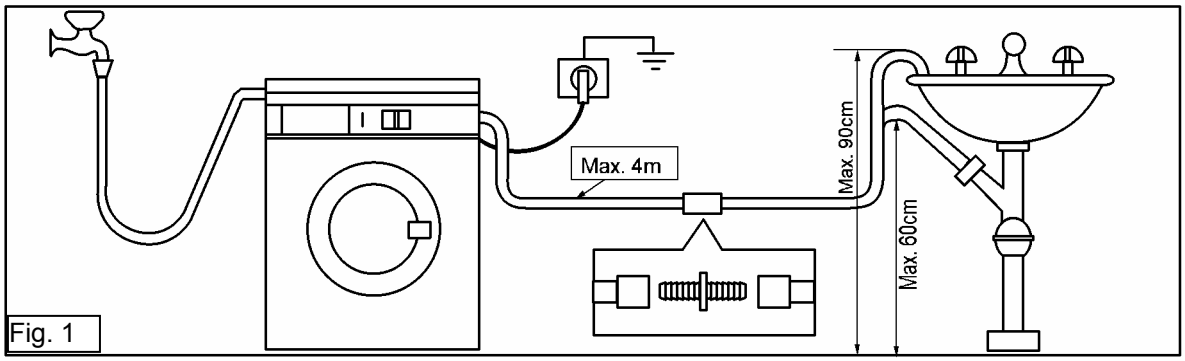


Fig. 1

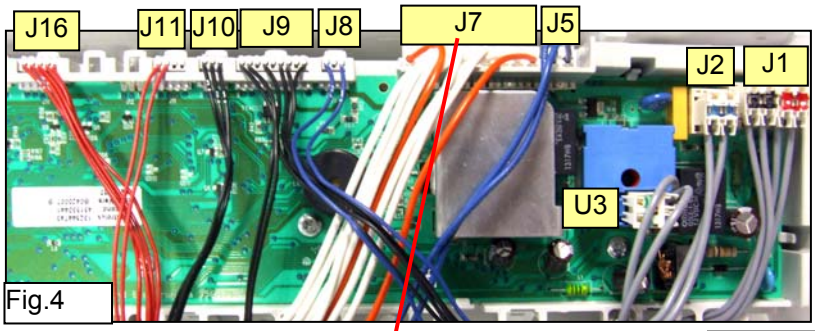


Fig.4

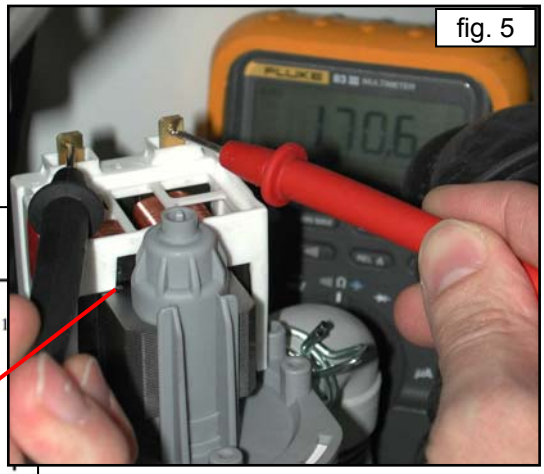
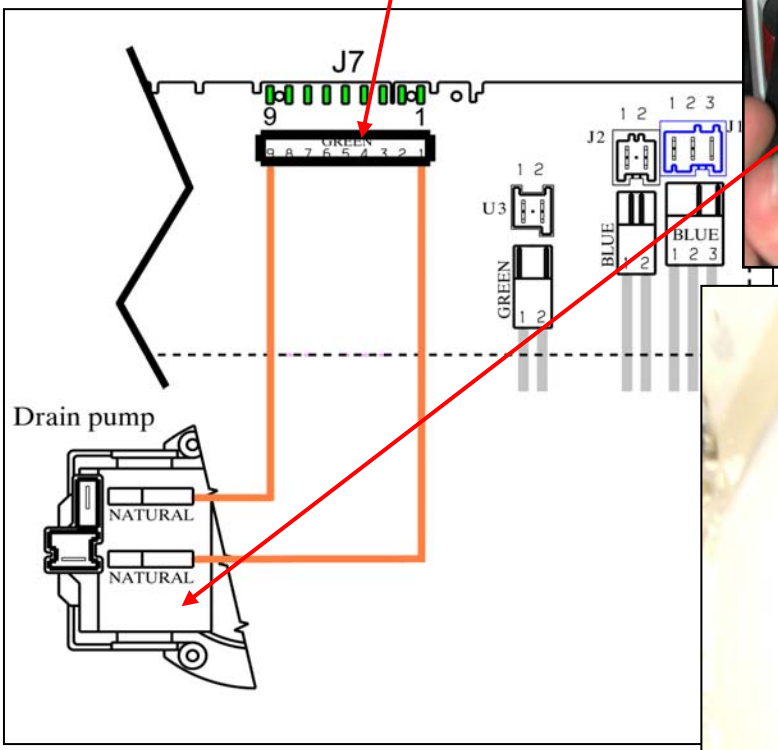


fig. 5



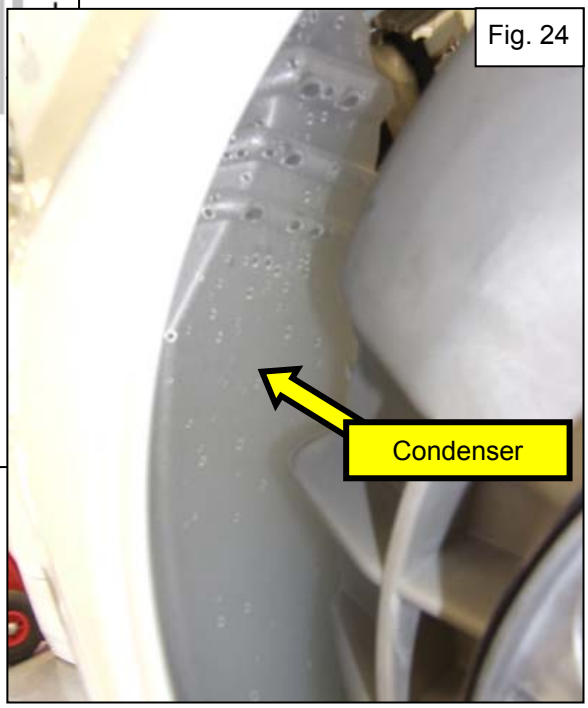


Fig. 24

E23	E23: Malfunction of the component (triac) that controls the drain pump	E23

Tests to be performed:

Is the resistance of the pump about 150-200 Ω? (Measure across connectors J7-1 and J7-9 on circuit board side – **(fig.4)-**

NO → Is the resistance of the pump about 150-200 Ω? (Measure directly on the pump) **–(see fig.5)-**

NO → Replace the pump and restart the diagnostic cycle to check for further alarms.

YES → Check and if necessary replace the wiring and restart the diagnostic cycle to check for further alarms.

YES → Measure across connectors J7-1 / J7-9 and the structure of the appliance **- fig.6 -** Is there any current leakage?

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

YES → Check and if necessary replace the wiring and restart the diagnostic cycle to check for further alarms.

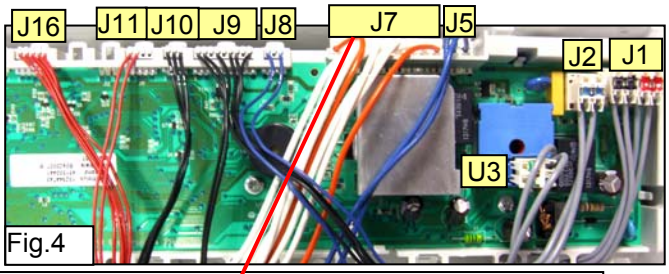


Fig.4

If there are traces of burning on the circuit board, refer to page 90

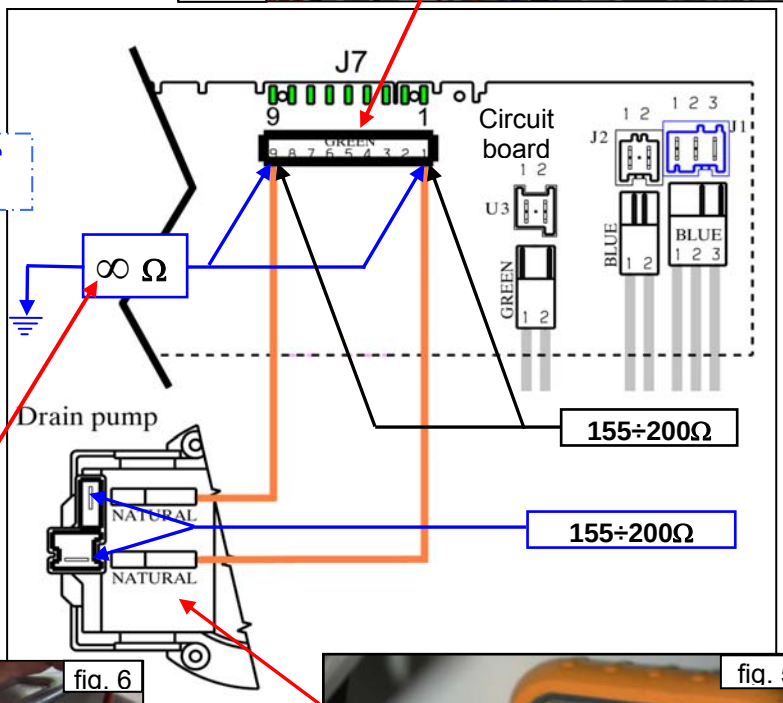



fig. 6

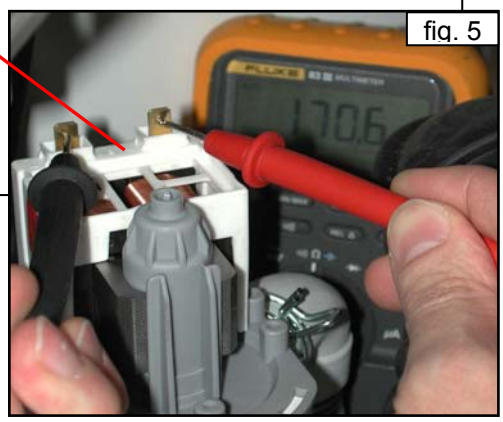


fig. 5

E24	E24: «Sensing» circuit of the component (triac) that controls the drain pump faulty	E24

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

If there are traces of burning on the circuit board, refer to page 90

E31	E31: The analogic pressure switch is giving to the main board a signal outside the range	E31

Tests to be performed:

Measure a close circuit across J10-1, J10-2, J10-3 and the connector on analogic pressure switch (they are 3 independent connections **see fig. 7**.
Is the cable between main board and analogic pressure switch OK and connected correctly on both sides?

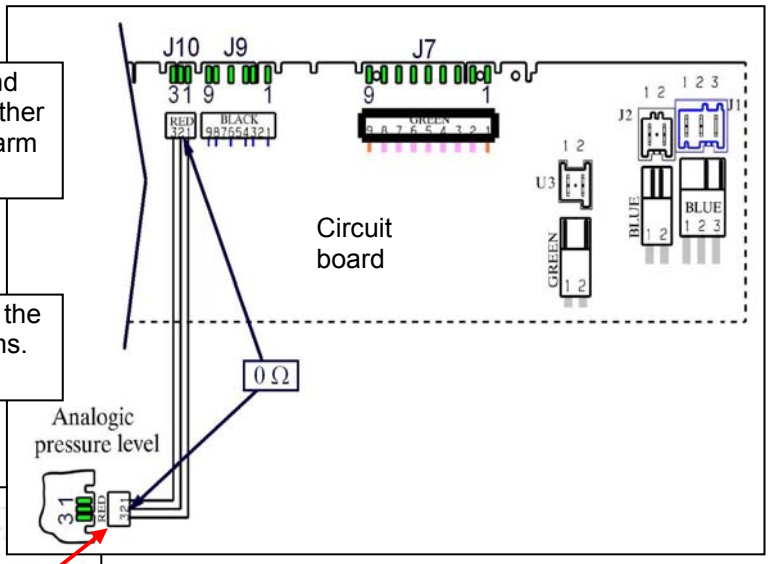
NO → Reconnect and/or replace the cable and restart the diagnostic cycle to check for further alarms.

YES ↓

Replace the analogic pressure switch and restart the diagnostic cycle to check for further alarms. Does the appliance display the alarm code again?

YES ↓

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



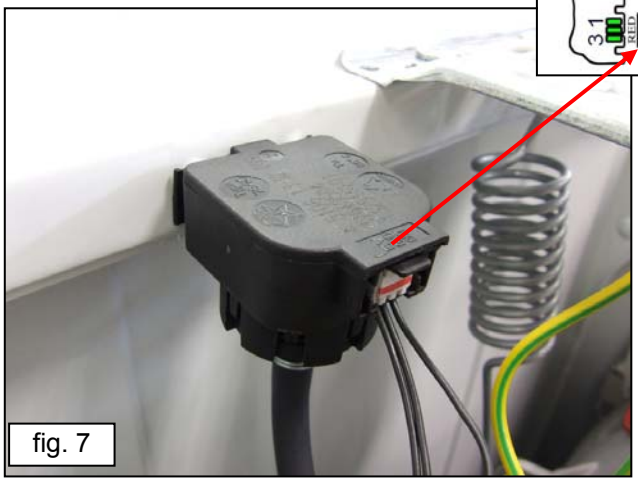
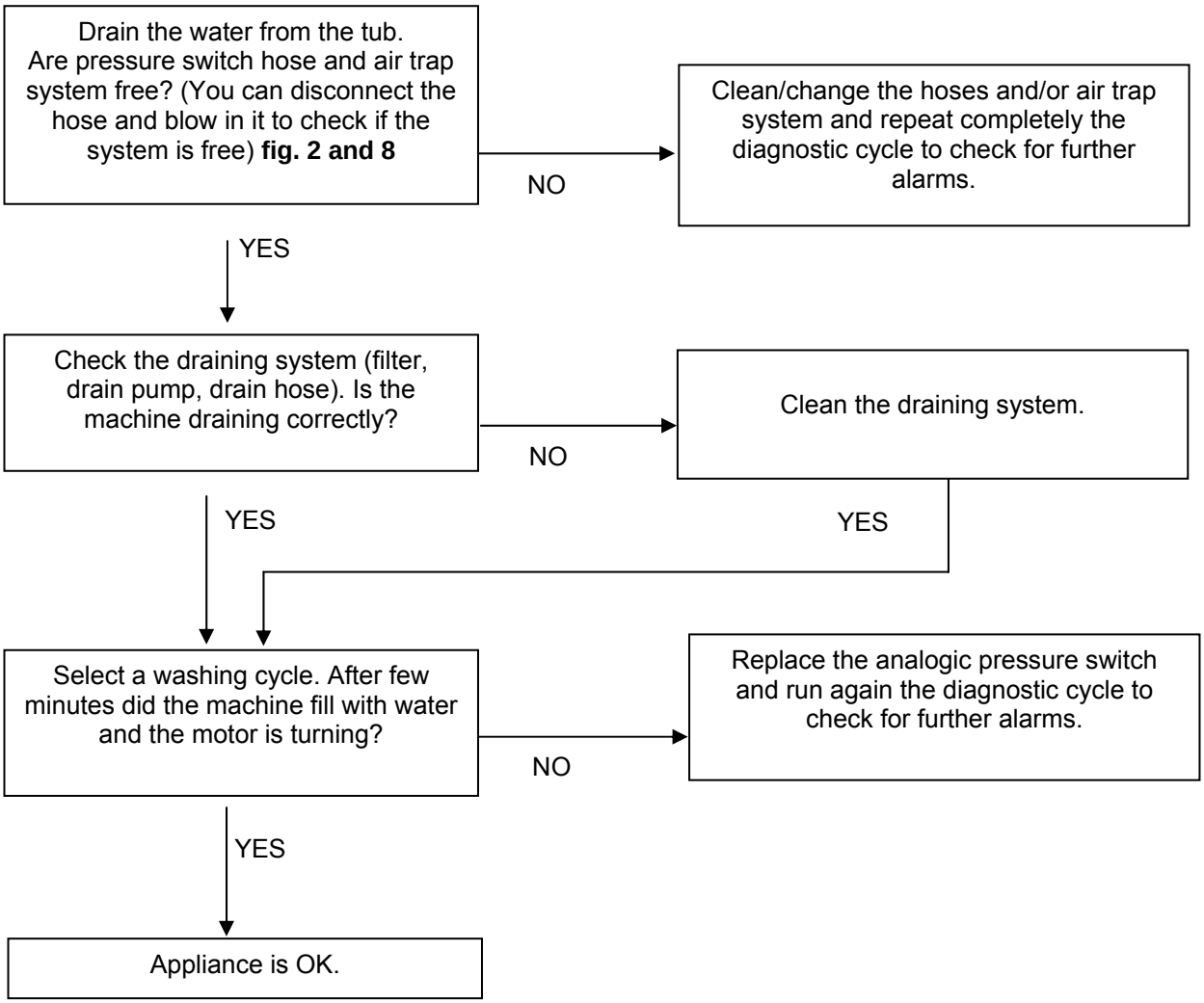


fig. 7

If there are burn marks on electronic board, see page 90

E32	E32: **The analogic pressure switch is giving an error during the calibration phase** (At the beginning of each cycle the appliance drain to empty the tub and create a 0 level to verify the calibration of the analogic pressure switch)	E32

Tests to be performed:



If there are traces of burning on the circuit board, refer to page 90


Fig.2

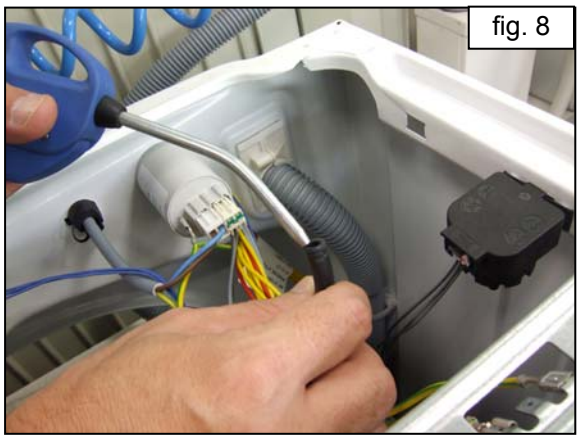


fig. 8

E35	E35: Water level too high	E35
	The electronic board measures a water level from analogic pressure switch higher then 300 mm for more then 15 seconds.	

Tests to be performed:

Empty the machine.
Are pressure switch hose and air trap system free? (You can disconnect the hose and blow in it to check if the system is free) **-see fig. 2 and 8-**

NO → Clean/change the hoses and/or air trap system and repeat completely the diagnostic cycle to check for further alarms.

YES ↓

Is the machine filling water when main switch is turned OFF?

NO → Get inside diagnostic cycle at step 8. After door lock is the machine also filling water?

NO → Is the cable between main board and analogic pressure switch connected correctly on both sides?

NO → Reconnect and/or replace the cable and do the diagnostic cycle completely again to check for further alarms.

YES ↓ Replace the inlet valves and repeat completely the diagnostic cycle to check for further alarms.

YES ↓ Replace the main board and repeat completely the diagnostic cycle to check for further alarms.

YES ↓ Replace the analogic pressure switch and run the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 60

Fig.2

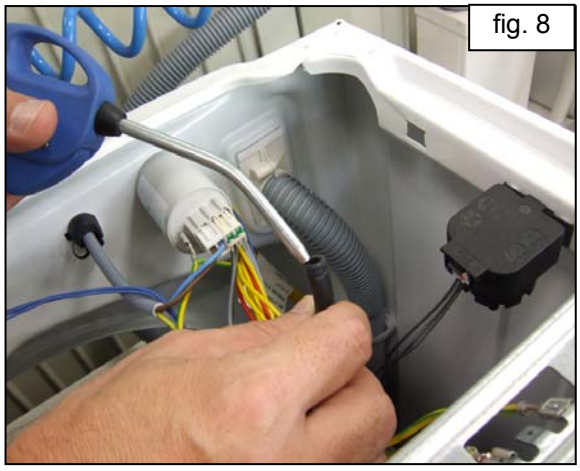
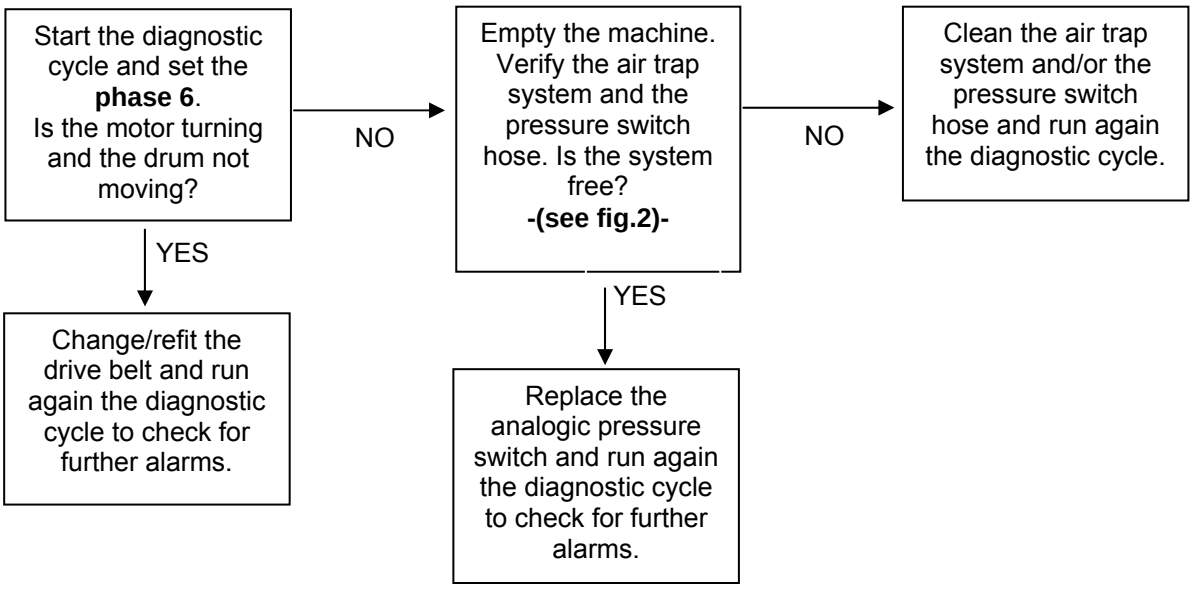


fig. 8

E38	E38: Pressure chamber blocked	E38
	The analogic pressure switch is not able to measure any variation of the water level for at least 30-sec. during drum movement.	

Tests to be performed:



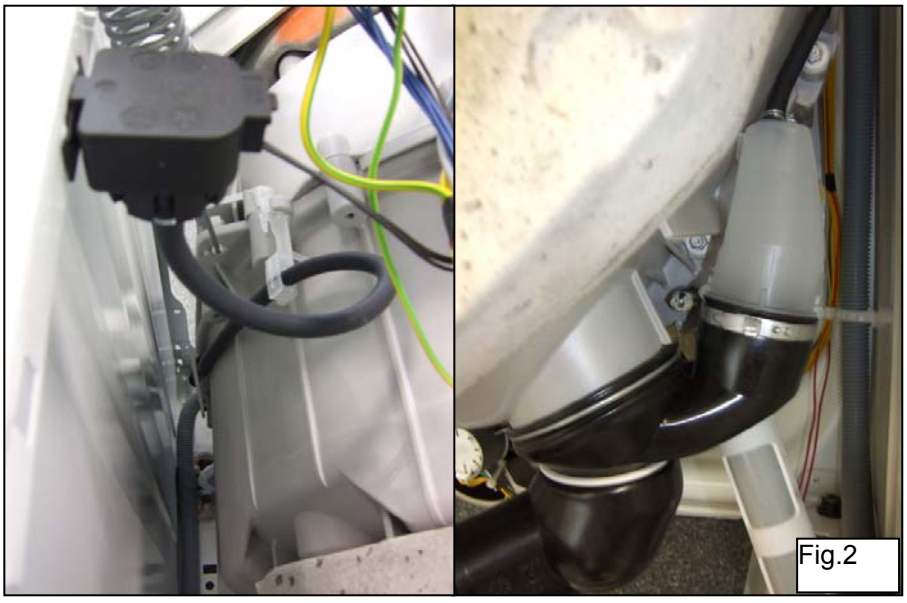


Fig.2

E3A	E3A: Problems with “Sensing” circuit of the heating element relay	E3A

Tests to be performed:

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

E41	E41: Door open (3-contact device) Maximum time exceeded (PTC = 15 seconds)	E41

Tests to be performed:

fig. 9

Is the door correctly closed?

NO → Close the door correctly and restart the diagnostic cycle to check for further alarms.

YES ↓

The door interlock is traditional with **3 connections** as represented in (**fig 9**)?

NO → Continues at page 37. Instantaneous door interlock with **4 connections** as represented in (**fig.28**)

YES ↓

To check the wiring (with the door open), measure the following wiring connectors:
-between wires J1-3 and J1-1, the circuit must NOT be open (Measure the resistive value of the PTC).
- between wires J1-1 and J1-2, the circuit must be OPEN.
Is the system ok?

NO → Detach the connectors and effect measurement on the component **(fig. 9):**
- across connectors 3 and 5 the circuit must not be open (the resistive value should be measurable).
- across connectors 4 and 5, the circuit must be open (the numbers are printed on the component).
Is the door safety interlock is OK?

NO → Replace the door interlock and restart the diagnostic cycle to check for further alarms.

YES ↓

Measure the concinuity between the connector J1 (PCB) and the door interlock connector.
Is the wiring OK?

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

YES ↓

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

YES ↓

Is the door locking device securely anchored to the latch?

NO → Replace the door latch or the door.

YES ↓

Replace the door locking device. Does the appliance function correctly?

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

YES ↓

Restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

E41 (3-contact device)

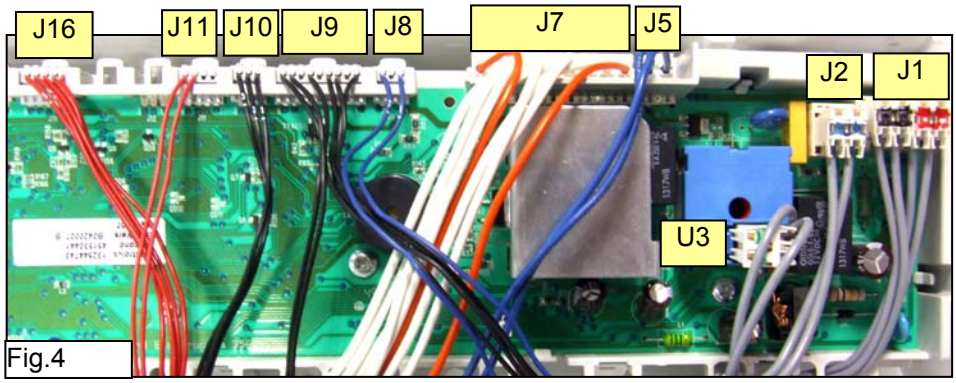
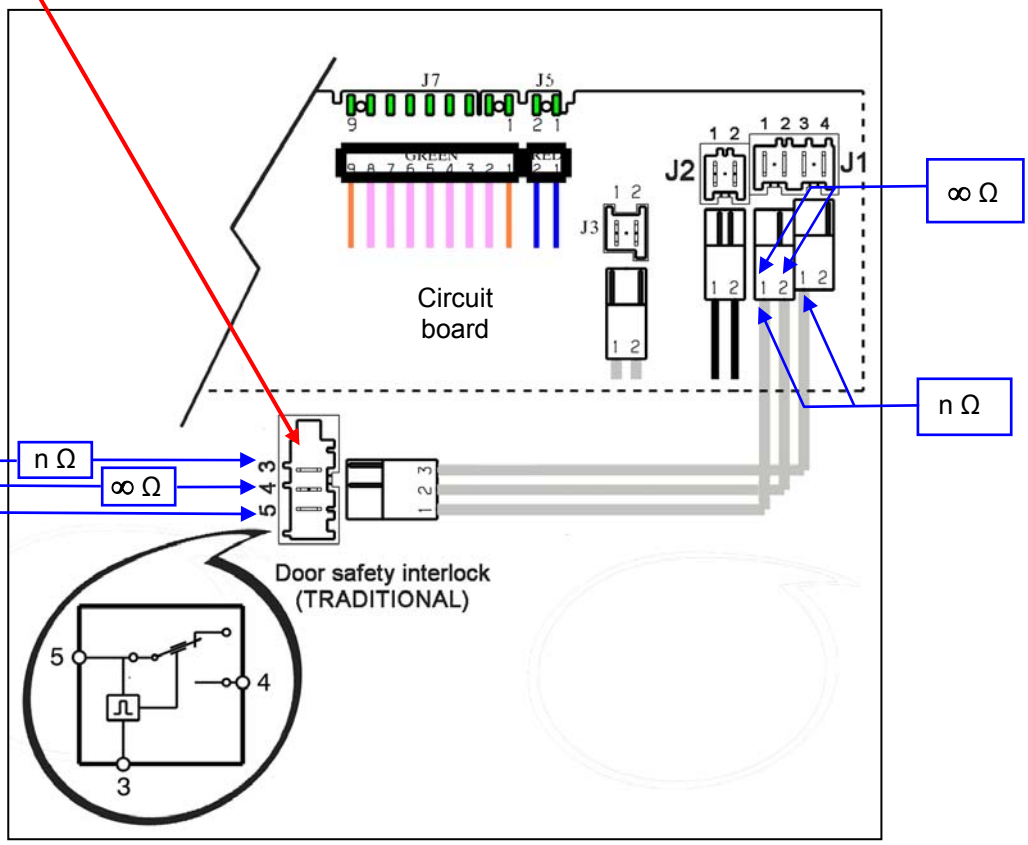


Fig.4


fig. 9



If there are traces of burning on the circuit board, refer to page 90

E41	E41: Door open (4-contact device) Maximum time exceeded (5 pulses for instantaneous)	E41

Instantaneous door interlock with **4 connections.** **- fig 28 -**

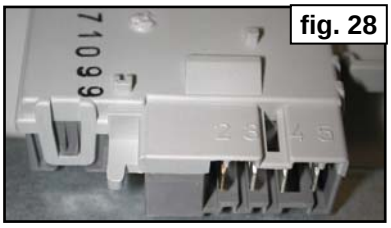


fig. 28

YES

To check the wiring (with the door open), measure the following wiring connectors (**fig.4**):
- between J1-1 and J1-3, the circuit must NOT be open (Measure the resistive value of the PTC).
- between J1-1 and J1-4, the circuit must be OPEN (Measure the resistive value of the PTC).
- between J1-1 and J1-2, the circuit must be OPEN.

Is the system OK?

NO → Detach the connectors and measure on the component:
- across connectors 3 and 4 the circuit must NOT be open (measure the resistive value of PTC)
- across connectors 2 and 4 the circuit must NOT be open (measure the resistive value of PTC).
- across connectors 4 and 5 the circuit must be OPEN (the numbers are printed on the component).

Is the door safety interlock is OK? (**fig. 28**)

NO → Replace the door interlock and restart the diagnostic cycle to check for further alarms.

YES

Measure the continuity across connector J1 (PCB) and the door interlock connector. Is the wiring OK?

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

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES

Check for mechanical coupling between the door interlock and the door natch. Is the system OK?

NO → Replace the door natch/the door.

SI

Replace the door interlock. Is the machine working correctly?

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

YES

Restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

E41 (4-contact device)

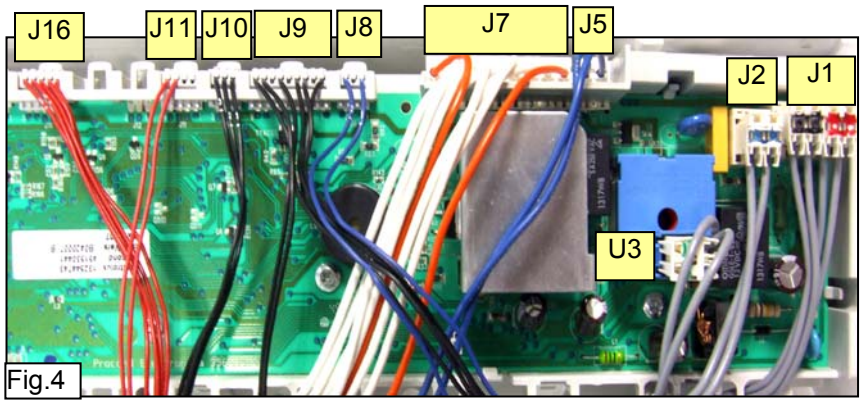
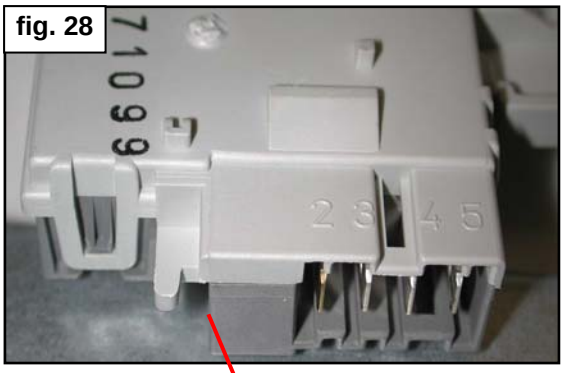
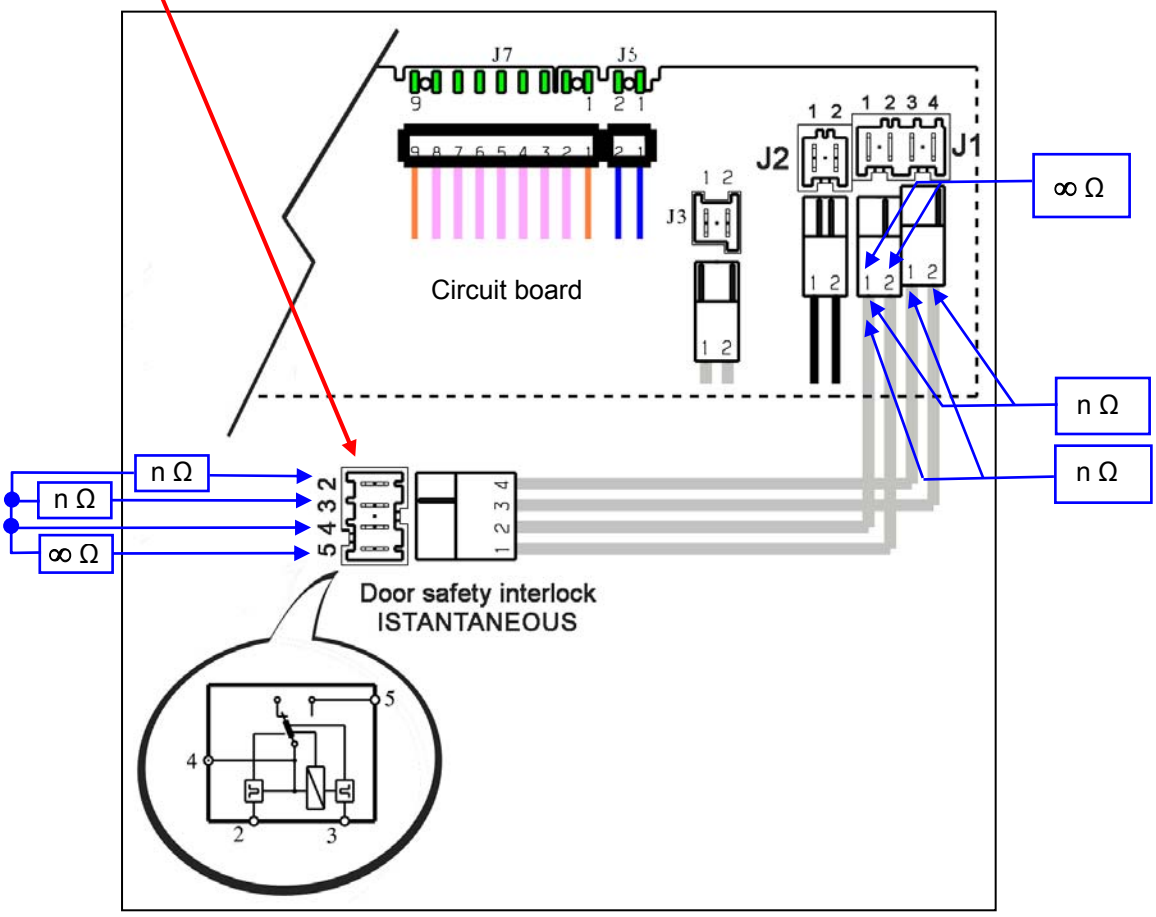


Fig.4





E42	E42: Problems with door aperture (3-contact device)	E42
	Maximum time exceeded (255 seconds)	

Tests to be performed:

fig. 9

Is the door correctly closed?

NO → Close the door correctly and restart the diagnostic cycle to check for further alarms.

YES ↓

The door interlock is traditional with **3 connections** as represented in (**fig 9**)?

NO → Continues at page 42. Instantaneous door interlock with **4 connections** as represented in (**fig.28**)

YES ↓

To check the wiring (with the door open), measure the following wiring connectors:
-between wires J1-3 and J1-1, the circuit must NOT be open (measure the resistive value of the PTC).
- between wires J1-3 and J1-2, the circuit must be OPEN.
Is the system OK?

NO → Detach the connectors and effect measurement on the component **(fig. 9):**
- across connectors 3 and 5 the circuit must not be open (the resistive value should be measurable).
- across connectors 4 and 5, the circuit must be open (the numbers are printed on the component).
Is the door safety interlock is OK?

NO → Replace the door interlock and restart the diagnostic cycle to check for further alarms.

YES ↓

Measure the continuity across connector J1 (PCB) and the door interlock connector.
Is the wiring OK?

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

YES ↓

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

YES ↓

Check for mechanical coupling between the door interlock and the door natch. Is the system OK?

NO → Replace the door natch/the door.

YES ↓

Replace the door interlock.
Is the machine working correctly?

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

YES ↓

Restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

E42 (3-contact device)

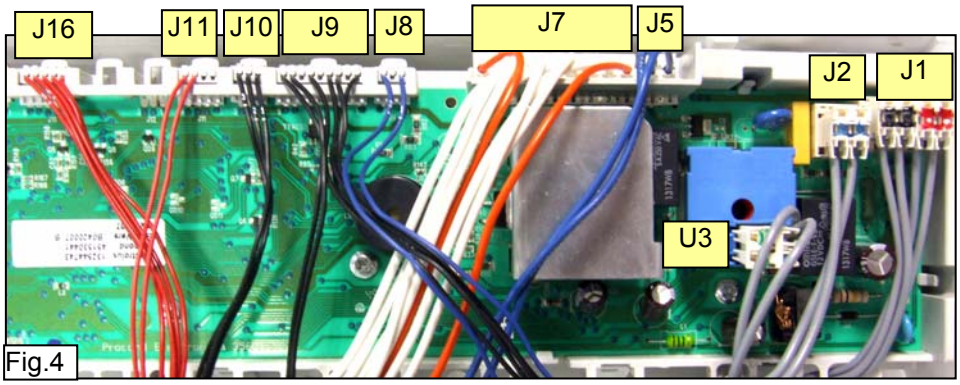
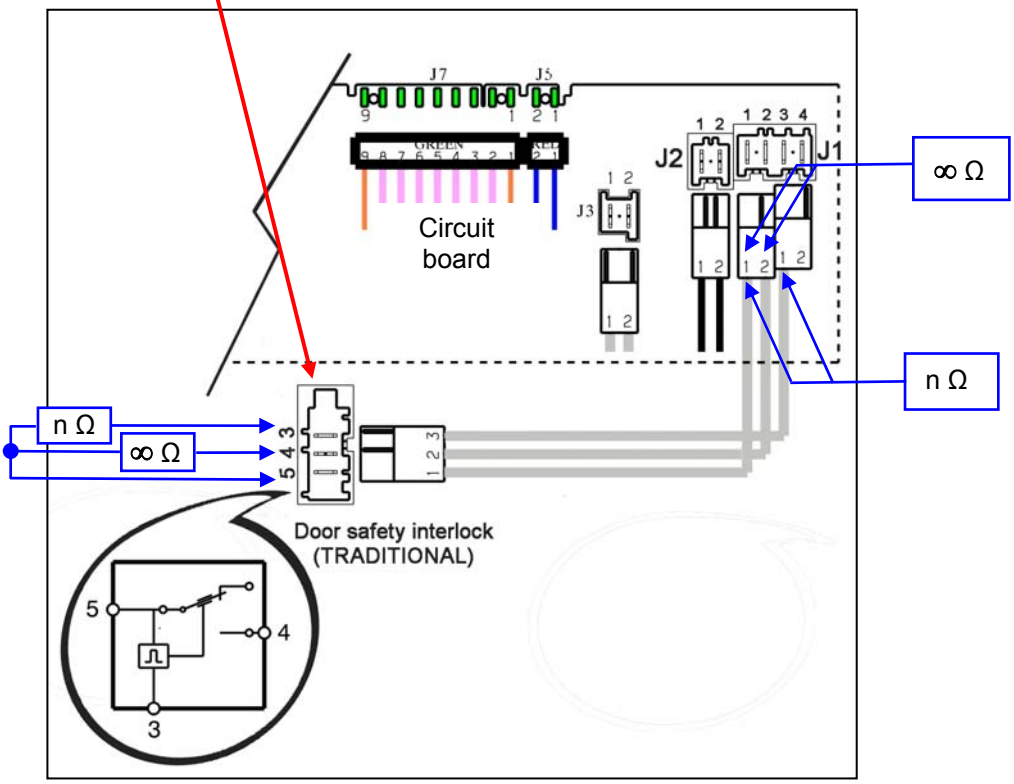


Fig.4

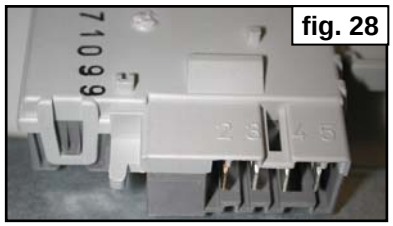

fig. 9



If there are traces of burning on the circuit board, refer to page 90

E42	E42: Problems with door aperture (4- contact device) Maximum time exceeded (5 pulses for instantaneous)	E42

Instantaneous door interlock device with **4 Connections.** **- fig 28 -**



YES

To check the wiring (with the door open), measure the following wiring connectors **(fig. 4)**:
- between wires J1-3 and J1-1, the circuit must NOT be open (Measure the resistive value of the PTC).
- between wires J1-1 and J1-4, the circuit must NOT be open (Measure the resistive value of the PTC).
- between wires J1-1 and J1-2, the circuit must must be OPEN.

Is the system OK?

NO → Detach the connectors of the door interlock and measure on the component:
- across connectors 3 and 4 the circuit must NOT be open (Measure the resistive value of the PTC).
- across connectors 2 and 4 the circuit must NOT be open (Measure the resistive value of the PTC).
- across connectors 4 and 5 the circuit must be OPEN (the numbers are printed on the component).

Is the door safety interlock OK? (**fig. 28**)

NO → Replace the door interlock and restart the diagnostic cycle to check for further alarms.

YES

Measure the continuity across connector J1 (PCB) and the door interlock connector. Is the wiring OK?

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

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES

Check for mechanical coupling between the door interlock and the door natch. Is the system OK?

NO → Replace the door natch/the door.

YES

Replace the door interlock. Is the machine working correctly?

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES

Restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

E42 (4-contact device)

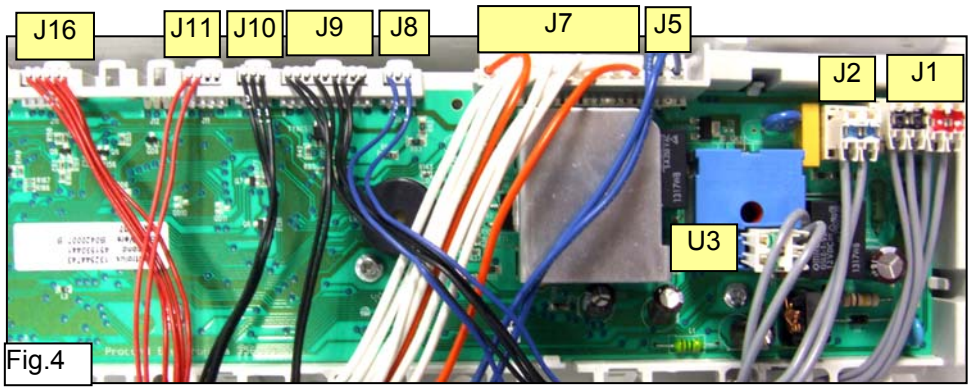
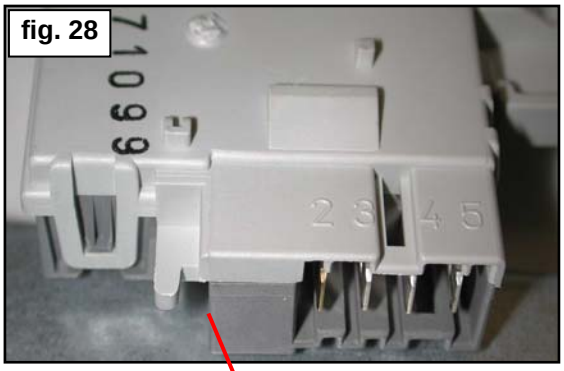
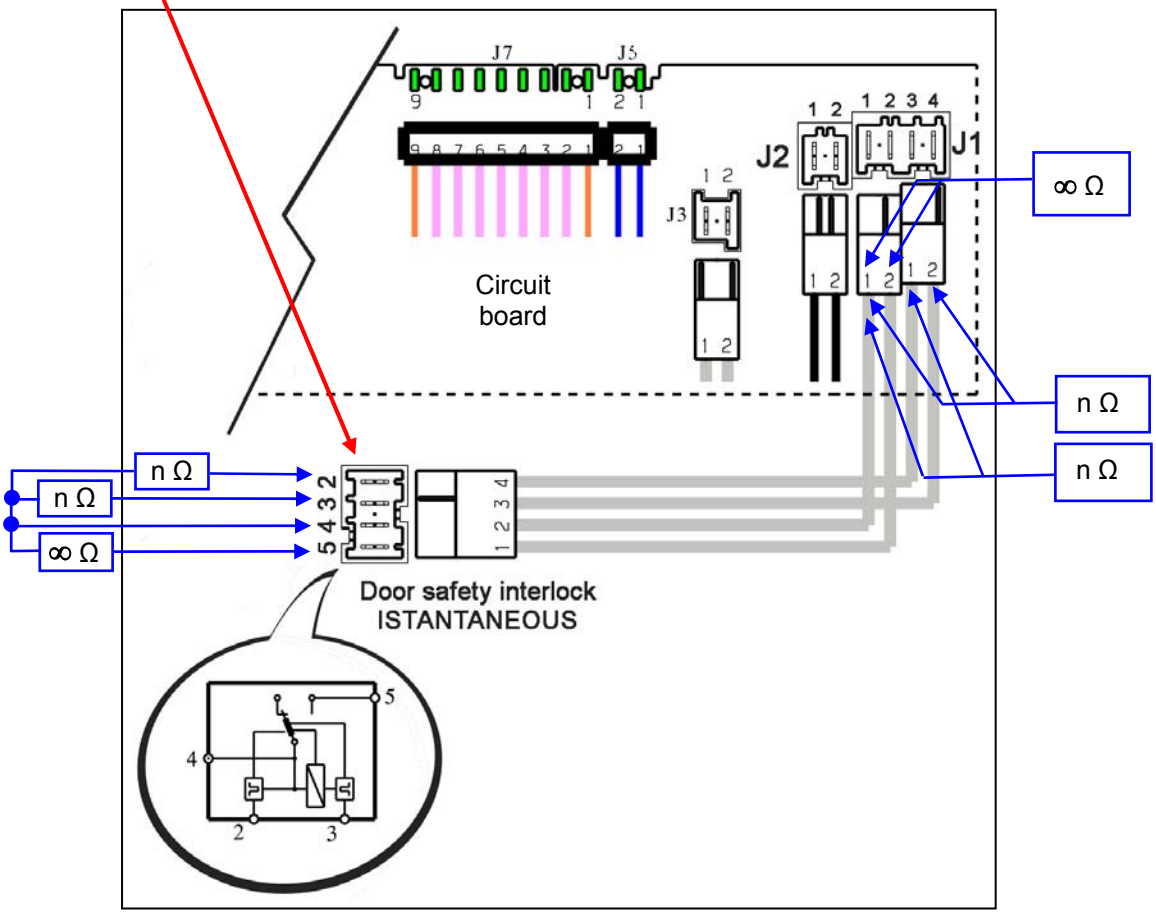


Fig.4





E43	E43: Problems with the component (triac) which actions the door interlock (3-contact device)	E43

Tests to be performed:

To check the wiring, (with the door open), measure the following wiring connectors **(fig. 4)**:
-between wires J1-3 and J1-1, the circuit must NOT be open (measure the resistive value of the PTC).
- between wires J1-1 and J1-2, the circuit must be OPEN.
Is the system OK?

NO → Detach the connectors and measure on the component **(fig. 9):**
- across connectors 3 and 5 the circuit must NOT be open (the resistive value should be measurable).
- across connectors 4 and 5, the circuit must be OPEN (the numbers are printed on the component).
Is the door safety interlock OK?

NO → Replace the door interlock and restart the diagnostic cycle to check for further alarms.

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES → Measure the continuity across connector J1 (PCB) and the door interlock connector.
Is the wiring OK?

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

SI → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

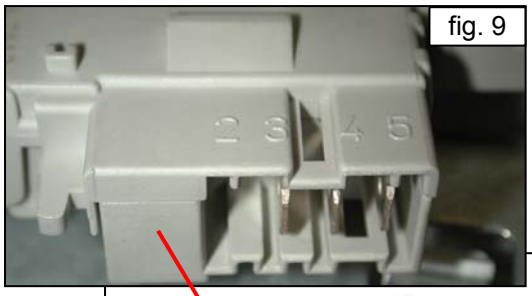


fig. 9

If there are traces of burning on the circuit board, refer to page 90

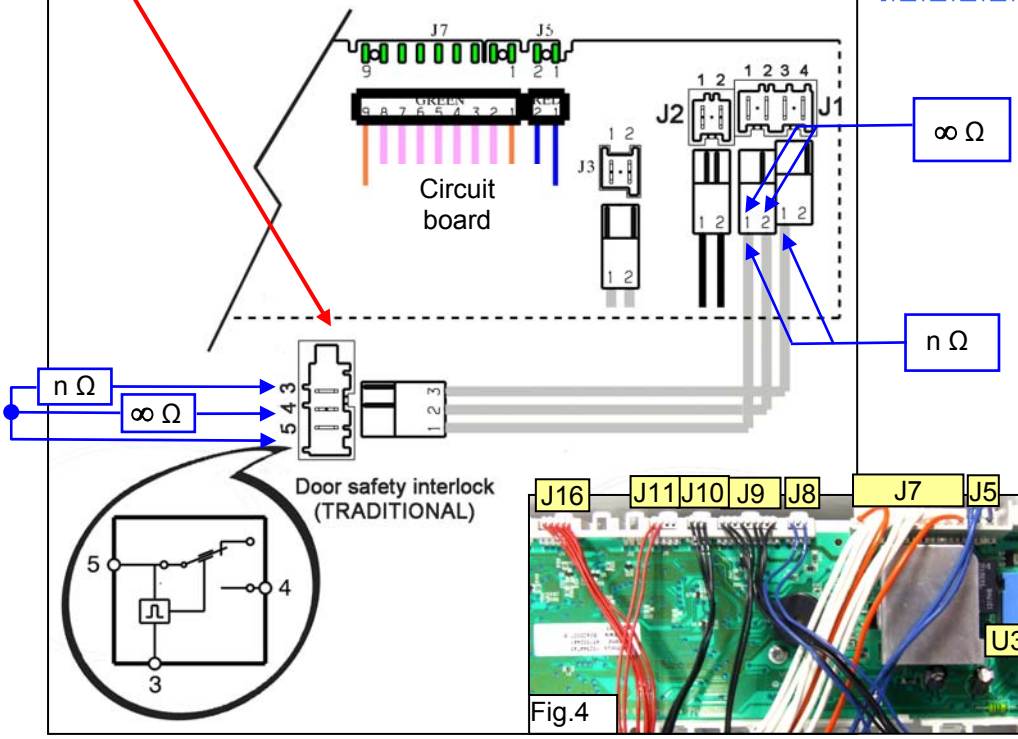


Fig.4

E43	E43: Problems with the component (triac) which actions the door interlock (4-contact device)	E43

Tests to be performed:

To check the wiring, (with the door open), measure the following wiring connectors **(fig.4)**:
- between J1-1 and J1-3, the circuit must NOT be open (measure the resistive value of the PTC).
- between J1-1 and J1-4 the circuit must NOT be open (measure the resistive value of the PTC).
- between J1-1 and J1-2, the circuit must be OPEN.

Is the system OK?

NO → Detach the connectors of the door interlock and measure on the component (**fig. 28**):
- across connectors 3 and 4 the circuit must NOT be open (Measure the resistive value of the PTC).
- across connectors 2 and 4 the circuit must NOT be open (Measure the resistive value of the PTC).
- across connectors 4 and 5 the circuit must be OPEN (the numbers are printed on the component).

Is the door safety interlock OK?

NO → Replace the door interlock and restart the diagnostic cycle to check for further alarms.

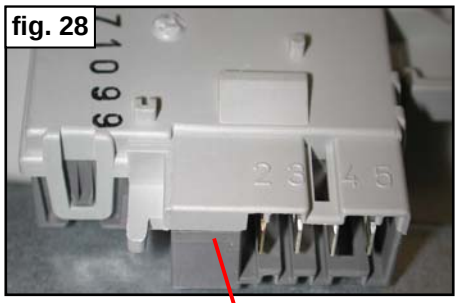
YES → Measure the continuity across connector J1 (PCB) and the door interlock connector. Is the wriring OK?

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

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

fig. 28



If there are traces of burning on the circuit board, refer to page 90

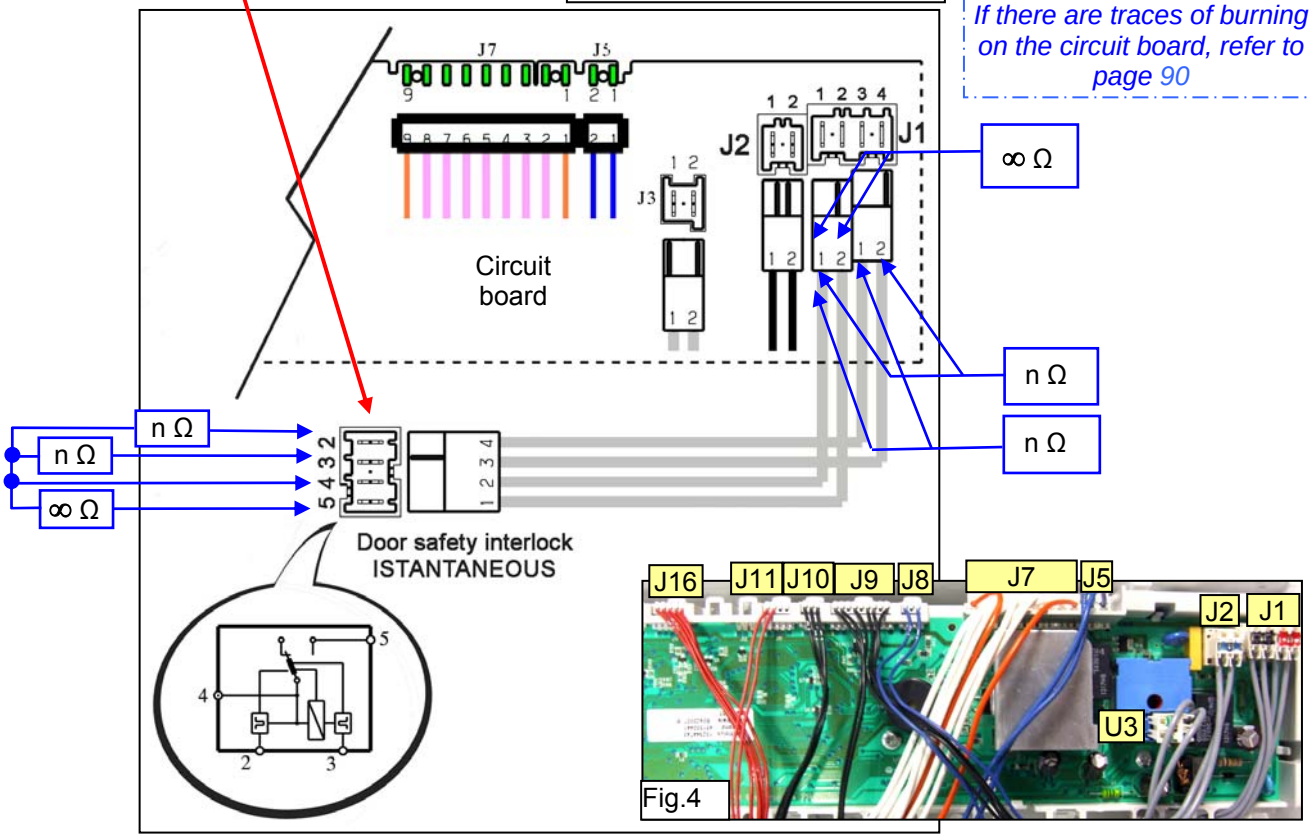


Fig.4

E44	E44: Door closure «sensing» circuit faulty	E44

Tests to be performed:

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

E45	E45: Problems with the «sensing» circuit of the triac that actions the door interlock	E45

Tests to be performed:

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

If there are traces of burning on the circuit board, refer to page 90

E51	E51: Motor power triac short-circuited	E51
	Intervention of the safety system for short-circuiting of the triac (after 5 attempts during the cycle, immediately if detected at the start or during diagnostics)	

Tests to be performed:

Measure among all the terminals of wiring connector J7-2÷J7-8 and the structure of the appliance **see fig.6** Is there current leakage?

NO → Reconnect the connector J7 to the circuit board, detach the connector from the motor and perform **phase 8** of the diagnostic cycle. Does E51 alarm appear again?

NO → E52 will probably be displayed: replace the motor and restart the diagnostic cycle to check for further alarms.

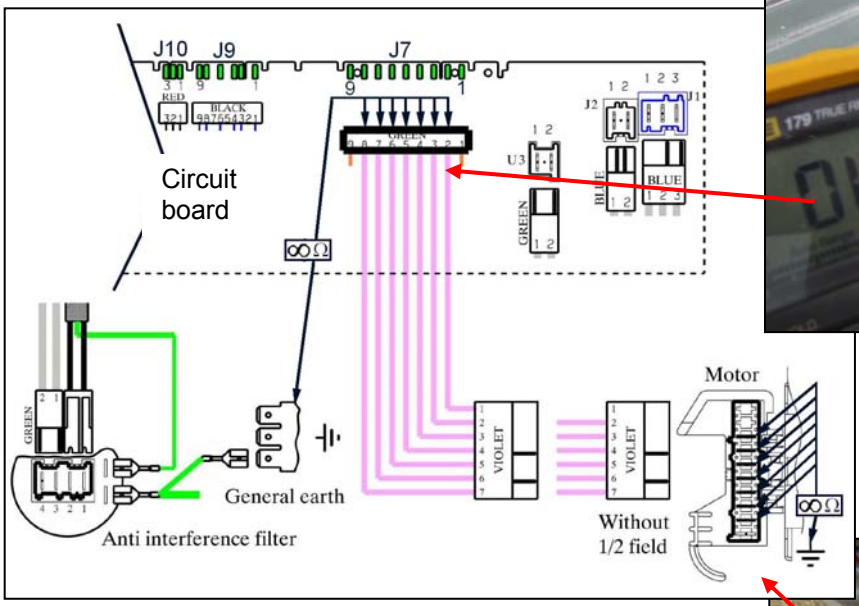
YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

Detach the connector from the motor and measure across the terminals of the motor and the motor shield. **-see fig.10-** Is there current leakage?

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

YES → Replace the motor and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90



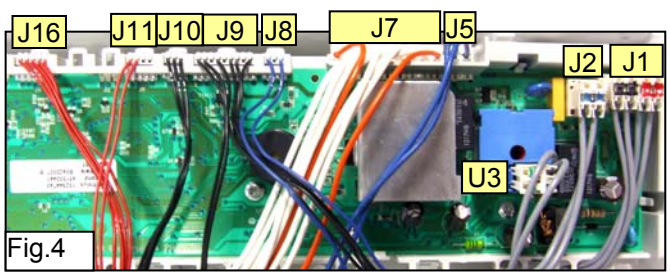
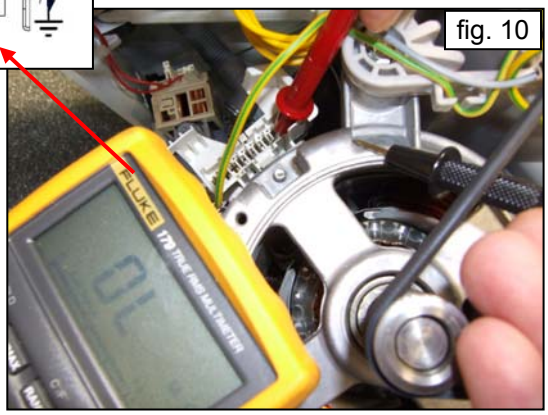


Fig.4



E52	**E52: No signal from the motor tachometric generator *(first part)***	E52
	Cycle blocked after 5 attempts during the cycle or immediately if detected at the start or during diagnostics.	

Tests to be performed:

Perform **phase 7** of the diagnostic cycle (the drum rotates at 55 rpm clockwise 55 rpm anti-clockwise with pulse at 250 rpm). Does the motor rotate correctly?

YES

The motor protection circuit-breaker has probably tripped. Before replacing the motor, check the following

→ that the hydraulic circuit of the pressure switch is OK (minor leaks from the tube may cause greater than normal water fills, and the motor may overheat)

→ that the bearings are OK and the drum rotates without friction

→ that the mains voltage is correct (if the voltage is too low, though not lower than the EH3 alarm threshold, the motor might not start)

Restart the diagnostic cycle to check for further alarms.

NO

Does the motor rotate for a few moments and then stop?

NO

The motor does not rotate at all.
- see page 49-

YES

Measure across the terminals of the wiring connector J7-7 and J7-8. Are the values (Ω) of the tachometric generator correct? (refer to **page 50** - Step 4, phase "A").

NO

Detach the connector from the motor and measure (Ω) the coil of the tachometric generator **-see fig.11-** Is the value correct? (refer to **page 50** Step 4 - phase "A").

NO

Replace the motor or the tachometric generator and restart the diagnostic cycle to check for further alarms.

YES

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

YES

Measure across the same terminals of the wiring connector (J7-7 and J7-8) and the structure of the appliance. Is there any current leakage? - **see fig 6**?

NO

Check for the positioning of the tachometric generator.

Is it correct? **- see fig.12) -**

NO

Replace the motor/ tachometric generator and restart the diagnostic cycle to check for further alarms.

YES

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

YES

Detach the connector from motor and measure across terminals and motor shield. – **(see fig.10)-** Is there any current leakage?

NO

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

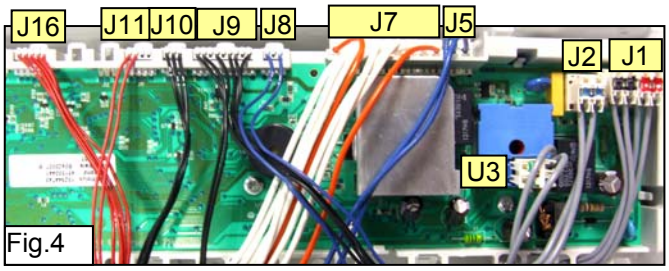
YES

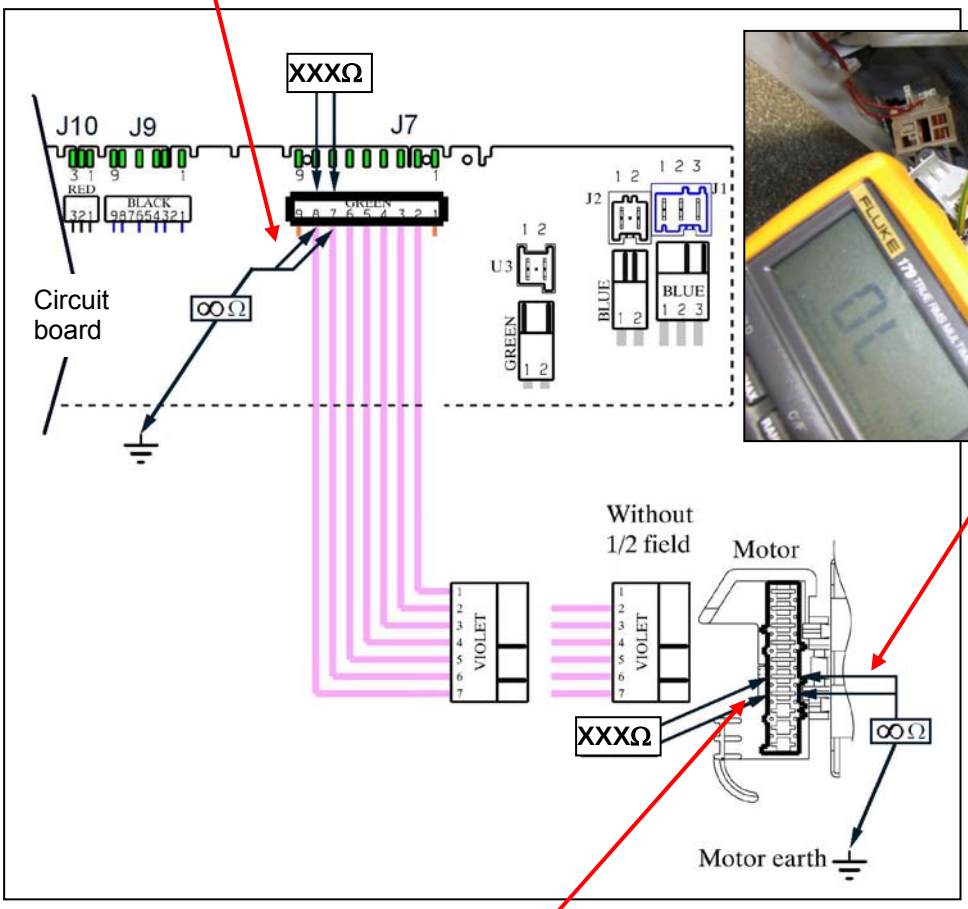
Replace the motor and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

E52a


fig. 6


J16
J11
J10
J9
J8
J7
J5
J2
J1
U3
Fig.4


XXXΩ
J10
J9
J7
RED
BLACK
GREEN
Circuit board
U3
J2
BLUE
GREEN
Without 1/2 field
Motor
VIOLET
VIOLET
XXXΩ
Motor earth

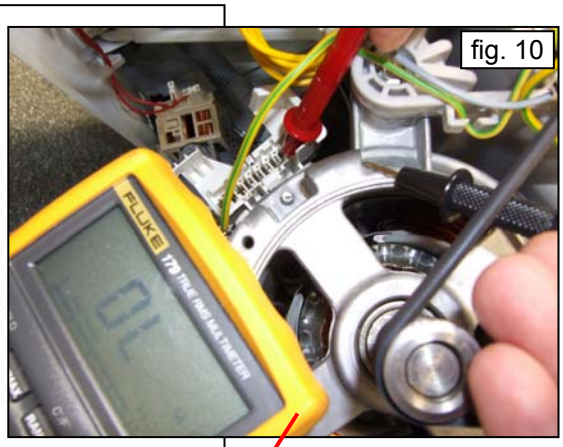


fig. 10

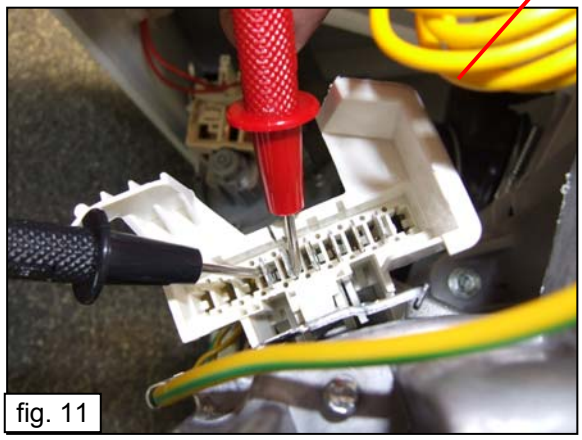


fig. 11

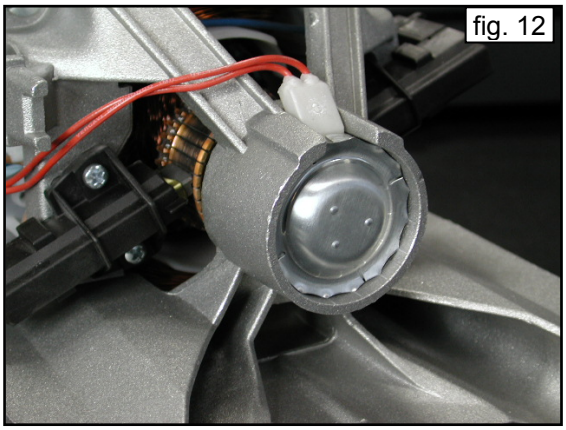


fig. 12

E52	E52: No signal from the motor tachometric generator *(second part)*	E52
	Cycle blocked after 5 attempts during the cycle or immediately if detected at the start or during diagnostics.	

Tests to be performed:

The motor does not rotate at all.

To check the wiring, measure (Ω) across the following terminals of the circuit board connector **(fig.4)** and compare with the correct values (**see page 50**: step 4 – motor parameters)
- across J7-2 and J7-5, the value must be as in 4 - **B** (Stator)
- across J7-1 and J7-5, if present, the value must be as in step 4 - **D** (stator ½ range)
- across J7-2 and J7-4, the value must be as in step 4-**C** (rotor).

Are these values correct?

NO → Check the motor as described on **page 50**.

Is the motor OK?

NO → Replace the motor and restart the diagnostic cycle to check for further alarms.

SI → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

SI → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

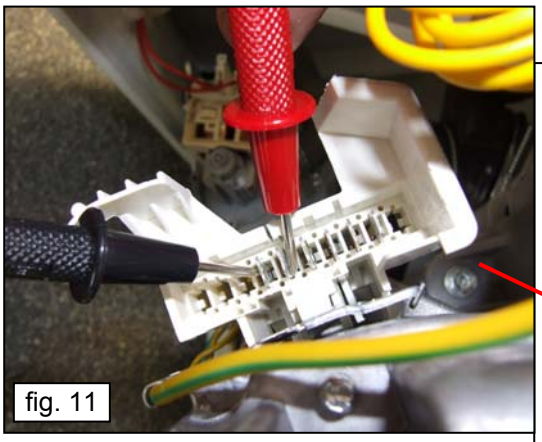
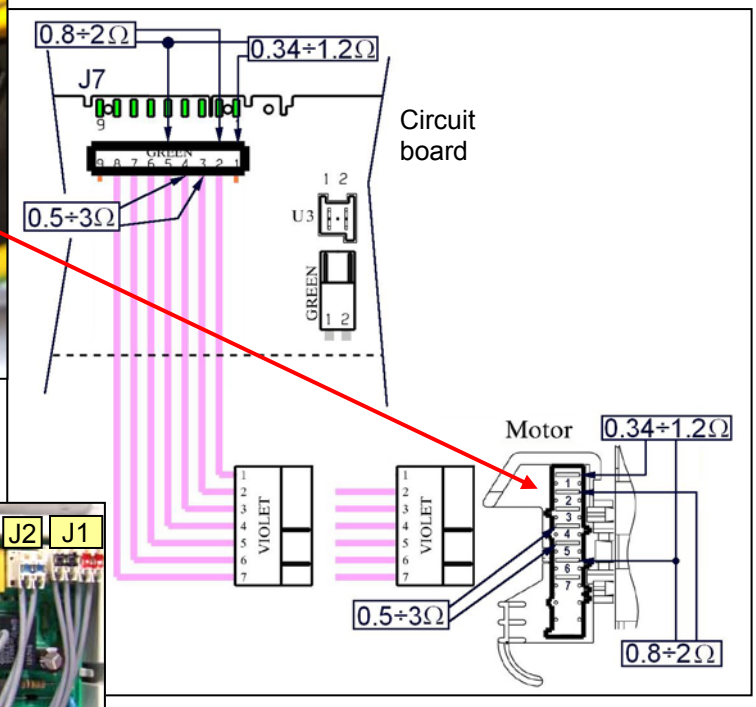


fig. 11



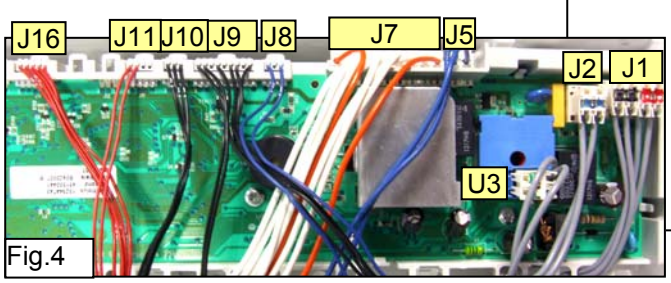


Fig.4

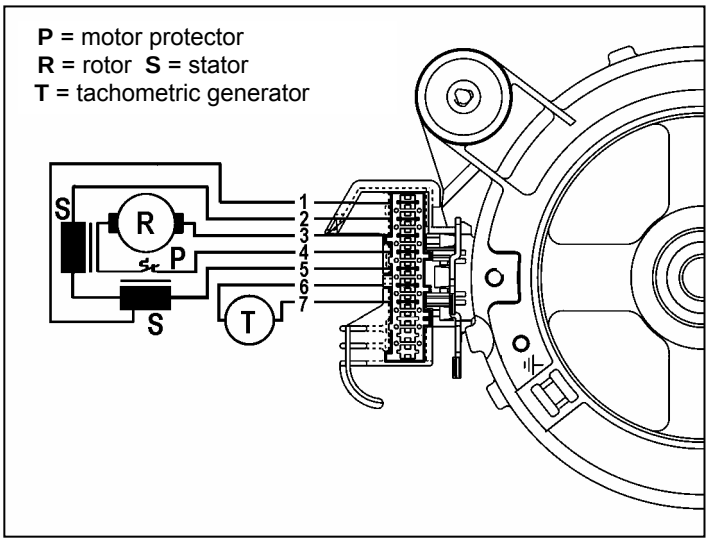
Procedure for checking the commutator motors

1) Check the connector blocks (wiring) and check for detached or bent terminals.

2) Check for traces, residue or deposits of water or detergent on the motor and identify the source.

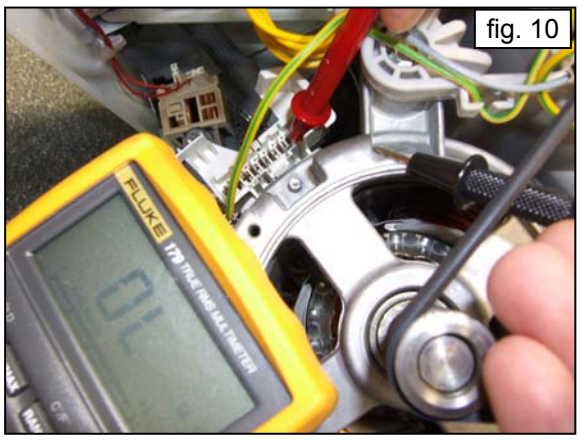
3) Check for windings or other parts that may be grounded or poorly insulated. Use a tester with a minimum scale of 40 MΩ: between each terminal and the casing, this should read ∞ **(fig. 10).**

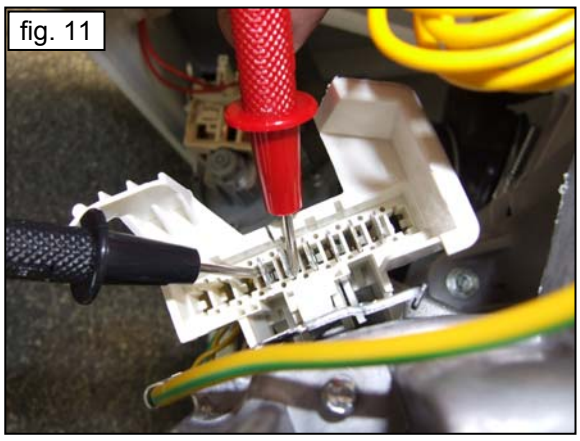
4) Check each winding against the values shown in the table below **(fig. 11)**.



	TERMINALS ON MOTOR TERMINAL BLOCK	CHECKS:	MOTORS				
			C.E.SET. [ ]	ACC (FHP)	ACC (SOLE)	BSH	ECM
A	6-7	Winding of tachymetric generator	63÷74	125÷145	468÷540 171÷197	14÷16	84÷98
B	2-5	Stator winding (full range)	1.0÷2.0	0.9÷3.2	0.8÷1.9	1.4÷1.9	1.3÷1.6
C	3-4	Rotor winding (overheating breaker)	1.6÷2.7	0.5÷3.0	1.4÷2.3	1.5÷1.9	1.8÷2.5
D	1-5	Stator winding (half range, presence of terminal 1)	0.34÷0.65	0.4÷1.2	0.4÷1.0	1.0÷1.2	0.6÷0.8

N.B.: When checking the rotor winding, the measurement must be effected over the entire surface, rotating the spindle very slowly and checking for short-circuits between visible plates. Also check the brushes for wear.





E53	E53: Problems with the "Sensing" circuit of the triac which powers the motor	E53

Tests to be performed:

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

If there are traces of burning on the circuit board, refer to page 90

E54	E54: Motor relay contacts sticking	E54
	Voltage in the motor circuit even when the motor should be inoperative	

Tests to be performed:

Measure between all terminals of wiring connector J7-2 ÷ J7-8 and the structure of the appliance
see page 50, point 3
Is there any current leakage?
- see fig. 9 -

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

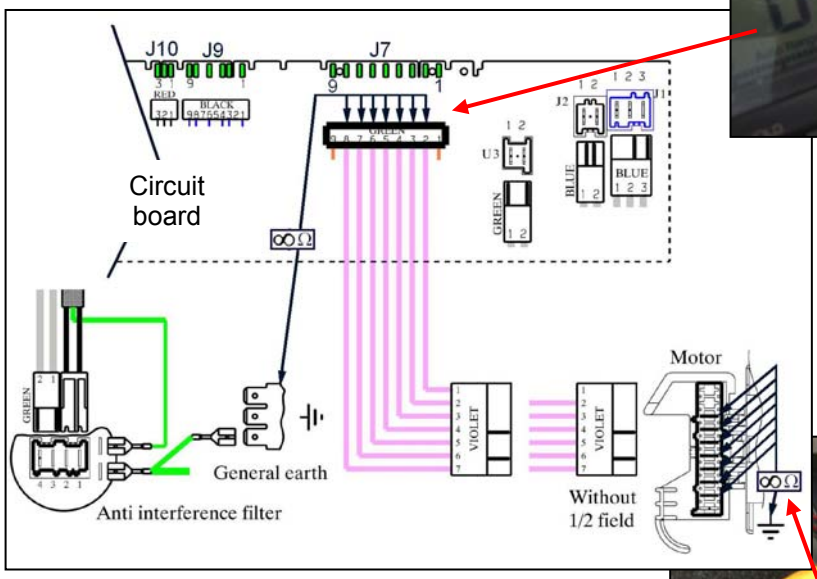
YES ↓

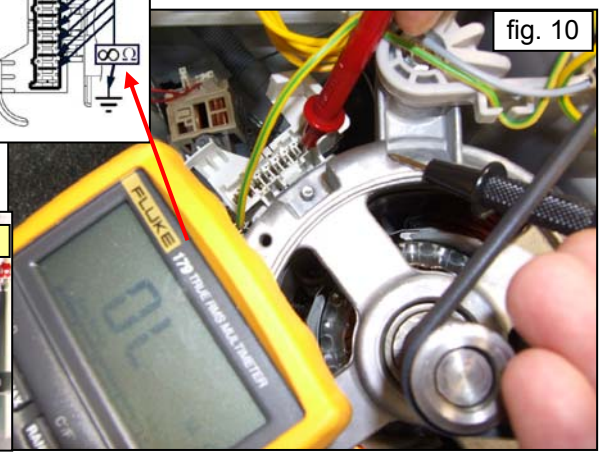
Detach the connector from the motor and measure across the terminals and the motor shield.
- see fig. 10 -
Is there any current leakage?

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

YES ↓

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





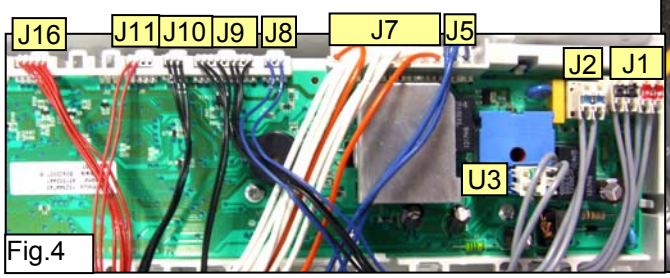


Fig.4

If there are traces of burning on the circuit board, refer to page 90

E61	E61: Insufficient heating during washing	E61
	Maximum heating time exceeded ➲ ***SOMETIMES THE ALARM CAN BE CAUSED BY THE POWER VOLTAGE TOO LOW!***	

Tests to be performed:

Measure the value of the NTC sensor across contacts J9-9 and J9-8 of the circuit board connector. Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

NO →

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

NO →

Replace the NTC temperature sensor and restart the diagnostic cycle to check for further alarms.

YES ↓

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

YES ↓

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

If there are traces of burning on the circuit board, refer to page 90

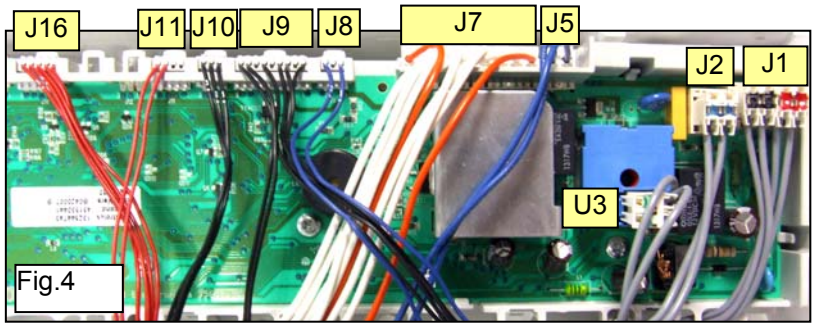
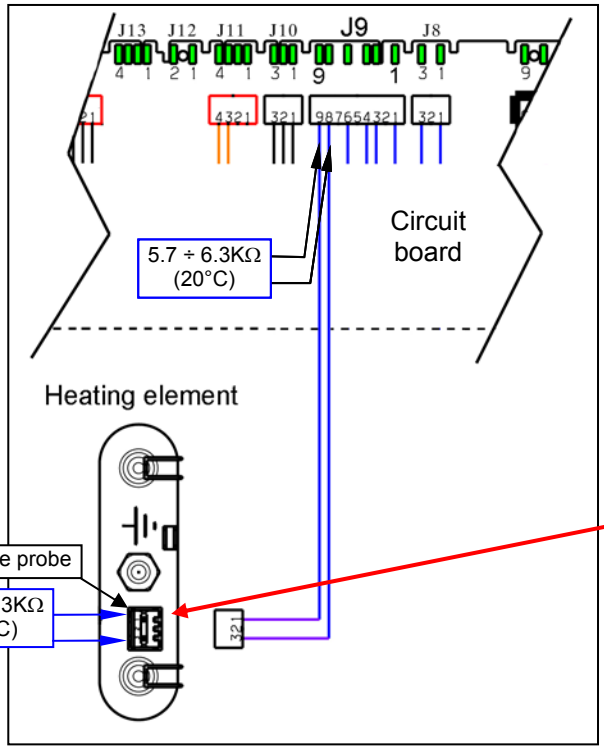
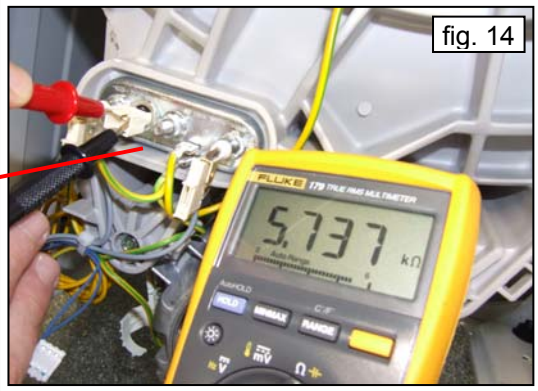


Fig.4





E62	E62: Overheating during washing (version WM)	E62
	The temperature of the NTC sensor exceeds 88°C for more than 5 minutes.	

Tests to be performed:

Start the diagnostic cycle and fill with water up to the level of the door to ensure that the heating element is completely dipped into. Measure between wiring connector J2-2 and the structure of the appliance - **see fig 6 -** Is the circuit open?

NO → Detach the connector and measure across the heating element and the ground contact. **- see fig. 15 -** Is the circuit open?

NO → Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

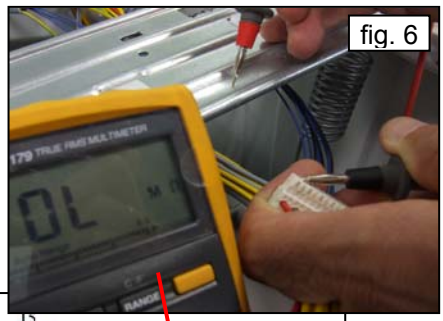
YES → Measure the NTC sensor across terminals J9-9 and J9-8 of the circuit board connector. Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

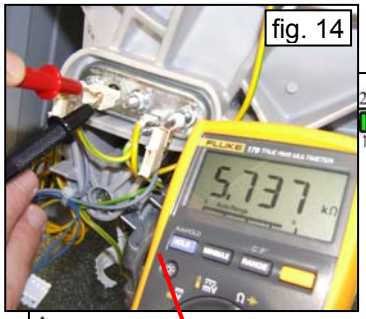
NO → Detach the connector and measure directly on the NTC sensor. **- see fig. 14 -** Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

NO → Replace the NTC sensor and restart the diagnostic cycle to check for further alarms.

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.





If there are traces of burning on the circuit board, refer to page 90

E62	E62: Overheating during washing (version WD)	E62
	The temperature of the NTC sensor exceeds 88°C for more than 5 minutes.	

Tests to be performed:

Start the diagnostic cycle and fill with water up to the level of the door to ensure that the heating element is completely dipped into. Measure between wiring connector J2-2 and the structure of the appliance - **see fig 6 -** Is the circuit open?

NO → Detach the connector and measure across the heating element and the ground contact. **- see fig. 15 -** Is the circuit open?

NO → Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

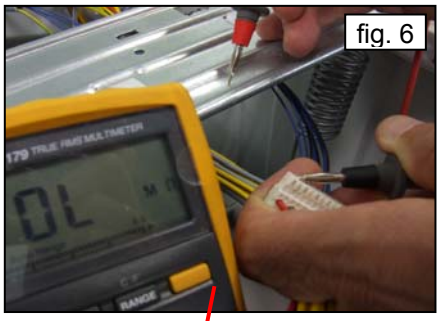
YES → Measure the NTC sensor across terminals J9-9 and J9-8 of the circuit board connector. Is the value correct? (between 5.7 and 6.3 KΩ at

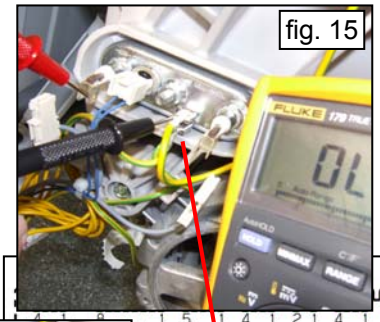
NO → Detach the connector and measure directly on the NTC sensor. **- see fig. 14 -** Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

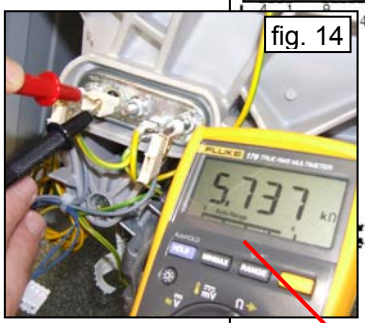
NO → Replace the NTC sensor and restart the diagnostic cycle to check for further alarms.

YES → Replace the WD boardand restart the diagnostic cycle to check for further alarms.

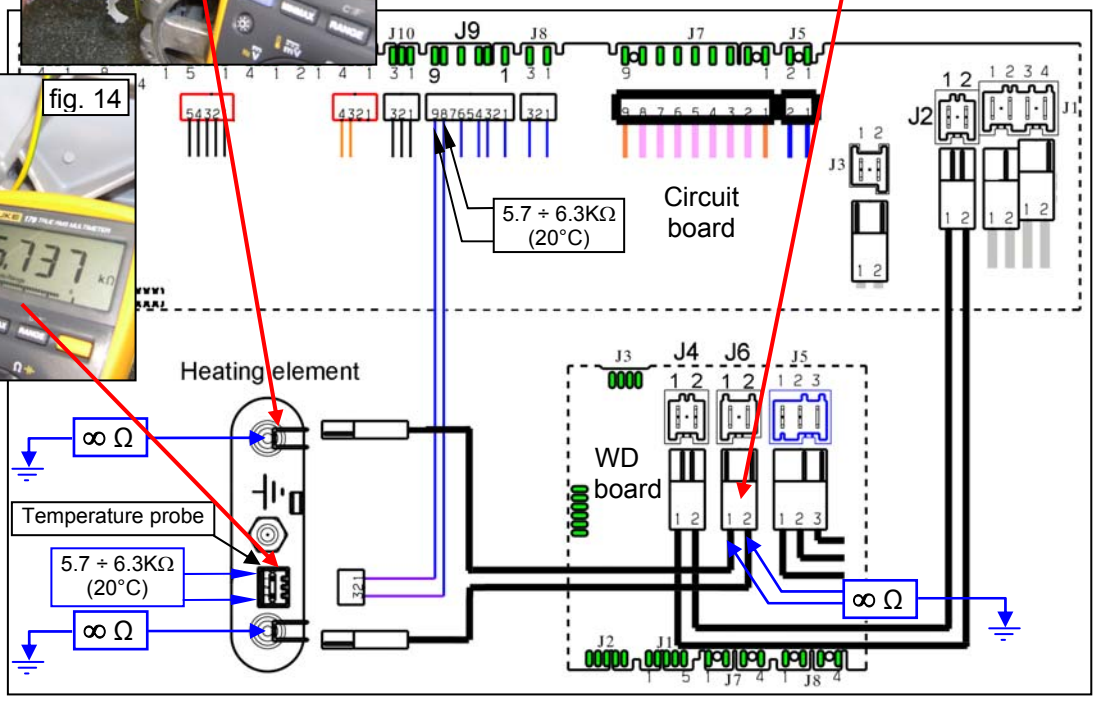
YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.







If there are traces of burning on the circuit board, refer to page 90



E66	E66: The contacts of the heating element power relay are always closed (version WM)	E66

Tests to be performed:

Measure across connector J2-1/J2-2 on the circuit board and the structure of the appliance. **(Fig. 6)** Is there any current leakage?

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

YES ↓

Detach the connector and measure across the heating element and the ground contact. **- fig. 15 -** Is the circuit open?

NO → Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES ↓

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

If there are traces of burning on the circuit board, refer to page 90

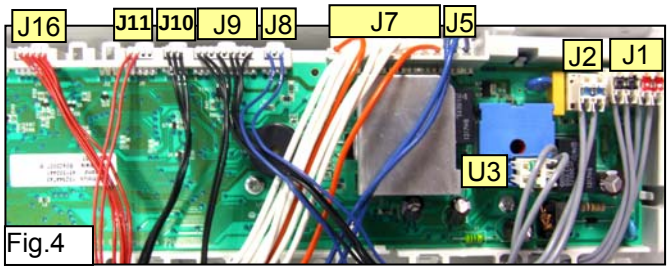


Fig.4


fig. 6

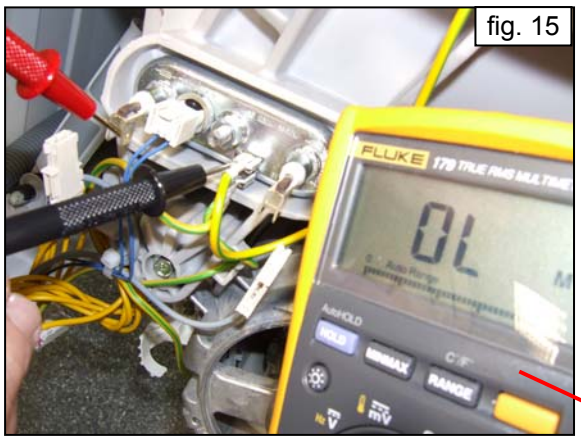
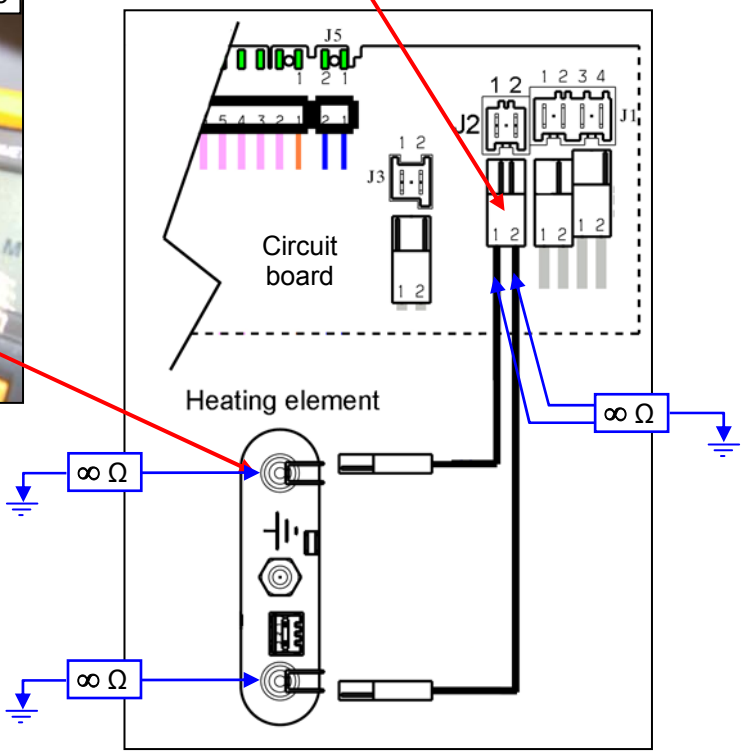


fig. 15



E66	E66: The contacts of the heating element power relay are always closed (version WD)	E66

Tests to be performed:

Measure across connector J6-1/J62-2 on the circuit board and the structure of the appliance. **(Fig. 6)** Is there any current leakage?

NO → Replace the WD board and restart the diagnostic cycle to check for further alarms.

YES ↓

Detach the connector and measure across the heating element and the ground contact. **– (fig. 15)-** Is the circuit open?

NO → Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES ↓

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

If there are traces of burning on the circuit board, refer to page 90

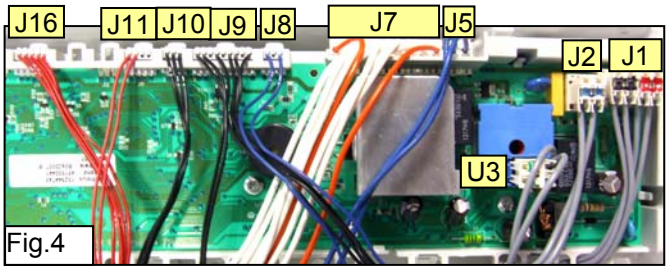
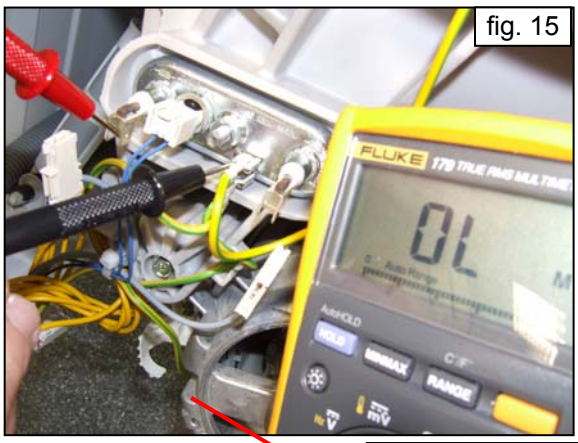
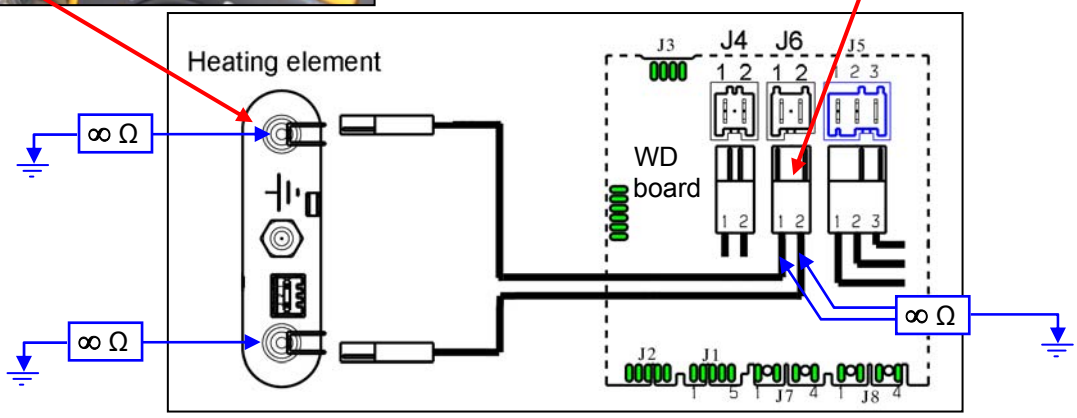


Fig.4





E68	E68: Washing heating element leaks current (version WM)	E68

Tests to be performed:

Start the diagnostic cycle and fill with water up to the level of the door to ensure that the heating element is completely dipped into. Measure between wiring connector J2-1/J2-2 and the structure of the appliance **-see fig.6-** Is the circuit open?

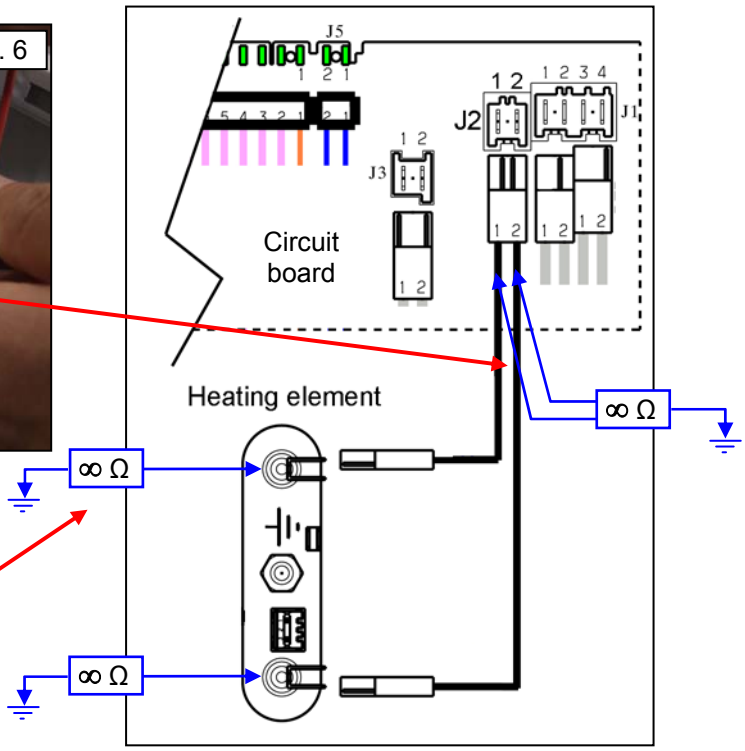
NO → Detach the connector and measure across the heating element and the ground contact. **- see fig. 15 -** Is the circuit open?

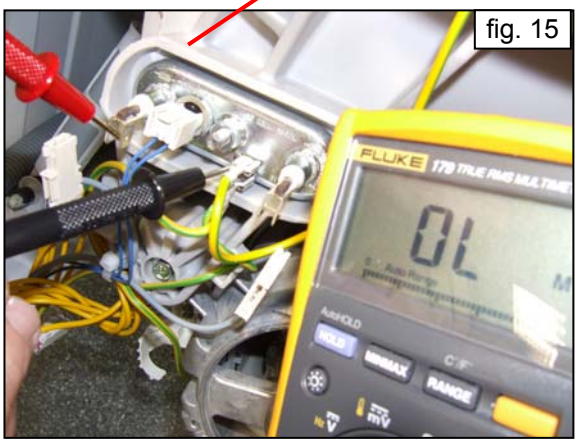
NO → Start phase **8** of the diagnostic cycle, drain water from tub. Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90





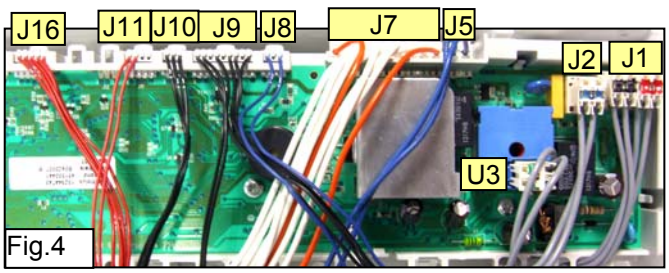


Fig.4

E68	E68: Washing heating element interrupted (version WD)	E68

Tests to be performed:

Start the diagnostic cycle and fill with water up to the level of the door to ensure that the heating element is completely dipped into. Measure between wiring connector J2-1/J2-2 and the structure of the appliance **-see fig.6-** Is the circuit open?

NO → Detach the connector and measure across the heating element and the ground contact. **- see fig. 15 -** Is the circuit open?

NO → Start phase **8** of the diagnostic cycle, drain water from tub. Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES → Replace the circuit board and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

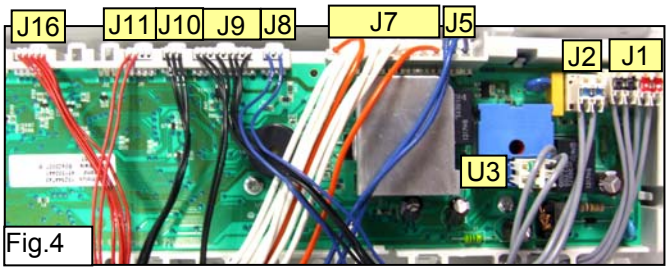


Fig.4


fig. 6

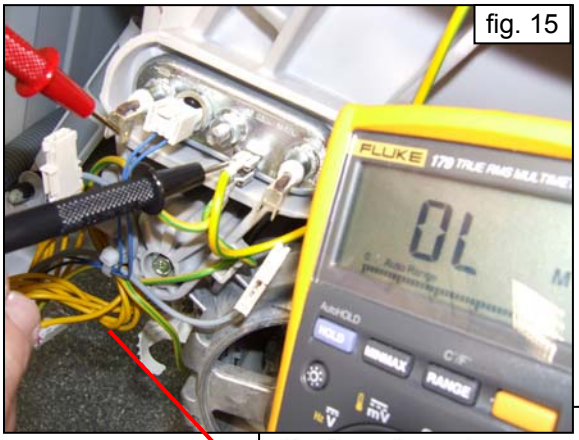
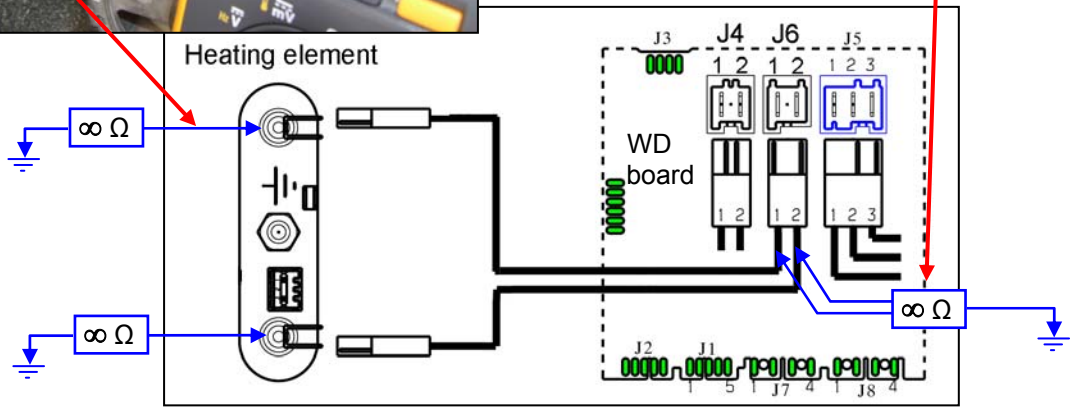


fig. 15



E69	E69: Washing heating element interrupted (version WM)	E69

Tests to be performed:

Measure the heating element value (Ω) across terminals J2-2 ÷ J2-1of the wiring connector.
-see fig.4-
Is the value correct?
(26÷28Ω for 230V/1950W,
28÷31 for 240V/1950W)

NO →

Measure the ohmic value directly on the terminals of the heating element (detach the connectors)
-see fig 13-
Is the value correct?
(26÷28Ω for 230V/1950W,
28÷31 for 240V/1950W)

NO →

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

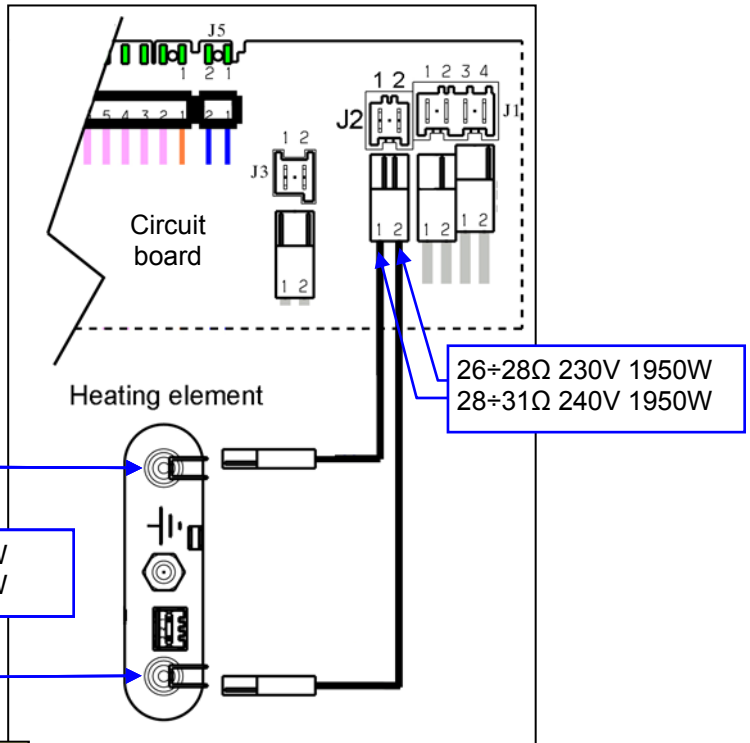
YES ↓

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

YES ↓

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

Fig.13



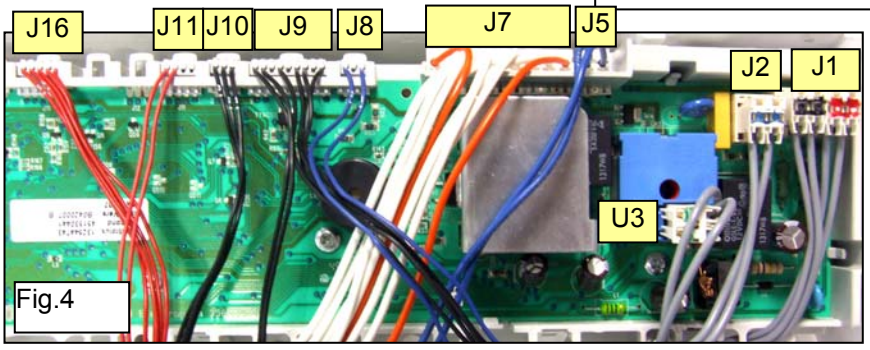


Fig.4

If there are traces of burning on the circuit board, refer to page 90

E69	E69: Washing heating element interrupted (version WD)	E69

Tests to be performed:

Measure the heating element value (Ω) across terminals J6-2 ÷ J6-1 of the wiring connector.
-see fig.4-
Is the value correct?
(26÷28Ω for 230V/1950W, 28÷31 for 240V/1950W)

NO → Measure the ohmic value directly on the terminals of the heating element (detach the connectors)
-see fig 13-
Is the value correct?
(26÷28Ω for 230V/1950W, 28÷31 for 240V/1950W)

NO → Replace the heating element and restart the diagnostic cycle to check for further alarms.

YES → Replace the WD board and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

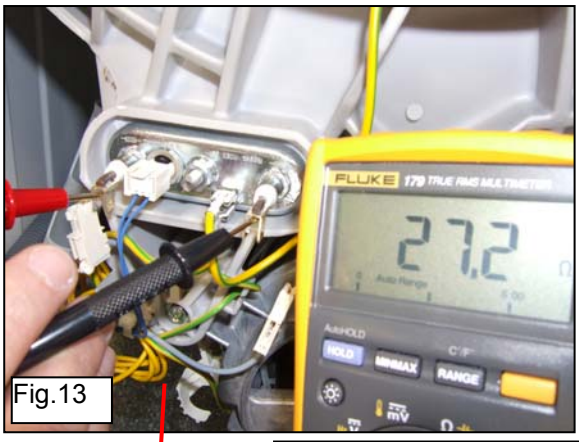
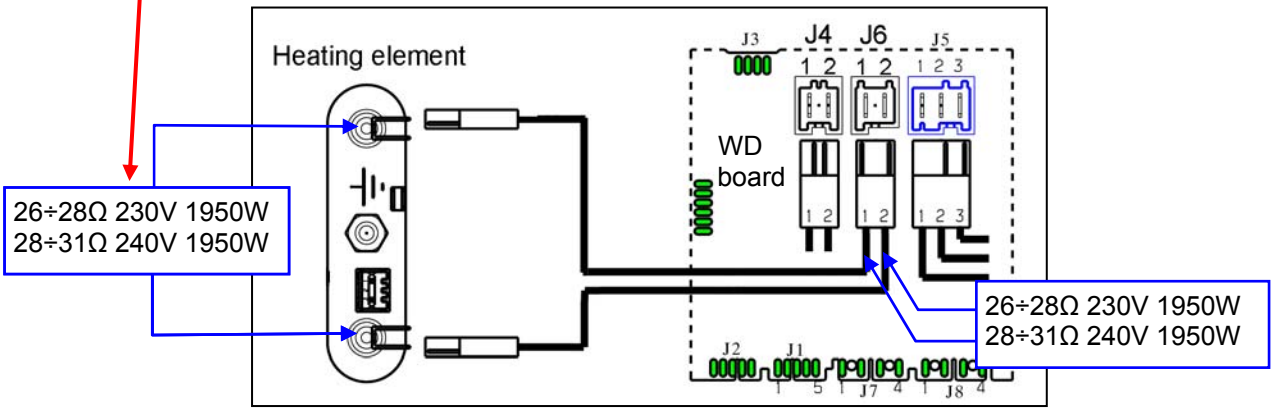


Fig.13



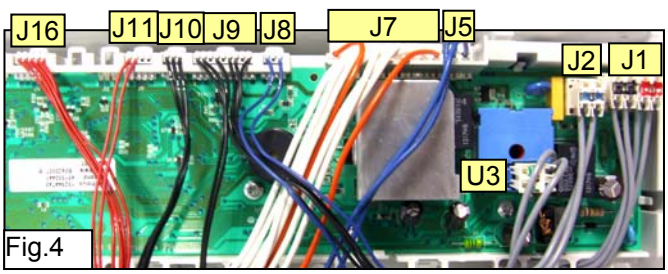


Fig.4

If there are traces of burning on the circuit board, refer to page 90

E71	E71: NTC washing sensor faulty	E71
	Voltage not within limits (short-circuited or open)	

Tests to be performed:

Perform **phase 6** of the diagnostic cycle and wait until the fill ends. Switch the appliance off and measure the value of the NTC sensor across contacts J9-8 and J9-9 dof the wiring connector **-see fig. 4-.** Is the value correct? (between 5.7÷6.3 KΩ at 20°C)

NO → Detach the connector and measure the NTC sensor directly. **- see fig. 14 -** Is the value correct? (5.7÷6.3 KΩ at 20°C)

NO → Start phase **8** of the diagnostic cycle, drain water from the tub. Replace the NTC sensor and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

YES → Measure across terminals J9-9, J9-8 of the connector and the structure of the appliance **– see fig. 6 -** Is there any current leakage?

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

YES → Detach the connector and measure directly across the terminals of the NTC sensor and the structure of the appliance (there must be water in the tub). Is there any leakage?

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

YES → Start phase **8** of the diagnostic cyle, drain water from the tub. Replace the NTC sensor and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

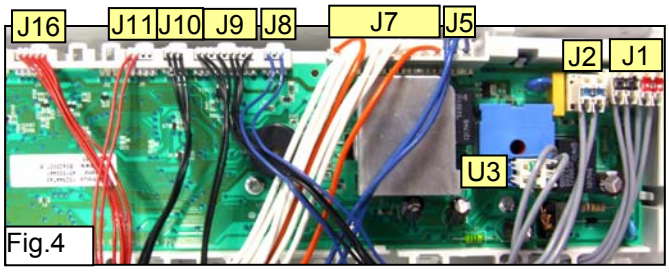
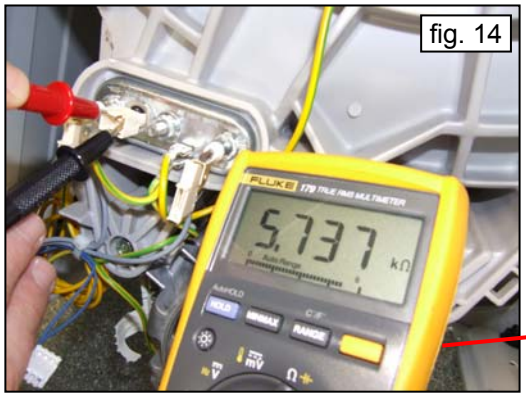
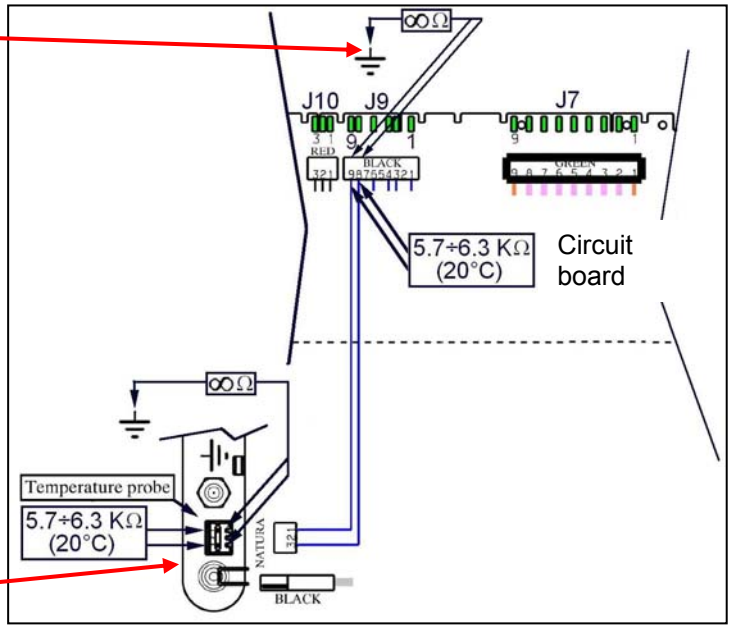


Fig.4





E72	E72: Drying NTC sensor on condenser faulty	E72
	Ohm value of the NTC out of limits	

Tests to be performed:

Measure the value of the NTC sensor across contacts J7-3 and J7-4 of the WD board connector. **- see fig. 32 -** Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

NO → Detach the connector and measure the NTC sensor directly. Is the value correct? **- see fig.33 -**

NO → Replace the NTC sensor and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

YES → Measure across terminals J7-3, J7-4 of the connector and the structure of the appliance **– see fig. 6 -** Is there any current leakage?

NO → Replace the WD board and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

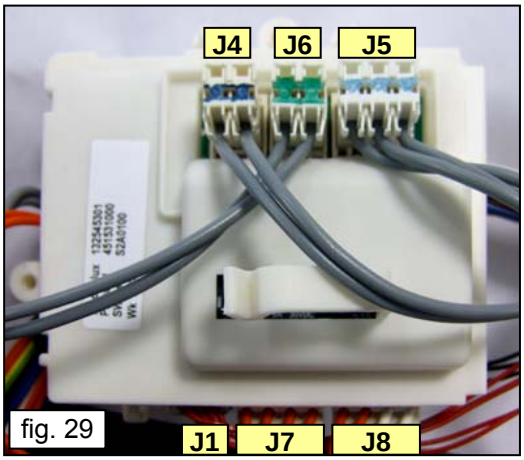
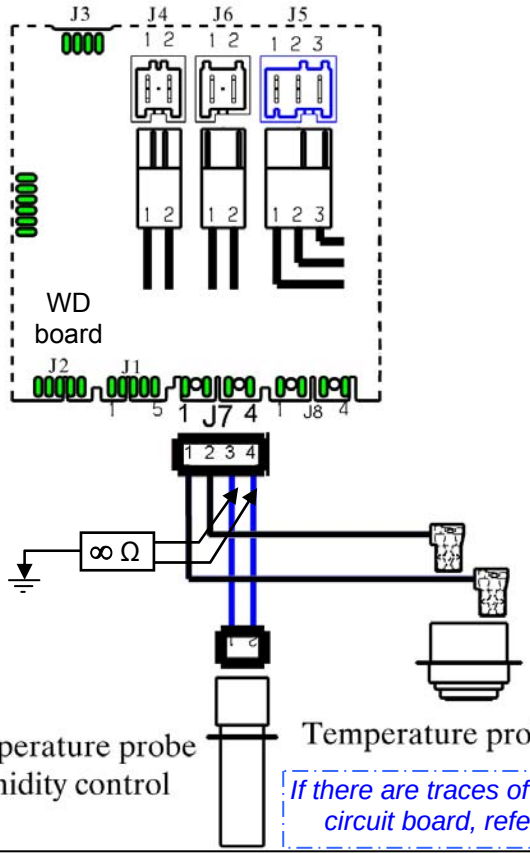


fig. 29


fig. 6

fig. 32

Fig.33



If there are traces of burning on the circuit board, refer to page 90

E73	E73: NTC sensor on drying duct faulty	E73
	Ohm value of the NTC out of limits	

Tests to be performed:

Measure the value of the NTC sensor across contacts J7-1 and J7-2 of the WD board connector.- **(see fig. 30)** - Is the value correct? (between 4.7 and 5.3 KΩ at 20°C)

NO → Detach the connector and measure the NTC sensor directly. Is the value correct? **- (see fig.31) -**

NO → Replace the NTC sensor and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

YES → Measure across terminals J7-1, J7-2 of the connector and the structure of the appliance **– see fig. 6 -** Is there any current leakage?

NO → Replace the WD board and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

fig. 6

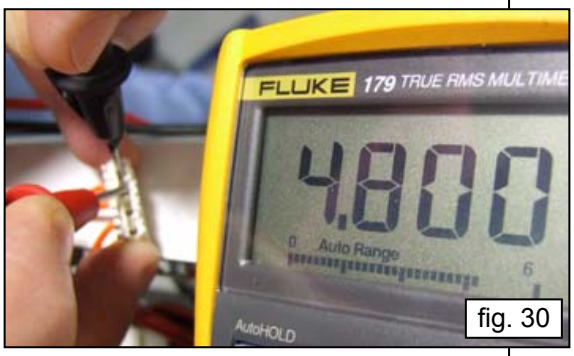


fig. 30

fig. 31

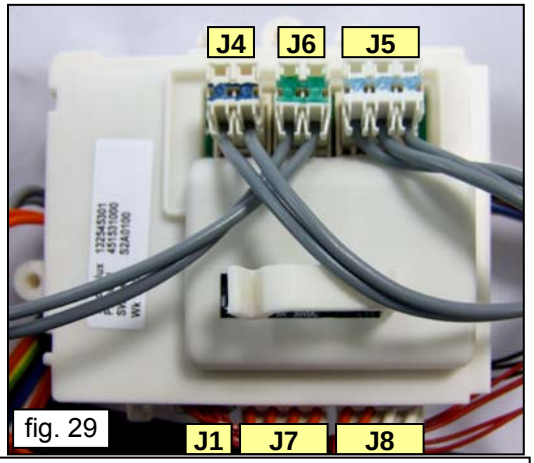
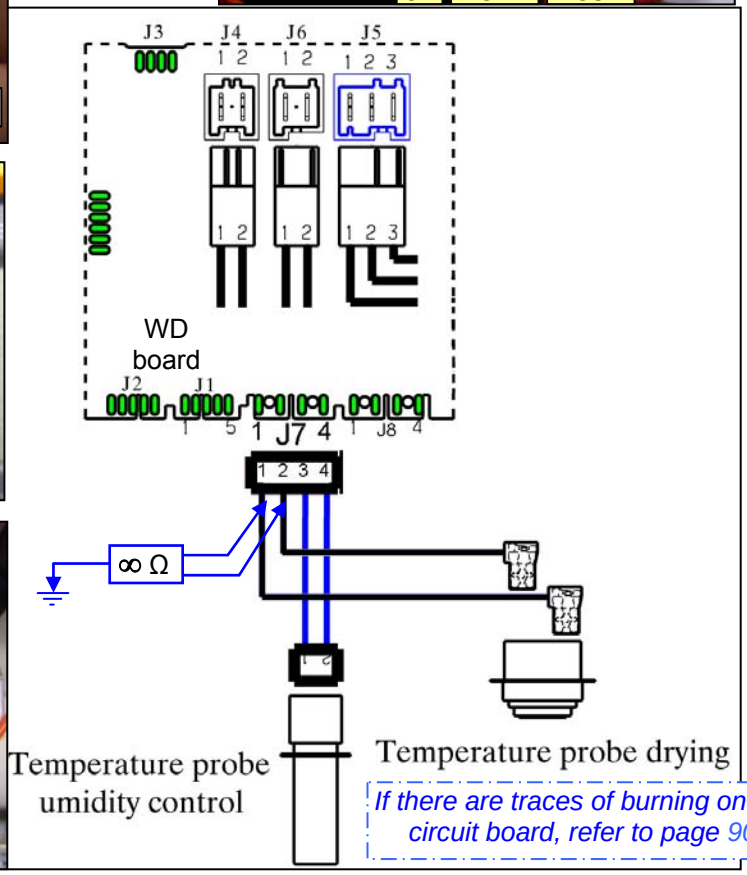


fig. 29



If there are traces of burning on the circuit board, refer to page 90

E74	E74: NTC sensor wrongly positioned	E74

Tests to be performed:

Is the sensor correctly positioned? **-see fig.17-**

NO → Position the sensor again into its seat and restart the diagnostic cycle to check for further alarms.

YES ↓

Measure the value of the NTC sensor (5.7÷6.3KΩ at 20°C) across contacts J9-8 and J9-9 of the wiring connector **(fig. 4)**. Is the value correct? (between 5.7 and 6.3 KΩ at 20°C)

NO → Replace the sensor and restart the diagnostic cycle to check for further alarms.

YES ↓

Perform **phase 6** of the diagnostic cycle and wait until the fill ends. Remain in this phase for five minutes. Switch the appliance off and measure the value of the NTC sensor across contacts J9-8 and J9-9 of the wiring connector **(fig. 4)**. Is the value lower than 5 KΩ?

NO →

!!ATTENTION!!

DRAIN WATER FROM TUB BECAUSE IT IS BOILING

Replace the sensor and restart the diagnostic cycle to check for further alarms.

YES ↓

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

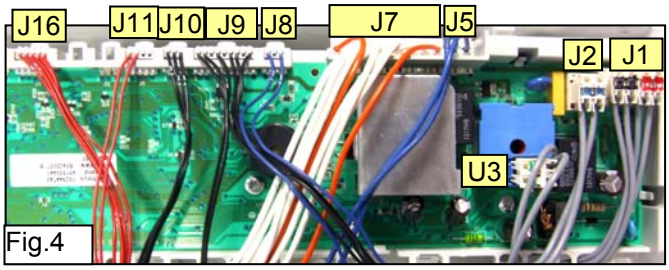
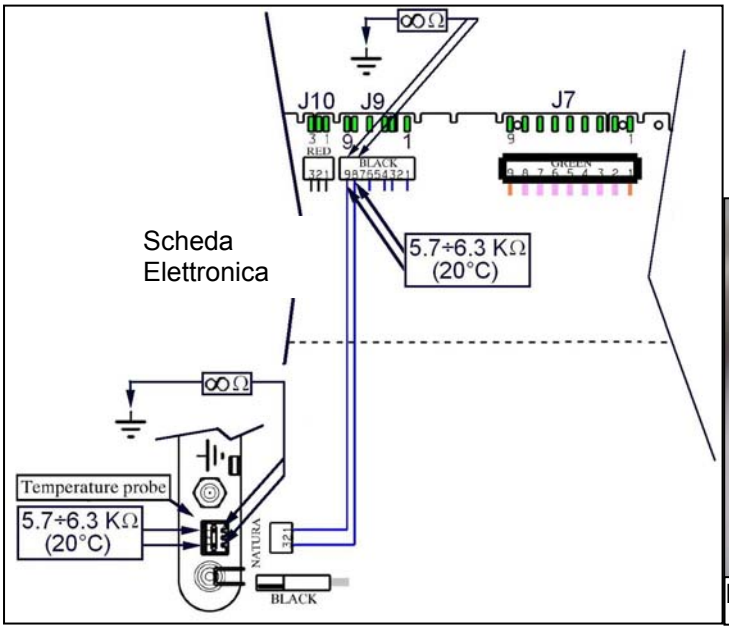


Fig.4

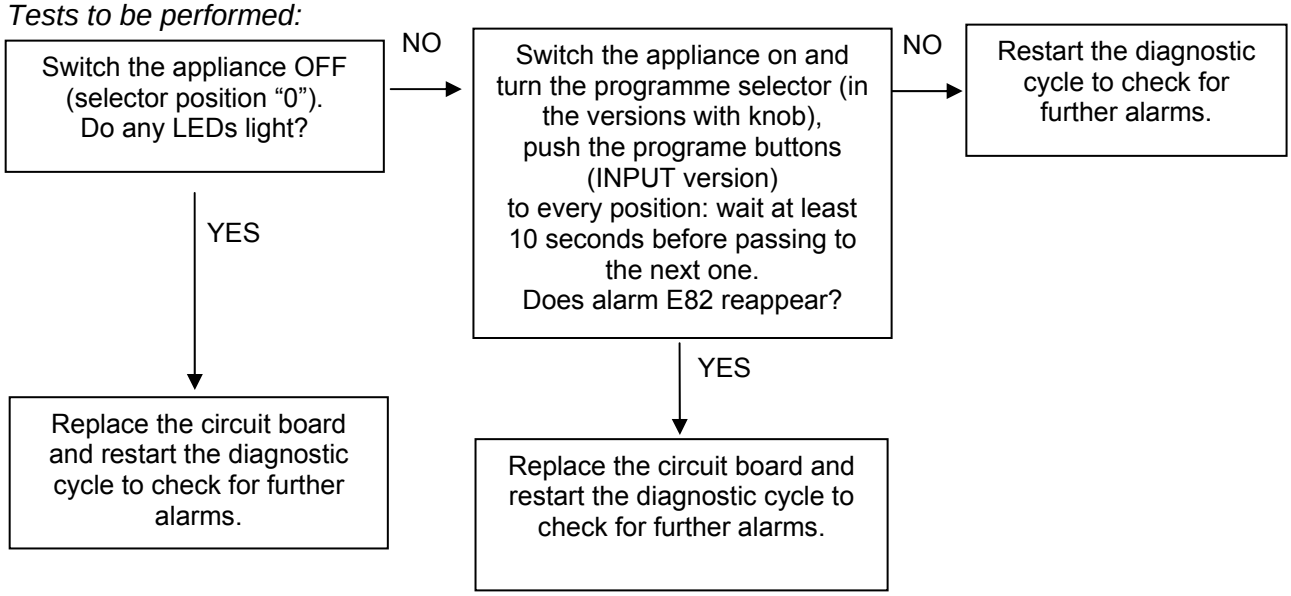


If there are traces of burning on the circuit board, refer to page 90


Fig.17

E82	E82: Error in reading the RESET/OFF position of the programme selector	E82
	Reading of position “0” of the selector when the appliance is switched on, or configuration error	

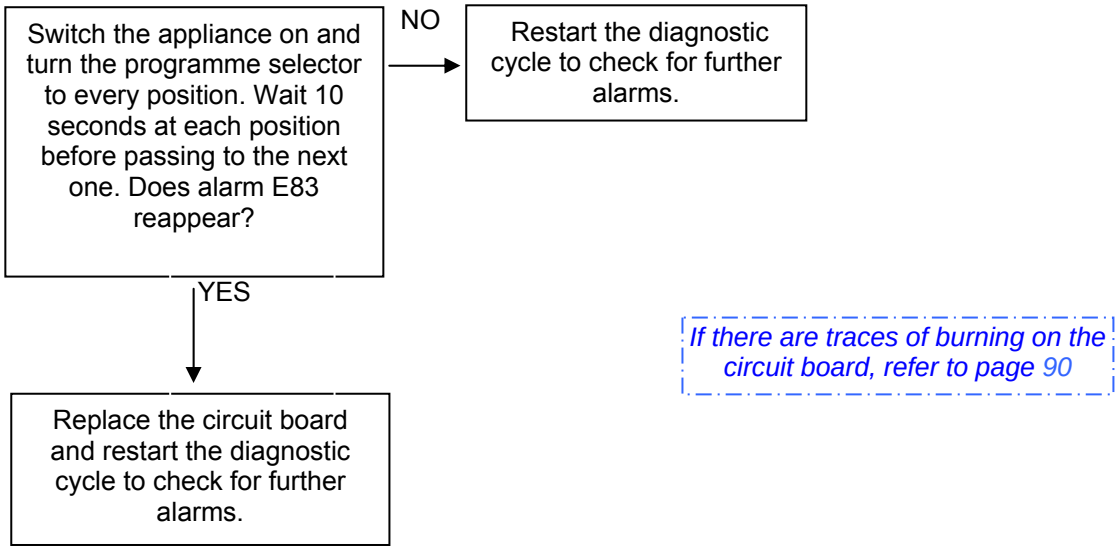
Tests to be performed:



If there are traces of burning on the circuit board, refer to page 90

E83	E83: Error in reading the programme selector code	E83
	Code for the position of the selector not included in configuration data or configuration error	

Tests to be performed:



E91	E91: Communication error between user interface and main board	E91
	Incongruence of configuration values at the switching on of the appliance	

Tests to be performed:

Possible configuration error
Replace the circuit board and restart the diagnostic cycle to check for further alarms.

E92	E92: Protocol incongruence	E92
	Incongruence of configuration values at the switching on of the appliance	

Tests to be performed:

Possible configuration error
Replace the circuit board and restart the diagnostic cycle to check for further alarms.

E93	E93: Appliance configuration error	E93
	Incongruence of configuration values at the switching on of the appliance	

Tests to be performed:

Possible configuration error
Replace the circuit board and restart the diagnostic cycle to check for further alarms.

E94	E94: Washing cycle configuration error	E94
	Incongruence of configuration values at the switching on of the appliance	

Tests to be performed:

Possible configuration error
Replace the circuit board and restart the diagnostic cycle to check for further alarms.

E95	E95: Communication failed between EEprom and Microprocessor	E95

Tests to be performed:

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

E97	E97: Incongruence between version of the control selector and configuration data	E97
	Incongruence between configuration data of the programmes and those of the selector	

Tests to be performed:

Possible configuration error
Replace the circuit board and restart the diagnostic cycle to check for further alarms.

EA1	EA1: Drum positioning system (DSP) faulty *(top-loaders)*	EA1
	No signal or discontinuous signal from the sensor for more than 10 seconds during actioning of the motor to position the drum	

Tests to be performed:

Is the drive belt OK? Is the pulley OK? Is the ferrite plate positioned correctly? **(fig. 20)**

NO → Replace the belt/pulley and restart the diagnostic cycle to check for further alarms.

YES ↓

Remove the connector and measure directly on the sensor: - circuit closed when on the normal section of the pulley **(fig.18)** - circuit open when on the ferrite plate **(fig.19)**. Is the sensor efficient?

NO → Replace the positioning sensor and restart the diagnostic cycle to check for further alarms.

YES ↓

Replace the connector and measure across J12-1 and J12-3 on the wiring connector: when the drum is rotated, the circuit should open and close. Check for leakage to ground across the same terminals.
Is the wiring OK?

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

YES ↓

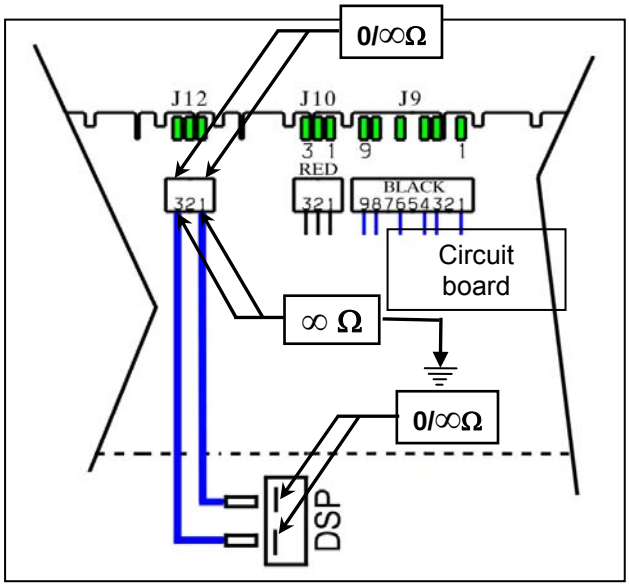
Start the diagnostic cycle (**phase 9**). If alarm EA1 reappears, replace the circuit board and restart the diagnostic cycle to check for further alarms.

If there are traces of burning on the circuit board, refer to page 90

fig. 18

fig. 19

fig. 20



EA6	EA6: Drum flap faulty *(top-loaders)*	EA6
	Cycle immediately blocked if a not correct tachometric signal is identified for at least 3 seconds	

Tests to be performed:

Open the door and manually check if the drum turns easily.
Is the drum blocked?

NO → Measure across the terminals of the wiring connector J7-7 and J7-8.
Are the values (Ω) of the tachometric generator correct?
(see **page 50**
- Step 4, phase "A").

NO → Detach the connector from the motor and measure (Ω) the coil of the tachometric generator **-see fig.11-**
Is the value correct?
(see **page 50**
- Step 4, phase "A").

NO → Replace the motor or the tachometric generator and restart the diagnostic cycle to check for further alarms.

YES → Replace the drum flap and restart the diagnostic cycle to check for further alarms.

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

YES → Measure across the same terminals of the wiring connector (J7-7 and J7-8) and the structure of the appliance.
Is there any leakage?
- (see fig.6) -.

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

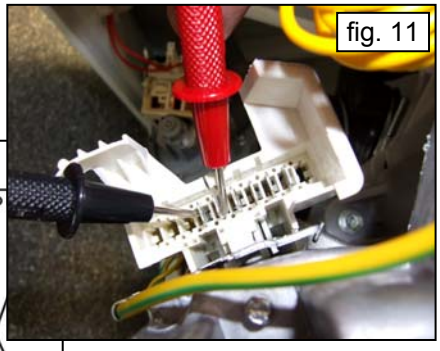
NO → Replace the motor/ generator and restart the diagnostic cycle to check further alarms.

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

YES → Check/replace the wiring and restart the diagnostic cycle to check for further alarms.

fig. 6

fig. 11



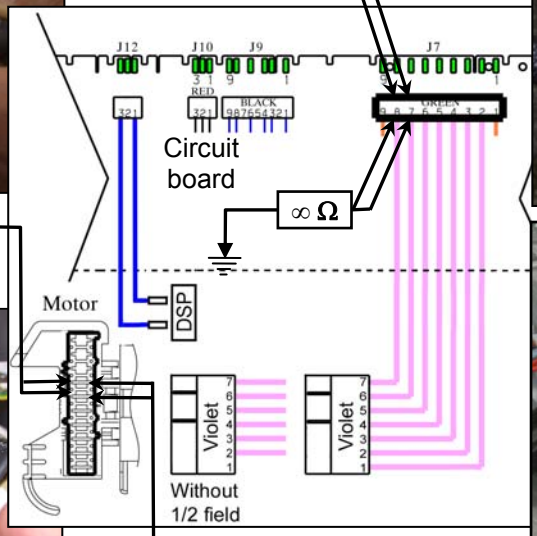


fig. 10

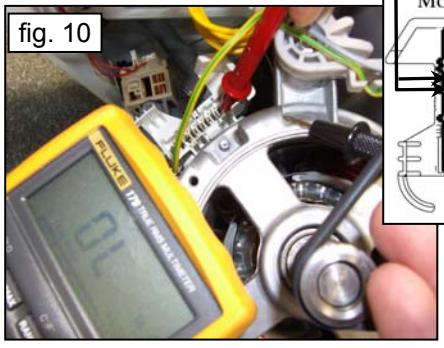
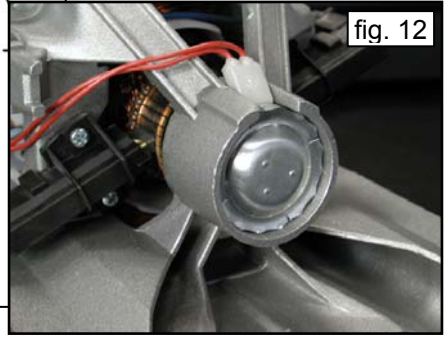


fig. 12



If there are traces of burning on the circuit board, refer to page 90

EH1	EH1: Incorrect mains frequency	EH1
	The power supply frequency is not within the configured limits	

Tests to be performed:

Important!
The appliance remains in alarm mode until the frequency returns to the correct value or the appliance is switched off (programme selector on “0”). Only the family of the alarm is displayed, and the diagnostic cycle cannot be started. The complete alarm can be read only when the alarm condition has ceased.

Is there interference in the power line, or is the mains frequency outside the correct limits?

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

YES ↓

Let repair the domestic power supply circuit.

EH2	EH2: Mains voltage too high	EH2
	Mains voltage higher than configured voltage (for more than 10 seconds)	

Tests to be performed:

Important!
The appliance remains in alarm mode until the frequency returns to the correct value or the appliance is switched off (programme selector on “0”). Only the family of the alarm is displayed, and the diagnostic cycle cannot be started. The complete alarm can be read only when the alarm condition has ceased.

Is there interference in the power line, or is the mains voltage outside the correct limits?

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

YES ↓

Let repair the domestic power supply circuit.

EH3	EH3: Mains voltage too low	EH3
	Mains voltage lower than configured voltage	

Tests to be performed:

Important!
The appliance remains in alarm mode until the frequency returns to the correct value or the appliance is switched off (programme selector on “0”). Only the family of the alarm is displayed, and the diagnostic cycle cannot be started. The complete alarm can be read only when the alarm condition has ceased.

Is there interference in the power line, or is the mains voltage outside the correct limits?

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

YES ↓

Let repair the domestic power supply circuit.

If there are traces of burning on the circuit board, refer to page 59

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

It is a warning that appears only at the end of the cycle. The machine has detected long draining phases during the cycle (Es. More then 20 seconds during draining after rinsing phase). Check/clean the drain filter.

EF2	EF2: Overdosing of detergent; drain hose blocked/throttled; drain filter dirty/blocked	EF2

Overdosing of detergent. The system has detected an over foaming during draining phases. Advice Customer to use the right quantity of detergent and verify that drain filter and drain system are clean.

EF3	EF3: Intervention of Aqua Control device	EF3

It warns about the presence of water at the bottom of the appliance. Check for any possible water leaks and the correct positioning of the float of the Aqua Control device.

EF4	EF4: Low water fill pressure and solenoid open	EF4

Flowmeter faulty – Wiring faulty

EF5	EF5: Load too unbalanced, skipping of spin phases	EF5

It is a warning of load too unbalanced. During the spin phases the load is excessively unbalanced. Tell the user to load more clothes in the drum and not single clothes.

EF6	EF6: Appliance reset	EF6

No action to be carried out, if it does not disappear, replace the circuit board.

EC1	EC1: Water fill solenoids blocked	EC1
	The flowmeter detects water filling even if the solenoid is not controlled	

Tests to be performed:

Does the appliance fill in water when the main switch is off?

NO → As soon as the appliance is switched on does the solenoid start to fill water?

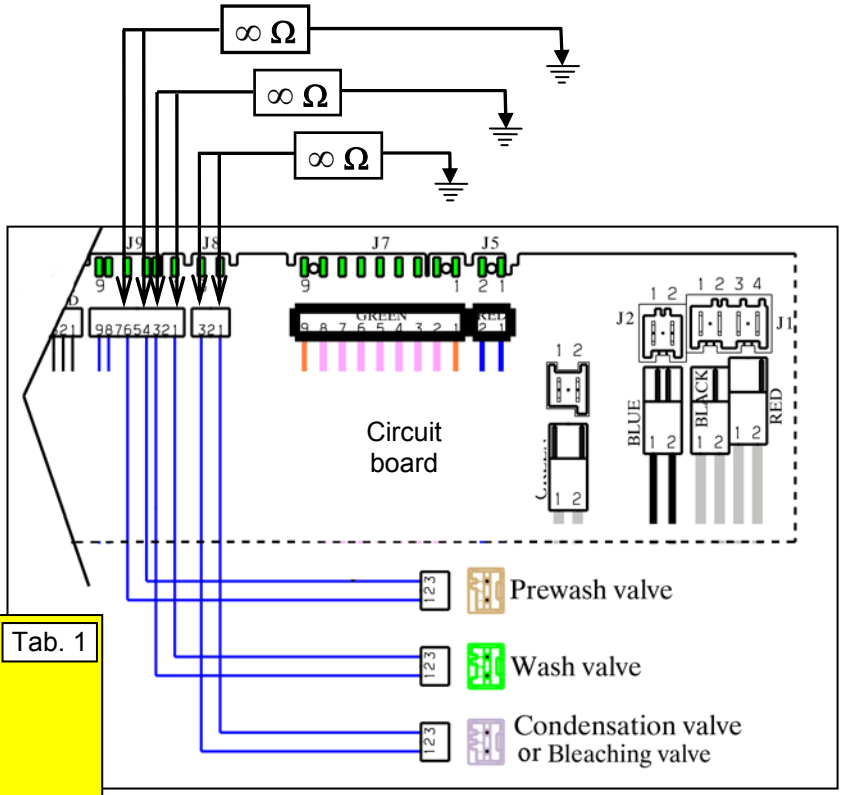
NO → Replace the main circuit board and restart the diagnostic cycle to check for further alarms.

YES → Open the drawer and check which solenoid leaks and replace it. Restart the diagnostic cycle to check for further alarms.

YES → Open the drawer and check which solenoid leaks and measure between the wiring connector of the relative solenoid and the appliance housing if there is any current leakage **(fig.6 and tab. 1).** Is there any leakage?

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

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



Tab. 1

Version WM
Across J8-1 and J8-3 bleach solenoid
Across J9-1 and J9-3 wash solenoid
Across J9-4 and J9-6 prewash solenoid

Version WD
Across J8-1 and J8-3 condensation solenoid
Across J9-1 and J9-3 wash solenoid
Across J9-4 and J9-6 prewash solenoid

If there are traces of burning on the circuit board, refer to page 90

ED1	ED1: Communication problems betweeen main circuit board and WD board	ED1

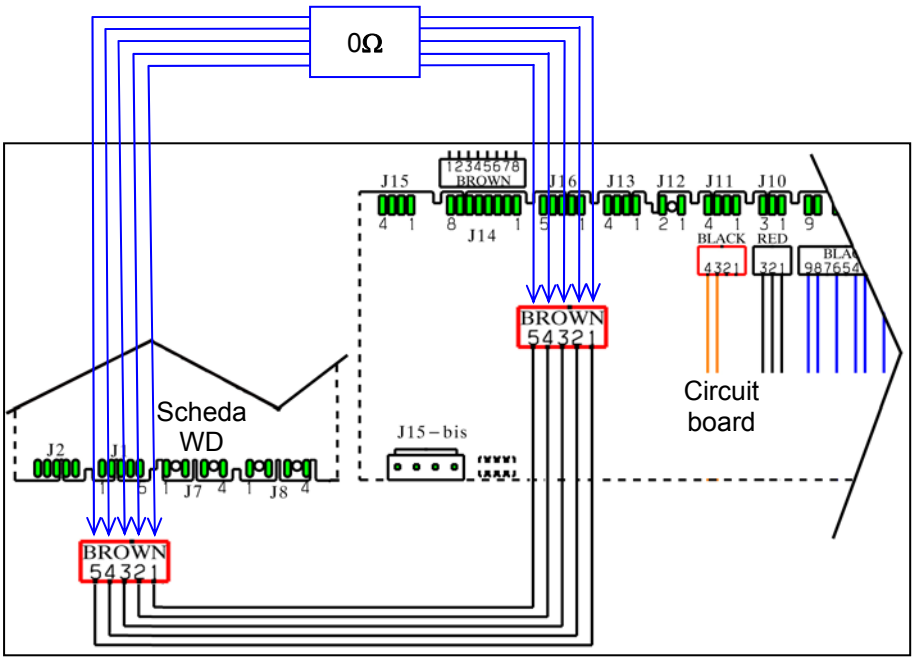
Tests to be performed:

Measure the continuity between connector J16 (main circuit board) and J1 (WD board). Is the wiring OK?

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

YES ↓

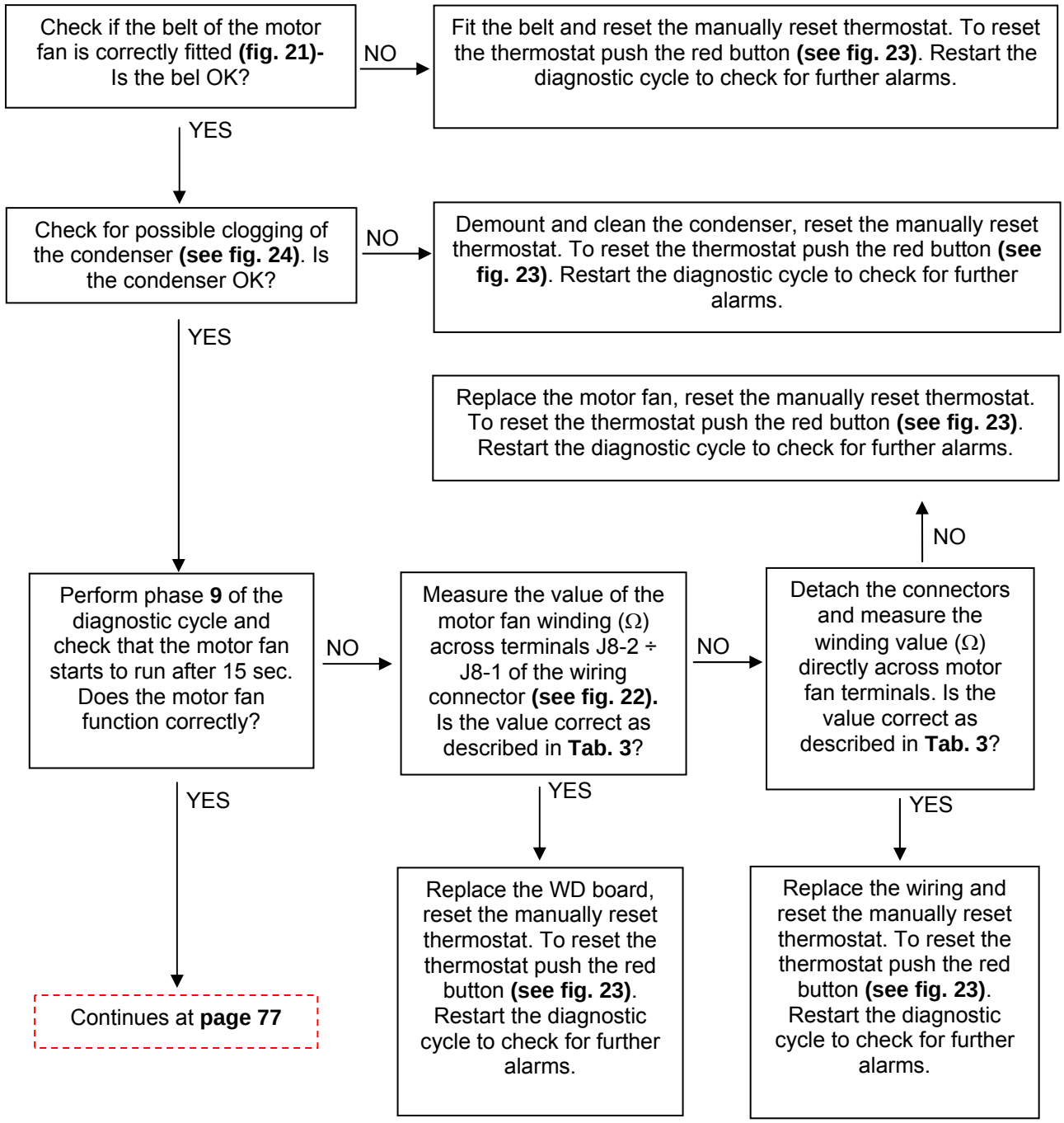
Replace the WD board and restart the diagnostic cycle to check for further alarms.



If there are traces of burning on the circuit board, refer to page 90

ED2	ED2: Drying heating element 1 faulty	ED2

Tests to be performed:



If there are traces of burning on the circuit board, refer to page 90

ED2

Follows **page 75**

Measure if the automatically reset thermostat is off (0Ω) across terminals J5-2 ÷ J5-3 of the wiring connector. Is the value correct?

NO → Detach the connectors and measure the value of 0Ω directly across the terminals of the automatically reset thermostat. Is the value correct?

NO → Replace the automatically reset thermostat and restart the diagnostic cycle to check further alarms.

YES → Replace the wiring and restart the diagnostic cycle to check further alarms.

YES → Reset the manually reset thermostat. To reset the thermostat push the red button **(see fig. 23)**. Measure across terminals J5-1 ÷ J8-3 and across J5-1 ÷ J8-4 of the wiring connector. In this way we will check also the two branches of the drying heating element. Is the value correct as the one in **Tab. 2**?

NO → Detach the connnectors and measure the value of 0Ω directly across the terminals of the manually reset thermostat. Is the value correct?

NO → Replace the manually reset thermostat and restart the diagnostic cycle to check for further alarms.

YES → Detach the connnectors and measure the value of the two branches of the drying heating elements. Does it correspond to the value in **Tab. 2**?

NO → Replace the heater unit and restart the diagnostic cycle to check for further alarms.

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

YES → Replace the WD board and restart the diagnostic cycle to check for further alarms.

Tab. 2

Drying heating element

Branch A
Across J5-1 and J8-3 measure a value between:
51.5Ω ÷ 69Ω.

Branch B
Across J5-1 and J8-4 measure a value between:
51.5Ω ÷ 69Ω.

NOTE: The measurements must be carried out with a room temperature of 25°C.

Tab. 3

Motor fan

The value of winding heating elementi s between:
22Ω ÷ 30.5Ω

NOTE: The measurements must be carried out with a room temperature of 25°C.

If there are traces of burning on the circuit board, refer to page 90

Fig. 21

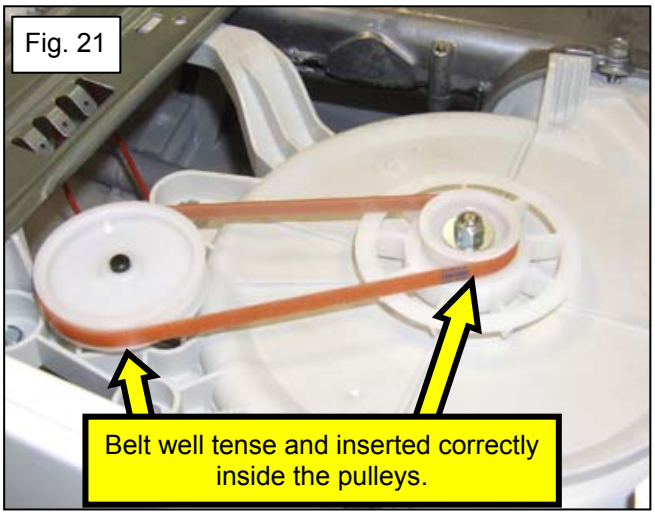


Fig. 23

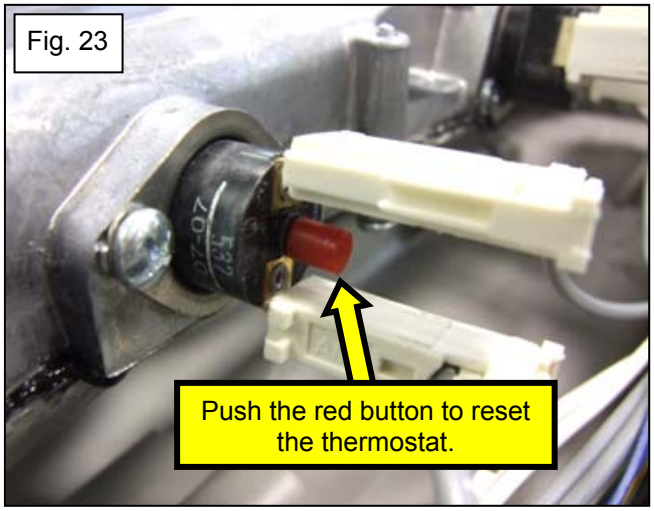
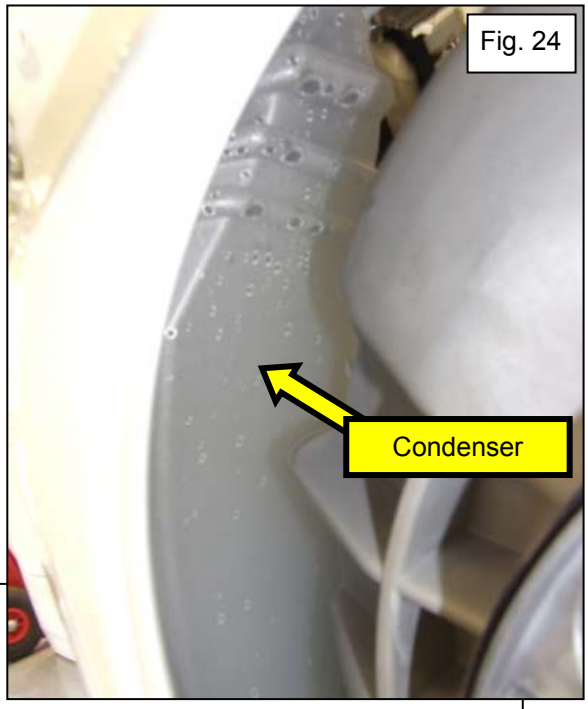
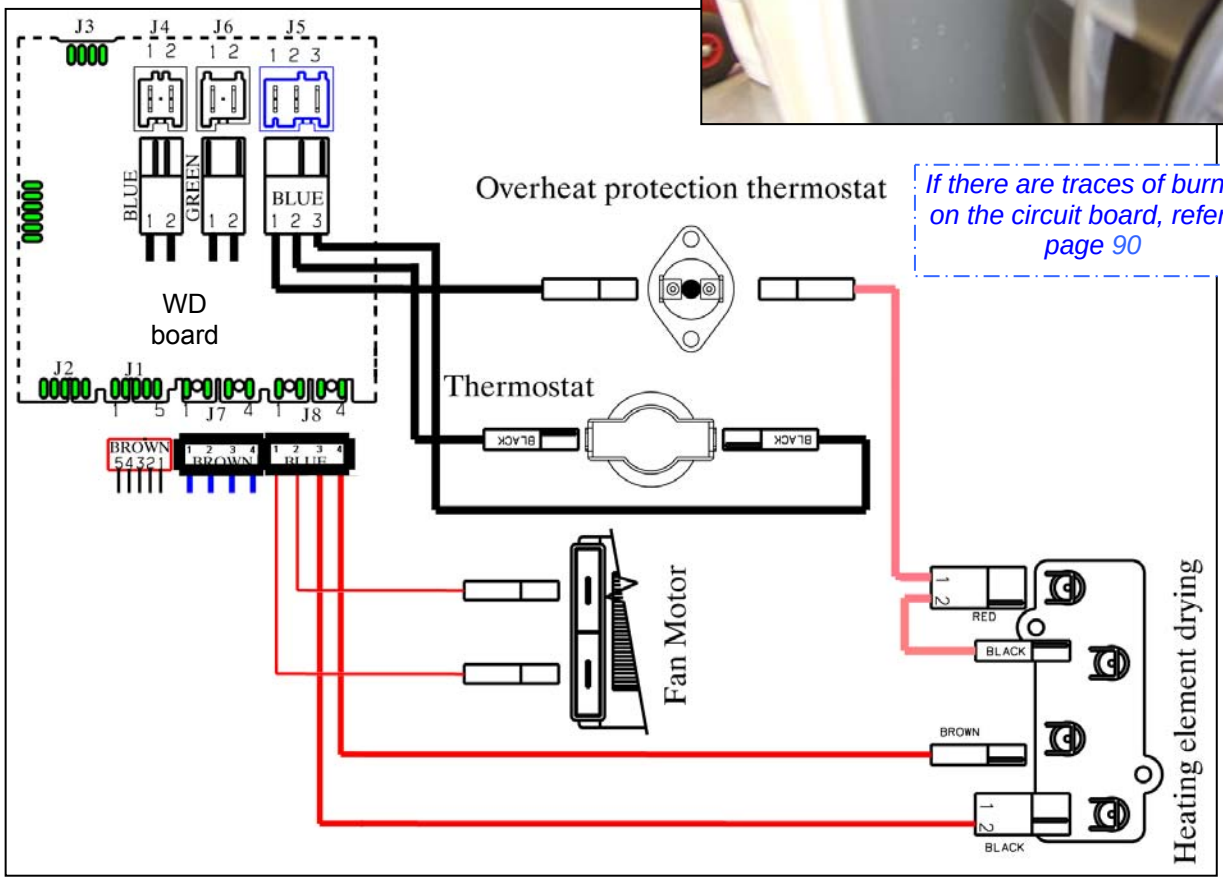


Fig. 22

Fig. 24





If there are traces of burning on the circuit board, refer to page 90

ED3	ED3: Drying heating element 2 faulty	ED3

Tests to be performed:

Check across terminals J5-1 ÷ J8-3 and J5-1 ÷ J8-4 of the connector wiring **(see fig. 25).**

Is the value the one described in **Tab. 2**?

NO

Detach the connectors and measure the value of the two branches of the drying heating element. Does it correspond to value described in **Tab. 2?**
Are the values correct?

NO

Replace the drying heating element and restart the diagnostic cycle to check for further alarms.

YES

Replace the WD board and restart the diagnostic cycle to check for further alarms.

YES

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

Fig. 25

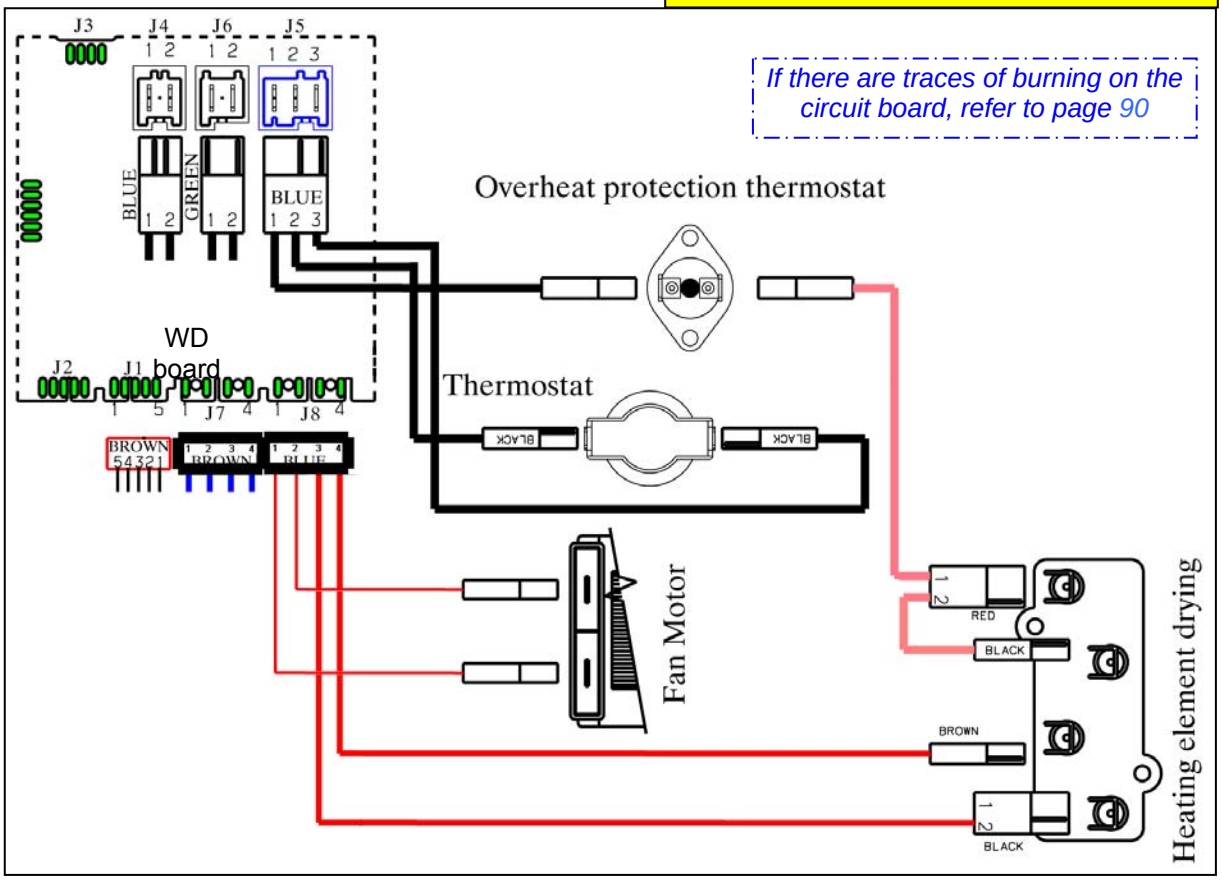
Tab. 2

Drying heating element

Branch A
Across J5-1 and J8-3 the value must be betweeen:
51.5Ω and 69Ω.

Branch B
Across J5-1 and J8-4 the value must be between:
51.5Ω and 69Ω.

NOTE: The measurements must be carried out with a room temperature of 25°C



If there are traces of burning on the circuit board, refer to page 90

ED4	ED4: Drying relays faulty	ED4

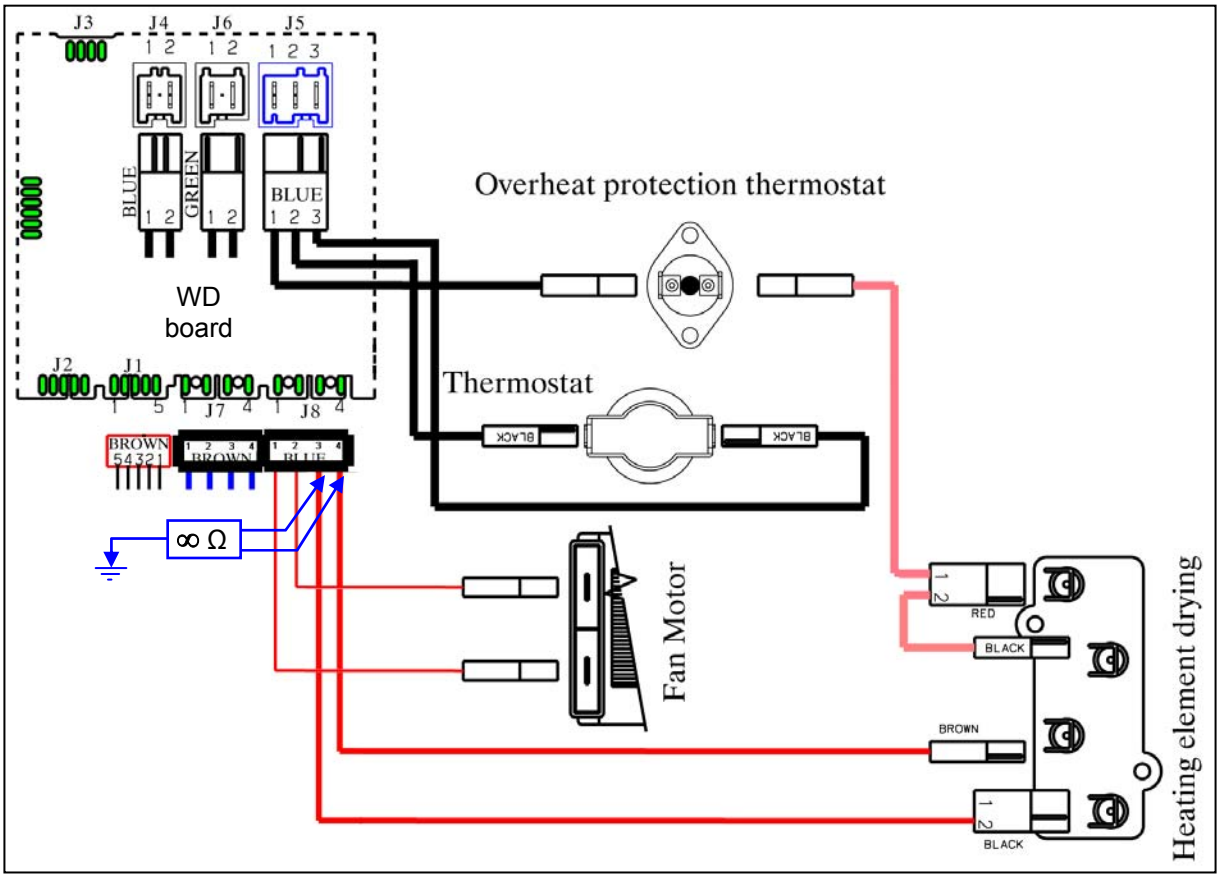
Tests to be performed:

Measure across terminals J8-3, J8-4 of the connector and the structure of the appliance- **see fig.6** -
Is there any leakage?

NO → Replace the WD board and restart the diagnostic cycle to check for further alarms.

YES ↓

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



If there are traces of burning on the circuit board, refer to page 90

Tests to be performed:

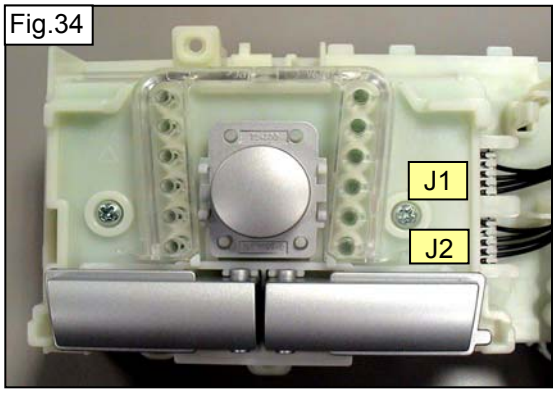
Measure the continuity between connector J16 (main circuit board) and J1 (Satellite board **fig. 34**). Is the wiring OK?

NO → Fit / replace the wiring and restart the diagnostic cycle to check for further alarms.

YES ↓

Replace the electronic board (main + satellite) and restart the diagnostic cycle to check for further alarms.

Fig.34



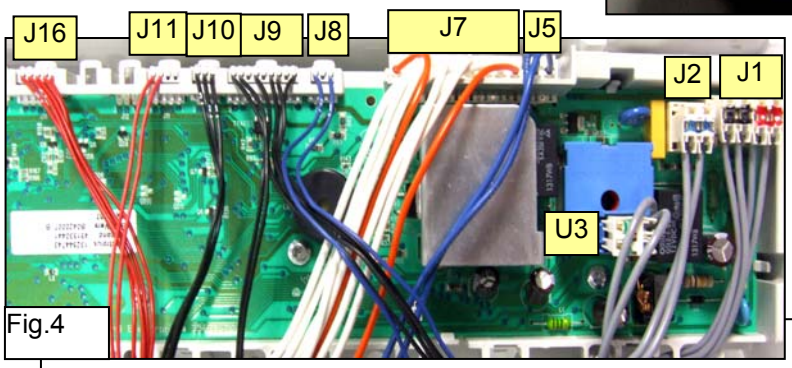
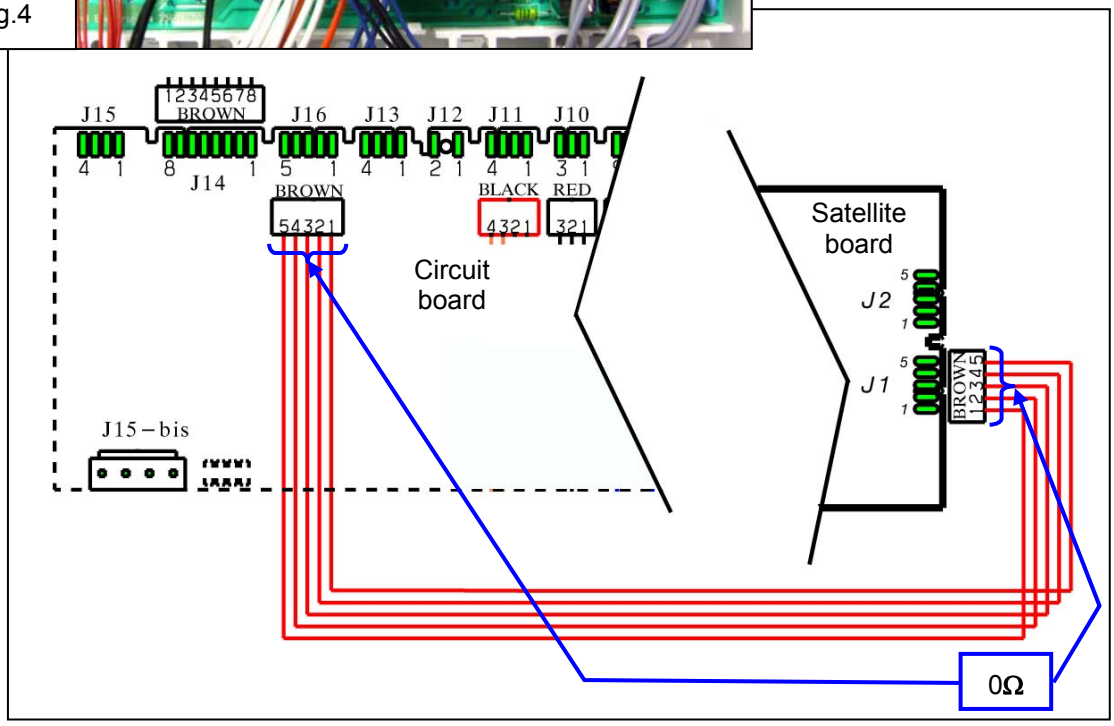
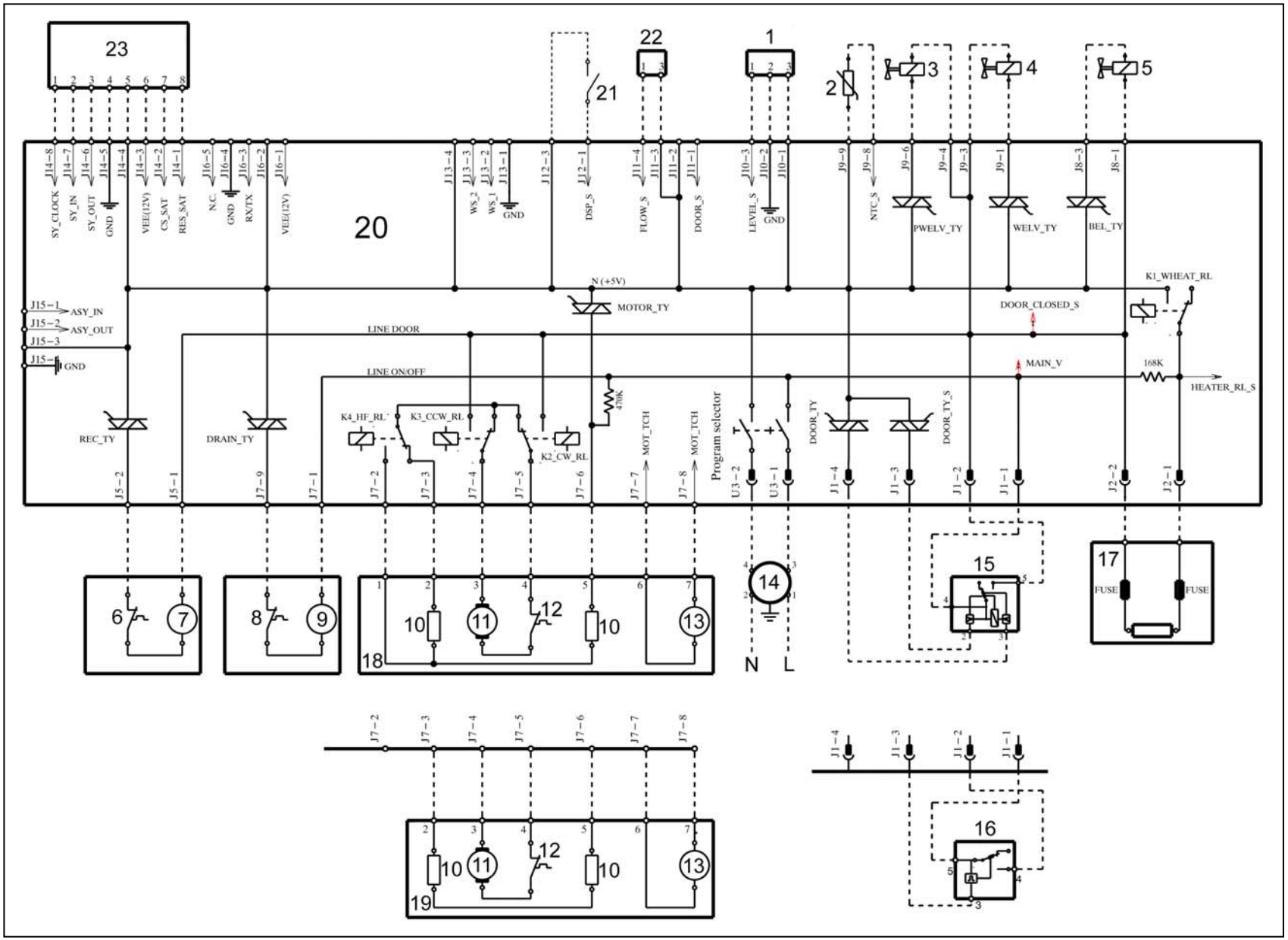


Fig.4



If there are traces of burning on the circuit board, refer to page 90

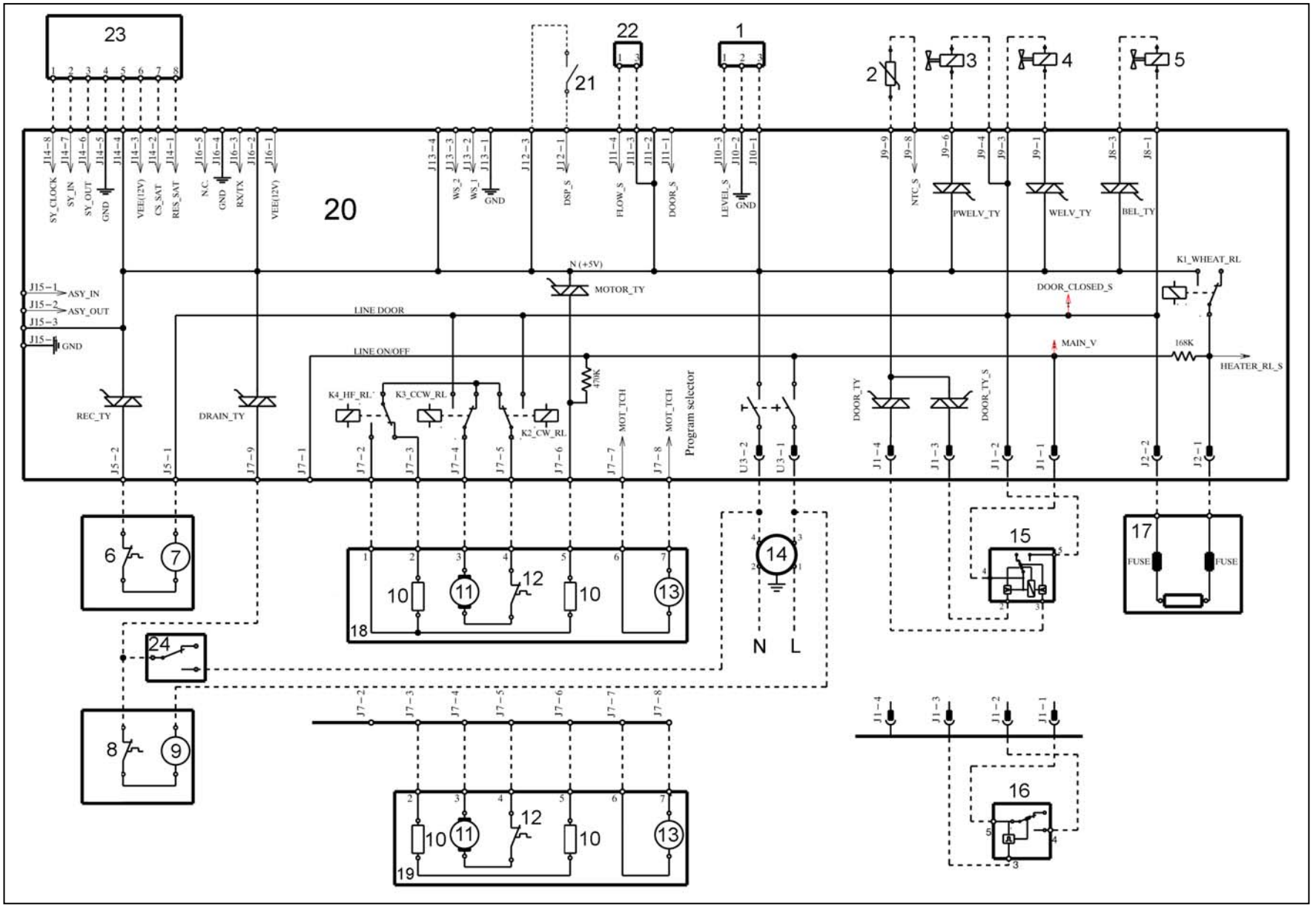
8 BASIC CIRCUIT DIAGRAM WM



8.1 Key to circuit diagram WM

Electrical components on appliance	Components on main board	
1. Analogue pressure switch	DOOR_TY	Door interlock Triac
2. NTC temperature sensor	DRAIN_TY	Drain pump Triac
3. Solenoid valve for prewash	REC_TY	Triac circulation pump
4. Solenoid valve for wash	K1	Heating element relay
5. Solenoid valve for bleach	K2	Motor relay: clockwise rotation
6. Thermal cut-out (circulation pump)	K3	Motor relay: anti-clockwise rotation
7. Pump circulation	K4	Motor relay: half field power supply (some models)
8. Thermal cut-out (drain pump)	MOTOR_TY	Motor Triac
9. Drain pump	ON/OFF	Main switch (programme selector)
10. Stator (motor)	PWELW_TY	Pre-wash solenoid Triac
11. Rotor (motor)	WELV_TY	Wash solenoid Triac
12. Thermal cut-out (motor)	BEL_TY	Beach solenoid Triac
13. Tachometric generator (motor)		
14. Interference filter		
15. Instantaneous door interlock		
16. Traditional door interlock		
17. Heating element (with thermal fuses)		
18. Motor with half field		
19. Motor without half field		
20. Circuit board		
21. Drum sensor position (DSP)		
22. Flowmeter		
23. LCD module		

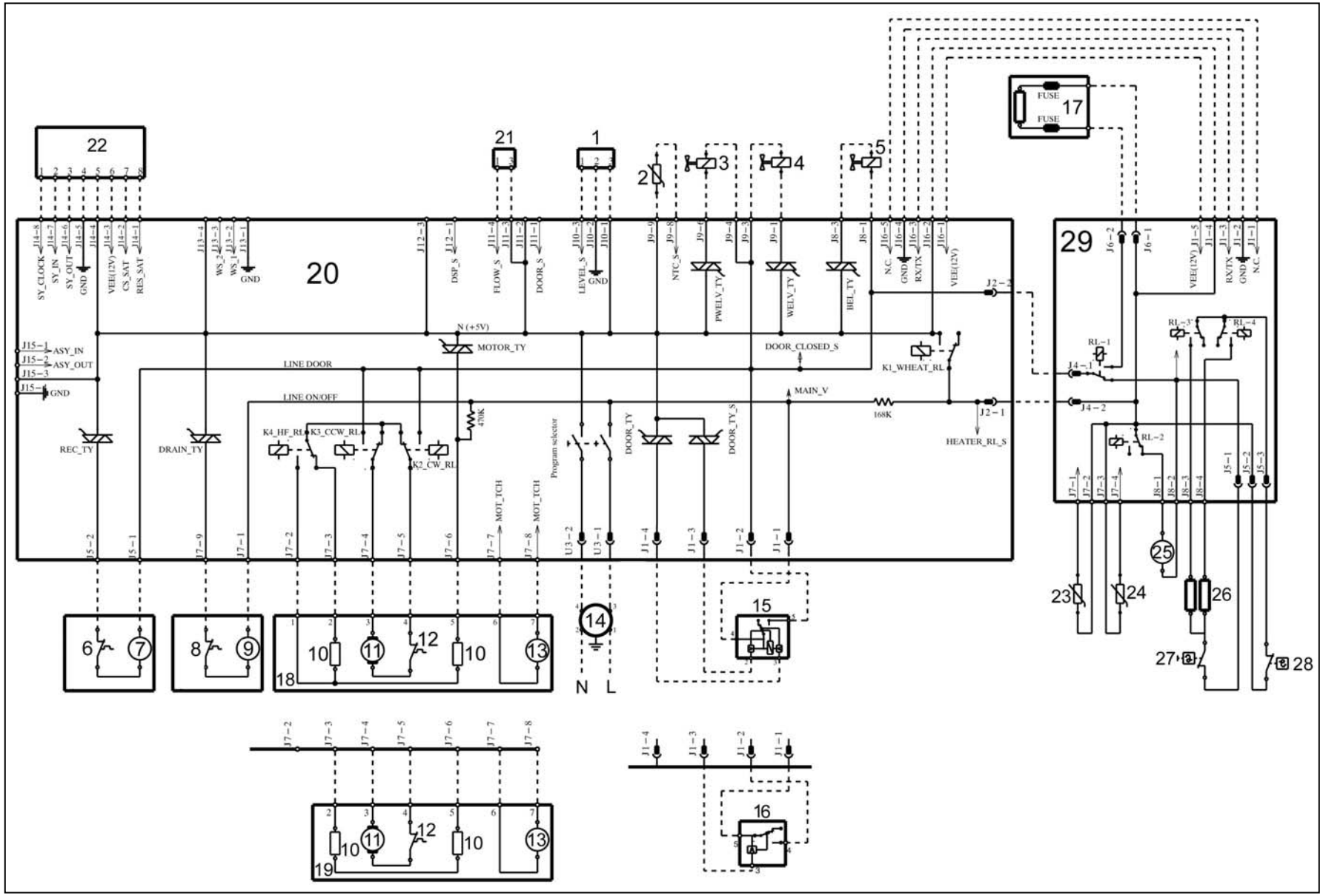
9 BASIC CIRCUIT DIAGRAM WM WITH AQUA CONTROL



9.1 Key to circuit diagram WM with Aqua Control

Electrical components on appliance		Components on main board	
1.	Analogue pressure switch	DOOR_TY	Door interlock Triac
2.	NTC temperature sensor	DRAIN_TY	Drain pump Triac
3.	Solenoid valve for prewash	REC_TY	Triac circulation pump
4.	Solenoid valve for wash	K1	Heating element relay
5.	Solenoid valve for bleach	K2	Motor relay: clockwise rotation
6.	Thermal cut-out (circulation pump)	K3	Motor relay: anti-clockwise rotation
7.	Pump circulation	K4	Motor relay: half field power supply (some models)
8.	Thermal cut-out (drain pump)	MOTOR_TY	Motor Triac
9.	Drain pump	ON/OFF	Main switch (programme selector)
10.	Stator (motor)	PWELW_TY	Pre-wash solenoid Triac
11.	Rotor (motor)	WELV_TY	Wash solenoid Triac
12.	Thermal cut-out (motor)	BEL_TY	Beach solenoid Triac
13.	Tachometric generator (motor)		
14.	Interference filter		
15.	Instantaneous door interlock		
16.	Traditional door interlock		
17.	Heating element (with thermal fuses)		
18.	Motor with half field		
19.	Motor without half field		
20.	Circuit board		
21.	Drum sensor position (DSP)		
22.	Flowmeter		
23.	LCD module		
24.	Aqua Control (water leaks device)		

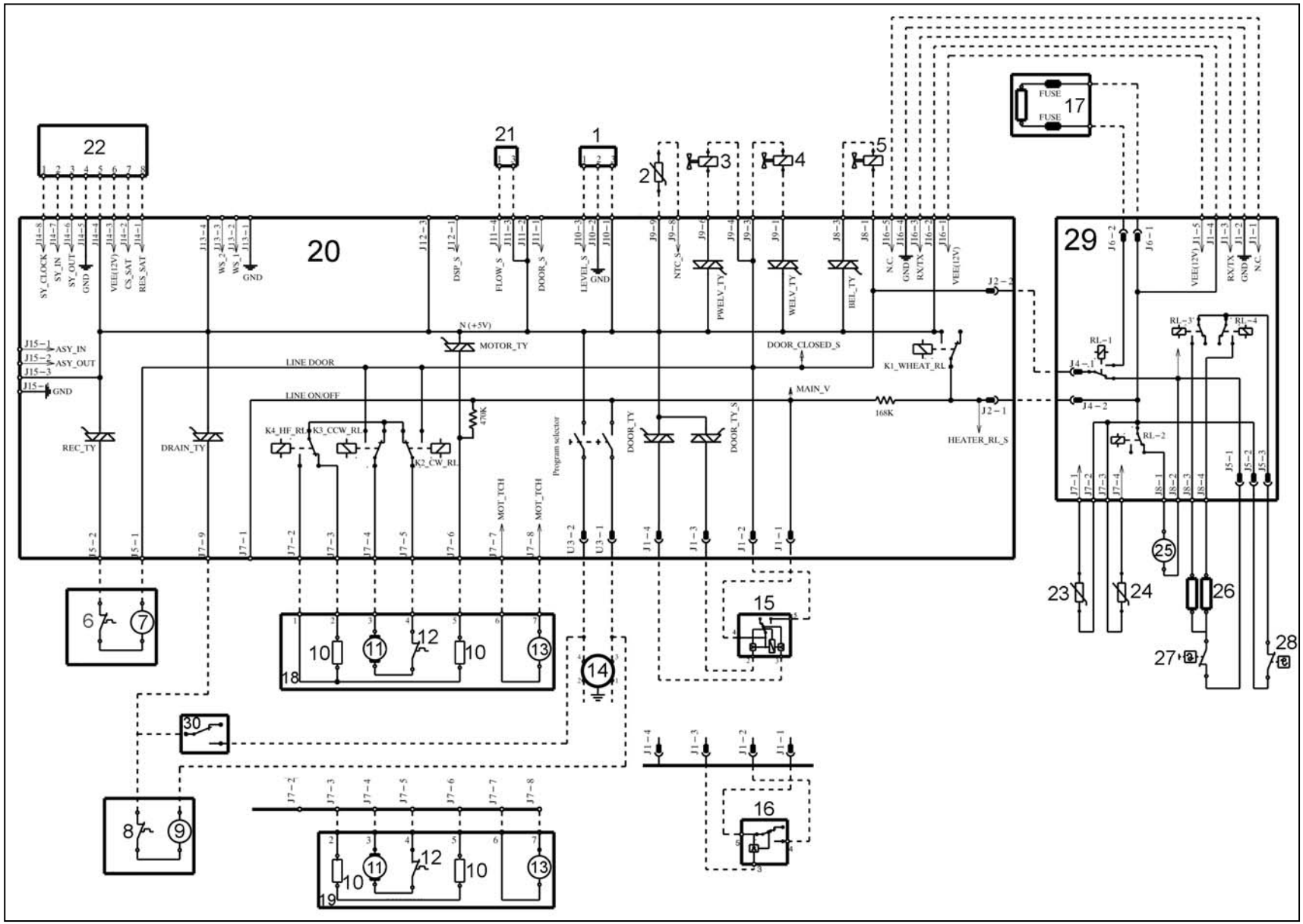
10 BASIC CIRCUIT DIAGRAM WD



10.1 Key to circuit diagram WD

Electrical components on appliance	Components on main board	
1. Analogue pressure switch	DOOR_TY	Door interlock Triac
2. NTC temperature sensor	DRAIN_TY	Drain pump Triac
3. Solenoid valve for prewash	REC_TY	Triac circulation pump
4. Solenoid valve for wash	K1	Heating element relay
5. Condensation solenoid valve	K2	Motor relay: clockwise rotation
6. Thermal cut-out (circulation pump)	K3	Motor relay: anti-clockwise rotation
7. Pump circulation	K4	Motor relay: half field power supply (some models)
8. Thermal cut-out (drain pump)	MOTOR_TY	Motor Triac
9. Drain pump	ON/OFF	Main switch (programme selector)
10. Stator (motor)	PWELW_TY	Pre-wash solenoid Triac
11. Rotor (motor)	WELV_TY	Wash solenoid Triac
12. Thermal cut-out (motor)	BEL_TY	Beach solenoid Triac
13. Tachometric generator (motor)		
14. Interference filter		
15. Instantaneous door interlock		
16. Traditional door interlock		
17. Heating element (with thermal fuses)		
18. Motor with half field		
19. Motor without half field		
20. Circuit board		
21. Flowmeter		
22. LCD Module		
23. Humidity temperature sensor		
24. Drying temperature sensor		
25. Motor fan		
26. Drying heating elements		
27. Manually reset thermostat		
28. Automatically reset thermostat		
29. WD board		

11 BASIC CIRCUIT DIAGRAM WD WITH AQUA CONTROL

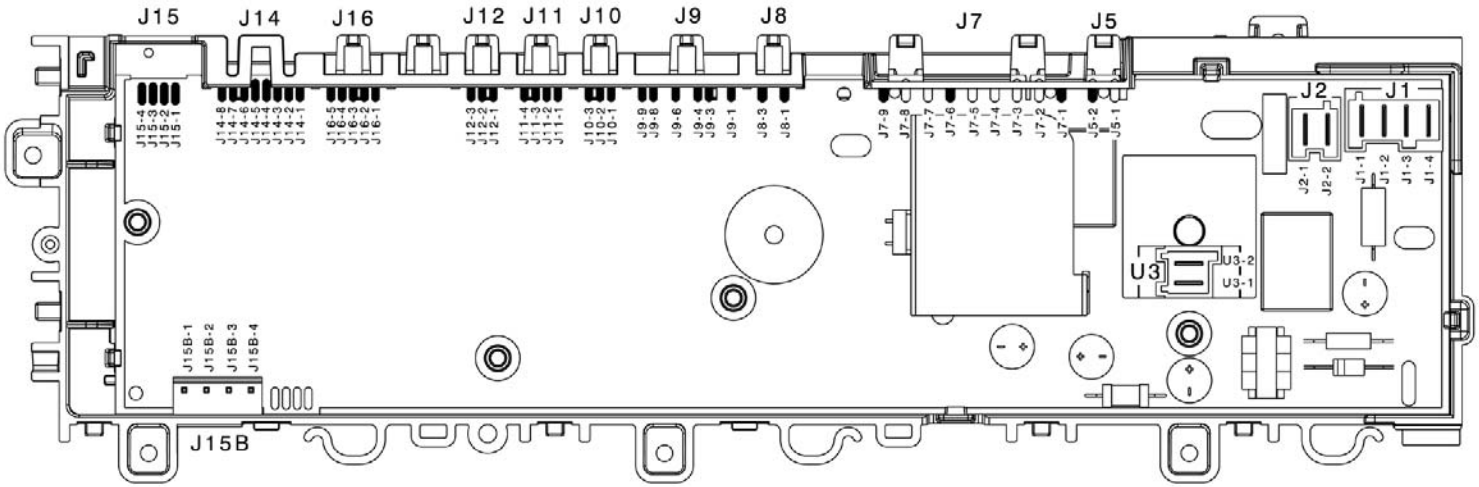


11.1 Key to circuit diagram WD with aqua control

Electrical components on appliance	Components on main board	
1. Analogue pressure switch	DOOR_TY	Door interlock Triac
2. NTC temperature sensor	DRAIN_TY	Drain pump Triac
3. Solenoid valve for prewash	REC_TY	Triac circulation pump
4. Solenoid valve for wash	K1	Heating element relay
5. Condensation solenoid valve	K2	Motor relay: clockwise rotation
6. Thermal cut-out (circulation pump)	K3	Motor relay: anti-clockwise rotation
7. Pump circulation	K4	Motor relay: half field power supply (some models)
8. Thermal cut-out (drain pump)	MOTOR_TY	Motor Triac
9. Drain pump	ON/OFF	Main switch (programme selector)
10. Stator (motor)	PWELW_TY	Pre-wash solenoid Triac
11. Rotor (motor)	WELV_TY	Wash solenoid Triac
12. Thermal cut-out (motor)	BEL_TY	Beach solenoid Triac
13. Tachometric generator (motor)		
14. Interference filter		
15. Instantaneous door interlock		
16. Traditional door interlock		
17. Heating element (with thermal fuses)		
18. Motor with half field		
19. Motor without half field		
20. Circuit board		
21. Flowmeter		
22. LCD Module		
23. Humidity temperature sensor		
24. Drying temperature sensor		
25. Motor fan		
26. Drying heating elements		
27. Manually reset thermostat		
28. Automatically reset thermostat		
29. WD board		
30. Aqua Control (water leaks device)		

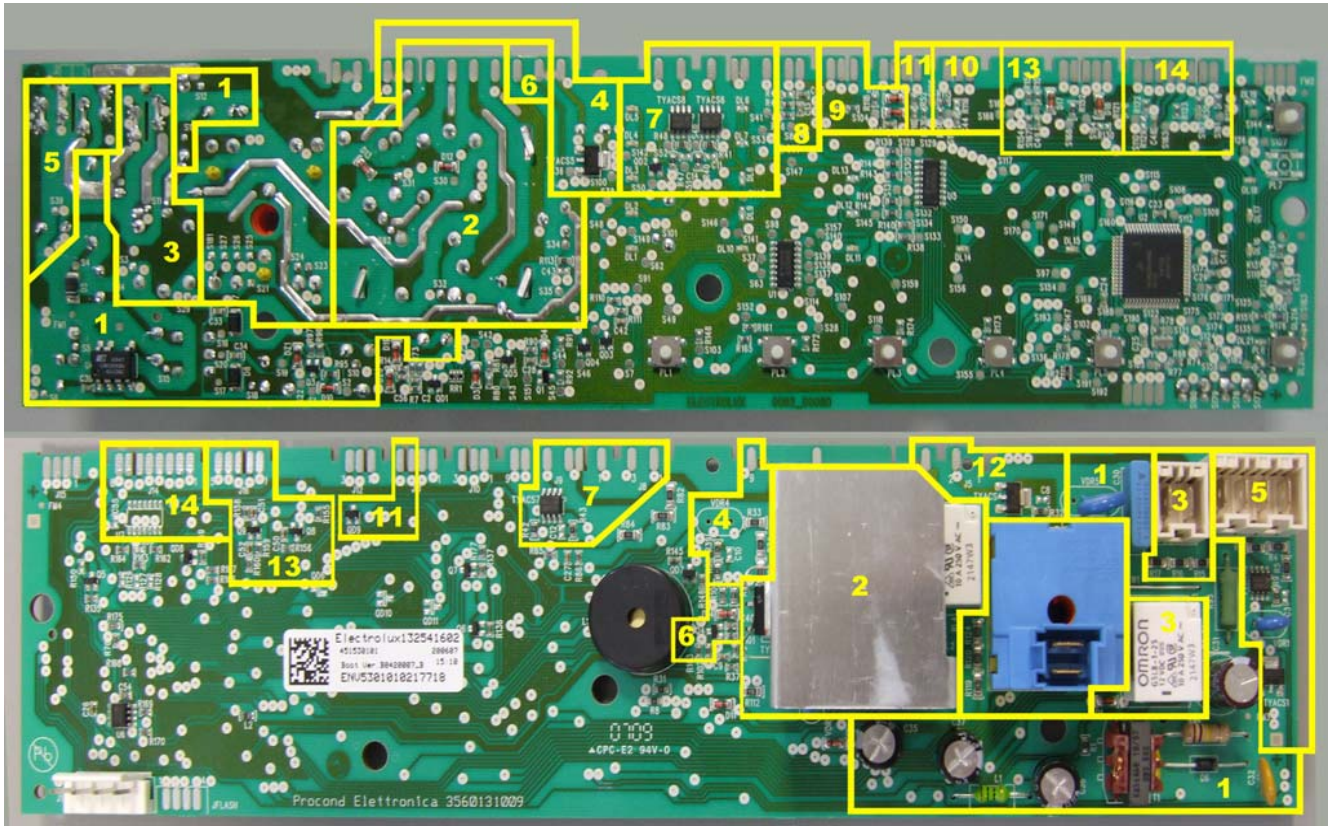
12 CONNECTORS ON CIRCUIT BOARD WM/WD

J15/J15B	J16	J11	J9	J7	J1
Serial interface: **J15-1** ASY_IN **J15-2** ASY_OUT **J15-3** +5V **J15-4** GND	Communication with WD external board: **J16-1** Vee 12V **J16-2** 5V **J16-3** Rx/Tx **J16-4** GND **J16-5** N.C.	**J11-3** Flowmeter (GND) **J11-4** Flowmeter (signal)	**J9-1** Washing solenoid (triac) **J9-3** Solenoids (line) **J9-4** Solenoids (line) **J9-6** Pre-wash solenoid (triac) **J9-8** NTC temperature sensor **J9-9** NTC temperature sensor	**J7-1** Drain pump (line) **J7-2** Motor (stator - ½ field) **J7-3** Motor (stator full field **J7-4** Motor (rotor) **J7-5** Motor (rotor) **J7-6** Motor (triac) **J7-7** Motor (tachometric generator) **J7-8** Motor (tachometric generator) **J7-9** Drain pump (triac)	**J1-1** Door safety interlock (triac) **J1-2** Door safety interlock (line-sensing) **J1-3** Door safety interlock (line)
J14	**J12**	**J10**	**J8**	**J5**	**U3**
LCD Module: **J14-1** RES_SAT **J14-2** CS_SAT **J14-3** Vee (12V) **J14-4** GND **J14-5** 5V **J14-6** SY_OUT **J14-7** SY_IN **J14-8** SY_CLOCK	**J12-1** Drum position sensor DSP (sensing) **J12-2** not used **J12-3** Drum position sensor DSP (+5V)	**J10-1** Analogic pressure switch (+5V) **J10-2** Analogic pressure switch (GND) **J10-3** Analogic pressure switch (signal)	**J8-1** Bleach/condensation solenoid **J8-3** Bleach/condensation solenoid (tiac)	**J5-1** Circulation pump (line) **J5-2** Circulation pump (triac) **J2** **J2-1** Heating element (relay) **J2-2** Heating element (line)	**U3-1** Line **U3-2** Line (neutral)



13 BURNING ON THE CIRCUIT BOARD EWM2100 WM/WD

In case of burning on the main circuit board, check that the problem is not caused by another electrical component (short-circuits, poor insulation, water leakage). Refer to the figures below in order to identify the component that might have caused the burning according to the position of the burned area.
The circuit board shown below is the version with the greatest number of components: other boards may not feature all these components.



1. Power supply	6. Tachometric generator (motor)	11. Flowmeter
2. Motor	7. Water fill solenoids	12. Circulation pump
3. Heating element	8. NTC temperature sensor washing	13. Communication WD board
4. Drain pump	9. Analogic sensor	14. Communication LCD
5. Door safety interlock	10. Drum positioning (top-loader)	

14 APPENDIX

Revision	Date	Description
01	06/03/2009	Modified Alarms E21-E22 page 15 / Alarm EF3 page 73