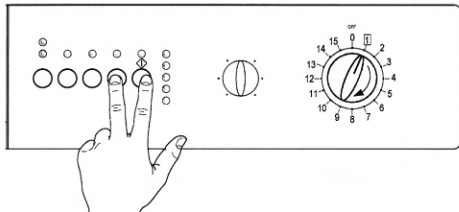


DIAGNOSTICS SYSTEM

Access to diagnostics mode



1. Switch off the appliance.
2. Press and hold down **START/PAUSE** and **any one of the option buttons** simultaneously.
3. Holding down both buttons, switch the appliance on by turning the programme selector **one position to the right** (clockwise).
4. Continue to hold down the START/PAUSE and option buttons until the LED begins to flash (at least 2 seconds).

Remark: The START/PAUSE button can be configured according to the styling of the model, and is therefore not always in the position shown in the figure.








In the first selector position, the operation of the buttons and the relative LEDs is checked; turning the selector knob clockwise activates the diagnostics cycle for the operation of the various components and displays any alarm conditions.

7.2 Exiting diagnostics mode

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

Diagnostics phases

Irrespective of the type of PCB (i.e. with horizontal or vertical buttons) and the configuration of the programme selector it is possible, after entering diagnostics mode, to perform diagnostics on the operation of the various components and to read the alarms by turning the programme selector **clockwise**. All the alarms are enabled during the diagnostics cycle.

Selector position	Components actioned	Operating conditions	Function checked
1	 <ul style="list-style-type: none"> - All the LEDs light in sequence - When a button is pressed, the corresponding LED lights (and the buzzer, if featured, sounds) 	Always activated	Operation of the user interface
2	 <ul style="list-style-type: none"> - Door interlock - Washing solenoid 	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through washing compartment
3	 <ul style="list-style-type: none"> - Door interlock - Pre-wash solenoid 	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through pre-wash compartment
4	 <ul style="list-style-type: none"> - Door interlock - Pre-wash and wash solenoids 	Door locked Water level below anti-flooding level Maximum time 5 minutes	Water ducted through conditioner compartment
6	 <ul style="list-style-type: none"> - Door interlock - Washing solenoid if the level of water in the tub is below 1st level - Heating element 	Door locked Water level above 1st level Maximum time 10 minutes or up to 90°C (*)	Heating
7	 <ul style="list-style-type: none"> - Door interlock - Washing solenoid if the level of water in the tub is below 1st level - Motor (55 rpm clockwise, 55 rpm counter-clockwise, 250 rpm impulse) 	Door locked Water level above 1st level	Check for leaks from the tub
8	 <ul style="list-style-type: none"> - 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

(*) 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 diagnostics cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating does not take place).

ALARMS

User alarm display

Control of the alarm system can be configured; according to the model, therefore, some or all of the alarms may be displayed to the user.

Normally, all alarms are displayed for the used, with the exception of:

- ♦ E61 (insufficient heating during the washing phase)
- ♦ E83 (error in selector reading)

Operation of the alarm system during normal use

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 1st level
- The temperature of the water is lower than 40°C.

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

- Cooling water fill if the temperature is in excess of 60°C.
- Drain until closure of both pressure switch contacts (1st level and anti-boiling safety system) on EMPTY within a maximum of 5 minutes.

Alarms displayed during normal operation

The type of alarm condition is displayed to the user by the repeated flashing of the END OF CYCLE LED (0.4 seconds lit, 0.4 seconds off, with an interval of 2.5 seconds between sequences). This LED is featured on ALL MODELS, though configured in different positions.

All the LEDs flash to indicate a configuration error.



If, for example, the user should forget to close the door, the control system will detect alarm E41 about 15 seconds after the start of the cycle; the cycle remains in PAUSE mode and the LED flashes repeatedly in the sequence shown in the table.

The four flashes indicate the first of the two digits of alarm E41 (the alarms for a given function are grouped in "families").

In this case, after closing the door, it is sufficient to press START in order to re-start the programme.

END OF CYCLE LED		→
ON / OFF	Time (sec.)	Value
	0.4	1
	0.4	
	0.4	2
	0.4	
	0.4	3
	0.4	
	0.4	4
	0.4	
	2.5	Pause between sequences

Reading the alarm codes

In order to read the last alarm code memorized in the EEPROM on the PCB:

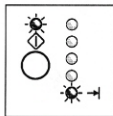
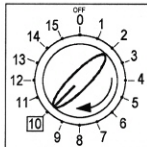
- Enter diagnostics mode.
- Irrespective of the type of PCB and configuration, turn the programme selector **clockwise** to the **tenth position**.

Displaying the alarm

The alarm is displayed by a repeated flashing sequence of the two LEDs (0.4 seconds lit, 0.4 seconds off, with an interval of 2.5 seconds between sequences). The buzzer (if featured) will sound "bips" in synchronization with the flashing of the LEDs:

- **END OF CYCLE LED** → indicates the first digit of the alarm code (family)
- **START/PAUSE LED** → indicates the second digit of the alarm code (number within the family)

These two LEDs are featured on all models (though they are **configured differently**), and flash simultaneously.



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).

Examples of alarm displays

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

- the sequence of four flashes of the END OF CYCLE LED indicates the first number (E43);
- the sequence of three flashes of the START/PAUSE LED indicates the second number (E43).

END-OF-CYCLE LED →			START/PAUSE LED ↕		
ON / OFF	Time (Sec.)	Value	ON / OFF	Time (Sec.)	Value
☀	0.4	1	☀	0.4	1
○	0.4		○	0.4	
☀	0.4	2	☀	0.4	2
○	0.4		○	0.4	
☀	0.4	3	☀	0.4	3
○	0.4		○	0.4	
☀	0.4	4	○	3,3	Pause
○	0.4				
○	2.5	Pause			

Operation of alarms during diagnostics

All alarms are enabled during the components diagnostics phase.

Rapid reading of alarm codes

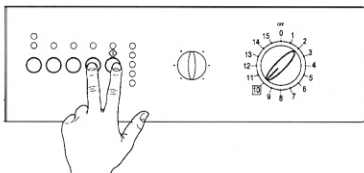
The last alarm code can be displayed even if the programme selector is not in the tenth position (diagnostics) or if the appliance is in normal operating mode (e.g. during the execution of the washing programme):

- Press and hold down **START/PAUSE** and **any of the option buttons** for at least two seconds: the LEDs initially switch off, and then display the flashing sequence corresponding to the alarm.
- The alarm sequence continues as long as the two buttons are held down.
- The alarm reading system is as described in paragraph 8.2.1.
- 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.

8.4 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.



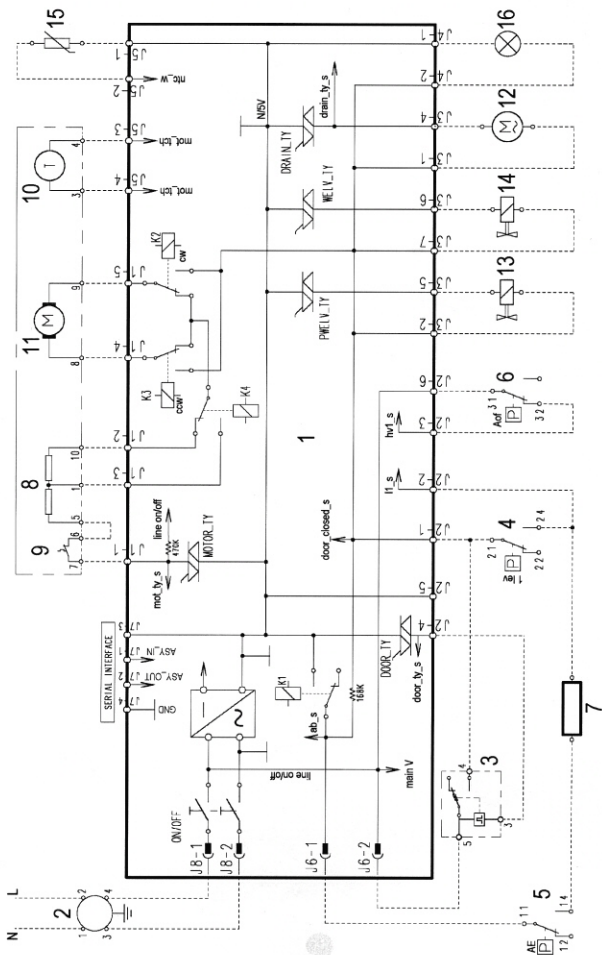
1. Select diagnostics mode and turn the programme selector to the **tenth** position (reading of alarms).
2. Press and hold down **START/PAUSE** and **any of the option buttons** at the same time.
3. Hold down the **START/PAUSE** and option buttons until the LEDs begin to flash (at least 2 seconds).

Important: The **START/PAUSE** button is configurable depending on the styling of the model, and is not necessarily in the position shown in the figure.

Table of alarm codes

Alarm	Description	Possible fault	Action/machine status	Reset
E11	Difficulties in water fill for washing	Tap closed or mains pressure insufficient; drain hose incorrectly positioned; water fill solenoid faulty; leaks from the hydraulic circuit of the pressure switch; pressure switch faulty; wiring faulty; PCB faulty.	Cycle paused	Start
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 paused	Start
E21	Difficulties in draining	Drain hose kinked/blocked/incorrectly positioned; drain filter blocked/dirty; drain pump faulty; wiring faulty; PCB faulty; current leakage from heating element to ground.	Cycle paused	Start
E23	Drain pump triac faulty	Drain pump faulty; wiring faulty; PCB faulty.	Safety drain cycle – Cycle stopped with door open	OFF
E24	Fault in “sensing” circuit of drain pump triac	PCB faulty.	Safety drain cycle – Cycle stopped with door released	OFF
E33	Incongruence between closure of anti-boiling and 1st level pressure switch contacts	Pressure switch faulty; current leakage from heating element to ground; heating element; wiring faulty; PCB faulty.	Safety drain cycle – Cycle stopped with door open	OFF
E35	Water overflow (flooding)	Water fill solenoid faulty; leakage from pressure switch hydraulic circuit; pressure switch faulty; wiring faulty; PCB faulty.	Cycle blocked. Safety drain cycle. Drain pump always in operation (5 minutes on, 5 minutes off etc.)	OFF
E36	Fault in “sensing” circuit of anti-boiling pressure switch	PCB faulty.	Cycle blocked, door locked.	OFF
E37	1st level sensing circuit faulty	PCB faulty.	Cycle blocked, door locked.	OFF
E39	“HV” sensor of anti-overflow level faulty	PCB faulty.	Cycle blocked, door locked.	OFF
E41	Door open	Door interlock faulty; wiring faulty; PCB faulty.	Cycle paused	Start
E42	Problems of door closure	Door interlock faulty; wiring faulty; PCB faulty.	Cycle paused	Start
E43	Interlock power supply triac faulty	Door interlock faulty; wiring faulty; PCB faulty.	(Safety drain cycle) Cycle blocked	OFF
E44	Door interlock sensor faulty	PCB faulty.	(Safety drain cycle) Cycle blocked	OFF
E45	Door interlock sensing circuit triac faulty	PCB faulty	(Safety drain cycle) Cycle blocked	OFF
E51	Motor power supply triac short-circuited	PCB faulty; current leakage from motor or from wiring.	Cycle blocked, door locked (after 5 attempts)	OFF
E52	No signal from motor tachometric generator	Motor faulty; wiring faulty; PCB faulty	Cycle blocked, door locked (after 5 attempts)	OFF
E53	Motor triac sensing circuit faulty	PCB faulty.	Cycle blocked, door locked	OFF
E54	Motor relay contacts sticking	PCB faulty; current leakage from motor or from wiring	Cycle blocked, door locked (after 5 attempts)	OFF

Alarm	Description	Possible fault	Action/machine status	Reset
E61	Insufficient heating during washing	NTC sensor faulty, heating element faulty, wiring faulty, PCB faulty.	The heating phase is skipped	---
E62	Overheating during washing	NTC sensor faulty, heating element faulty, wiring faulty, PCB faulty.	Safety drain cycle – Cycle stopped with door open	OFF
E66	Heating element power relay faulty	PCB faulty, current leakage from heating element to ground.	Safety drain cycle – Cycle stopped with door open	OFF
E71	Washing NTC sensor faulty	NTC sensor faulty, wiring faulty, PCB faulty.	The heating phase is skipped	Start
E82	Error in selector reset position	PCB faulty.	---	OFF
E83	Error in reading selector	Incorrect configuration data, PCB faulty.	Cycle cancelled	---
E93	Incorrect configuration of appliance	Incorrect configuration data, PCB faulty.	Cycle interrupted	OFF
E94	Incorrect configuration of washing cycle	Incorrect configuration data, PCB faulty.	Cycle interrupted	OFF
E95	Communications error between microprocessor and EEPROM	PCB faulty.	Cycle interrupted	OFF
E96	Incongruency between hardware version and configuration	Incorrect configuration data, PCB faulty.	Cycle interrupted	OFF
E97	Incongruency between selector and cycles configuration	Incorrect configuration data, PCB faulty.	Cycle interrupted	OFF
EB1	Frequency of appliance Incorrect	Power supply problems (incorrect / disturbance), PCB faulty.	Cycle interrupted	---
EB2	Voltage too high	Power supply problems (incorrect / disturbance), PCB faulty.	Cycle interrupted	---
EB3	Voltage too low	Power supply problems (incorrect / disturbance), PCB faulty.	Cycle interrupted	---



Key to circuit diagram

Components in the appliance	Components of the PCB
1. Electronic board	DOOR_TY
2. Suppressor	DRAIN_TY
3. Door interlock	K1
4. 1st level pressure switch	K2
5. Anti-boiling pressure switch	K3
6. Anti-overflow pressure switch (not all models)	K4
7. Heating element	MOTOR_TY
8. Stator (motor)	ON/OFF
9. Thermal overload cut-out (motor)	PWELW_TY
10. Tachometric generator (motor)	Serial interface
11. Rotor (motor)	WELV_TY
12. Drain pump	Interlock triac
13. Pre-wash solenoid valve	Drain pump triac
14. Wash solenoid valve	Heating element relay
15. NTC temperature sensor	Motor relay (clockwise rotation)
16. "Door locked" pilot lamp (not all models)	Motor relay (counter-clockwise rotation)
	Motor relay: half-range power (not all models)
	Motor triac
	Main switch (on programme selector)
	Pre-wash solenoid triac
	Asynchronous serial interface
	Wash solenoid triac