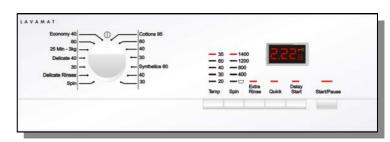
SERVICE MANUAL



WASHING



Serie 6



Serie 7



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

599 74 08-64

ΕN

Top loading washing machines

with electronic control system

NEW COLLECTION

EWM09

Demo Diagnostics Alarms table

SERIES 6 / 7

Edition: 10-2010 rev 00

INDEX

1 PURPOSE OF THIS MANUAL		1
2 "DEMO" MODE	Ę	5
	5	
3 DIAGNOSTIC SYSTEM		
	6	
3.2 Quitting the diagnostics system	6	-
3.3 Diagnostic test phases	7	7
4 ALARMŠ		
	11	
	12	
	13	
	13	
5 OPERATING TIME COUNTER		
5.1 Reading the operating time	14	4
	15	
5.3 Alarm Summary Table	16	3
6 DIAGRAMS	23	3
6.1 WM diagram with THREE-PHASE ASYNCHRON	OUS MOTOR23	-
	24	

1 PURPOSE OF THIS MANUAL

The purpose of this manual is to provide service engineers who are already familiar with the repair procedures for traditional washing machines with information regarding washing machines fitted with the EWM09 electronic control system (SERIES 6).

Previous platforms (electronic/mechanical) used a safety pressure switch which controlled the minimum water level in the tub, beneath which the supply to the heating element was interrupted.

The current electronic appliances manufactured (EWM10 platform), use a heating element with thermal fuses (inside its branches) for safety, which interrupt in case of temperature overload caused by the water level dropping below the minimum level permitted.

The incorporated NTC probe contacts have a 2.5 mm pitch.

The manual deals with the following topics:

- Settings: Demo, Diagnostics
- Alarms

Consumption reduction mode

In order to reduce electricity waste when the cycle is not running, the appliance on this platform has two ways of entering consumption reduction mode:

Stand-Off

Stand- Off – When the appliance is turned off using the ON/OFF button, it is in the "virtual" turn off "Stand-Off" status; the LEDs and LCD screen are turned off and the buttons are disabled, but the main electronic circuit board and some electric parts are powered electrically.

There are two ways of disconnecting the electric power supply: the first is to remove the plug or integrate a small electronic circuit known as Zero Watt (0 Watt) into the main electronic circuit board that automatically turns off the appliance.

Automatic turn off together with the Zero Watt circuit works in two ways:

- 1. When you press the ON/OFF button to turn off the appliance, the supply voltage is cut off and the washing machine is secured (motor off, door locked, etc...), the cycle and any options selected are reset, so that the next time the appliance is turned on, it is ready to perform the programme. (To open the door, you will have to wait one or two minutes for the door safety lock to be released).
- 2. If, after 5 minutes, during the selecting phase or after the end of the cycle, the appliance receives no further instructions, it is automatically turned off (for energy savings in conformity with the standards on energy consumption).
 - If this occurs during the setting stage, the programme and selected options are annulled and when turned on again, the basic programme appears.
 - If the cycle has ended, all the settings are stored so that when the appliance is turned back on, the user can see that the cycle ended normally, and can restart it if necessary.
- 3. If an alarm goes off when a wash programme is running, the automatic turn off is disabled showing the alarm.

2 "DEMO" MODE

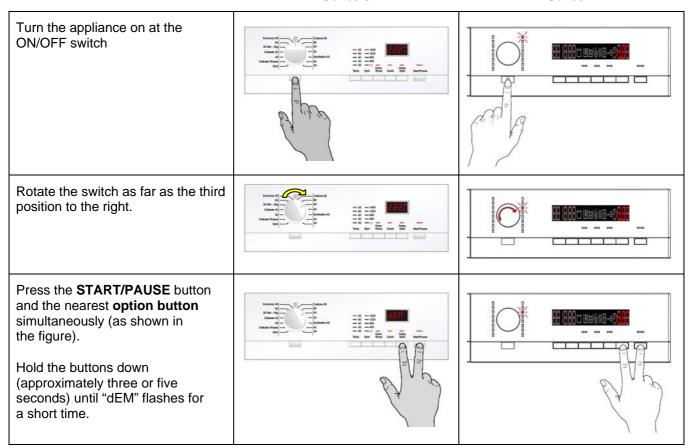
A special cycle is designed to demonstrate the operation of these appliances in shops, without connecting them to the water mains:

- ♦ The door closure device is activated normally.
- All motor's low speed movements, the pulses and spin are disabled.
- The water fill solenoid valves and the drain pump are disabled.
- ♦ The display only shows the set-up stage.
- (START / PAUSE is disabled), because without the door the movement cannot be seen and is, therefore, useless.

2.1 DEMO MODE SETTING

Do not start the procedure with the combination buttons pressed

Series 6 Series 7



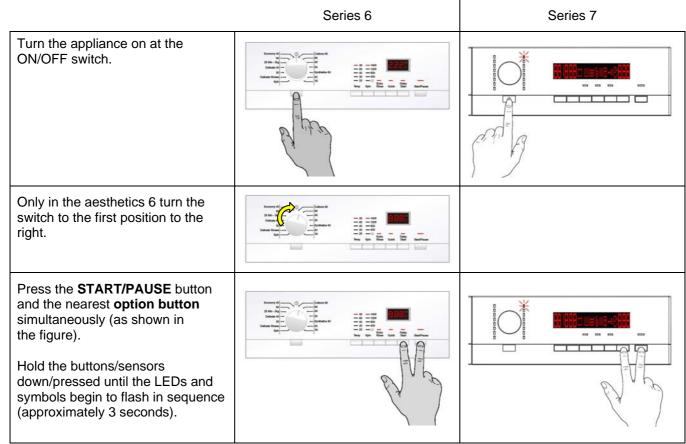
2.2 Exiting DEMO mode

To quit the demo mode, unplug the appliance at the socket, because the ON/OFF button does not function.

3 DIAGNOSTIC SYSTEM

3.1 Accessing diagnostics

Do not start the procedure with the combination buttons pressed



In the first position, the operation of the buttons, of the related LEDs and of the groups of symbols shown on the LCD screen is checked; turn the programme selector dial **clockwise** to run the diagnostic cycle for the operation of the various components and to read any alarms (see diagnostic test).

During this phase, if any key combination is pressed (except for the one relating to diagnostics), all the combinations of options stored are deleted (Extra rinse, No buzzer, etc..) whereas for SERIES 9, the memories with the customised programmes are also deleted.

3.2 Quitting the diagnostics system

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

3.3 Diagnostic test phases

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

Concurrently, a selector control code is shown on the LCD display, which indicates for **two** seconds the description in the last column of the table below. (all alarms are enabled in the diagnostic cycle).

Position 1

User interface test	Purpose of the test:	To test operation of all the LEDs and switches.
0 1	Components activated:	The LEDs are turned on in sequence, as are the symbol groups of the LCD display and its backlight.
- (Behaviour:	All LEDs turn on in sequence.
		By pressing a key the corresponding icon unit lights up.
1		The code is shown on the LCD and a beep sounds.
		All the icons on the LCD flash.
	Working conditions:	There is a control to run the test (always active).
	LCD display	CO:

Water fill to wash compartment	Purpose of the test:	To check the correct operation of the wash compartment water route.
0 2	Components activated:	Door safety interlockWash solenoid
	Working conditions:	 Door closed Water level below anti-flooding level Maximum time 5 mins.
2	LCD display	Water level in the tub is displayed (mm)

Position 3

Water fill to pre-wash compartment	Purpose of the test:	To check the correct operation of the pre-wash compartment water route
0	Components activated:	Door safety interlockPre-wash solenoid
	Working conditions:	Door closedWater level below anti-flooding levelMaximum time 5 mins.
3	LCD display	Water level in the tub is displayed (mm)

Position 4

Water fill to conditioner compartment	Purpose of the test:	To check the correct operation of the conditioner compartment water route.
	Components activated:	Door safety interlockPre-wash and wash solenoid valves
-4	Working conditions:	Door closed.Water level below anti-flooding levelMaximum time 5 mins.
4	LCD display	Water level in the tub is displayed (mm)
i		

No command	Purpose of the test:	
	Components activated	
	Working conditions	
-5	LCD display	E 05

Position 6

No command	Purpose of the test:	
	Components activated:	
	Working conditions:	
	LCD display	C 06

Position 7

Position i	•	·
Heating	Purpose of the test:	To check the correct operation of the heater unit.
	Components activated:	 door fastening device. Wash solenoid, if the water in the tub is not enough to cover the heating element. Heating element.
7	Working conditions:	 Door closed Water level high enough to cover the heating element. Maximum time 10 mins or up to 90°C. (*)
7	LCD display	Temperature in °C measured using the NTC probe

Leaks from the tub	Purpose of the test:	To check for any water leaks from the tub during operation.
8	Components activated:	 Door fastening device. Wash solenoid, if the water in the tub is not enough to cover the heating element. Motor (anticlockwise rpm, pulse at 250 rpm)
	Working conditions:	Door closed.Water level above.The heating element
8	LCD display	Drum speed in rpm/10

Position 9

i osition s	1	
Drain, calibration of analogue pressure switch and spin	Purpose of the test:	To check the correct operation of the spin cycle drain pump and calibrate the analogue pressure switch.
0	Components activated:	 Door safety interlock Drain pump Motor up to 650 rpm then at maximum spin speed (**)
9	Working conditions:	Door closedWater level lower than anti-boiling level for spinning
	LCD display	Drum speed in rpm/10
9		

Position 10

Drum position	Purpose of the test:	To check the correct position of the drum via DSP
	Components activated:	Drum rotation motor.door fastening device.Drum position sensor DSP
10 -	Working conditions:	Door closed.
	LCD display	E 10

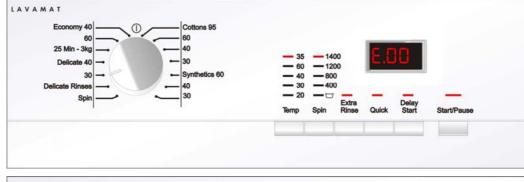
Reading/Deleting the last alarm	Purpose of the test:	Reading/Deleting the last alarm.
	Components activated:	
	Working conditions:	
	LCD display	

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

4 ALARMS

4.1 Displaying the alarms to the user

When a problem arises in the appliance, which generates a "WARNING" or an "ALARM", this is displayed with three digits, where normally the remaining cycle time is represented.





The alarms displayed to the user are listed below:

⋄ E10 - Water fill difficulty (tap closed)

♦ E20 - Drain difficulty (filter dirty)

🔖 E40 - Door open

The alarms listed below:

🔖 EF0 – Water leakage (Aqua Control System)

The intervention of a service engineer is required

While for the alarm:

♦ EH0 – Voltage or frequency outside normal values

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

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

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

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

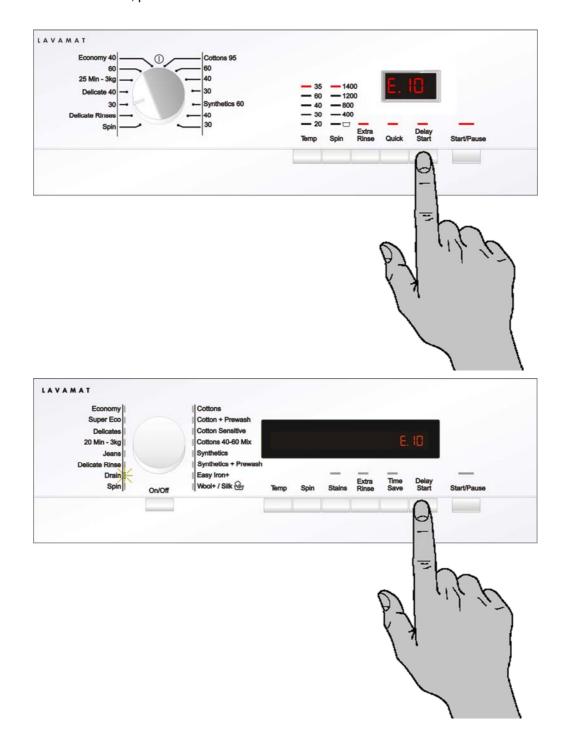
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

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

4.2 Reading the alarms

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

- Enter the diagnostic mode.
- Irrespective of the type of circuit board and configuration, turn the programme selector knob clockwise to the tenth position and this will display the last alarm.
- To display previous alarms, press the button to the left of the START/PAUSE button in sequence (as shown in the figure).
- To return to the last alarm, press the START/PAUSE button.



4.3 Rapid reading of alarms

The last three alarms can even be displayed if the selector is not in the tenth diagnostic position

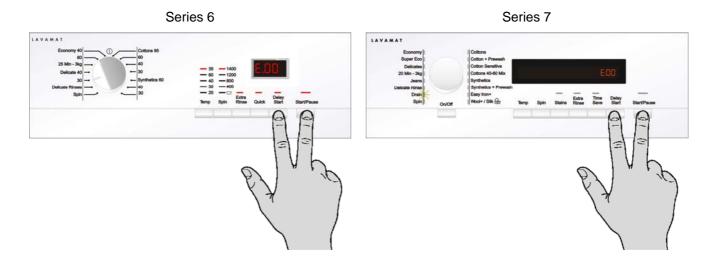
or if the appliance is in normal operating mode (for example when performing a wash programme):

- Press the **START/PAUSE** button and the nearest **option button** simultaneously (as if you were entering DIAGNOSTIC mode) for at least 2 seconds: the LCD display shows the last alarm.
- The alarm is displayed until another key is pressed.
- While the alarm is being displayed, the appliance continues to perform the cycle or, if in the programme selection phase, it maintains the previously selected options in memory.

4.4 Deleting the last alarm

It is good practice to cancel the alarms stored:

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



- 1. Enter the diagnostic mode.
- 2. Turn the programme selector clockwise to position ten.
- 3. Press the START/PAUSE button and the nearest option button simultaneously (as shown in the figure).
- 4. Hold down the buttons (for at least 5 seconds) until the LCD display shows "E00".

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

5 OPERATING TIME COUNTER

Using a specific procedure, the operator can display the total operating time for the appliance, which is counted from the moment it is first switched on.

The unit can count up to a maximum of 6,550 hours of operating time.

- only the operating time of <u>normal programmes</u> (and not diagnostic cycles) is counted
- the <u>actual operating time</u> for the cycle is counted (which does not include pauses, delayed start time, rinse hold time and soaking phases)
- the precision of the counter is 30 seconds per programme.
- only whole hours of operation are counted (1 hr and 59 min = 1 hr)

5.1 Reading the operating time

Do not start the procedure with the combination buttons pressed

Turn the appliance on at the ON/OFF switch

Turn the programme selector clockwise to position five.

Press the START/PAUSE button and the nearest option button simultaneously (as shown in the figure).

Hold the buttons for approximately 5 seconds.

The display shows the operating hours.

5.2 Display of total operating time

This time is displayed with a sequence of two digits at a time: the first two digits indicate thousands and hundreds, the second two digits indicate tens and units.

For example, if the operating time is **6,550** hours, the display will show the following sequence:

Phase 1 →	Phase 2 →	Phase 3 →
For two seconds, the following is displayed: Hr	For two seconds, the following digits are displayed: ∜ thousands (6) ∜ hundreds (5)	For the next two seconds the following digits are displayed: tens (5) units (0)

At the end of phase three (after the tens and units are displayed), the cycle is repeated. To return to normal mode, either: switch the appliance off or press a button or turn the selector knob.

5.3 Alarm Summary Table

ALARM	Description	Possible fault	Machine status/action	Reset
E11	Water fill difficulty during washing	 Tap closed. Water pressure too low. Drain pipe improperly positioned. Water fill solenoid valve faulty. Leaks from pressure switch water circuit. Pressure switch faulty. Faulty wiring. Main circuit board faulty. 	Cycle is paused with door locked	START/RESET
E13	Water leaks	 Drain pipe improperly positioned. Water pressure too low. Water fill solenoid valve faulty. Leaks/clogging of pressure switch water circuit. Pressure switch faulty. 	Cycle is paused with door locked	START/RESET
E21	Drain difficulty during washing	 Drain tube kinked/clogged/improperly positioned. Drain filter clogged/dirty. Faulty wiring. Pressure switch faulty. Drain pump rotor blocked. Drain pump faulty. Main circuit board faulty. 	Cycle is paused (after 2 attempts)	START ON/OFF RESET
E23	Faulty triac for drain pump	Faulty wiring.Drain pump faulty.Main circuit board faulty.	Safety drain cycle - Cycle stops with door open	RESET
E24	Malfunction in sensing circuit on triac for drain pump	Main circuit board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET

ALARM	Description	Possible fault	Action Machine status	Reset
E31	Malfunction in electronic pressure switch circuit	Wiring; Electronic pressure switch.Main electronic circuit board.	Cycle stops with door locked	RESET
E32	Calibration error of the electronic pressure switch	 Drain tube kinked/clogged/improperly positioned. Solenoid valve faulty. Drain filter clogged/dirty. Drain pump faulty. Leaks from pressure switch water circuit. Pressure switch defective. Wiring; main circuit board. 	Cycle paused	START/RESET
E35	Overflow	 Water fill solenoid valve faulty. Leaks from pressure switch water circuit. Faulty wiring. Pressure switch faulty. Main circuit board faulty. 	Cycle interrupted. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
E38	Internal pressure chamber is clogged (water level does not change for at least 30 sec. of drum rotation)	 Motor belt broken. Pressure switch hydraulic circuit clogged. 	Heating phase is skipped	RESET

ALARM	Description	Possible fault	Action Machine status	Reset
E41	Door open	 Check whether the door is closed properly. Faulty wiring. Door safety interlock faulty. Main circuit board faulty. 	Cycle paused	CLOSE THE DOOR
E42	Problems with door lock	 Faulty wiring. Door safety interlock faulty. Electrical current leak between heating element and ground. Main circuit board faulty. 	Cycle paused	START/RESET
E43	Faulty triac supplying power to door delay system	Faulty wiring.Door safety interlock faulty.Main circuit board faulty.	Safety drain cycle. Cycle blocked	RESET
E44	Faulty sensing by door delay system	Main circuit board faulty.	Safety drain cycle. Cycle blocked	RESET
E45	Faulty sensing by door delay system triac	Main circuit board faulty.	Safety drain cycle. Cycle blocked	RESET
E51	Motor power triac short-circuited	Faulty wiring.Motor faulty.Main circuit board faulty.	After 5 attempts, cycle blocked with door unlocked.	ON/OFF RESET
E53	Faulty sensing by triac motor. Input voltage to microprocessor incorrect.	Main circuit board faulty.	Cycle interrupted.	RESET
E54	Motor relay contacts sticking (high voltage level when the relay switches to OFF).	 Current leakage from the motor. Current leakage from the cabling. Main circuit board faulty. 	Cycle blocked with door locked after 5 attempts.	RESET

ALARM	Description	Possible fault	Action Machine status	Reset
E61	Insufficient heating during the washing phase	 Faulty wiring. NTC probe for wash cycle faulty. Heating element faulty. Main circuit board faulty. 	The heating phase is skipped	START/RESET
E62	Overheating during washing phase (temperature higher than 88°C for more than 5 min.)	 Faulty wiring. NTC probe for wash cycle faulty. Heating element faulty. Main circuit board faulty. 	Safety drain cycle. Cycle stops with door open	RESET
E66	Heating element power relay faulty (inconsistency between sensing and relay status)	Main circuit board faulty.	Safety water fill. Cycle stops with door closed	ON/OFF RESET
E68	Current leak to the ground	Earth leakage between heating element and earth.	The heating phase is skipped	START/RESET
E69	Heating element interrupted	 Faulty wiring. Heating element for washing interrupted (thermal fuse open). Main circuit board faulty. 		START ON/OFF RESET
E6A	Heating relay sensing faulty	Main circuit board faulty.	Cycle stops with door locked	RESET
Еен	Heating element power relay faulty (inconsistency between sensing and relay status)	 Faulty wiring. Earth leakage between heating element and earth. Main circuit board faulty. 	Safety water fill Cycle stops with door closed	ON/OFF RESET

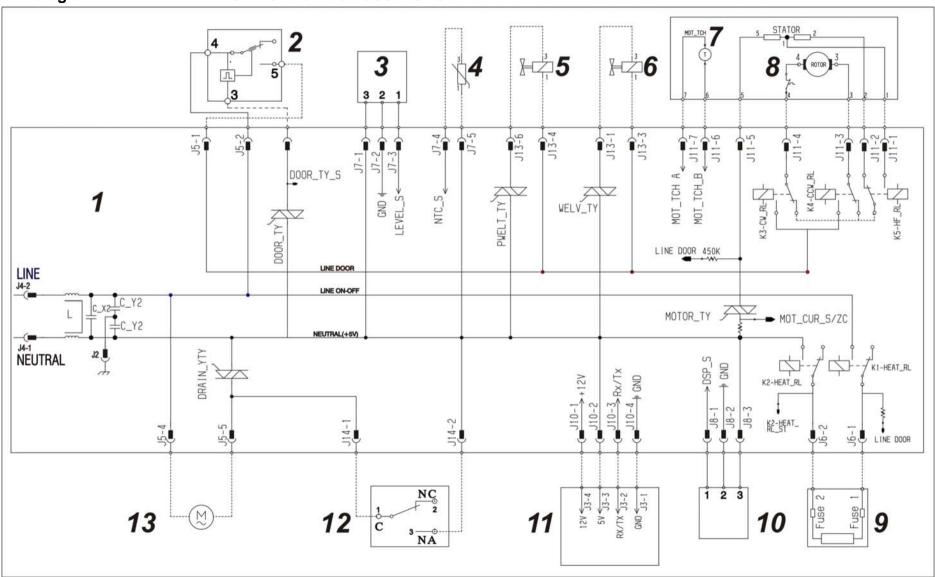
ALARM	Description	Possible fault	Action Machine status	Reset
E71	NTC probe for wash cycle faulty (short-circuited or open)	 Faulty wiring. NTC probe for wash cycle faulty. Main circuit board faulty. 	The heating phase is skipped	START/RESET
E74	NTC probe for wash cycle improperly positioned	 Faulty wiring. NTC probe for wash cycle improperly positioned. NTC probe faulty. Main circuit board faulty. 	The heating phase is skipped	RESET
E83	Error in reading selector	Main circuit board faulty.Incorrect configuration data.	Cycle cancelled	START/RESET
E86	Selector configuration error	Incorrect configuration of display board.		START ON/OFF RESET

ALARM	Description	Possible fault	Action Machine status	Reset
E91	Communication error between main PCB and display board	 Faulty wiring. Control/display circuit board faulty. Main circuit board faulty. 		RESET
E92	Communication inconsistency between main PCB and display board. (incompatible versions)	 Incorrect control/display board. Incorrect PCB (does not correspond to the model) 	Cycle blocked	ON/OFF
E93	Appliance configuration error	Main circuit board faulty.Incorrect configuration data.	Cycle blocked	ON/OFF
E94	Incorrect configuration of washing cycle	Main circuit board faulty.Incorrect configuration data.	Cycle blocked	ON/OFF
E97	Inconsistency between programme selector and cycle configuration	Main circuit board faulty.Incorrect configuration data.	Cycle blocked	RESET
E9C	Display board configuration error	 Display board faulty. 		START ON/OFF RESET
E9F	Communication error between main board and display board	Faulty wiring.Display board faulty.Main board faulty.		ON/OFF
EA1	No drum position signal made.	 DSP sensor faulty. Transmission belt broken. Main circuit board faulty. Faulty wiring. 	Drum positioning cycle cancelled	START/RESET
EA6	No signal from the DSP during motor activation.	 DSP sensor faulty. Transmission belt broken. Main circuit board faulty. Faulty wiring. 	Cycle paused. STAR RESE	
EC1	Electronically controlled valve blocked with operating flowmeter	Faulty wiring.Solenoid valve faulty/blocked.Circuit board faulty.	Cycle stops with door locked Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
EC4	AGS current sensor faulty	Faulty wiring.Main board faulty.	Spin speed reduced to safety speed.	

ALARM	Description	Possible fault	Action Machine status	Reset
EF1	Drain filter clogged (drain phase too long)	Drain filter clogged/dirty.Drain hose blocked/kinked/too high.	Warning displayed at the end of cycle.	START/RESET
EF2	Overdosing of detergent (too much foam during drain phases)	 Excessive detergent dosing. Drain hose kinked/blocked. Drain filter clogged/dirty. 	Warning displayed after 5 attempts or by the specific LED	RESET
EF3	Aqua control system intervention	Water leaks onto base frame.Aqua control device faulty.	Water drain	ON/OFF RESET
EF4	Water fill pressure too low, no signal from flowmeter and electronically controlled valve is open	Tap closed.Water fill pressure too low.		RESET
EF5	Unbalanced load	Final spin phases skipped.		START/RESET
EF6	Reset	If it continues, replace the main board.		
	Complete and a series as		T	
EH1	Supply frequency of appliance outside the limits	 Problem with the power supply network (incorrect/disturbed). Main circuit board faulty. 	Wait for nominal frequency conditions	ON/OFF
EH2	Supply voltage too high	Problem with the power supply network (incorrect/disturbed).Main circuit board faulty.	Wait for nominal voltage conditions	ON/OFF
ЕНЗ	Supply voltage too low	 Problem with the power supply network (incorrect/disturbed). Main circuit board faulty. 	Wait for nominal voltage conditions	ON/OFF
EH4	0 Watt relay malfunction	Main circuit board faulty.		ON/OFF RESET
EEE	Inconsistency between FCV relay (in the main board) and safety sensing circuit	Faulty wiring.Main circuit board faulty.	Safety drain cycle Cycle stops with door open	
EHF	Safety sensing circuit faulty (wrong input voltage to microprocessor)	Main circuit board faulty.	Safety drain cycle Cycle stops with door open	RESET

6 DIAGRAMS

6.1 WM diagram with THREE-PHASE ASYNCHRONOUS MOTOR



6.2 Key to diagram

	Appliance electrical components	PCB components	
1.	Main electronic circuit board	DOOR_TY	Door interlock Triac
2.	Door safety interlock	PWELT_TY	Pre-wash solenoid Triac
3.	Pressure switch	WELT_TY	Wash solenoid Triac
4.	NTC (washing)	MOTOR_TY	Motor Triac
5.	Pre-wash solenoid	DRAIN_YTY	Drain pump Triac
6.	Wash solenoid		
7.	Tachometric generator (motor)	K1	Heating element relay
8.	Universal motor	K2	Heating element relay
9.	Heating element	K3	Motor relay
10.	DSP	K4	Motor direction relay
11.	Display board	K5	Motor direction relay
12.	Aqua control sensor		·
13.	Drain pump		