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<p>Edition: 02/2013 - Rev. 00 1</p>		<p>Aesthetics AEG</p> <p>SERIES 6</p>

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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 ENV06 electronic control system.

A characteristic trait of the ENV06 electronic control system is that it uses an electronic pressure switch alone to check the various water levels in the tub (thus doing away with the mechanical pressure switches: anti-flooding, anti-boiling, 1st - 2nd level), and a new heating element fitted with two thermal fuses which trip if the degree of heating exceeds the values for which they were calibrated.

The manual deals with the following topics:

- general characteristics
- control panel and washing programmes
- technical and functional characteristics
- access to the electronic control system

For detailed information concerning hydraulic circuits, structural characteristics of the appliances and accessibility, please refer to the presentation Service Manual:

- *Publication N° 599 37 67-82 for HEC-ARCHED washing machines*

2 WARNINGS



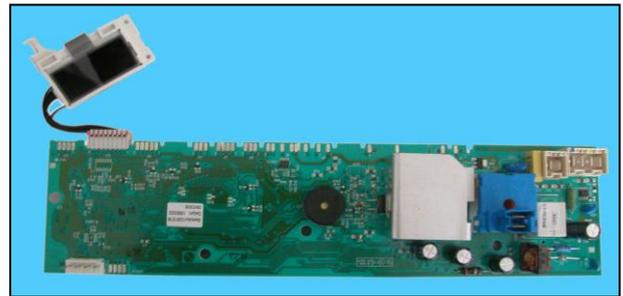
- Any work on electrical appliances must only be carried out by qualified technicians.
- Before servicing an appliance, check the efficiency of the electrical system in the home using appropriate instruments. For example: refer to the indications provided/illustrated in the <<metrater>> course at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.
- When the work is finished check that the equipment's safety conditions have been reinstated, as though it were straight off the assembly line.
- If the circuit board has to be handled/replaced, use the ESD kit (Cod. 405 50 63-95/4) to avoid static electricity from damaging the circuit board, see S.B. No. 599 72 08-09 or consult the course <<Electrostatic charges>> at the address (<http://electrolux.edvantage.net>) on the Electrolux Learning Gateway portal.
- Make resistance measurements, rather than direct voltage and current measurements.
- When replacing the heating element, replace it with one that has the same characteristics (2 thermal fuses) in order not to compromise the safety of the appliance. Do not remove/switch the NTC sensors between heating elements.
- Always empty the appliance of all the water before laying it on its side.
- Never place the appliance on its right side (electronic control system side): some of the water in the detergent dispenser could leak onto the electrical/electronic components and cause these to burn.
- When replacing components, please refer to the code shown in the list of spare parts relating to the appliance.



3 SERIES 6

3.1 GENERAL CHARACTERISTICS

The ENV06 electronic control system consists of a single PCB, which incorporates the power, control and display (where the LCD is connected) functions. The programme selector is incorporated in the board. The PCB is mounted on a casing fitted to the control panel.

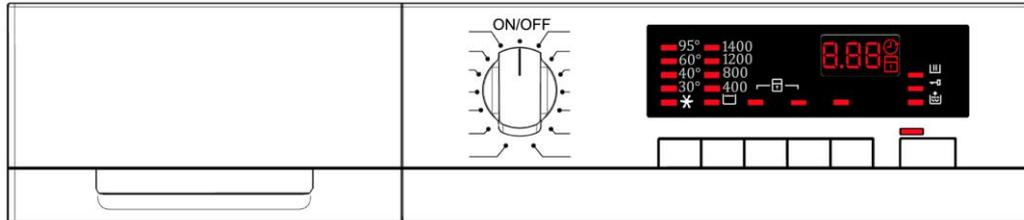


<p>Version</p> <p style="text-align: center;">SERIES 6</p>	
<p>No. buttons</p>	<ul style="list-style-type: none"> ▪ Maximum 6 (5 options + start/pause)
<p>No. LEDs</p>	<ul style="list-style-type: none"> ▪ Maximum 18 + LCD
<p>Programme selector</p>	<ul style="list-style-type: none"> ▪ 15 positions with main switch (incorporated in the circuit board)
<p>Serial port</p>	<ul style="list-style-type: none"> ▪ DAAS-EAP communication protocol up to 115,200 baud
<p>Power supply voltage</p>	<ul style="list-style-type: none"> ▪ 220/240 V ▪ 50/60 Hz (configurable)
<p>Washing type</p>	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball”
<p>Rinsing system</p>	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball”
<p>Motor</p>	<ul style="list-style-type: none"> ▪ Collector, with tachometric generator
<p>Spin speed</p>	<ul style="list-style-type: none"> ▪ 1.200 ÷ 1.400 rpm
<p>Anti-unbalancing system</p>	<ul style="list-style-type: none"> ▪ FUCS
<p>Water fill</p>	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 2 outlets
<p>Detergent dispenser</p>	<ul style="list-style-type: none"> ▪ 3 compartments: pre-wash/stains, wash, fabric softeners
<p>Control of water level in the tub</p>	<ul style="list-style-type: none"> ▪ Electronic/analogue pressure switch
<p>Door safety interlock</p>	<ul style="list-style-type: none"> ▪ Traditional (with PTC) ▪ Instantaneous
<p>Heating element heat output</p>	<ul style="list-style-type: none"> ▪ 1,950 W with thermal fuses incorporated
<p>Temperature check</p>	<ul style="list-style-type: none"> ▪ NTC probe incorporated in the heating element
<p>Buzzer</p>	<ul style="list-style-type: none"> ▪ Traditional incorporated in the PCB

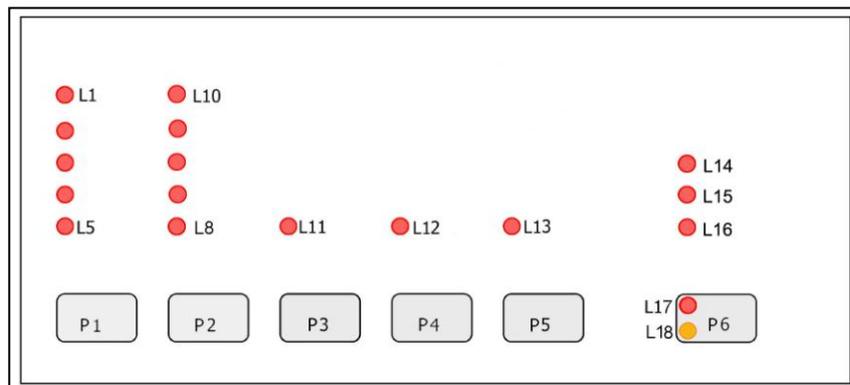
3.2 CONTROL PANEL

3.2.1 SERIES 6 Aesthetics

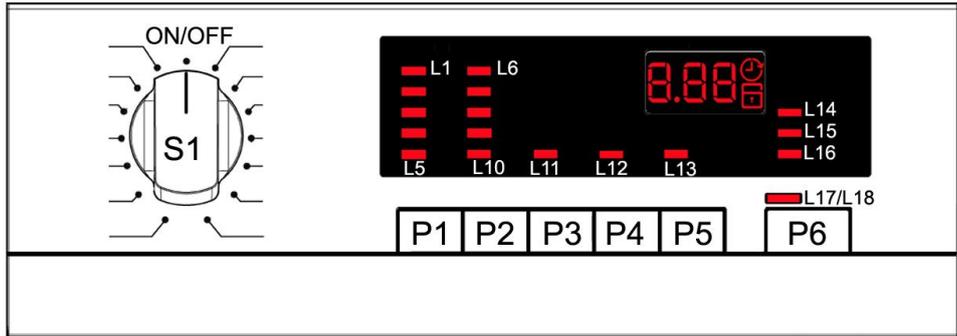
- Max. 6 buttons
- 15 position programme selector
- 18 LEDs
- LCD



- Positioning of LEDs and buttons



3.2.2 Control panel configuration



The washing programmes, the functions of the selector knob and the various buttons vary according to the model, since these are determined by the configuration of the appliance.

3.2.3 Programme selector (S1)

The selector features 15 positions and incorporates the ON/OFF switch. The various positions of the selector may be configured to perform different washing programmes (e.g. water level, drum movement, no. of rinses and the washing temperature to be selected according to the type of garments) can be rotated both clockwise and anti-clockwise. In the first position, the appliance is switched off and the current programme is cancelled. For each programme, the compatible options and other parameters are defined.



3.2.4 Programme configuration

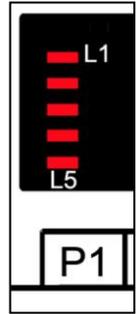
The table below lists the parameters that can be used to define the washing programmes.

Types of fabric	Cotton/linen, Synthetic fabrics, Delicates, Wool, Hand-wash, Shoes, Jeans, Duvet, Silk.
Special programmes	Soak, Miniprogramme, Easy-Iron, Conditioner, Rinses, Delicate rinses, Drain, Delicate spin, Spin.
Temperature	Determined by the selected programme.
Spin	Selectable with the "Spin" button.
Options (Normal/Possible)	Rinse Hold, Night cycle, Pre-wash, Stains, Sensitive, Extra rinse, Easy-Iron, Economy (energy label), Intensive, Normal, Daily, Quick, Super quick, Reduced spin speed and No-spin.
Programme phases	Pre-wash, Wash, Rinses, Spin, Delayed start.

3.2.5 Pushbuttons – LEDs and LCD

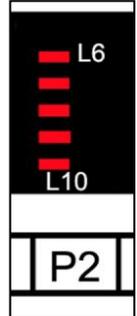
The function of each button is defined by the configuration of the appliance.

- **Button no. 1:** this button is configurable and is related to LEDs (L1÷L5).
The initial temperature is the one recommended by the programme; you can regulate it by pressing the button in sequence from maximum to minimum and then move on to the COLD cycle.



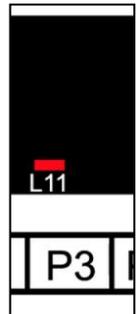
- **Button no. 2:** this button is configurable and is related to LEDs L6÷L10.

The programme recommends maximum spin; you can vary this speed by pressing the button sequentially down to zero and then move on to the STOP WITH WATER IN TUB (Rinse hold) cycle.



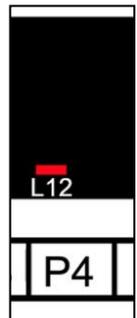
- **Button no. 3:** this button is configurable and is related to LED (L11).
Depending on the configuration of the appliance, it can perform the function of:

Normal, daily, light, quick, super quick, intensive, economy, pre-wash, easy iron, bleach, stains, super rinse, night cycle, stop with water in tub, half load, spin speed reduction, no spin.



- **Button no. 4:** this button is configurable and is related to LED (L12).
Depending on the configuration of the appliance, it can perform the function of:

Normal, daily, light, quick, super quick, intensive, economy, pre-wash, easy iron, bleach, stains, super rinse, night cycle, stop with water in tub, half load, spin speed reduction, no spin.

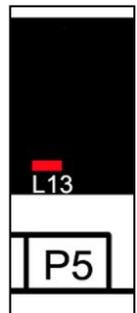


- **Button no. 5:** this button is configurable and is related to LED (L13).
Depending on the configuration of the appliance, it can perform the function of:

Normal, daily, light, quick, super quick, intensive, economy, pre-wash, easy iron, bleach, stains, super rinse, night cycle, stop with water in tub, half load, spin speed reduction, no spin.

It can also perform the function of delayed start.

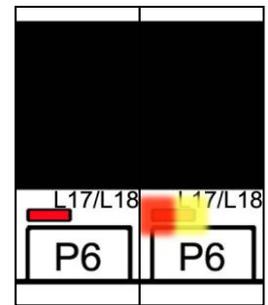
During the programme selection phase, a delayed start can be selected, from 30' to 20 hours (30' ↔ 60' ↔ 90' ↔ 2h ↔ 3h... ↔ 20h ↔ 0h) and the time is shown on the LCD display; during the last hour, the time decreases one minute at a time.



- **Button no. 6:** this button can be configured, has the START/PAUSE function and is combined with the L20-L21 LEDs.

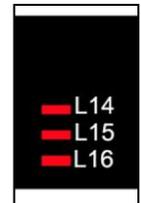
Two LEDs, one yellow that flashes in the event of an alarm and the other red:

- > That flashes when the appliance is paused, in selection or in combination with the yellow one to indicate an alarm code.
- > Stays lit during the performance of the cycle.



- **Wash phase indicator LEDs:**

LEDs L14, L15, L16 are configurable and are used as indicators of the wash phases.



Possible indications	
Pre-wash	Lights up during selection mode if the programme includes the pre-wash phase and during the performance of the pre-wash.
Wash	Lights up in selection mode if the programme includes the wash phase and during the wash cycle.
Pre-wash/Wash	Lights up during selection mode if the programme includes the pre-wash or wash phase and during the performance of these phases.
Rinses	Lights up during selection mode if the programme includes rinse phases and during rinsing.
Spin	Lights up during selection mode if the programme includes the spin phase and during the spin phase.
Rinses/Spin	Lights up in selection mode if the programme includes rinses and spin and during the execution of these phases.
Drainage	Lights up during selection mode if the programme includes the drain phase only and during draining.
Extra Rinse	Lights up when this option has been stored (if included in the cycle).
Rinse hold	Lights up when this option is selected and at the end of the cycle, when the appliance stops with water in the tub.
Cycle in progress	Lights up in the selection status. Lights up during the washing cycle then turns off during the drying phase if selected.
End of cycle	Lights up when the programme is completed.
Door closed	Lights up when the safety device prevents the door opening and switches off when the door can be opened. Flashes when the device is about to unlock the door (evident with PTC delaying devices, which need one or two minutes to open).
Child lock	Lights up when the child lock is activated and all the buttons are disabled.

- **LCD**

The following information appears on the LCD display:

- ☞ - **The duration of the washing programme**, which appears after it has been selected. This corresponds to the time required for the maximum wash load for each type of programme. After the programme has started, the time decreases (and is updated) minute by minute.



- ☞ - **The end of the programme** is indicated by **one flashing zero** (when the door can be opened).
- ☞ - **Stopping the appliance with water in the tub**, after the programmes with the RINSE HOLD option, is displayed by **one flashing zero**. The LED that indicates the door remains lit and the LED of the START/PAUSE button switches off.
- ☞ - The **anti-crease** phase at the end of the drying cycle is displayed by **one flashing zero**.



↩ - **Delayed start**, selected via the relevant button. After the START/PAUSE button is pressed, the countdown starts and the delay time decreases hour by hour. In the last two hours it decreases by 30 min. at a time and in the last hour, one minute at a time.



↩ - **The padlock**: when lit, it indicates that all the buttons are disabled to prevent children from modifying, starting or pausing the cycle. A combination of keys needs to be pressed to disable this function (See instruction manual).



↩ - **Wrong choice of option**, is displayed by Err, when a function not compatible with the chosen programme is selected. The wrong selection is also indicated by an acoustic alarm (if turned on).



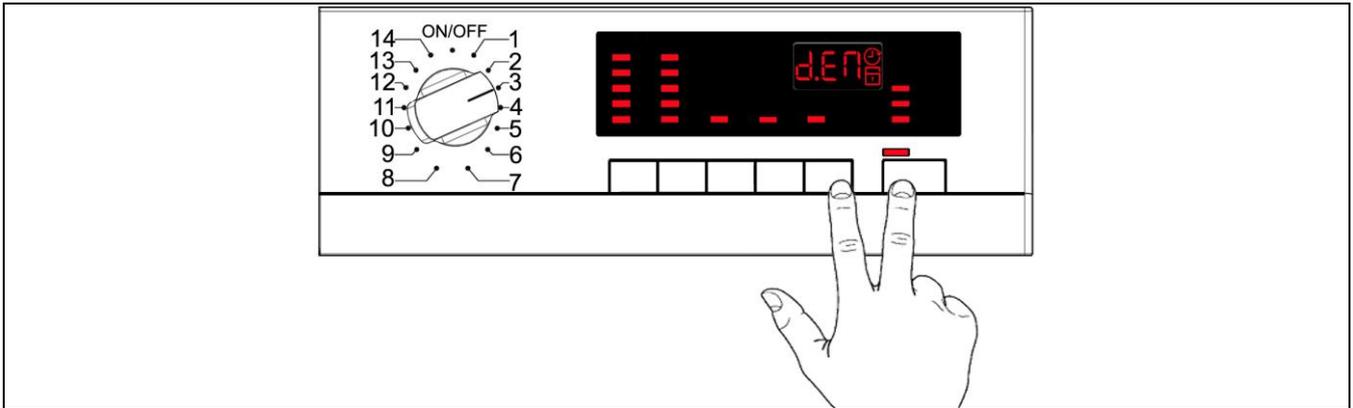
↩ - **An alarm code**, indicates an error in the appliance operation; simultaneously to the displaying of the code on the display, the yellow LED button (above the START/PAUSE button) flashes.



- **Buzzer** (configurable)

- One “beep” when the programmes or an option are selected, when the START/PAUSE button is pressed to start or pause the cycle.
- Three “beeps” when an option not compatible with the selected programme is chosen, or when a button is pressed or a knob is turned during a cycle.
- A particular sequence of “beeps” for a two-minute duration when the cycle has terminated.
- A particular sequence of three “beeps” to signal an appliance malfunction.

3.2.6 DEMO Mode Setting



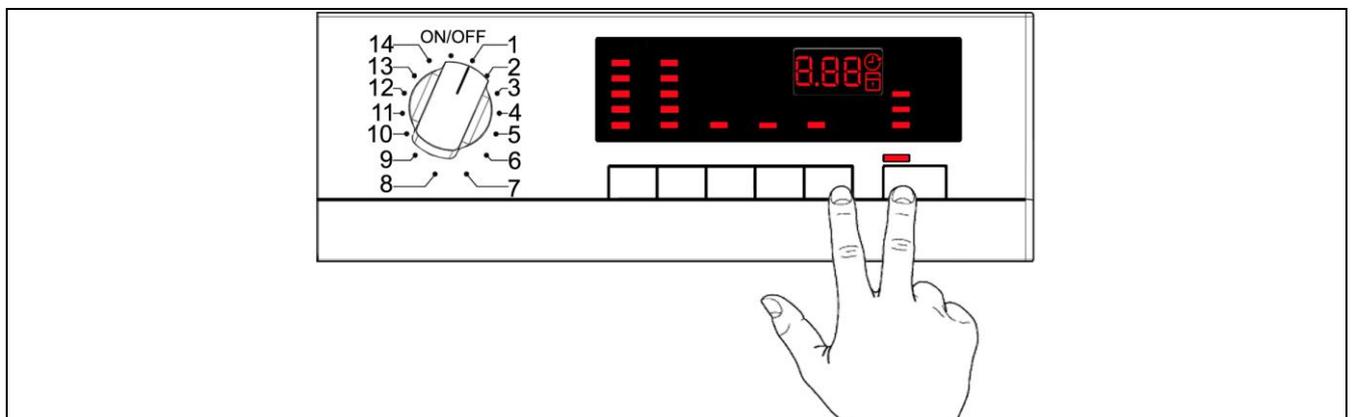
1. Switch off the appliance.
2. Press the **START/PAUSE** button and the nearest **option button** simultaneously (as shown in the figure).
3. Holding down both buttons, switch the appliance on by turning the programme selector by **three positions clockwise**.
4. Hold the buttons down until "dEM" flashes for a short time.

3.3 Exiting DEMO mode

Switch the appliance off (programme selector in off/cancel position) to exit demo mode

4 DIAGNOSTICS SYSTEM

4.1 Accessing diagnostics



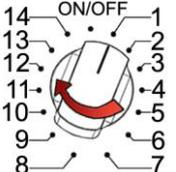
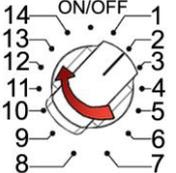
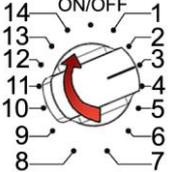
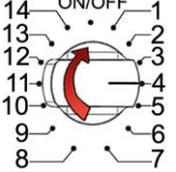
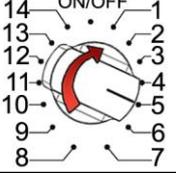
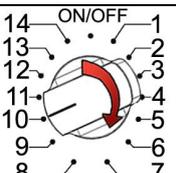
1. Switch off the appliance.
2. Press the **START/PAUSE** button and the nearest **option button** simultaneously (as shown in the figure).
3. Holding down both buttons, switch the appliance on by turning the programme selector by **one position clockwise**.
4. Hold the buttons down until the LEDs and symbols begin to flash in sequence (at least 2 seconds). In the first position, the operation of the buttons and the related LEDs is checked; turning the programme selector dial **clockwise** runs the diagnostic cycle for the operation of the various components and reads any alarms.

4.2 Quitting the diagnostics system

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

4.3 Phases of the diagnostics test

Irrespective of the type of PCB and the configuration of the programme selector, after entering the diagnostic mode, turn the programme selector **clockwise** to perform the diagnostic cycle for the operation of the various components and to read any alarms (all alarms are enabled in the diagnostic cycle).

Selector position	Components activated	Working conditions	Function tested	LCD
1 	- All the LEDs and symbols light up in sequence. - When a button is pressed, the corresponding group or LED or symbol lights up.	Always active	User interface functioning	
2 	- Door safety interlock - Wash solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 min.	Water fill to wash compartment	Water level in the tub is displayed
3 	- Door safety interlock - Pre-wash solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 min.	Water fill to pre-wash compartment (bleach)	Water level in the tub is displayed
4 	- Door safety interlock - Pre-wash and wash solenoid valves	Door closed Water level below anti-flooding level Maximum time 5 min.	Water fill to conditioner compartment	Water level in the tub is displayed
5 	- Door safety interlock - Bleach/stains solenoid valve	Door closed Water level below anti-flooding level Maximum time 5 min.	Water fill to bleach/stains compartment	Water level in the tub is displayed
6 	- Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Heating element - Circulation pump	Door closed Water level above the heating element Maximum time 10 min. up to 90°C. (*)	Reheating Circulation	Wash water temperature
7 	- Door safety interlock - Wash solenoid valve, if the water in the tub is not enough to cover the heating element - Motor (55 rpm clockwise, 55 rpm anti-clockwise, 250 rpm pulse)	Door closed Water level above the heating element	Check for leaks from the tub	Drum speed (the real value divided by ten) is displayed
8 	- Door safety interlock - Drain pump - Motor up to 650 rpm then at maximum spin speed (**)	Door closed Water level lower than anti-boiling level for spinning	Drain and spin	Drum speed (the real value divided by ten) is displayed
9	-----	-----	-----	-----
10 	- Reading/Deleting the last alarm	-----	----	

(*) In most cases, this time is sufficient to check the heating. The time, however, 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 garments must be inside the appliance.

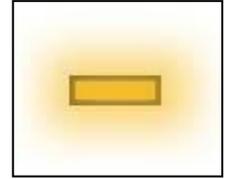
5 ALARMS

5.1 Displaying the alarms to the user

The alarms are displayed by the flashing yellow LED above the START/PAUSE button and simultaneously via the LCD display.

The alarms displayed to the user are listed below:

- ↻ E10 – Water fill difficulty (tap closed)
- ↻ E20 – Drain difficulty (filter dirty)
- ↻ E40 – Door open



they are represented by the flashing of the yellow LED above the START/PAUSE button and can be resolved directly by the user while the alarms listed below:

- ↻ EF0 – Water leakage (Aqua Control System)
- ↻ Eb0/EH0 – Voltage or frequency outside normal values

are displayed to the user, but technical assistance is required to remedy them.

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

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

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

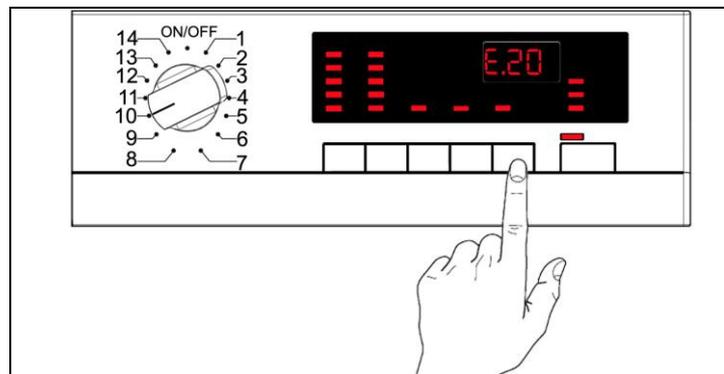
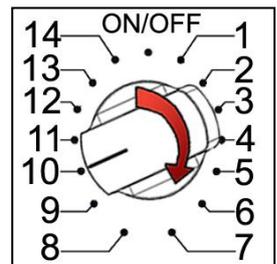
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

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

5.2 Reading the alarms

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

- Enter the diagnostic mode (para. 4.1).
- Irrespective of the type of PCB and configuration, turn the programme selector knob **clockwise** to the **tenth position**.
- The last alarm is displayed.
- To display previous alarms, press the button to the left of the START/PAUSE button in sequence (as shown in the figure).



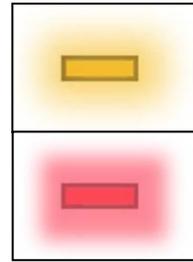
- To return to the last alarm, press the START/PAUSE button.

5.2.1 Displaying the alarm

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

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

These two LEDs can be found on all models.



Notes:

- The first letter of the alarm code "E" (Error) is not displayed, since this letter is common to all alarm codes.
- Alarm code families are expressed in hexadecimals; and therefore the letters:
 - **A** is represented by **10** flashes
 - **B** is represented by **11** flashes (appliances with LEDs)
 - **H** is represented by **11** flashes (appliances with LCD/DISPLAY)
 - ...
 - **F** is represented by **15** flashes

5.2.2 Example of alarm display

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

- a sequence of four flashes of the yellow light START/PAUSE button indicates the first number **E43**;
- the sequence of three flashes of the green light START/PAUSE button indicates the second number **E43**.

Yellow light START/PAUSE LED			Red light START/PAUSE LED		
On/Off	Time (Sec.)	Value	On/Off	Time (Sec.)	Value
	0.5	1		0.5	1
	0.5			0.5	
	0.5	2		0.5	2
	0.5			0.5	
	0.5	3		0.5	3
	0.5			0.5	
	0.5	4		2.5	Pause
	0.5				
	1.5	Pause			

5.2.3 Behaviour of the alarms during diagnostic testing

All alarms are enabled during diagnostic testing of the components.

5.3 Rapid reading of alarms

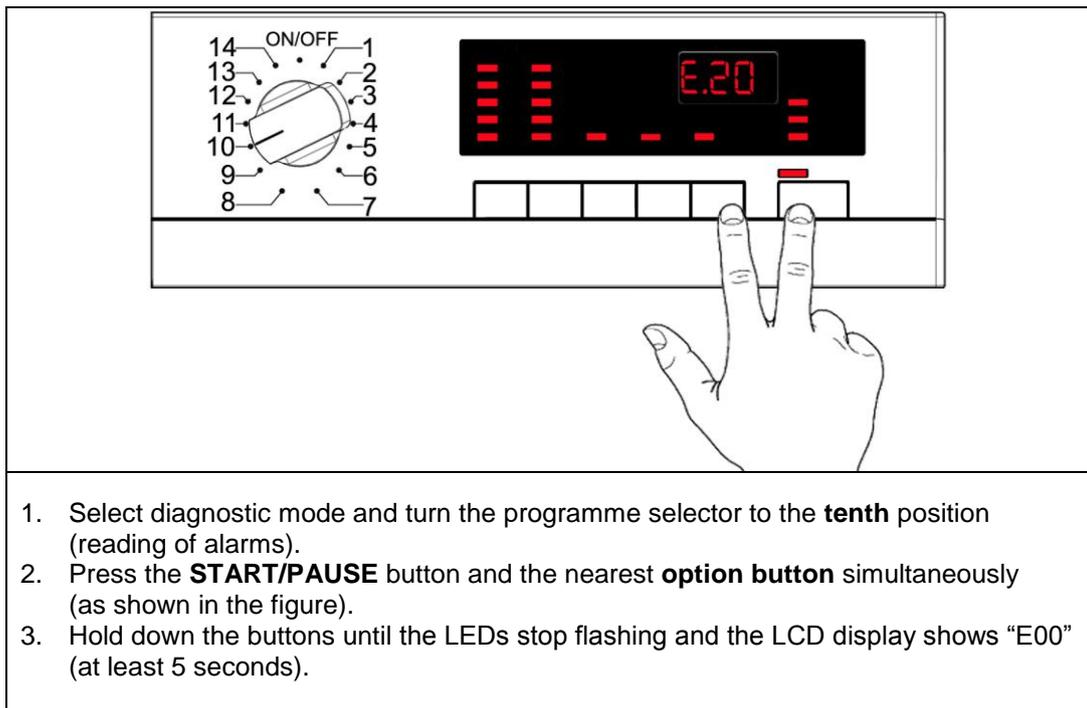
It is possible to view the last three alarms even if the machine is in normal working mode (e.g. while the washing programme is running, 5" after being turned on):

- Press the **START/PAUSE** button and the nearest **option button** simultaneously (as if you were entering DIAGNOSTIC mode) for at least 2 seconds: the LEDs initially switch off, and then display the flashing sequence indicating the last alarm.
- To display the previous alarms, press the button to the left of the START/PAUSE button in sequence.
- To return to the last alarm, press the START/PAUSE button.
- The alarm continues to be displayed for the amount of time required, and then the display returns to its normal operation.
- The alarm reading system is as described in sect. 5.2.
- While the alarm is being displayed, the appliance continues to perform the cycle or, if in the programme selection phase, it maintains the previously selected options in memory.

5.4 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



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

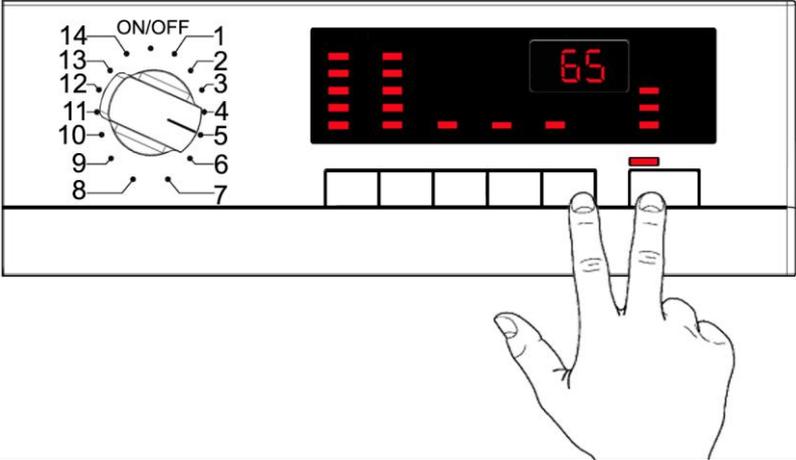
6 OPERATING TIME COUNTER

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 normal programmes (and not diagnostic cycles) is counted.
- The actual operating time 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).

6.1.1 Reading the operating time



The diagram shows a control panel with a programme selector knob (14) and buttons 1 through 13. A hand is shown pressing buttons 2 and 5 simultaneously. The digital display shows '65'.

1. Switch off the appliance.
2. Press the **START/PAUSE** button and the nearest **option button** simultaneously (as shown in the figure).
3. Holding down both buttons, switch the appliance on by turning the programme selector by **five positions clockwise**.
4. Hold down the buttons until the hours of operation appear on the display or on the LCD screen (at least 5 seconds).

6.1.2 Display of operating time with LEDs

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:

	Step 1 →	Step 2 →	Step 3 →
Styling	For <u>two seconds</u> , nothing boards	For <u>two seconds</u> , the following digits are displayed: ↵ thousands (6) ↵ hundreds (5)	For the next <u>two seconds</u> the following digits are displayed: ↵ tens (5) ↵ units (0)
SERIES 6			

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.

		OPTIONS																	
		Rinse hold	Night cycle	Pre-wash	Stains	Bleach	Extra-rinse	Easy-iron	Economy	INTENSIVE	Cupboard Dry	Daily	Light	Quick	Super Quick	Sensitive	Reduced spin speed	No spin	Half-load
Compatibility with OPTIONS	Rinse hold	■		X	X	X	X	X	X	X	X	X	X	X	X	X			X
	Night cycle		■	X	X	X	X		X	X	X	X	X	X	X				X
	Pre-wash	X	X	■	(*)	(*)	X	X	X	X	X	X	X	X	X	X	X	X	X
	Stains	X	X	(*)	■	(*)	X	X	X	X	X	X	X	X	X	X	X	X	X
	Bleach	X	X	(*)	(*)	■	X	X	X	X	X	X	X	X	X	X	X	X	
	Extra-rinse	X	X	X	X	X	■	X	X	X	X	X	X	X	X		X	X	X
	Easy-iron	X		X	X	X	X	■	X	X	X	X	X	X	X		X	X	X
	Economy	X	X	X	X	X	X	X	■							X	X	X	X
	INTENSIVE	X	X	X	X	X	X	X	X	■						X	X	X	X
	Cupboard Dry	X	X	X	X	X	X	X	X		■					X	X	X	X
	Daily	X	X	X	X	X	X	X	X			■				X	X	X	X
	Light	X	X	X	X	X	X	X	X				■				X	X	
	Quick	X	X	X	X	X	X	X	X					■			X	X	
	Super Quick	X	X	X	X	X	X	X	X						■		X	X	
	Sensitive	X		X	X	X			X	X	X	X				■	X	X	X
	Reduced spin speed			X	X	X	X	X	X	X	X	X	X	X	X	X	■		X
No spin			X	X	X	X	X	X	X	X	X	X	X	X	X		■	X	
Half-load	X	X	X	X		X	X	X	X	X	X				X	X	X	■	
Phases where selection/modification is possible	Selection	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	
	Pre-wash	X	X				X	X								X	X		
	Wash	X	X				X	X								X	X		
	Rinses	X																	
	Spin																		

(*) Pre-wash, Stains and Bleach are compatible with one another depending on the detergent dispenser used.

- The delayed start is compatible with all programmes, except for drain; the maximum time selectable is 20 hours.
- The selection of the spin cycle is available for all programmes, except for drain.

7.1 Description of options

- **Rinse hold**
 - Stops the appliance with water in the tub before the final spin cycle.
 - To drain the water, reset the programme and then select a drain or spin cycle.
- **Night cycle**
 - Eliminates all spin phases and adds **three** rinses in COTTON cycles and **two** rinses in SYNTHETIC FABRICS cycles.
 - Stops the appliance with water in the tub before the final spin cycle.
 - Eliminates the buzzer (if configured).
 - To drain the water, reset the programme and then select a drain or spin cycle.
- **Pre-wash**
 - Adds a pre-wash phase at the start of the cycle with water heating to 30°C (or cold, if selected).
 - In COTTON and SYNTHETICS cycles, performs a short spin before passing on to the washing phase.
 - This option cannot be selected for WOOL and HAND WASH cycles.
- **Stains**
 - Adds a 5-minute motor movement phase after heating to 40°C.
 - Water flow to the pre-wash/stains compartment to introduce the special stain-removal product.
 - This option cannot be selected for DELICATES, WOOL and HAND WASH cycles.
- **Bleach**
 - Loads water through the bleach compartment at the beginning of the first rinse in COTTON cycles.
- **Economy/Energy label**
 - Modifies the structure of the COTTON 40-60 – SYNTHETIC FABRICS 50/60 programmes to reduce energy consumption.
 - Reduces the washing temperature.
 - Increases the duration of the wash phase.
- **Super rinse**
 - Adds **two** rinses in the COTTONS – SYNTHETICS – DELICATES cycles.
 - Eliminates the intermediate spins except the last one which is reduced to 450 rpm.
- **Half-load**
 - Eliminates one rinse in COTTON programmes.
- **Easy-iron**
 - In COTTON programmes:
 - adds **three** rinse cycles
 - eliminates intermediate spin cycles
 - carries out a pulse spin
 - adds an “untangling” phase after the spin cycle
 - In SYNTHETIC FABRICS programmes:
 - it reduces the heating temperature in 50/60°C cycles to 40°C
 - increases the wash time
 - prolongs the cooling phase at the end of the wash phase
 - adds **one** rinse cycle
 - adds an “untangling” phase after the pulse spin cycle
- **Spin elimination**
 - It eliminates all the spin phases.
 - It adds three rinses to the COTTON CYCLE and one to the SYNTHETIC FABRICS cycle.
- **Intensive**
 - Performs a specific intensive cycle.
- **Daily**
 - Modifies the structure of the COTTON – SYNTHETICS – DELICATES cycles to obtain good washing performance in a short space of time.

- **Light**
 - Modifies the structure of the wash phase of the COTTON – SYNTHETICS – DELICATES cycles in a short space of time.
- **Daily**
 - Modifies the structure of the COTTON – SYNTHETIC FABRICS – DELICATES cycles to obtain very short washing times (optimised for reduced and very dirty wash loads).
 - Reduces the number of rinses (one less rinse).
 - Increases the water level of the other two rinses.
- **Super quick**
 - Modifies the structure of the wash phase of the COTTON – SYNTHETIC FABRICS – DELICATES cycles by half a load.
- **Delayed start time**
 - Adds a pause before the start of the programme. The delay time is displayed on the corresponding LEDs starting from a 2-hour until a 20-hour delay (☞ 30' ☞ 60' ☞ 90' ☞ 2h ☞ 3h... ☞ 20hrs. ☞ 0hrs.).
 - To start the cycle immediately after the countdown to the delayed start has already begun: press the Start/Pause button, cancel the delay time by pressing the relevant button, then press Start/Pause again.

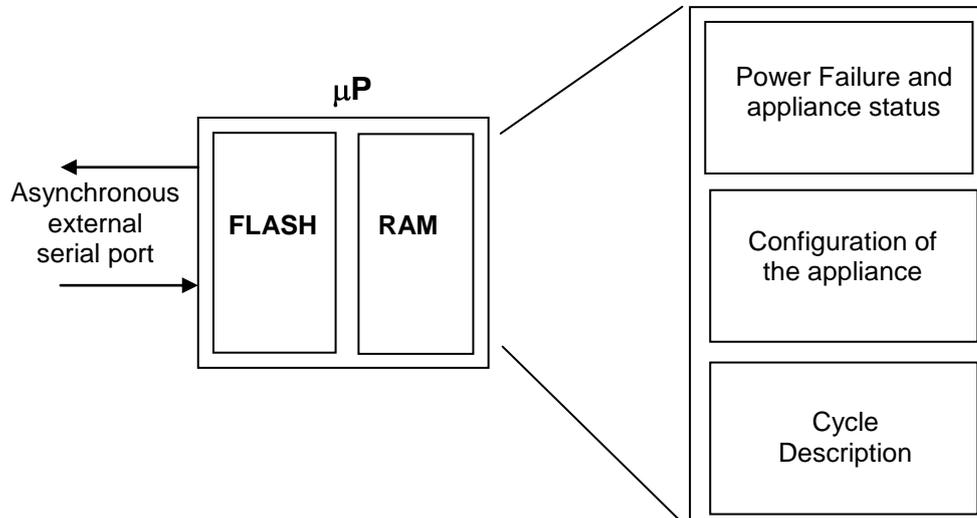
8 TECHNICAL CHARACTERISTICS

8.1 Electronic control system memory



8.1.1 General structure of the memory system

The system features a FLASH memory inside the microprocessor, which allows recording of configuration data, the description of the cycle, the status of the appliance in the event of a power failure and alarms.



8.1.2 FLASH

This area of the memory contains the “firmware” code comprising the appliance function:

- ⇒ Control of electric loads (motor, pump, electronically controlled valves, etc.)
- ⇒ Control of the sensors (pressure switches, motor speed, door status, etc.)
- ⇒ Management of the user interface
- ⇒ Management of the serial port
- ⇒ Management of power failures and alarms
- ⇒ Running the washing programme
- ⇒ Power failure, i.e. the information necessary to restart the appliance in the event of a power failure:
 - Selected cycle and options
 - Current phase and sub-phase
- ⇒ Appliance status, used to perform special cycles, such as:
 - Electrical test (used on the assembly line)
 - Continuous cycles (used in the factory workshop)
- ⇒ Appliance configuration: the data contained in this portion of the memory defines the characteristics of the model and is interpreted by the function software. The variables are as follows:
 - Type of machine (frontal load)
 - Type of door interlock (PTC or instantaneous)
 - Anti-flooding safety device
 - Transmission ratio between drum pulley and motor pulley
 - Structure of the washing group
 - Power supply frequency (50 or 60 Hz)
 - Type of electronic board
 - Detergent tray (3 dispensers)
 - Final spin speed (600±1,400 rpm)
- ⇒ Identification of the appliance:
 - Prod. No.
 - ELC
 - Serial Number
- ⇒ Configuration of the user interface:
 - Programmes on main selector
 - Function of secondary selector (where featured)
 - Number and functions of buttons
 - LED functions
 - Buzzer operation

- ⇒ Washing cycle tables: each washing cycle consists of a series of phases (steps); the steps are the basic instructions which comprise the description of the cycle, which is common to all appliances having the same characteristics.
 - Water fill
 - Motor movement
 - Reset
 - Reheating
 - Drainage
 - Spin
 - "IF" conditions (options, temperatures, etc.)
- ⇒ Configuration of the washing cycle: for each family of appliances, certain parameters associated with the washing cycle are defined:
 - Working limits (voltage/frequency)
 - Transmission ratios
 - Parameters for control of the signal from the tachometric generator
 - Parameters for half-range operation of the motor
 - Structure of the washing group
 - Control parameters for the FUCS anti-unbalancing system
 - Water fill algorithm
 - Alarm control system

8.1.3 RAM

This memory contains the variables, that is to say all the dynamic information used during the running of the programme:

- ⇒ Motor speed
- ⇒ Water temperature
- ⇒ Alarms
- ⇒ Cycle selected
- ⇒ Machine status

The memory is cancelled every time the power supply is disconnected (power failure or appliance switched off).

The contents of the memory can be read using a computer connected via a DAAS interface.

The same system can be used to send commands to the electronic control unit such as:

- ⇒ Select remote control mode
- ⇒ Activate the various loads in remote mode
- ⇒ Select diagnostic mode
- ⇒ Select a cycle and options, and start the cycle

8.2 Door safety interlock

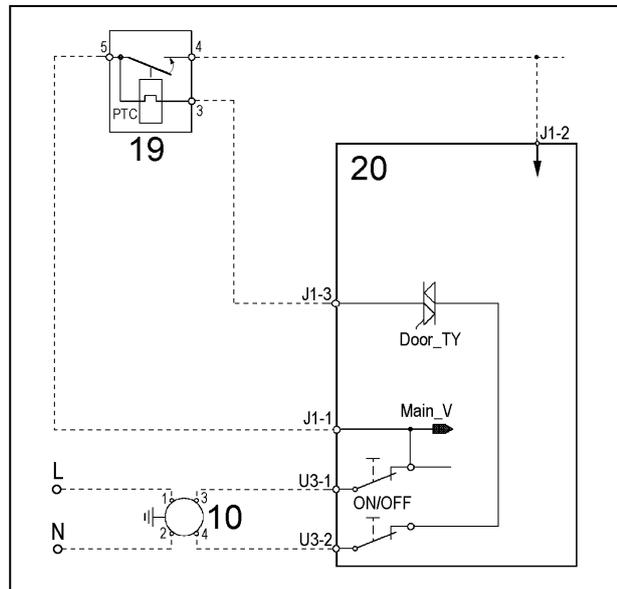
There are two types of door interlock:

- Volumetric with PTC
- Instantaneous

8.2.1 Volumetric interlock with PTC

- 10 Noise filter
- 19 Door safety interlock
- 20 PCB

ON/OFF = Main switch (incorporated in the programme selector)



8.2.1.1 Operating principle

- ↻ When the washing programme is started by pressing the start/pause button, the bi-metal PTC (contacts 3-5) is powered by the TRIAC (Door_TY) on the PCB: after 2-4 seconds, this closes the switch (5-4) which powers the electrical components of the appliance (only if the door is closed).
- ↻ The door interlock prevents the door from being opened while the appliance is in operation.
- ↻ At the end of the washing programme, the PCB disconnects the interlock from the power supply, but the door remains locked for a further 1 to 3 minutes (PTC cooling time).

8.2.2 Instantaneous door interlock

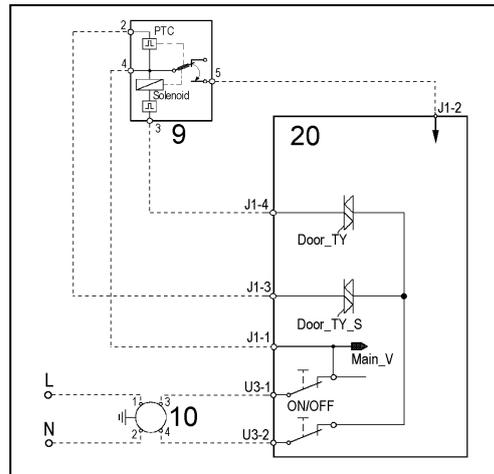
- With this safety device, the door can be opened immediately after the end of the cycle.

9 Door safety interlock

19 Noise filter

20 PCB

ON/OFF = Main switch (incorporated in the programme selector)



8.2.2.1 Operating principle

- When the ON/OFF switch closes and the appliance is switched on (at the programme selector knob), power is supplied to the bi-metal PTC (contact 4-2), but the door remains unlocked.
- When the programme starts (Start/Pause button), the PCB sends a 20 msec pulse to contact 4-3 of the electronically controlled valves (at least 6 seconds must have passed since the appliance was switched on); this locks the door and simultaneously closes the main switch (contacts 4-5), thus supplying power to all the appliance components.
- When the programme ends, the PCB sends two additional 20 msec pulses (200 msec apart):
 - the first pulse does not unlock the door
 - the second pulse (which is sent only if the appliance is operating properly) unlocks the door lock device and simultaneously opens the contacts on the main switch

8.2.2.2 Door open conditions

Before pulses are sent to open the door, the PCB checks for the following conditions:

- the drum must be stationary (no signal from the tachometric generator)
- the water level must not be higher than the lower edge of the door
- the temperature of the water must not be higher than 40°C

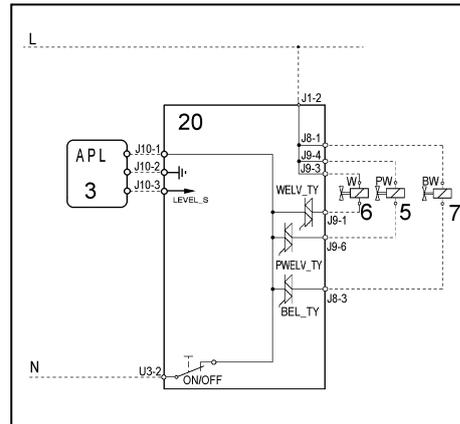
8.2.2.3 Automatic release device

If a power failure occurs, if the appliance is switched off, or if the electronically controlled valve malfunctions, the bi-metal PTC will cool down and unlock the door in approximately 1 - 4 minutes.

8.3 Water fill system

The solenoid valves are powered by the PCB by means of the TRIAC and the water level in the tub is controlled by the analogue pressure switch.

- 3 Analogue pressure switch
- 5 Pre-wash solenoid valve
- 6 Wash solenoid valve
- 7 Bleach solenoid valve
- 20 PCB



8.3.1 Mechanical jamming of the solenoid valve

The solenoid valve may jam open without being actuated (which will cause flooding if the pressure switch controlling the water level does not trip). If this occurs, the electronic control system (which continuously monitors the flow sensor) will lock the door, start the drain pump and display an ALARM simultaneously.

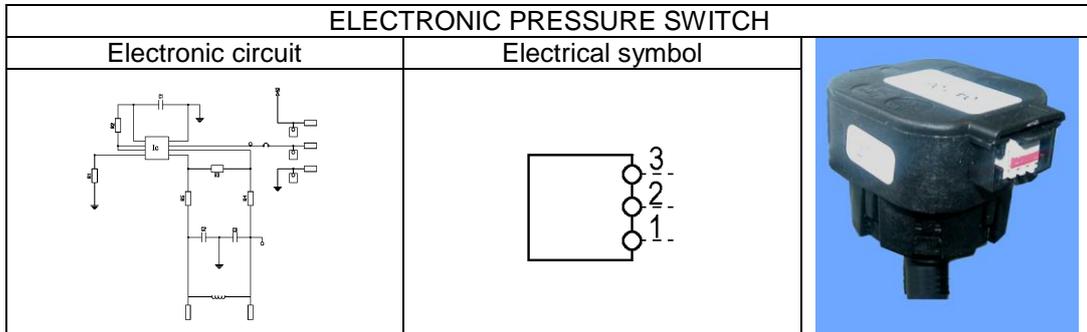
Low water pressure

If the sensor does not generate a signal during the water fill phases, even though power is being supplied to the solenoid valve, the cause of this condition may be a closed water tap or clogged filter on the solenoid valve (with ensuing low water pressure). If this occurs, only a WARNING will be displayed and the cycle will continue for five minutes, after which time an ALARM will be signalled.

8.4 Tub water level control analogue pressure switch

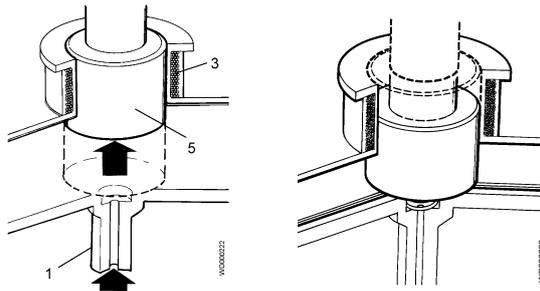
General characteristics

The electronic pressure switch is an analogue device that controls the water level in the tub, used in the models with electronic control system and it is directly connected to the main PCB.

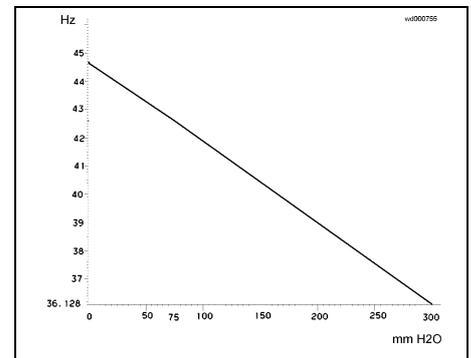


The pressure switch is connected via a pipe to the pressure chamber. When water is introduced into the tub, this creates a pressure inside the hydraulic circuit that causes the membrane to change position. This in turn modifies the position of the core inside the coil, thus changing the inductance and the frequency of the oscillating circuit. The PCB recognises how much water has been introduced into the tub according to the frequency.

1 Pipe
3 Oscillating coil
5 Core

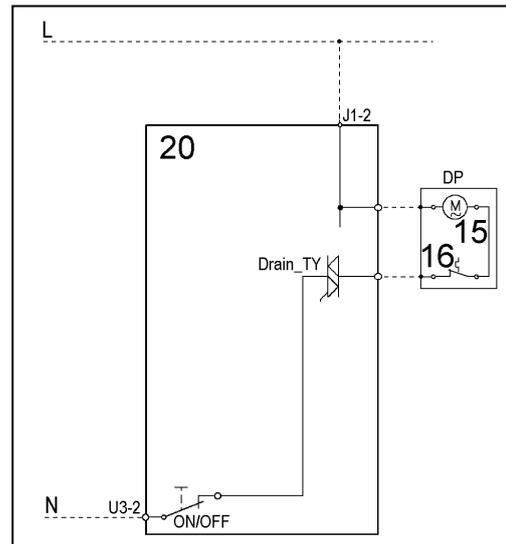


Operating frequency variation according to the quantity of water in the tub



8.5 Drain pump

- 15 Drain pump
- 16 Overload cut-out
- 20 PCB



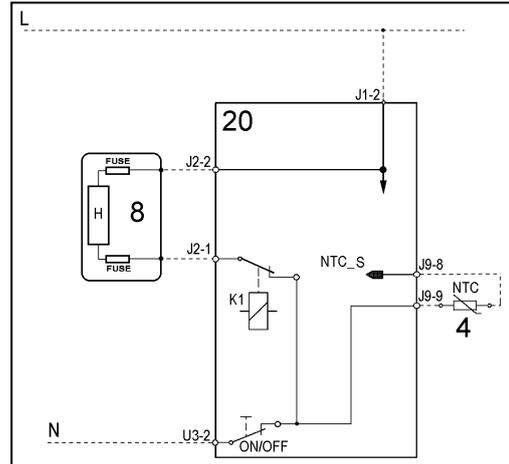
The PCB powers the drain pump via a TRIAC as follows:

- until the electronic pressure switch closes on empty, after which the pump is actuated for a brief period or passes to the subsequent phase
- for a pre-determined period (and possibly an alarm is displayed)

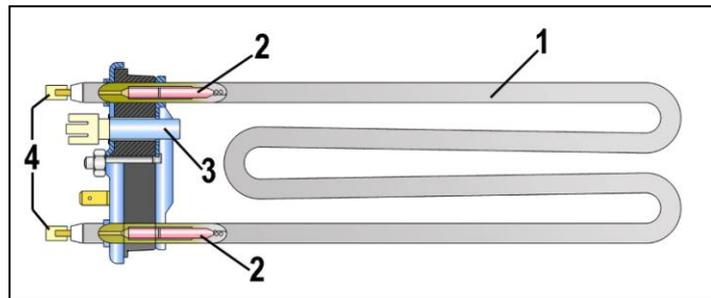
8.6 Reheating



- 4 NTC temperature sensor
- 8 Heating element (with thermal fuses)
- 20 PCB
- K1 Relay



- 1. Tubular casing
- 2. Thermal fuses
- 3. NTC probe
- 4. Connectors



The heating element is powered by a relay (K1) of the PCB and it is fitted with two thermal fuses, which interrupt if the temperature degree exceeds the values to which they are calibrated.

WARNING

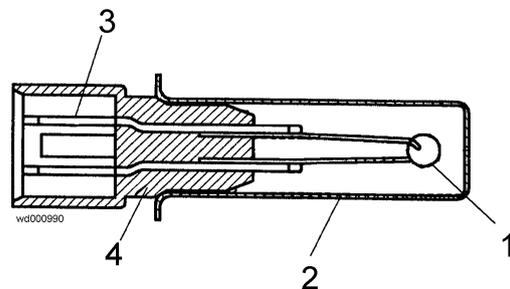


When replacing the heating element, do so with one that has the same characteristics so as not to compromise the safety of the appliance.

8.7 Temperature probe

Temperature is controlled by the PCB by means of an NTC temperature sensor incorporated into the heating element.

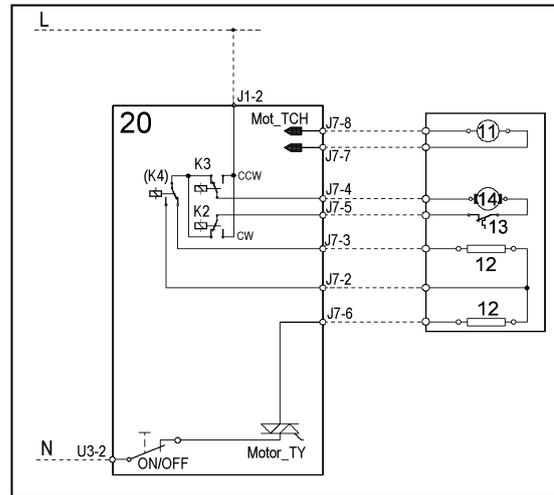
- 1. NTC heating element
- 2. Metallic capsule
- 3. Terminals
- 4. Plastic casing



TEMPERATURE (°C)	RESISTANCE (Ω)		
	Rated value	Maximum value	Minimum value
20	6,050	6,335	5,765
60	1,250	1,278	1,222
80	640	620	660

8.8 Universal motor

- 11 Tachometric generator
- 12 Stator
- 13 Protector
- 14 Rotor
- 20 PCB



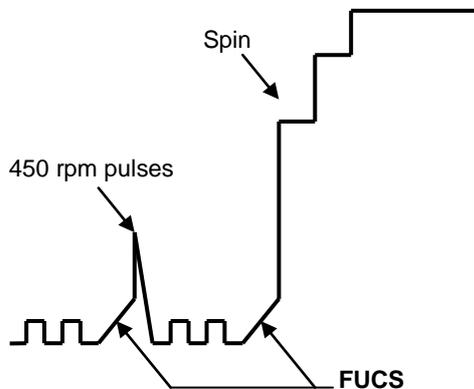
8.8.1 Power supply to motor

The PCB powers the motor via a TRIAC switch; the direction of rotation is reversed by switching the contacts on the two relays (K2-K3), which modify the connection between the rotor and the stator. In certain models, a third relay (K4) is used to power the stator (full or half field) according to the spin speed. The motor speed is controlled by the signal from the tachometric generator. During the spin phases, the micro-processor performs the anti-foam and the anti-balancing check procedure.

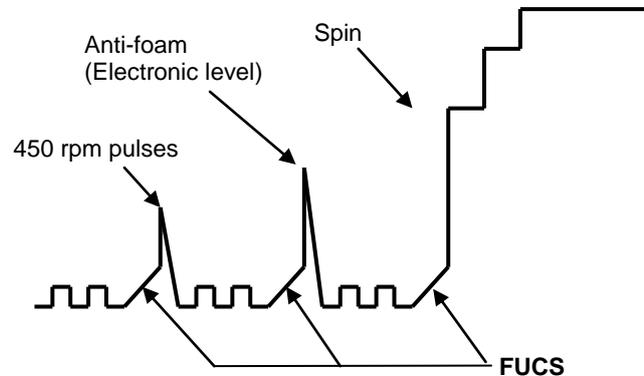
8.9 Anti-foam control system

The anti-foam control procedure is performed using the electronic pressure switch.

Spin phase without foam



Spin phase with little foam

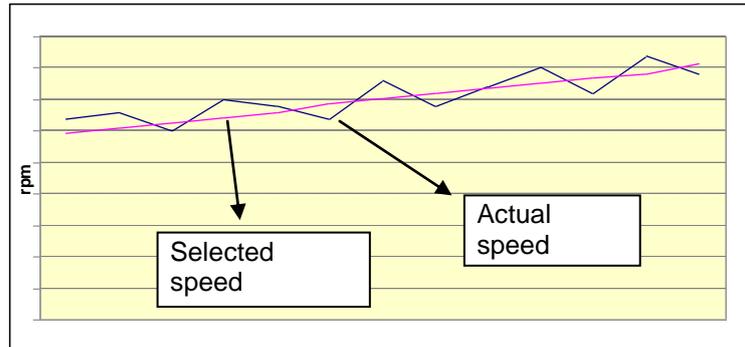


- **Spin with little foam:** if the contact of the electronic pressure switch closes on “full”, the spin phase is interrupted; the drain pump continues to operate and, when the contact returns to “empty”, the spin phase is resumed.
- **Spin with excess foam in the tub (critical situation):** this is recognised if the pressure switch senses full level on 5 occasions (five spin interruptions). If this occurs, the spin phase is skipped, and a one-minute drain cycle is performed with the motor stationary and, in the case of a washing phase, a supplementary rinse is added.

8.10 “FUCS” (Fast Unbalance Control System)

The control procedure for unbalanced loads is performed dynamically, before each spin cycle, as described below.

- ↪ The phase begins at a speed of 55 rpm; the speed can never fall below this threshold, otherwise the check is repeated.
- ↪ At intervals of 300 ms, the balance is calculated and compared with pre-determined limits; if the value is less than the minimum limit, the speed of the drum is increased by a certain value depending on the transmission ratio between motor pulley/drum; if the unbalancing is higher, it is decreased by the same value. The reduction in the speed of the drum distributes the laundry correctly; this procedure is repeated until the wash load is completely balanced.
- ↪ Correct balancing of the wash load is achieved at a speed of 115 rpm, after which the spin cycle begins.



The Unbalancing Control function takes place in different phases: each phase is characterised by:

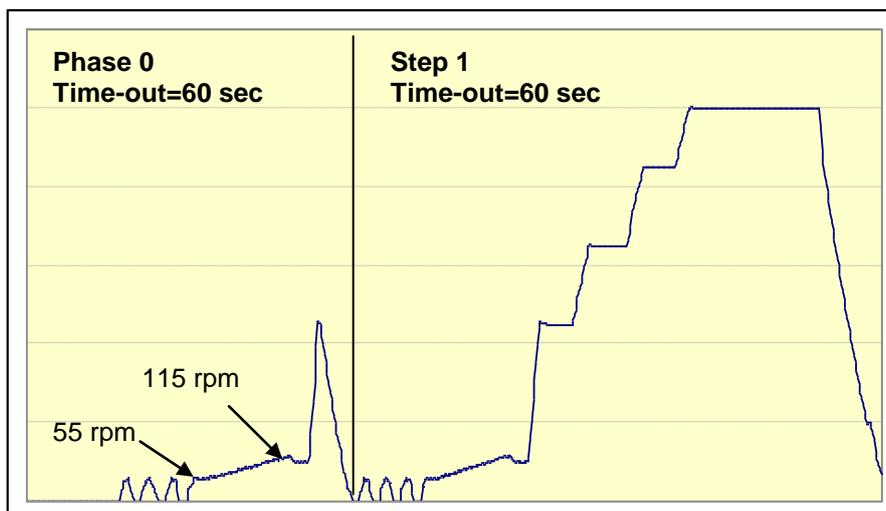
- ↪ an unbalancing index (0-1-2-3)
- ↪ an unbalancing threshold value (e.g. 850, 350, 650, 1,100 rpm)
- ↪ a time out (max. time)

• Ending of the FUCS balancing phase

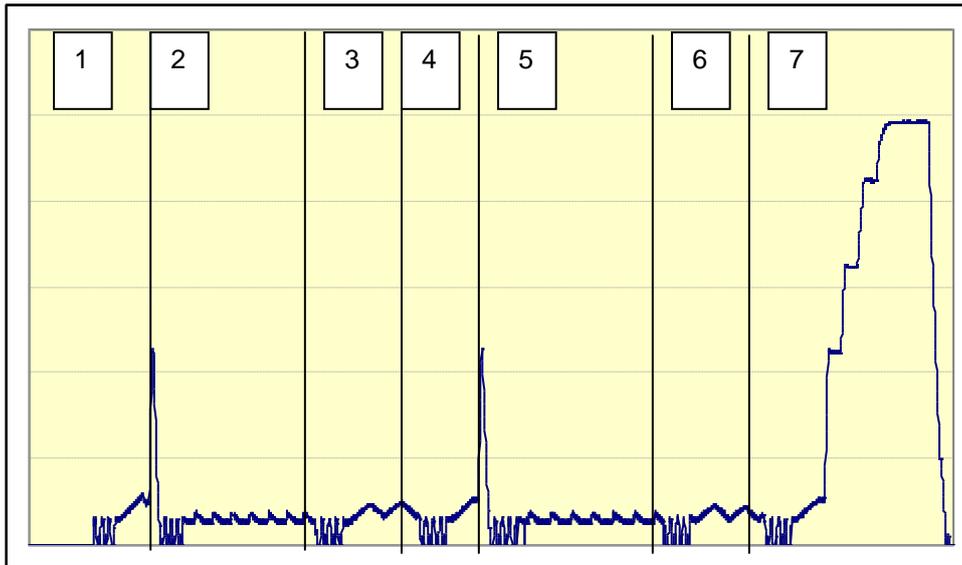
The phase ends when:

- ↪ The drum rotation speed is 115 rpm (or 85 rpm in some cases of unbalancing index). In this case the spin is performed.
- ↪ In some cases the optimal balancing value is not reached: a reduced spin is performed depending on the level of unbalance.
- ↪ In the worst case scenario, in which all phases are not sufficient to reach a minimum balancing value, the spin is not performed.

• Example of perfect balancing



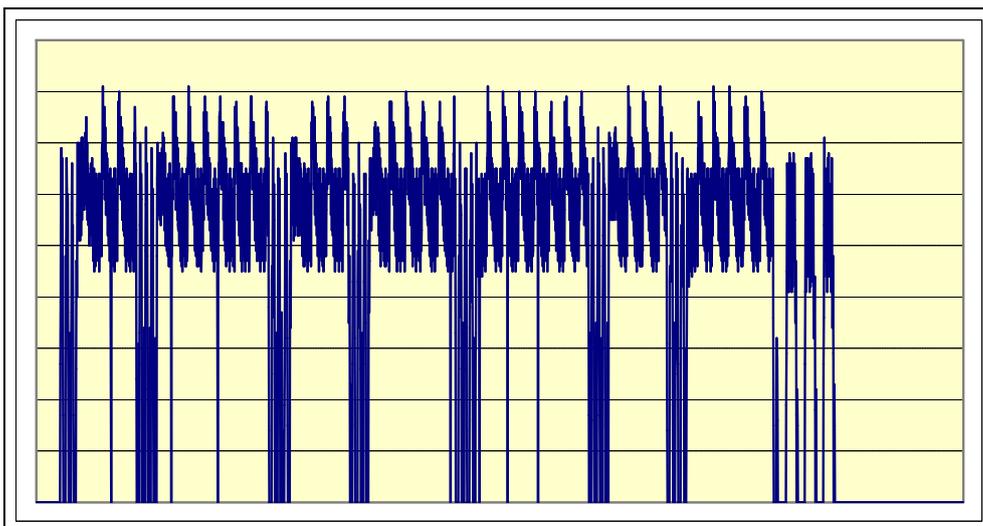
- **Balancing in the longest available time interval**



Phase	Unbalancing index	Time-out (sec.)
1	0	60
2	1	120
3	2	60
4	3	90
5	1	120
6	2	90
7	3	90

- **Unbalancing after all phases**

In this case the spin (or pulse) is not performed.



9 Alarm Summary Table

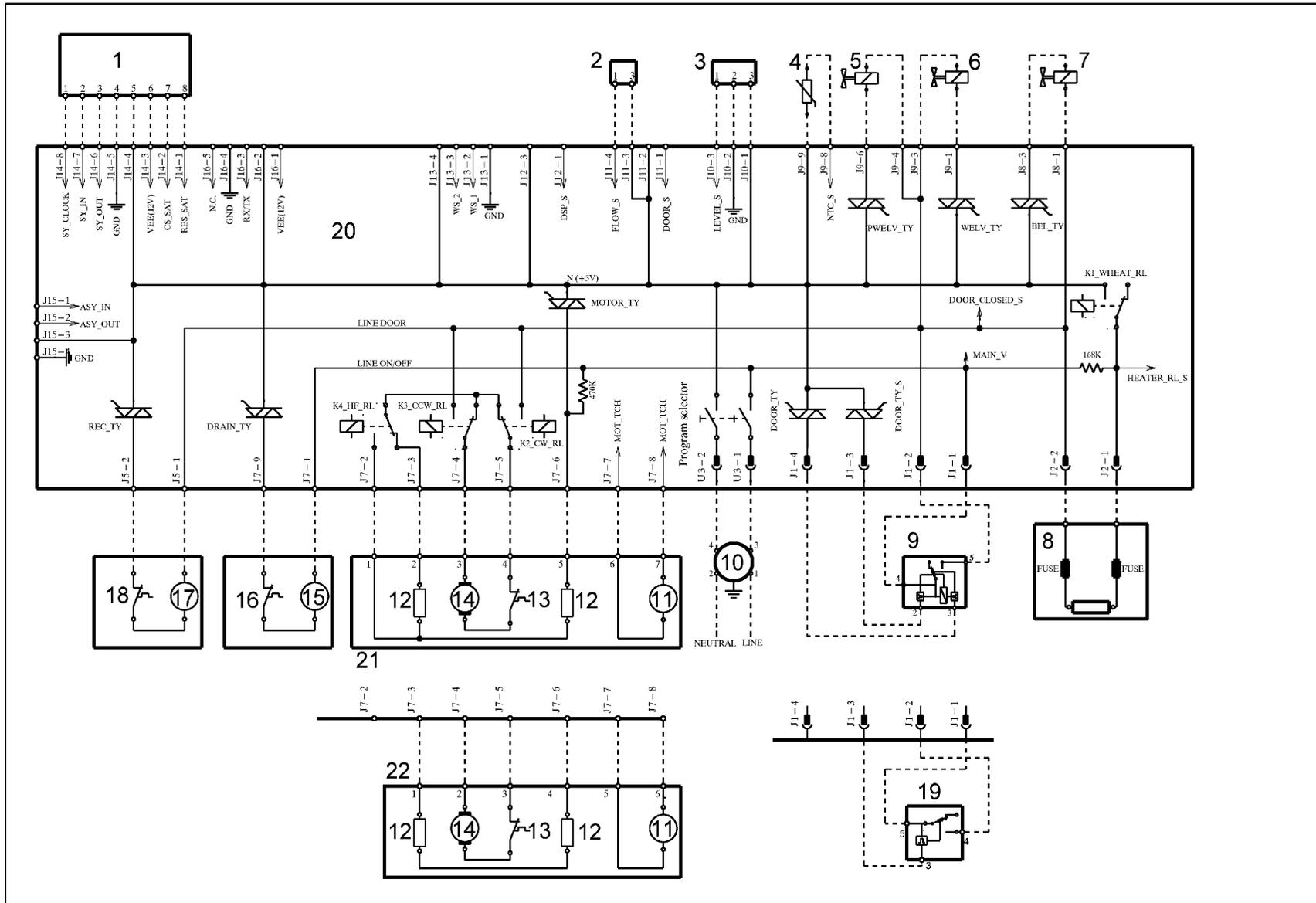
Alarm	Description	Possible fault	Machine status/action	Reset
E00	No alarm	-----	-----	-----
E11	Water fill difficulty during washing	Tap closed or water pressure too low; Drain pipe improperly positioned; Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; Main PCB faulty.	Cycle is paused with door locked	START/RESET
E13	Water leaks	Drain pipe improperly positioned; Water pressure too low; Water fill solenoid valve faulty; Water circuit on pressure switch is leaking/clogged; Pressure switch faulty.	Cycle is paused with door locked	START/RESET
E21	Drain difficulty during washing	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Wiring faulty; Drain pump faulty; Pressure switch faulty; Main PCB faulty.	Cycle is paused (after 2 attempts)	START/RESET
E23	Faulty TRIAC for drain pump	Wiring faulty; Drain pump faulty; Main PCB faulty.	Safety drain cycle - Cycle stops with door open	RESET
E24	Malfunction in drain pump TRIAC sensing circuit (incorrect microprocessor voltage input)	Main circuit board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET
E31	Malfunction in electronic pressure switch circuit (pressure switch signal frequency out of limits)	Wiring; Electronic pressure switch; Main PCB.	Cycle stops with door locked	RESET
E32	Calibration error of the electronic pressure switch (the electronic pressure switch generates a signal with unstable frequency during the drain phase)	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Pressure switch water circuit leaks; Pressure switch; Wiring; Main PCB.	Cycle is paused	START/RESET
E35	Overflow	Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Wiring faulty; Pressure switch faulty; Main PCB faulty.	Cycle interrupted. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
E38	Internal pressure chamber is clogged (water level does not change for at least 30 sec. of drum rotation)	Motor belt broken; Water circuit on pressure switches clogged.	Heating phase is skipped	ON/OFF RESET
E3A	Faulty sensing by heating element relay (input voltage to microprocessor always 5 V)	Main circuit board faulty.	Cycle stops with door locked	RESET
E41	Door open (after 15 sec.)	Check whether the door is closed properly; Wiring faulty; Door safety interlock faulty; Main circuit board faulty.	Cycle is paused	START/RESET
E42	Problems with door lock	Wiring faulty; Door safety interlock faulty; Electrical current leak between heating element and ground; Drain PCB faulty.	Cycle is paused	START/RESET

Alarm	Description	Possible fault	Machine status/action	Reset
E43	Faulty TRIAC supplying power to door delay system	Wiring faulty; door safety interlock faulty; Main circuit board faulty.	(Safety drain cycle) Cycle blocked	ON/OFF RESET
E44	Faulty sensing by door delay system	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	ON/OFF RESET
E45	Faulty "sensing" by TRIAC on door delay system (wrong microprocessor input voltage)	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	ON/OFF RESET
E51	Motor power TRIAC short-circuited	Current leakage from motor or from wiring; Main PCB faulty.	Cycle stops with door open (after 5 attempts)	RESET
E52	No signal from motor tachometric generator	Wiring faulty; Motor faulty; Main circuit board faulty.	Cycle stops with door locked (after 5 attempts)	RESET
E53	Motor TRIAC "sensing" circuit faulty (incorrect microprocessor input voltage)	Main circuit board faulty.	Cycle blocked	RESET
E54	Motor relay contacts sticking (voltage level high when the relay switches to OFF)	Current leakage from motor or from wiring; Main PCB faulty.	Cycle blocked (after 5 attempts)	RESET
E61	Insufficient heating during washing	Wiring faulty; NTC probe for wash cycle faulty; Heating element faulty; Main PCB faulty.	The heating phase is skipped	START/RESET
E62	Overheating during washing (temperature higher than 88°C for more than 5 min.)	Wiring faulty; NTC probe for wash cycle faulty; Heating element faulty; Main PCB faulty.	Safety drain cycle Cycle stops with door open	RESET
E66	Heating element power relay faulty (inconsistency between sensing and relay status)	Main PCB faulty.	Safety drain cycle Cycle stops with door open	RESET
E68	Current leakage to ground (value of mains voltage different from main value)	Earth-leakage between heating element and earth.	Cycle blocked with door open	RESET
E69	Heating element interrupted	Wiring faulty; Heating element for washing interrupted (thermal fuse open); Main PCB faulty.	-----	START/RESET
E71	NTC probe for wash cycle faulty (short-circuited or open)	Wiring faulty; NTC probe for wash cycle faulty; Main circuit board faulty.	The heating phase is skipped	START/RESET
E74	NTC probe for wash cycle improperly positioned	Wiring faulty; NTC probe for wash cycle improperly positioned; NTC probe faulty; Main PCB faulty.	The heating phase is skipped	START/RESET
E82	Error in selector reset position	Main PCB faulty (incorrect configuration data).	-----	RESET
E83	Error in reading selector	Main PCB faulty (Incorrect configuration data).	Cycle cancelled	START/RESET
E91	Communication error between main PCB and display	Wiring faulty; Control/display PCB faulty; Main circuit board faulty.	-----	RESET
E92	Communication inconsistency between main PCB and display (incompatible versions)	Incorrect control/display PCB; Incorrect PCB (does not correspond to the model).	Cycle blocked	ON/OFF
E93	Appliance configuration error	Main PCB faulty (incorrect configuration data)	Cycle blocked	ON/OFF

Alarm	Description	Possible fault	Machine status/action	Reset
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data)	Cycle blocked	ON/OFF
E95	Communication error between microprocessor and EEPROM	Main circuit board faulty.	Cycle blocked	RESET
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked	RESET
E9b/E9H*	Communication error between microprocessor and FLASH memory	Display board;	-----	ON/OFF RESET
E9C	Appliance configuration error	Display board;	-----	ON/OFF RESET
E9d	Clock faulty	Display board;	-----	ON/OFF RESET
EC1	Blocked solenoid valve	Faulty wiring; Faulty/blocked solenoid; PCB faulty;	Cycle stops with door locked Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
EF1	Drain filter clogged (drain phase too long)	Drain hose blocked/kinked/too high; Drain filter clogged/dirty.	Warning displayed at the end of cycle (specific LED)	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 system faulty; Drain pump winding interruption/overheating.	Appliance drains	ON/OFF RESET
EF4	Low pressure of water load	Tap closed, water fill pressure too low.	-----	RESET
EF5	Unbalanced load	Final spin phases skipped.	-----	RESET
EF6	Reset	-----	No action to be performed, if continues, replace the main PCB	-----
Eb1/EH1*	Supply frequency of appliance outside the limits	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal frequency	ON/OFF
Eb2/EH2*	Supply voltage too high	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions	ON/OFF
Eb3/EH3*	Supply voltage too low	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions	ON/OFF

*See page 16

9.1 WM Diagram with UNIVERSAL MOTOR



- WM diagram key with UNIVERSAL MOTOR

Appliance electrical components	PCB components	
1. Display board	DOOR_TY	Door interlock TRIAC
2. Flowmeter	DRAIN_TY	Drain pump TRIAC
3. Analogue pressure switch	REC-TY	Circulation pump TRIAC switch
4. NTC temperature probe	K1	Heating element relay
5. Pre-wash solenoid valve	K2	Motor relay: clockwise rotation
6. Wash solenoid valve	K3	Motor relay: anti-clockwise rotation
7. Bleach solenoid valve	K4	Motor relay: half-range power supply
8. Heating element (with thermal fuses)		(some models)
9. Door safety interlock (instantaneous)	MOTOR_TY	Motor TRIAC
10. Noise filter	ON/OFF	Main switch (programme selector)
11. Tachometric generator (motor)	PWELV_TY	Pre-wash solenoid TRIAC
12. Stator (motor)	WELV_TY	Wash solenoid TRIAC
13. Thermal cut-out (motor)	BEL_TY	Electronically controlled TRIAC bleach valve
14. Rotor (motor)		
15. Drain pump		
16. Thermal cut-out (drain pump)		
17. Circulation pump		
18. Thermal cut-out (circulation pump)		
19. Door safety interlock (with PTC)		
20. PCB		
21. Motor with half-range		
22. Motor without range		

10 ACCESS

10.1 Worktop

Remove the screws that secure it to the back panel.



Pull it out from the back.



10.2 From the worktop, you can access

1. Solenoid valves
2. Control panel
3. Main board/display assembly
4. Electronic pressure switch
5. Long detergent dispenser
6. Detergent fill pipe
7. Noise filter



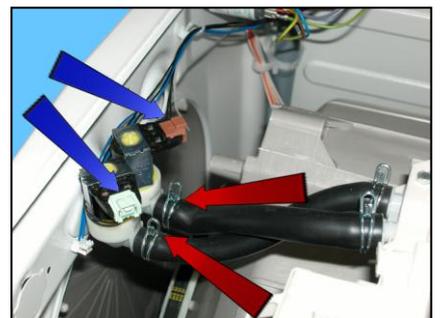
10.2.1 Solenoid valve

Remove the worktop (see relevant paragraph).

Detach the connectors indicated by the blue arrows.

Pull out the pipes indicated by the red arrows, which connect the solenoid valve to the detergent dispenser.

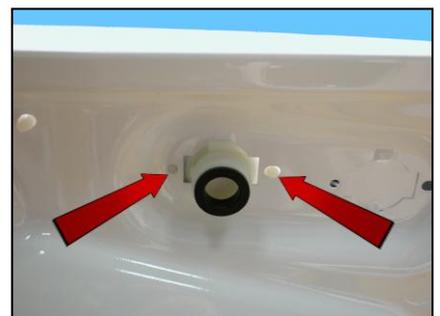
The pipes are crossed over when reassembling



Unscrew the water fill pipe from the solenoid valve.

Push the two retainers indicated by the arrows towards the inside of the appliance.

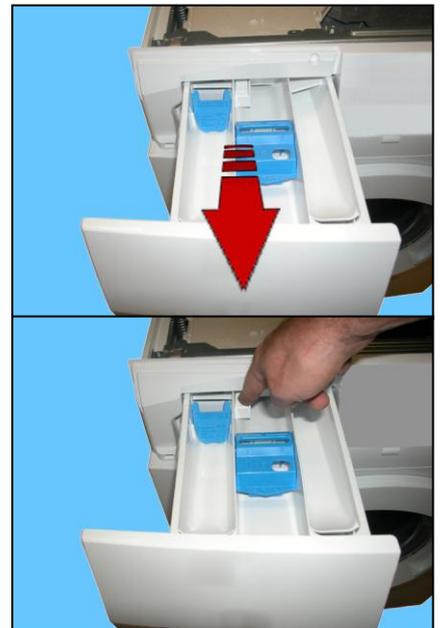
At the same time, turn the solenoid valve to remove it.



10.2.2 Control panel

Remove the worktop (see relevant paragraph).

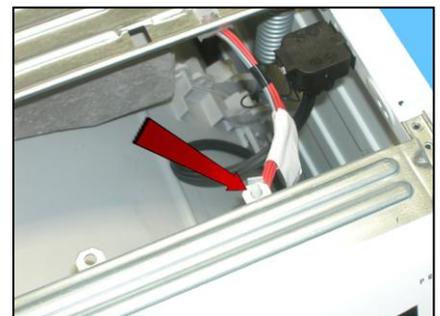
Pull the detergent dispenser out and at the same time press the stop locking it in place.



Loosen the screws that attach the control panel to the detergent tray.



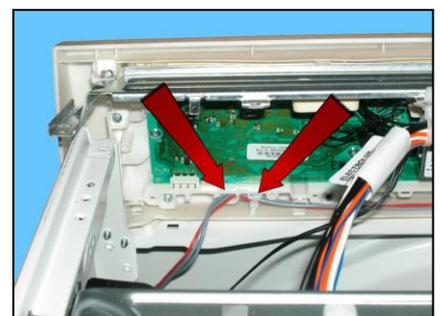
Pull out the clamp from the crosspiece.



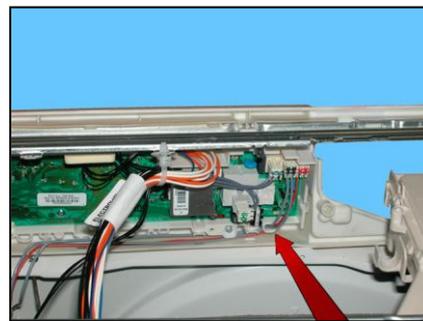
Remove the four screws which secure the crosspiece to the cabinet.
Remove the screws which secure the crosspiece to the detergent dispenser.



Cut the clamp, unhook the cable from the hook indicated by the arrows.



Unhook the cable from the hook indicated by the arrow.



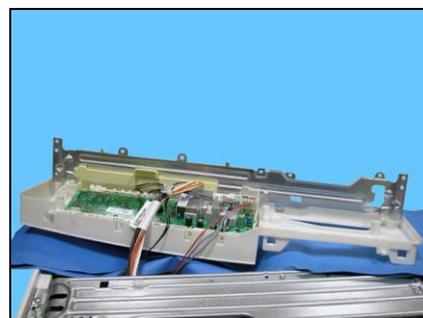
Raise both sides of the panel so as to pull out the hooks which secure it to the front panel.



Release the anchor tab which secures the detergent dispenser to the crosspiece.

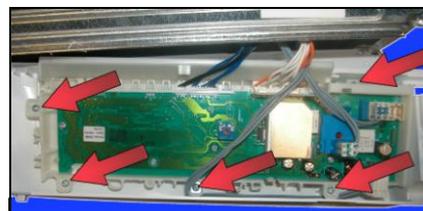


Remove the control panel and position it as shown in the figure, making sure you introduce a protection to prevent scratching it.

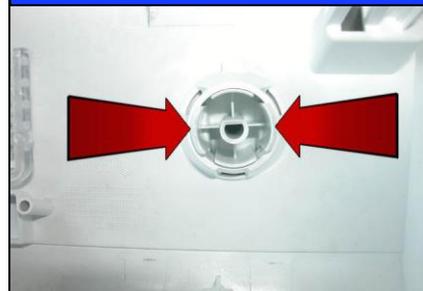


10.2.3 Main board/display assembly

Remove the screws and release the hooks which secure the PCB casing to the control panel.



Before fitting the new PCB, extract the knob by pressing the hooks indicated by the arrows as shown in the figure.



When re-assembling, repeat the same operations in reverse order and take care to position the cabling and knob correctly.

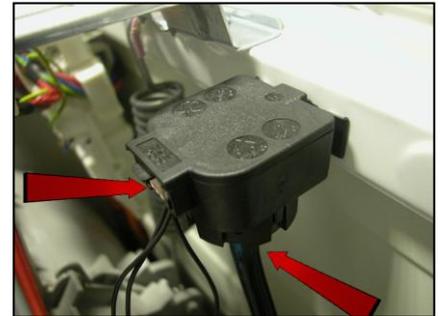


Replace the cut clamps with new ones.

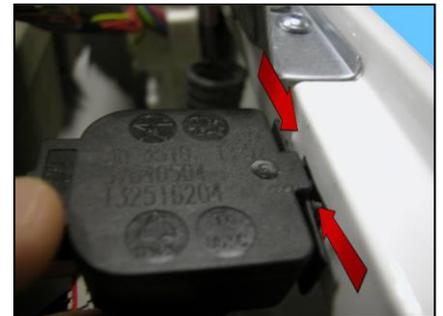
10.2.4 Analogue pressure switch

Remove the worktop (see relevant paragraph).

Remove the connector.
Pull out the small tube which connects it to the pressure chamber.



Tighten the two tabs which secure it to the cabinet and remove it.



10.2.5 Detergent dispenser (long)

Remove the worktop (see relevant paragraph).

Remove the pipes that connect it to the solenoid valves.

Remember that they should be crossed over during re-assembly

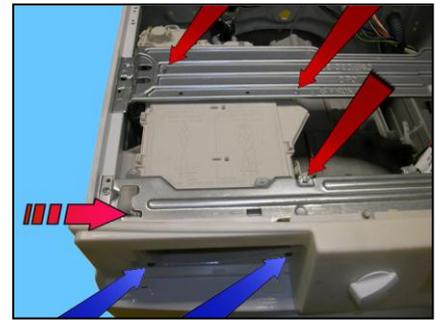


Unfasten the screw in the clamp that fixes the detergent loading pipe to the tray, and remove it from its housing.



Extract the detergent dispenser.

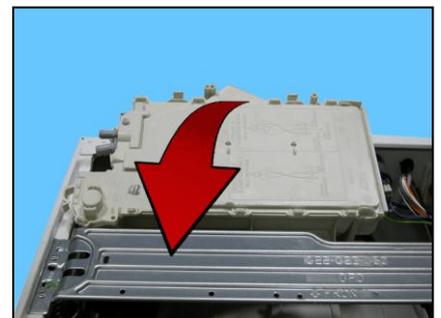
Remove the screws that secure it to the control panel (light blue arrows).
 Loosen the screws that hold it to the central crossbar and the controls crossbar (red arrows).
 Release the anchor tab which secures the detergent dispenser to the crosspiece (red dotted arrow).
 Move the dispenser towards the back.



Press the washing unit downwards.
 Simultaneously rotate the dispenser as shown by the arrow.



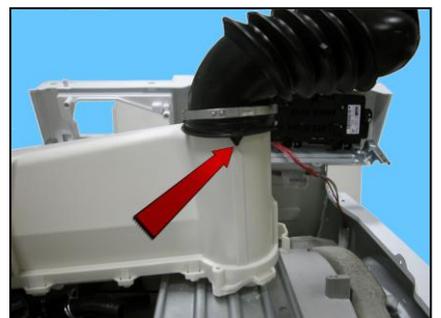
Remove the detergent dispenser.



10.2.6 Detergent fill pipe

Remove the worktop (see relevant paragraph).
 Remove the detergent tray (see relevant paragraph).

Pull out the pipe from the detergent dispenser after breaking/loosening the clamp between the detergent dispenser and the detergent loading pipe.
 When reassembling, use a new clamp with the same characteristics.
 The size of the clamp to use is 65.5 mm.
 When introducing the pipe into the dispenser, make sure the two references are aligned.



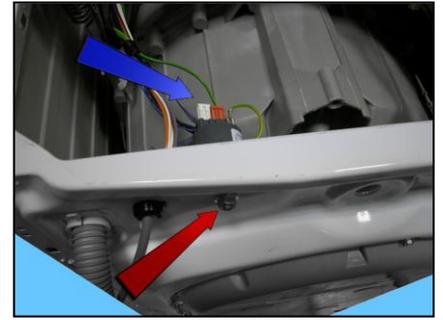
Before tightening the clamp check that the two references between the detergent loading pipe and the drum pipe are aligned.



10.2.7 Noise filter

Remove the worktop (see relevant paragraph).

Disconnect the connectors (Blue arrow).
Unscrew the bolt that holds it on to the back.

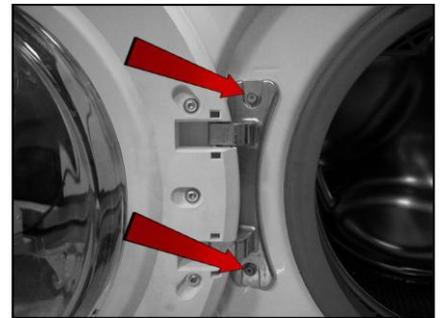


10.3 Accessing the front part

1. Door and Door Hinge
2. Door safety interlock
3. Drum light
4. Bellow seal
5. Blade
6. Front panel

10.3.1 Door hinge – Door

To replace the hinge, loosen the screws securing it to the cabinet.



To access the door, loosen the screws joining the two front and rear door frames together.



10.3.2 Door safety interlock

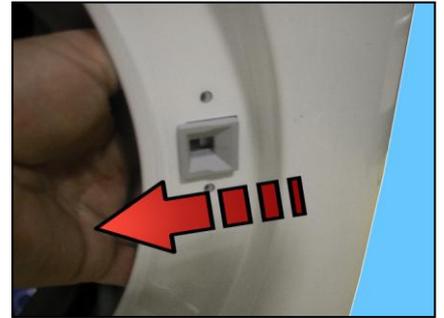
Remove the iron ring securing the bellow seal to the cabinet.
Remove the part of the bellow seal concerned from the unit.



Unfasten the two screws securing the door safety interlock to the front panel.



Take the device and move it to the left.



Turn it towards the inside (right-hand side of the flange).



Pull it out towards the right and remove it.



Pull out the wiring protection from the door safety interlock.
Disconnect the connector.



To reassemble the door safety interlock, repeat the same tasks in reverse order.

If difficulties arise when inserting the flange, press the washing unit inwards.

Before tightening the screws to secure the door safety interlock to the front panel, make sure the flange is positioned properly on the outside as indicated by the arrows.

Tighten the screws at a torque of 2.5 Nm.



10.3.3 Bellow seal

Remove the iron ring securing the bellow seal to the cabinet.
Release the bellows seal from the front panel.

Take the seal out of the welded tub.
(take care as the seal is held in position by a snap ring).

When reassembling the seal.
Lubricate with liquid soap the part where the tub is inserted.
Make sure the references are aligned.
Reassemble the snap ring between the door bellow seal and the tub.
Where featured, reposition the Jet pipe and the lamp in their seats.
Reassemble the iron ring between the door bellow seal and the cabinet.

10.3.4 Blade

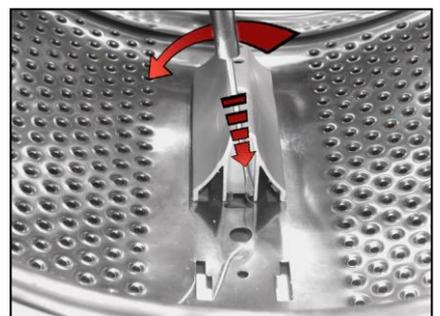
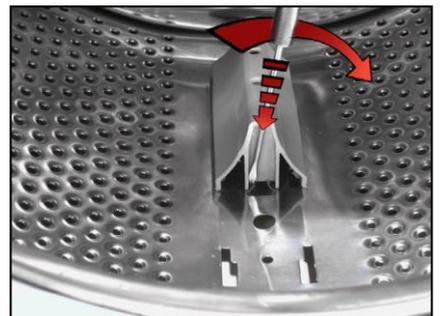
This blade is secured to the drum with slides and secured with blades carved into the drum.

To remove it from the drum:

Insert a flat-tip screwdriver into the third hole, counting from the first one.

The screwdriver with the handle tilted towards the right.
Push the left-hand tab downwards.

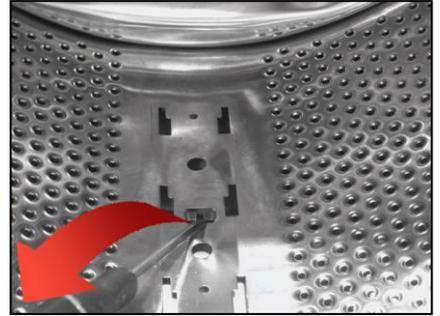
The screwdriver with the handle tilted towards the left.
Push the right-hand tab downwards.



When the two tabs are down.
Move the blade towards the front of the drum, and if necessary squash the blade at the two ends.



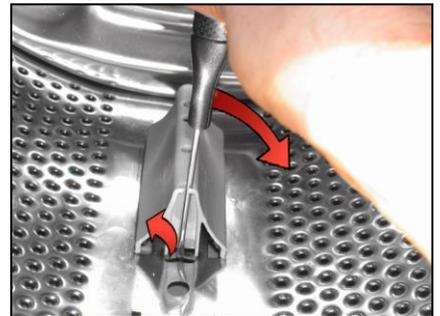
Before securing the new blade.
insert a screwdriver beneath the tabs and raise them a little.



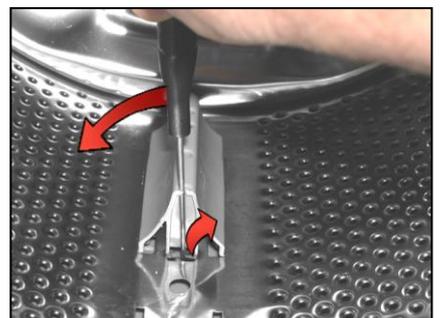
Position the new blade inside the drum guides.
Push it towards the back.



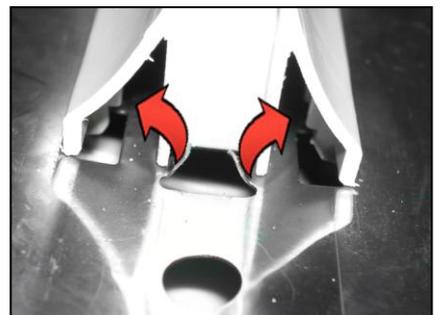
Insert the screwdriver (in the central slot of the left-hand row) at a right angle to the blade, so as to position it at the centre of the two drum tabs.
Tilt it towards the right so that the left tab moves upwards.



With the screwdriver still inserted in the slot.
Tilt it towards the left so that the right tab moves upwards.



With the tabs raised, the blade is secured to the drum.



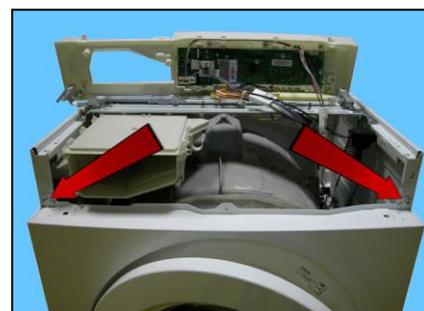
10.3.5 Front panel

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the iron ring, remove the door bellow seal from the front panel.
Unfasten the screws securing the door safety interlock.

Tilt the washing machine towards the back.
Unfasten the three screws securing the front panel at the bottom.



Remove the four screws which secure the front panel to the sides.



Remove the front panel.



10.4 From the front panel, you can access

The front counterweight
The shock absorbers
The drain water circuit
The pressure chamber
The welded tub assembly
The tub suspension springs

10.4.1 Front counterweight

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the front panel (see relevant paragraph).

Unfasten the five screws securing the front counterweight to the welded tub assembly.

If the welded tub assembly is new, tighten the screws at a torque of 15 Nm.
If the welded tub assembly is not new, align with the existing thread and tighten the screws at a torque of 10÷12 Nm.



10.4.2 Shock absorbers

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the front panel (see relevant paragraph).

Pull out the pins securing it to the tub and lower crosspiece.



Work on the dampers can be carried out even from the bottom of the appliance see page 54.

To reposition the pins, see para. 10.5 page 53.

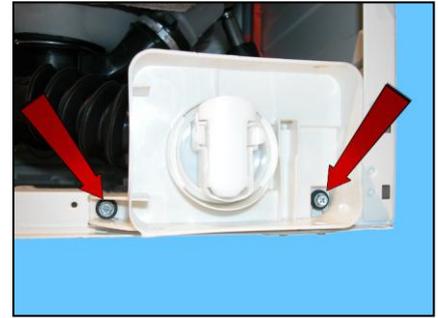
10.4.3 Drain water circuit

Before intervening to carry out a repair on the draining circuit, drain off the water.

10.4.3.1 Filter body

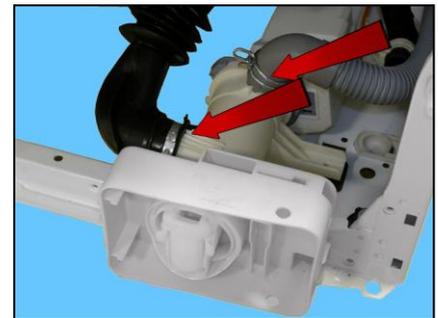
Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the front panel (see relevant paragraph).

Loosen the screws securing it to the front crossbar.



Pull out the main drain pipe.
Slacken the clamp that holds the tub drain pipe to the filter unit assembly.

When re-assembling, replace the broken clamp with an original new one (40.5 mm).



Lift the filter body to extract the support inserted on the side crossbar.

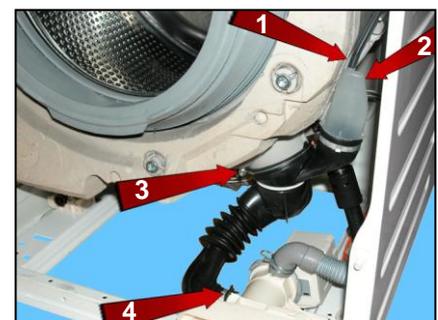
Taking care with the wires that connect the pump.



10.4.3.2 Tub drain pipe

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the front panel (see relevant paragraph).

Remove the tube from the pressure chamber (1).
Loosen the screws that hold the pressure chamber to the tub (2).
Loosen the screws that tighten the clamp that holds the draining pipe to the tub (3).
Break the clamp that holds the tub drain pipe to the filter unit assembly (4).



When re-assembling, replace the broken clamp with an original new one (40.5 mm).

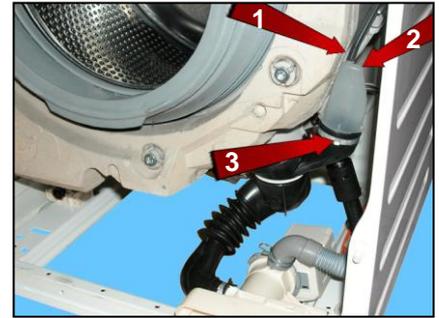
When replacing the clamp that holds the pressure chamber to the tub draining pipe, use an original 52.5 mm clamp.

10.4.3.3 Pressure chamber

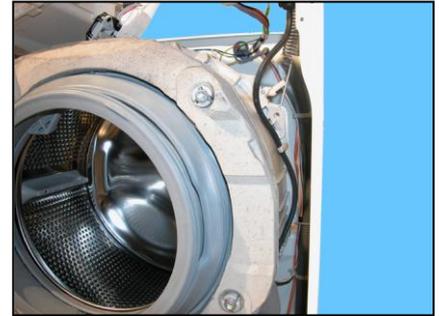
Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the front panel (see relevant paragraph).

Remove the tube from the pressure chamber (1).
Loosen the screws that hold the pressure chamber to the tub (2).
Break the clamp that holds the tub drain pipe to the pressure chamber (3).

When re-assembling, replace the broken clamp with an original new one (52.5 mm).



Check that the pipe that connects the pressure chamber to the pressure switch, is positioned in the slots arranged around the welded tub, (as shown in the diagram).



10.4.3.4 Main drain pipe

Use a pair of pliers to tighten the tabs on the clamp that hold the general draining pipe to the filter unit.
Pull out the main drain pipe.



When re-assembling, arrange the pipe in contact with the foam and insert it into the clamps placed there to hold it.



10.4.4 Welded tub assembly

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the front panel (see relevant paragraph).
Remove the detergent tray (see relevant paragraph).
Remove the front counterweight (see relevant paragraph).
Remove the back panel (see relevant paragraph).
To remove the washing unit assembly, disconnect:
All the tub pipes, the wiring connectors that connect the heating element, the NTC probe, remove the belt and the motor (to lighten the tub).
Lay the appliance on its back (making sure you place a polystyrene or cardboard layer on the floor to prevent damaging the cabinet).
Take the tub out of the washing machine.

10.4.5 Tub suspension springs

- Left spring

Attach the spring as shown in the figure: the shortest leg faces towards the side, whereas the longest leg faces towards the welded tub.

The hole where the spring should be inserted depending on the system used, is shown at the centre of the crossbar.



- Right spring

The instructions provided for the left spring also apply to the right spring.

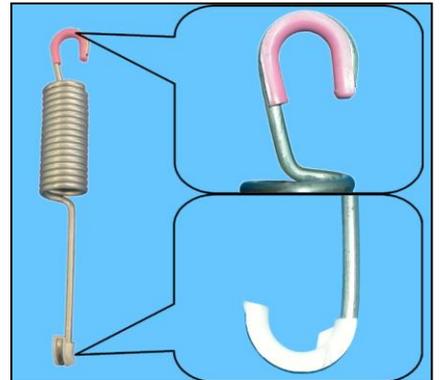


When reattaching the springs (after repair work which required their removal), make sure that the bushings shown in the figure are featured on both ends (the colour of the bushings in the photos below may vary).

Pay attention to the differences between the bushings (see enlarged details). Spare bushings are available, under the following codes:

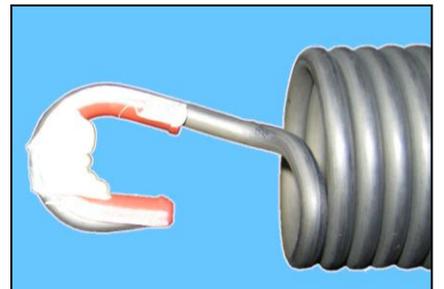
Upper bushing Code 405 50 62-51/9

Lower bushing Code 405 50 62-52/7



Apply some grease on either end of the spring.

Use grease Code 5026 24 16-00/6

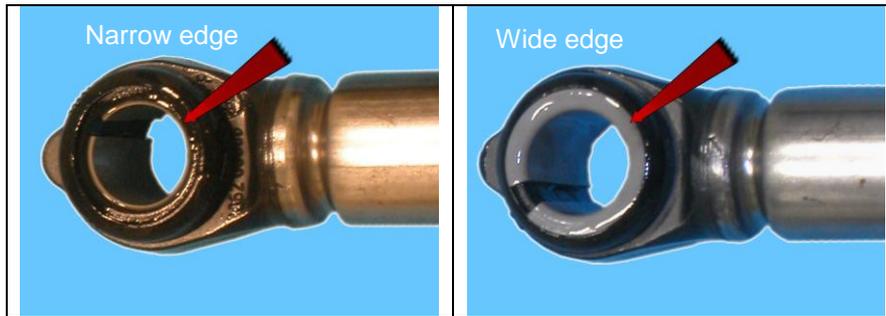


Attachment position of springs to top crosspiece.

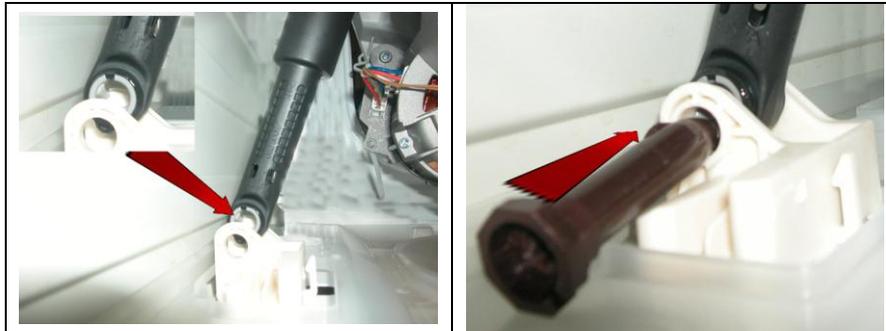


10.5 Shock absorber pin

There is a bushing on either end of the shock absorber. It has a wider profile on one end to avoid it becoming dislodged when the pin is inserted (see the two figures below).



When positioning the shock absorber inside the fastening (situated at the bottom of the cabinet or in the tub), take care when positioning the bushing, so as to insert the pin from the part of the bushing with the widest profile. The spare bushing is supplied under Code 344 91 25-30/5.



If you are having difficulty inserting the pin, grease it a little (Code 5026 24 16-00/6).

10.6 From the bottom of the appliance, you can access

Lay the appliance on its left side (as seen from the front) putting down protection to avoid scratching/damaging the unit.

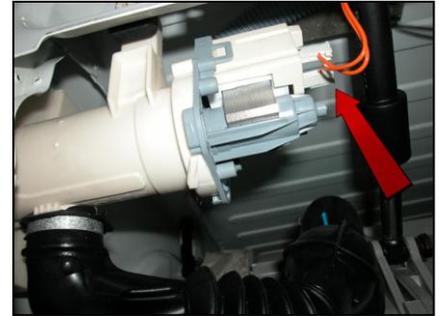
The drainage pump.
The shock absorbers.

10.6.1 Drainage pump

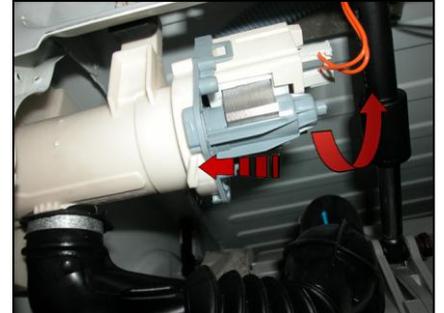
Remove the protection.



Disconnect the connectors.



Push the lock catch that attaches the pump to the filter unit assembly. Turn the pump in the direction shown by the arrow.



If the lock catch securing the pump to the filter body breaks. Use a screw size 3.5x19 Code 5024 79 51-00/2. Screw it into the slot indicated by the arrow.



10.6.2 Shock absorbers



10.7 Accessing the rear part

10.7.1 Back panel

Loosen the screws that fix it to the cabinet.



10.8 From the back panel, you can access

1. Belt
2. Plastic pulley
3. Motor
4. Resistance
5. Shock absorber



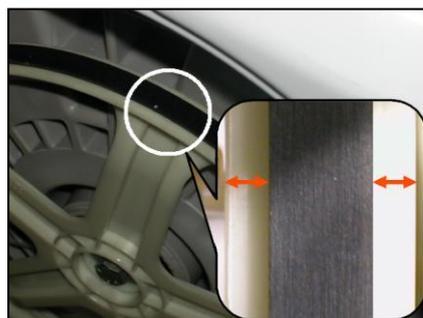
10.8.1 Belt

Remove the back panel (see relevant chapter).
Take the belt, turning the pulley, and remove it.



When reassembling:
Position the belt and align it with the centre of the pulley as shown in the figure.

Turning the pulley, check that the belt positions itself and remains in the central part of the pulley.



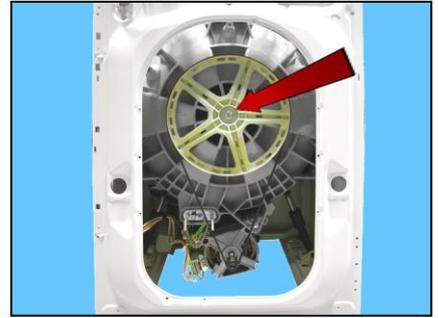
If necessary, adjust the position of the belt on the drive pulley, so that it is correctly positioned.



10.8.2 Plastic pulley

Remove the back panel (see relevant chapter).
Remove the belt (see relevant chapter).
Insert a retainer to secure the pulley in place.
Unfasten the screw securing the pulley to the drum shaft.

Tighten the screw at a torque of 60 Nm.



10.8.3 Motor

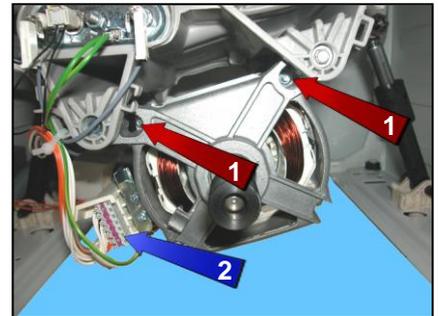
Remove the back panel (see relevant chapter).
Remove the belt (see relevant chapter).

Loosen the two front fastening screws (1) and the rear ones (not visible in the figure).
Disconnect the connectors (2): for the power supply and earthing.

When reassembling, restore the connections.

If the clamp securing the wiring to the motor breaks, replace it with a new one.

Tighten the screws at a torque of 5 Nm.

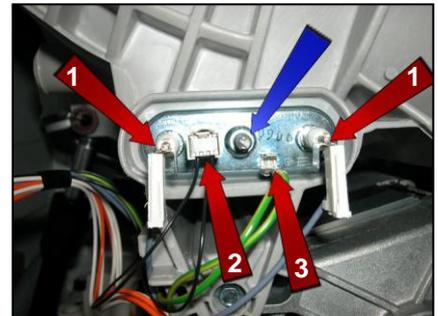


10.8.4 Resistance

Remove the back panel (see relevant chapter).

Disconnect the connectors of the heating element (1), NTC probe (2) and earth (3) red arrows.
Unscrew the nut (blue arrow) and remove the heating element from its seat.

Tighten the nut at a torque of 4 Nm.



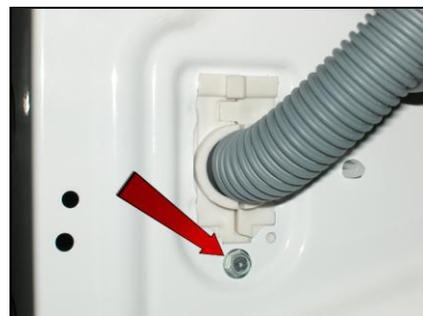
10.8.5 Drain pipe/wiring support

When fixing the drain pipe/wiring support make sure that the two stops (indicated by the red arrows) fit into their housings, locking the support to the unit.

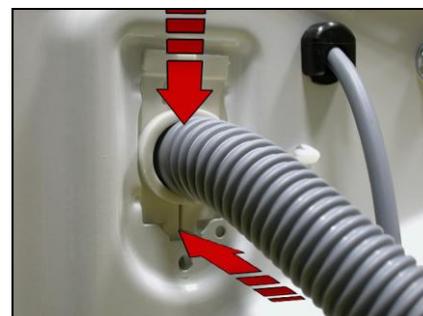
If the fixing is not stable and there is a risk of it coming out of its position, fasten the support to the unit with a screw (3.5x6.5 mm) screwed into the hole indicated by the blue arrow.

10.8.6 Drain pipe fastener

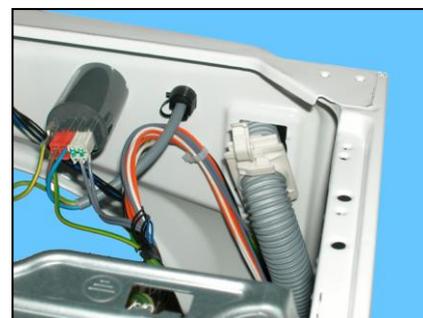
Loosen the screw that secures it to the cabinet.



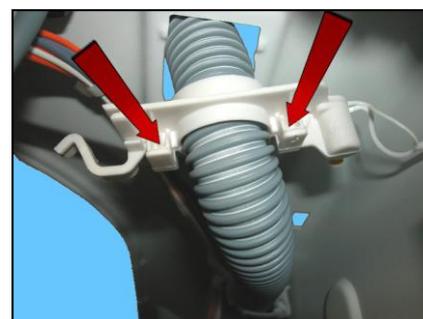
Push the lower part inwards and simultaneously push it downwards.



Remove it towards the inside of the appliance.

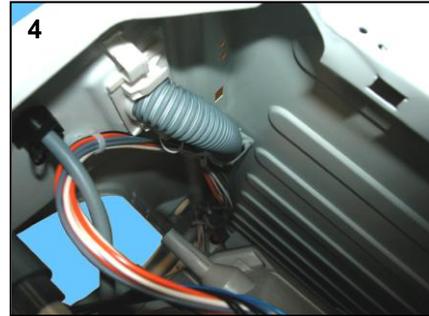


Push the two hooks indicated by the arrows to open the pipe fastener.



10.8.7 Main drain pipe

Arrange the drain pipe as shown in the figures.



REVISIONS:

Revision	Date	Description	Author	Approved by:
00	01/2013	Document Creation	DMM	XX – 0X/201X