



SERIES 7	SERIES 8	SERIES 9

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Washing machines

**with electronic control
system**

EWM10931

**Technical and functional
characteristics**

**NEW
COLLECTION**

SERIES

7 / 8 / 9

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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 EWM10931 electronic control system (SERIES 7/8/9).

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 (EWM10931 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:

- General characteristics
- Control panel and compatibility between washing programmes and options
- Settings: Demo, Diagnostics
- Alarms
- Technical and functional characteristics
- Access

Low consumption mode

In order to minimise electricity wastage when the cycle is not under way, appliances in this platform offer two ways of enabling a low consumption mode:

1. Stand-off

When the appliance is switched off at the ON/OFF button, it is in the "Stand-Off" or "virtual" off status. The LEDs and the LCD screen are turned off and the buttons are disabled, although the main circuit board and certain electrical components are electrically powered.

There are two ways to cut off the electricity supply: the first involves unplugging the appliance at the socket or incorporating a small electronic circuit referred to as Zero Watt (0 Watt) into the main circuit board to turn the appliance off automatically.

The auto off function combined with the Zero Watt (actual consumption ~50 mW) works in two ways:

- a.) 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).
- b.) 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 selecting phase, the programme and the options selected are cancelled and the basic programme appears when the appliance is turned back on.
 - If the cycle has instead 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.

If an alarm occurs during a washing programme, the auto off function is disabled, and an alarm is displayed.

2 WARNINGS



- **Any work on electrical appliances must only be carried out by qualified technicians.**
- **This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to cut the power supply.**
- **If the heating element needs replacing, replace it with one featuring the same characteristics (2 thermal fuses) so as not to compromise the safety of the appliance. It is strictly forbidden to remove/exchange the NTC probes from one heating element to another.**
- **Always empty the appliance of all the water before laying it on its side (see description on page 47).**
- **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.**

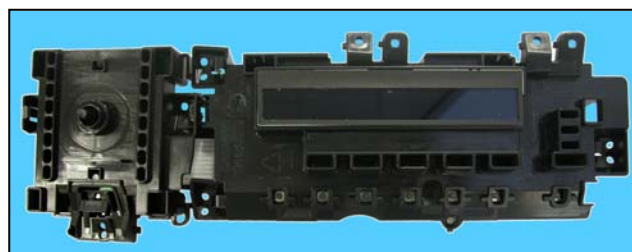
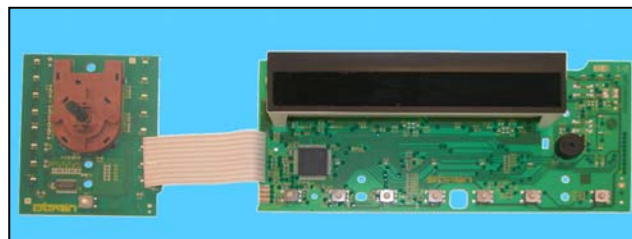


3 SERIES 7

3.1 General characteristics

The EWM10931 electronic control system consists of two circuit boards plus the motor control system (inverter).

- ↪ The control/display circuit board, inserted in a plastic box, secured to the control panel (the figure illustrates: the display circuit board with the side support plate onto which the selector is secured, connected to one another by a flat cable and the display circuit board assembly).



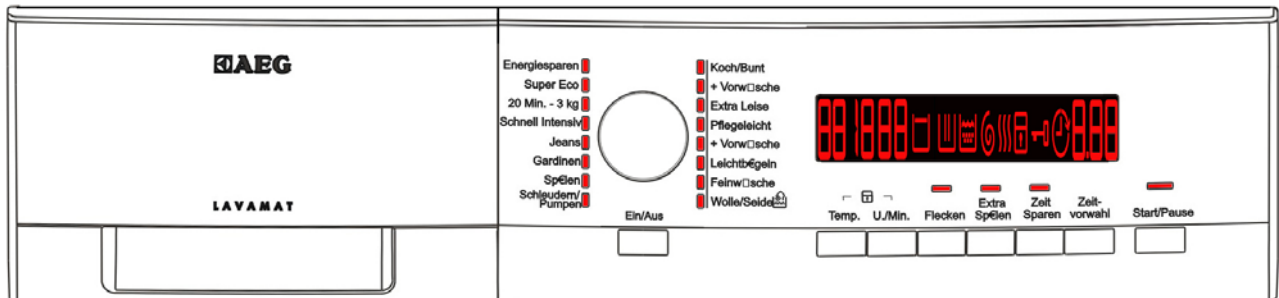
- ↪ The main circuit board is positioned at the rear of the appliance and powers the electrical components as well as communicating with the motor control board (Inverter) and receiving commands from the display board.

No. buttons	<ul style="list-style-type: none"> ▪ maximum 8 (6 options + start/pause + ON/OFF)
No. LEDs	<ul style="list-style-type: none"> ▪ maximum 20 + LCD
Programme selector	<ul style="list-style-type: none"> ▪ 16 positions (incorporated in the circuit board)
Serial port	<ul style="list-style-type: none"> ▪ DAAS-EAP communication protocol up to 115,200 baud
Power supply voltage	<ul style="list-style-type: none"> ▪ 220/240 V ▪ 50/60 Hz (configurable)
Washing type	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball” sphere ▪ Jet-System
Rinsing system	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball” sphere ▪ Jet-System
Motor	<ul style="list-style-type: none"> ▪ Two-pole asynchronous (three-phase), with tachometric generator
Spin speed	<ul style="list-style-type: none"> ▪ 400 ÷ 1,600 rpm
Anti-unbalancing system	<ul style="list-style-type: none"> ▪ AGS
Cold water filling	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 2 or 3 outlets
Hot water filling	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 1 outlet
Detergent dispenser	<ul style="list-style-type: none"> ▪ 3 compartments: prewash/stains, wash, fabric softeners ▪ 4 compartments: prewash, wash, stain remover and conditioners.
Control of water level in the tub	<ul style="list-style-type: none"> ▪ Electronic/analogue pressure switch
Door safety interlock	<ul style="list-style-type: none"> ▪ Traditional (with PTC) ▪ Instantaneous
Heating element heat output	<ul style="list-style-type: none"> ▪ 1950 W with thermal fuses incorporated
Temperature control	<ul style="list-style-type: none"> ▪ NTC probe incorporated in the heating element
Buzzer	<ul style="list-style-type: none"> ▪ Traditional incorporated in the PCB
Sensors	<ul style="list-style-type: none"> ▪ Water fill gauge (flowmeter from 2 ÷ 12 l/m) ▪ Aqua control
Drum light	<ul style="list-style-type: none"> ▪ LED

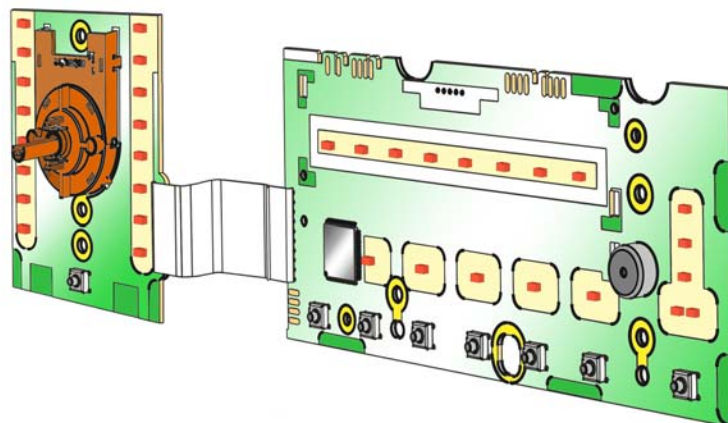
3.1.1 Control panel

3.1.1.1 Styling

- Max. 8 buttons
- 16-position programme selector
- 20 LEDs
- LCD

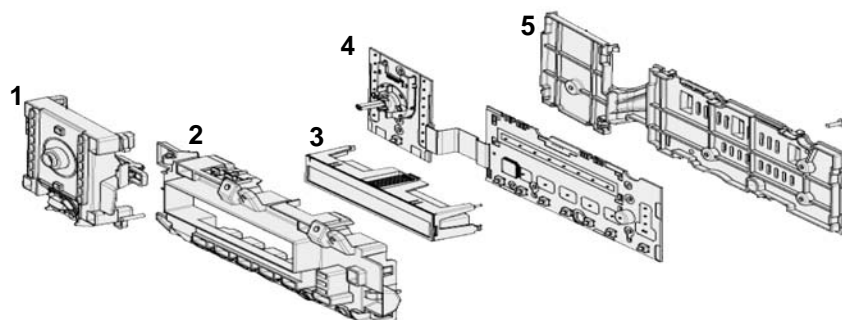


- Positioning of LEDs and buttons

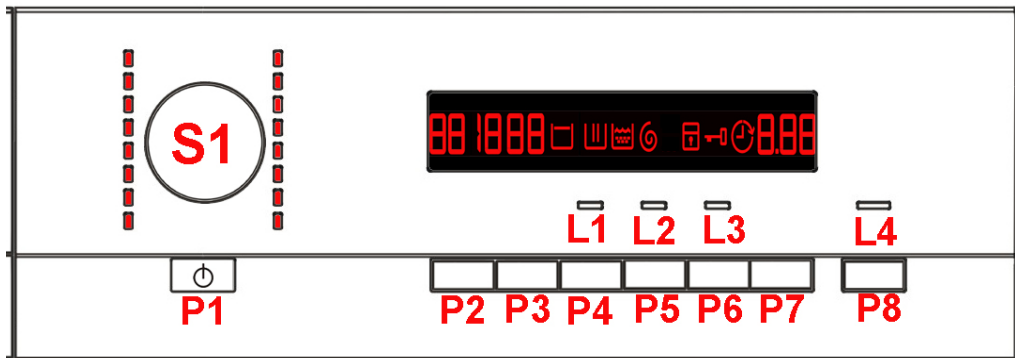


- Display board assembly, exploded view

1. Selector board protection
2. Display board protection
3. LCD display
4. Display board and selector board
5. Rear protection



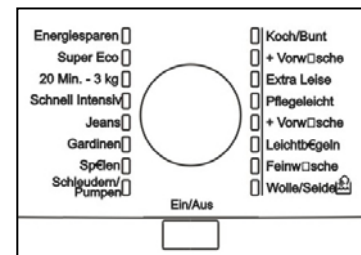
3.1.1.2 Control panel configuration



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

3.1.1.3 Programme selector (S1)

The selector used is a HI-FI type (the knob has non index and no reset position, the programme selected is indicated by the lighting of the corresponding LED). The number of positions cannot be configured. There are always 16 (in all three stylings) and they are bound to the number of LEDs that indicate the washing programmes. The programmes can be configured to perform the different washing cycles (e.g.: water level, drum movement, no. of rinses and the washing temperature to be selected according to the type of garments). The selector can be turned both clockwise and anti-clockwise. For each programme, the compatible options and other parameters are defined.



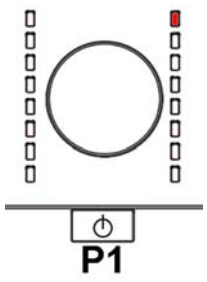
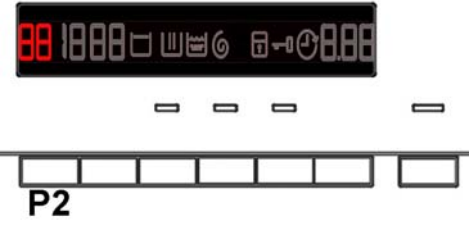

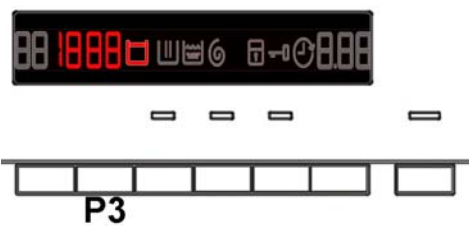
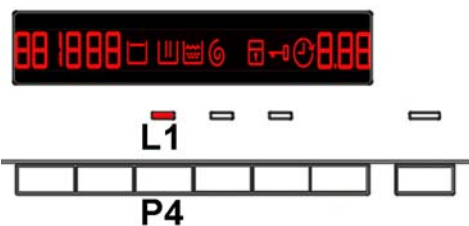
3.1.1.4 Programme configuration

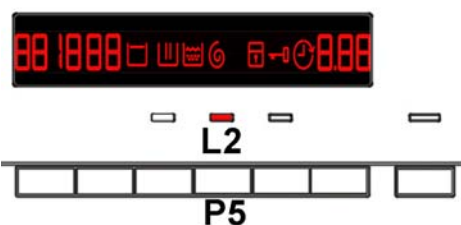
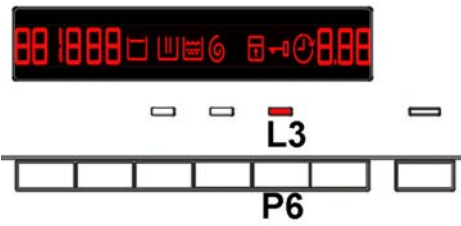
The table below lists the parameters that can be used to define the washing programmes.

Types of fabric	Cottons/linen, Synthetics, Delicates, Wool, Hand-wash, Shoes, Jeans, Duvet, Silk.
Special programmes	Soak, Miniprogramme, Easy-Iron, Conditioner, Rinses, Delicate rinses, Drain, Delicate spin, Spin,
Temperature	Normal, Maximum: the initial temperature is the one configured by the chosen washing programme.
Spin	Normal, Minimum, Maximum
Options (Normal/Possible)	Rinse Hold, Pre-wash, Stains, Extra Rinse, Normal, Daily, Super quick, Spin reduction, No spin.
Programme phases	Pre-wash, Wash, Rinses, Spin, Delayed start.

3.1.1.5 Pushbuttons – LEDs and LCD

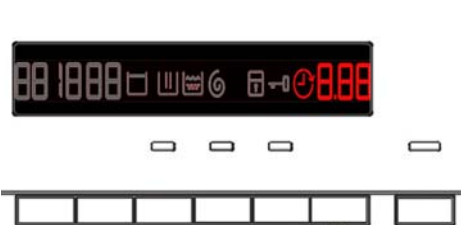
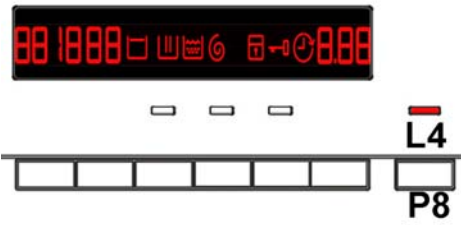
The functions of each button are defined by the configuration of the appliance.

<p>• Button no. 1: ON/OFF This button is always included in all stylings. – Press it to turn the appliance on. The buzzer concurrently plays a melody (where enabled), the LCD display lights up (the illuminated symbols are those of the programme). – To turn the appliance off, press the button and hold it down for approximately 1 second, after which time the buzzer plays a melody (where enabled), the LCD display and LEDs are turned off, all the options selected and any programme in operation are cancelled.</p> <p>The operation of the ON/OFF depends on the configuration of the main circuit board. It can cut the appliance off from the electricity mains completely (0 Watt circuit) or set the appliance to low energy consumption mode (without 0 Watt circuit) in which case you will need to take the plug out of the socket to cut off the electricity supply completely.</p>	
<p>• Button no. 2: TEMPERATURE This button is related to the part of the LCD display where the temperature of the washing cycle is shown. The initial temperature shown on the LCD display is that set for the selected programme. Press the button in sequence to lower the temperature. Once the lowest temperature has been reached, the selection starts off again from the highest one available for that particular programme.</p> <p>The temperatures available (displayed in °C) are: 95°C, 60°C, 50°C, 40°C, 30°C, 20°C, cold cycle. The cold cycle is displayed by three dashes “ - - - ”.</p>	
<p>• Button no. 3: SPIN SPEED This button is related to the part of the LCD display where the spin speed of the washing cycle is shown. The initial speed shown on the LCD display is that set for the selected programme. Press the button in sequence to lower the speed. Once the lowest speed has been reached, the next one is “Rinse Hold” and the related symbol lights up  (where compatible with the selected programme), which is also lit during the “Extra Silent” programme. The next selection will be the highest speed available for the programme.</p> <p>The spin speeds are: 1600–1400–1200–1000–800–600–400– “Rinse Hold” cycle. When no speed is selected, or the “Rinse Hold” cycle is selected, the LCD display shows three dashes “ - - - ”.</p>	
<p>• Button no. 4: OPTION This button is configurable and is related to LED (L1). Depending on the configuration of the appliance, it can perform the option of: – Stains – HOT & COLD water filling Press this button to enable/disable the option related to it, with the respective lighting/turning off of LED L1. At the same time, the programme time is updated (via the three digits).</p>	

<ul style="list-style-type: none"> • Button no. 5: OPTION This button is related to LED (L2), and performs the option of: <ul style="list-style-type: none"> – Extra rinse Press this button to enable/disable the option related to it, with the respective lighting/turning off of the LED. At the same time, the programme time is updated (via the three digits). 	
<ul style="list-style-type: none"> • Button no. 6: OPTION This button is related to LED (L3), and performs the option of: <ul style="list-style-type: none"> – Time Save Press this button to enable/disable the option related to it, with the respective lighting/turning off of the LED. At the same time, the programme time is updated (via the three digits). 	








The following options can also be configured in appliances:




- Time Save: with two levels, corresponding to: Daily and Super Quick. Press it once to perform the Daily function. The related LED lights. Press it twice to perform the Super Quick function. The related LED stays on and the three digits simultaneously vary the cycle time.
- Stains and HOT and COLD Water are alternative options of the same button.
- When a solenoid valve for hot water is fitted, the related option is also configured.

<ul style="list-style-type: none"> • Button no. 7: DELAYED START This button is configurable and has the DELAYED START function. 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 Display; during the last hour, the time decreases one minute at a time. To cancel the delayed start time, after the cycle has started, pause the washing machine using the START/PAUSE button and cancel the option. 	
<ul style="list-style-type: none"> • Button no. 8: START/PAUSE This button is used to START the appliance or PAUSE it. It is related to LED L4, which flashes when the appliance is on pause, whereas it is lit continuously when the appliance is performing a washing cycle. 	

- **LCD**

The information described below is also displayed on the LCD:

<ul style="list-style-type: none"> • Programme phases: The three icons represented respectively mean: <ul style="list-style-type: none"> - Wash/Prewash - Rinse - Spin They are lit during the selecting phase to display which phases the programme includes. During the programme, the icon of the phase in progress flashes, and once the phase has been completed, it remains lit continuously. The same applies when the appliance is paused during the cycle. 	
<ul style="list-style-type: none"> • Padlock: The icon lights up when the “child lock” is on. To indicate that all the buttons are disabled to prevent children from modifying, starting or pausing the cycle. If a button is pressed when it is on, the icons flash. A key combination needs to be pressed to activate/deactivate it. It may be silk-screen printed on the control panel or described in the instruction manual. 	
<ul style="list-style-type: none"> • Door lock: Lights up when the safety device stops door opening and switches off when the door can be opened. It flashes when the device is about to unlock the door (it is noticed with PTC delaying devices, which need one or two minutes to open). 	
<ul style="list-style-type: none"> • Washing programme time It is displayed after a washing programme has been selected. This time 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. 	
<ul style="list-style-type: none"> • Delayed start Selected on the related button. After the START/PAUSE button is pressed, the countdown starts and the delay time decreases hour by hour, from a delay of 20 hours up to 2 hours (☞ 30' ☞ 60' ☞ 90' ☞ 2h ☞ 3h... ☞ 20h ☞ 0h). During the last 2 hours, it decreases by 30 mins at a time. During the delayed start, the icon  remains permanently lit. 	
<ul style="list-style-type: none"> • Wrong selection Displayed by a flashing “Err”, for one second. When a function not compatible with the chosen programme is selected, or if the selector is turned when a cycle is in progress. 	

<ul style="list-style-type: none"> • End of cycle End of the programme is indicated by a permanently lit zero (when the door can be opened). • Appliance stopping with water in the tub, at the end of programmes with the RINSE HOLD option, is displayed by a permanently lit zero. The LED indicating the door remains on and the LED of the START/PAUSE button is turned off. The washing machine continues to operate, rotating the drum once every 2 minutes. 	
<ul style="list-style-type: none"> • Alarm code Indicates an error in the appliance operation. Simultaneously to the displaying of the code, the START/PAUSE button flashes. 	
<ul style="list-style-type: none"> • Laundry load calculation Only for appliances with PROPORTIONAL programmes. After the washing programme has started, the dot starts to flash. The washing machine is now calculating the laundry load inside the drum. When this phase is completed, the dot is lit continuously and the three digits display the programme time. 	

- **Buzzer**

It consists of a multi-tone buzzer and sounds in the following cases:

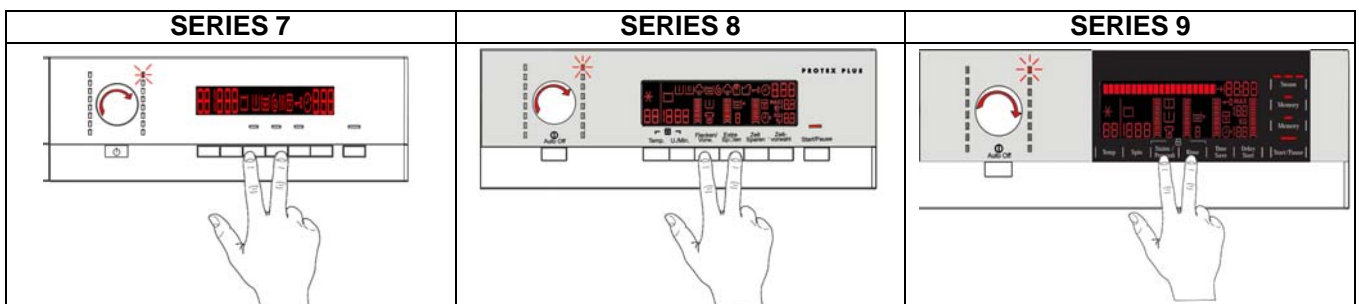
- When the appliance is turned on and off, it plays two different musical tunes.
- If a button is pressed, it emits a short **“Click”**
- When the cycle has ended, this is indicated by a special sequence of **“three long beeps”** repeated at 15" intervals for two minutes.
- In the event of an appliance malfunction, this is indicated by a special sequence of **“three short beeps”** repeated three times at 15" intervals for 5 minutes.

All the appliances are fitted with the buzzer. They leave the factory with the option enabled. Use the key combination to disable it.

The volume has a factory setting which cannot be adjusted by the user.

When the buzzer is disabled (using the key combination), it only emits a short **“Click”** and the sequence of **“three short beeps”** when an alarm occurs.

The buzzer can be enabled/disabled during the programme selecting phase but the alarm signalling remains enabled.



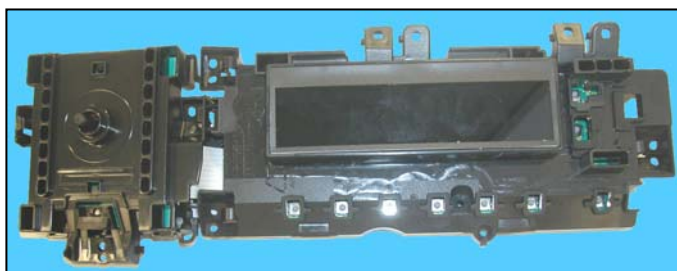
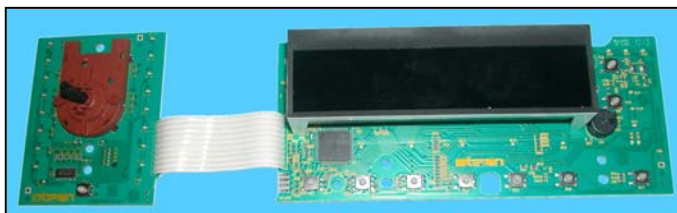
To enable it, press the buttons simultaneously for 5 seconds. A short beep will confirm it has been enabled/disabled.

4 SERIES 8

4.1 General characteristics

The EWM10931 electronic control system consists of two circuit boards plus the motor control system (inverter).

- ↪ The control/display circuit board, inserted in a plastic box, secured to the control panel (the figure illustrates: the display circuit board with the side support plate onto which the selector is secured, connected to one another by a flat cable and the display circuit board assembly).



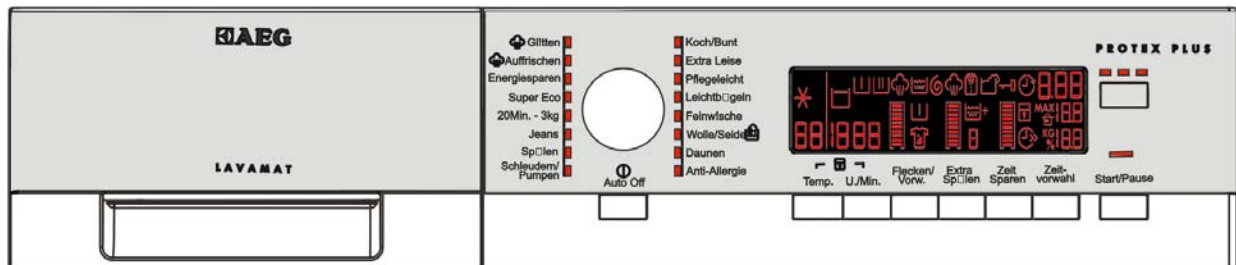
- ↪ The main circuit board is positioned at the rear of the appliance and powers the electrical components as well as communicating with the motor control board (Inverter) and receiving commands from the display board.

No. buttons	<ul style="list-style-type: none"> ▪ maximum 9 (6 options + start/pause + ON/OFF)
No. LEDs	<ul style="list-style-type: none"> ▪ maximum 20 + LCD
Programme selector	<ul style="list-style-type: none"> ▪ 16 positions (incorporated in the circuit board)
Serial port	<ul style="list-style-type: none"> ▪ DAAS-EAP communication protocol up to 115,200 baud
Power supply voltage	<ul style="list-style-type: none"> ▪ 220/240 V ▪ 50/60 Hz (configurable)
Washing type	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball” sphere ▪ Jet-System
Rinsing system	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball” sphere ▪ Jet-System
Motor	<ul style="list-style-type: none"> ▪ Two-pole asynchronous (three-phase), with tachometric generator
Spin speed	<ul style="list-style-type: none"> ▪ 400 ÷ 1,600 rpm
Anti-unbalancing system	<ul style="list-style-type: none"> ▪ AGS
Cold water filling	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 2 or 3 outlets
Hot water filling	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 1 outlet
Detergent dispenser	<ul style="list-style-type: none"> ▪ 3 compartments: prewash/stains, wash, fabric softeners ▪ 4 compartments: prewash, wash, stain remover, conditioners.
Control of water level in the tub	<ul style="list-style-type: none"> ▪ Electronic/analogue pressure switch
Door safety interlock	<ul style="list-style-type: none"> ▪ Traditional (with PTC) ▪ Instantaneous
Heating element heat output	<ul style="list-style-type: none"> ▪ 1950 W with thermal fuses incorporated
Temperature control	<ul style="list-style-type: none"> ▪ NTC probe incorporated in the heating element
Buzzer	<ul style="list-style-type: none"> ▪ Traditional incorporated in the PCB
Sensors	<ul style="list-style-type: none"> ▪ Water fill gauge (flowmeter from 2 ÷ 12 l/m) ▪ Aqua control ▪ Weight sensor
Drum light	<ul style="list-style-type: none"> ▪ LED

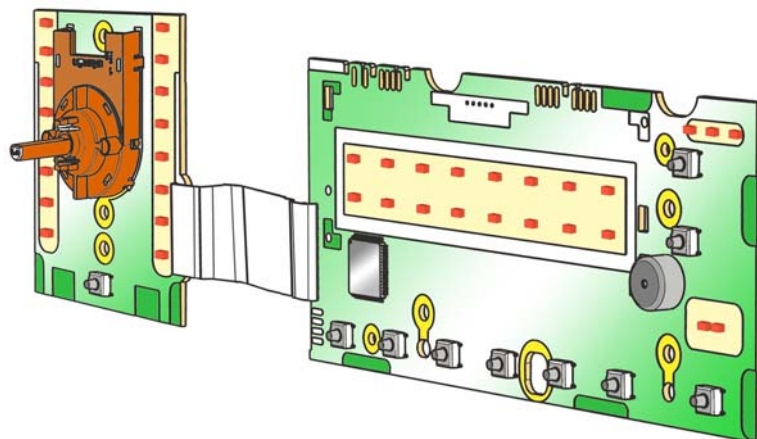
4.1.1 Control panel

4.1.1.1 Styling

- Max. 9 buttons
- 16-position programme selector
- 20 LEDs
- LCD

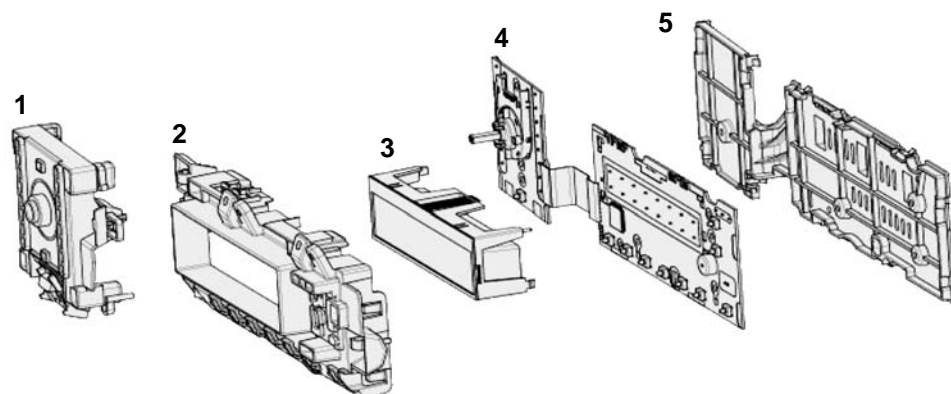


- Positioning of LEDs and buttons

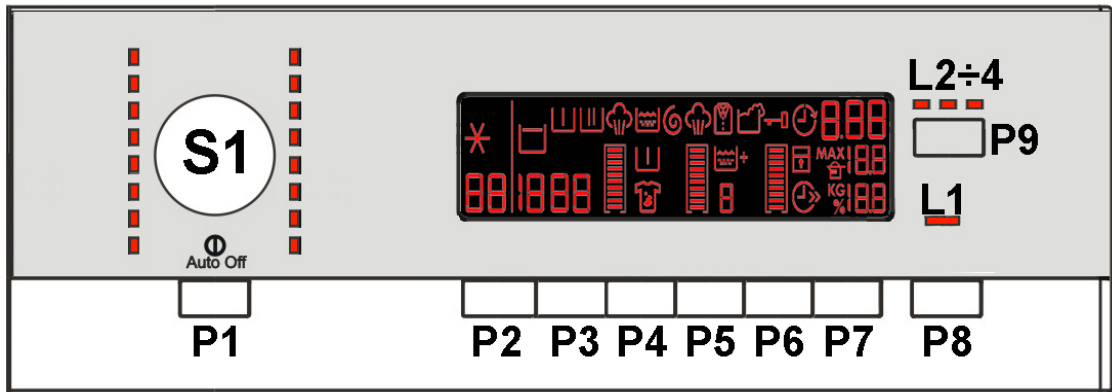


- Display board assembly, exploded view

1. Selector board protection
2. Display board protection
3. LCD display
4. Display board and selector board
5. Rear protection



4.1.1.2 Control panel configuration



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

4.1.1.3 Programme selector (S1)

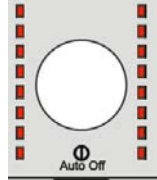




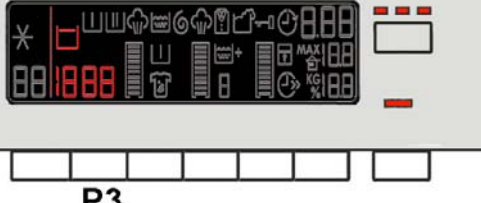
See para. 3.1.1.3 page 10

4.1.1.4 Programme configuration


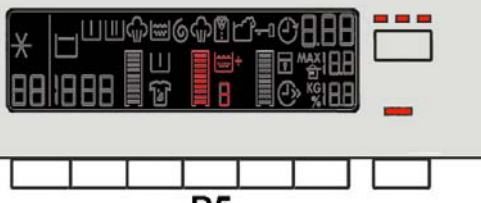
See para. 3.1.1.4 page 10

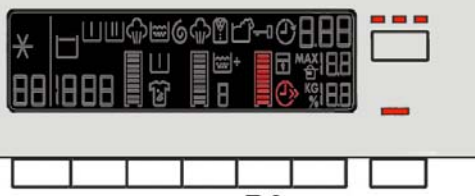


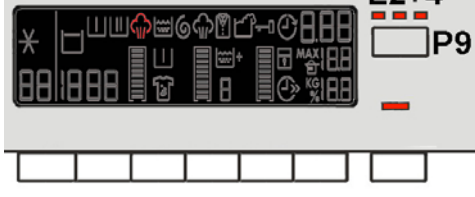
4.1.1.5 Pushbuttons – LEDs and LCD

The functions of each button are defined by the configuration of the appliance.

<p>• Button no. 1: ON/OFF</p> <p>See description on page 11</p>	 <p style="text-align: center;">P1</p>
<p>• Button no. 2: TEMPERATURE</p> <p>See description on page 11 The only difference with version 7 is the representation of the cold cycle, which is represented by the cold symbol  and by two dashes  to replace the Digits.</p>	 <p style="text-align: center;">P2</p>
<p>• Button no. 3: SPIN SPEED</p> <p>This button is related to the part of the LCD display where the spin speed of the washing cycle is shown. The spin speed displayed initially is that configured for the chosen programme. Press the button in sequence to lower the speed. Once the lowest speed has been reached, the next one is “Rinse Hold” and the related symbol lights up  (where compatible with the selected programme), which is also lit during the “Extra Silent” programme. The next selection will be the highest speed available for the programme.</p> <p>The spin speeds are: 1600–1400–1200–1000–800–600–400– “Rinse Hold” cycle. When no speed is selected, or the “Rinse Hold” cycle is selected, the LCD display shows three dashes “ - - - ”.</p>	 <p style="text-align: center;">P3</p>

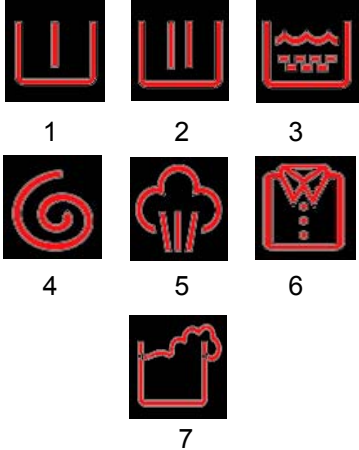





The settings described below not only have symbols, but they are also accompanied by a graphic bar within a frame. If it is illuminated, this indicates that the option is enabled for the chosen programme, otherwise it is off. When all its segments are lit, it will start from scratch again the next time it is pressed.

<p>• Button no. 4: OPTION</p> <p>It is related to the part of the LCD display (see figure) where the graphic bar and the symbols relating to the options are displayed, depending on the chosen programme. Press the button to light the graduated scale and the Stains symbol lights simultaneously. If you continue to press it, the Prewash symbol also lights. The selection order is as follows: 1. Stains 2. Pre-wash 3. Stains + Prewash</p>	 <p style="text-align: center;">P4</p>
<p>• Button no. 5: OPTION</p> <p>It is related to the part of the LCD display (see figure) showing: the graphic bar, a digit and the “Extra rinse” symbol. Press the button to light the graduated scale. The symbol for the “Extra rinse” lights simultaneously, and the digit shows the number of additional rinses to combine with the programme. The number of rinses depends on the programme configuration.</p>	 <p style="text-align: center;">P5</p>

<ul style="list-style-type: none"> • Button no. 6: OPTION <p>It is related to the part of the LCD display (see figure) showing: the graphic bar and the “Time save” option. Press the button and half or all of the graduated scale may light up, depending on the configuration of the button. The related symbol also lights simultaneously.</p> <ul style="list-style-type: none"> – Press the button once and the chosen option is “Daily”. – Press the button twice and the chosen option is “Super Quick”. 	 <p style="text-align: center;">P6</p>
<ul style="list-style-type: none"> • Button no. 7: DELAYED START <p>It is related to the part of the LCD display (see figure) showing the related symbol and the three digits.</p> <p>Press the button in sequence to increase the delay by 30' up to 2 hours, whereas from 2 hours to 20 hours, the increase is of 1 (one) hour every time the button is pressed. The symbol lights and stays on for the entire delay phase.</p> <p>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 minute by minute.</p> <p>To cancel the delayed start time, after the cycle has started, pause the washing machine using the related button and cancel the option.</p>	 <p style="text-align: center;">P7</p>
<ul style="list-style-type: none"> • Button no. 8: START/PAUSE <p>This button is used to START the appliance or PAUSE it.</p> <p>It is related to LED L1, which flashes when the appliance is on pause, whereas it is lit continuously during a washing cycle.</p>	 <p style="text-align: center;">P8</p>
<ul style="list-style-type: none"> • Button no. 9: STEAM (where featured) <p>Press this button in sequence to select from three different steam intensity levels.</p> <p>These are highlighted by the lighting of LEDs L2/L3/L4 and the related symbol lighting on the LCD display.</p>	 <p style="text-align: center;">P9</p>

- **LCD**

The information described below is also displayed on the LCD:

<ul style="list-style-type: none"> • Programme phases: <p>The icons represented respectively mean:</p> <ol style="list-style-type: none"> 1. Pre-wash 2. Wash 3. Rinse 4. Spin 5. Steam combined with the programme (where featured) 6. Rinse Hold 7. Detergent overdose <p>They light up during the programme setting where featured and during their performance.</p> <p>The icon representing the Overdose lights up at the end of the cycle if during the performance of the programme an excess production of foam was detected.</p>	
<ul style="list-style-type: none"> • Padlock: <p>The icon lights up when the “child lock” is on. To indicate that all the buttons are disabled to prevent children from modifying, starting or pausing the cycle.</p> <p>A key combination needs to be pressed to activate/deactivate it. It may be silk-screen printed on the control panel or described in the instruction manual.</p>	
<ul style="list-style-type: none"> • Door lock: <p>Lights up when the safety device stops door opening and switches off when the door can be opened. It flashes when the device is about to unlock the door (it is noticed with PTC delaying devices, which need one or two minutes to open).</p>	
<ul style="list-style-type: none"> • Weight sensor: <p>Group of icons representing the weight information of the laundry inside the drum. These represent the maximum load possible and the actual weight of the laundry inside the drum, and the ratio of these two factors suggests the quantity of detergent to pour into the detergent dispenser. See Chapt. 4.1.1.6 on page 21</p>	
<ul style="list-style-type: none"> • Washing programme time: <p>See description on page 13</p>	
<ul style="list-style-type: none"> • Delayed start <p>Selected on the related button. After the START/PAUSE button is pressed, the countdown starts and the delay time decreases hour by hour, from a delay of 2 hours up to 20 hours (⏪ 30' ⏪ 60' ⏪ 90' ⏪ 2h ⏪ 3h... ⏪ 20h ⏪ 0h).</p> <p>During the last 2 hours, it decreases by 30 mins at a time. Press the button in sequence to increase the delay by 30' up to 10 hours, whereas from 10 hours to 20 hours, the increase is of 1 (one) hour every time the button is pressed.</p> <p>During the programme selection phase, a delayed start can be selected, from 30' to 20 hours (30' ⏪ 60' ⏪ 90' ⏪ 10h ⏪ 11h... ⏪ 20h ⏪ 0h) and the time is shown on the LCD display; during the last hour, the time decreases minute by minute. To cancel the delayed start time, after the cycle has started, pause the washing machine using the related button and cancel the option.</p>	

<ul style="list-style-type: none"> • Wrong selection <p>See description on page 13</p>	
<ul style="list-style-type: none"> • End of cycle <p>See description on page 14</p>	
<ul style="list-style-type: none"> • Alarm code <p>See description on page 14</p>	

4.1.1.6 Weight sensor (where featured)

Appliances fitted with the weight sensor (inserted inside a shock absorber) are designed - thanks to the LCD display - to inform the user of the weight of the laundry inside the drum while at the same time suggesting the quantity of detergent to pour into the dispenser provided.

For it to operate, the appliance needs to be turned on and in selecting phase with the door open. When the laundry is being placed inside the drum, the LCD displays the weight in kg with an accuracy of half a kilogram.

The exact sequence to have the correct weight information is as follows:

The appliance must be turned off and the drum must be empty.

Turn the washing machine on, select the programme, choose the options, and if the door was closed on starting, open it.

The LCD displays the maximum declared weight for the selected programme and 0.0 kg the weight of the laundry inside the drum (empty drum). At the same time the laundry is placed in the drum, the LCD display updates the digits relating to the time until the end of the programme.



In the event of an overload in a programme (Cottons), the LCD display will continue to show the maximum weight without warning that the load is excessive.

Whereas in other programmes (Synthetics, delicates, special programmes and in particular the drying programmes) if the weight exceeds by only 1 kg or more, the symbol "MAX" will begin to flash, together with the weight of the maximum load allowed.

In some cases, you will have to take some laundry out so that the symbol "MAX" and the maximum weight allowed stop flashing and to guarantee optimum washing performance.



Once the laundry has been loaded, close the door, the LCD display cancels all the weight details and displays the quantity of detergent to be poured into the dispenser.

The representation consists of: a measuring cup, a number and the symbol for the percentage.

The number displayed represents the percentage detergent to pour into the dispenser, considering 100% to be the quantity required for the maximum load for the chosen programme (value that remains fixed even in the case of an overload).

Once the detergent has been poured in, and the START/PAUSE button has been pressed, the washing cycle will begin. The information about the weight of the laundry and the percentage detergent disappears and will not be displayed again.



5 SERIES 9

5.1 General characteristics

The SERIES 9 has a single ON/OFF button, all the other choices/adjustments are made by skimming your finger over the touch sensors, which replace the buttons used so far.

In the event of problems with the touch sensors (difficulty selecting/adjusting them), clean and dry the display and do not wear gloves when setting the chosen programme.

The EWM10931 electronic control system consists of two circuit boards plus the motor control system.

- ↖ The control/display circuit board, inserted in a plastic box, secured to the control panel (the figure illustrates: the display circuit board with the side support plate onto which the selector is secured, connected to one another by a flat cable and the display circuit board assembly).



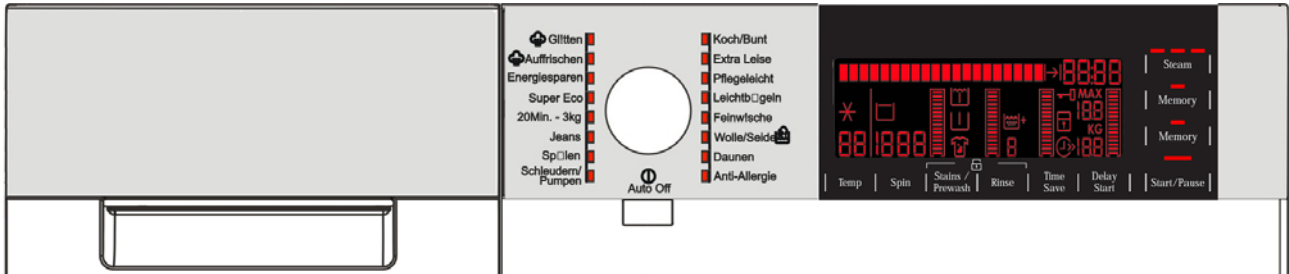
- ↖ The main circuit board is positioned at the rear of the appliance and powers the electrical components as well as communicating with the motor control board (Inverter) and receiving commands from the display board.

No. buttons	<ul style="list-style-type: none"> ▪ max 1 (ON/OFF)
No. of sensors	<ul style="list-style-type: none"> ▪ max 10 (options+start/pause+ memories)
No. LEDs	<ul style="list-style-type: none"> ▪ maximum 22 + LCD
Programme selector	<ul style="list-style-type: none"> ▪ 16 positions (incorporated in the circuit board)
Serial port	<ul style="list-style-type: none"> ▪ DAAS-EAP communication protocol up to 115,200 baud
Power supply voltage	<ul style="list-style-type: none"> ▪ 220/240 V ▪ 50/60 Hz (configurable)
Washing type	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball” sphere ▪ Jet-System
Rinsing system	<ul style="list-style-type: none"> ▪ Traditional with “Eco-ball” sphere ▪ Jet-System
Motor	<ul style="list-style-type: none"> ▪ Two-pole asynchronous (three-phase), with tachometric generator
Spin speed	<ul style="list-style-type: none"> ▪ 400 ÷ 1,600 rpm
Anti-unbalancing system	<ul style="list-style-type: none"> ▪ AGS
Cold water filling	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 2 or 3 outlets
Hot water filling	<ul style="list-style-type: none"> ▪ 1 solenoid valve with 1 inlet – 1 outlet
Detergent dispenser	<ul style="list-style-type: none"> ▪ 3 compartments: prewash/stains, wash, fabric softeners ▪ 4 compartments: prewash, wash, stain remover, conditioners.
Control of water level in the tub	<ul style="list-style-type: none"> ▪ Electronic/analogue pressure switch
Door safety interlock	<ul style="list-style-type: none"> ▪ Traditional (with PTC) ▪ Instantaneous
Heating element heat output	<ul style="list-style-type: none"> ▪ 1950 W with thermal fuses incorporated
Temperature control	<ul style="list-style-type: none"> ▪ NTC probe incorporated in the heating element
Buzzer	<ul style="list-style-type: none"> ▪ Traditional incorporated in the PCB
Sensors	<ul style="list-style-type: none"> ▪ Water fill gauge (flowmeter from 2 ÷ 12 l/m) ▪ Aqua control ▪ Weight sensor
Drum light	<ul style="list-style-type: none"> ▪ LED

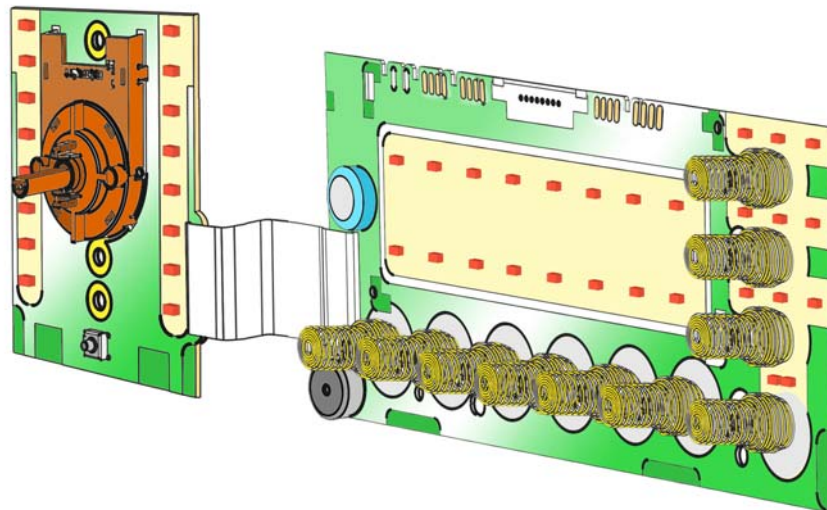
5.1.1 Control panel

5.1.1.1 Styling

- Max buttons 1
- Max sensors 10
- 16-position programme selector
- 22 LEDs
- LCD

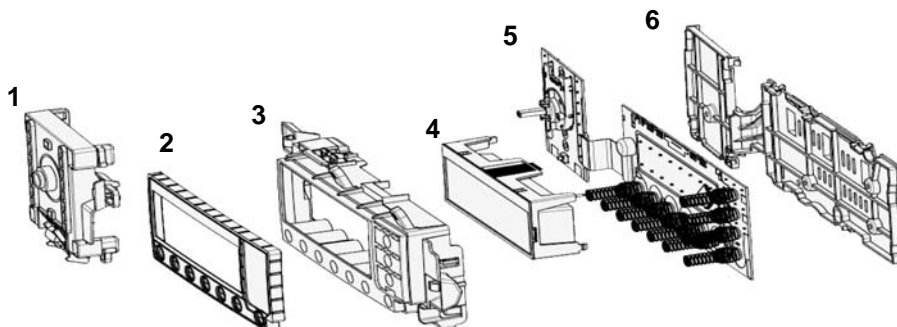


- Positioning of LEDs and buttons

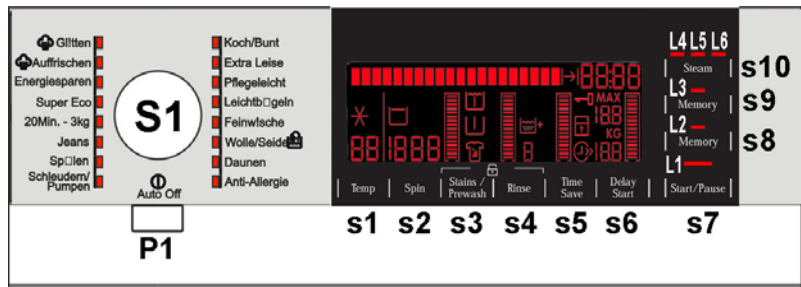


- Display board assembly, exploded view

1. Selector board protection
2. Seal
3. Display board protection
4. LCD display
5. Display board and selector board
6. Rear protection



5.1.1.2 Control panel configuration



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

5.1.1.3 Initial Start up

The first time the appliance is turned on and after every diagnostic cycle, the language and time need to be set.

5.1.1.3.1 Set Language

The first time the appliance is turned on or after a diagnostic cycle, the text line prompts you to turn the selector to choose your language (the language displayed is the one of the silk screen printed control panel) for approximately 3 seconds. Once you have chosen your language, after another 3 seconds you will be prompted to touch the START/PAUSE sensor to confirm your choice.

If the appliance is turned off before you confirm your choice, the next time it is turned on, you will again be prompted to choose your language.

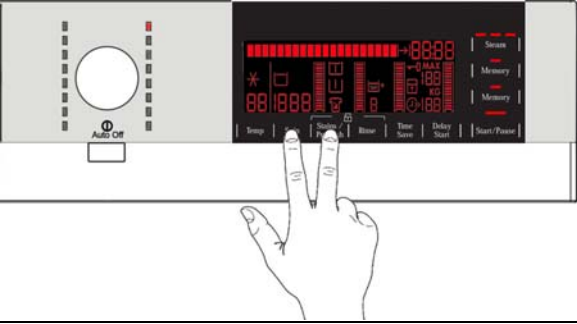
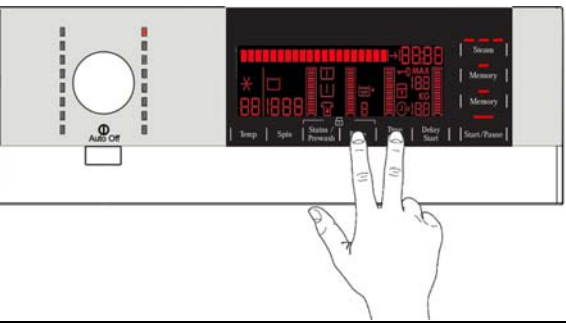
5.1.1.3.2 Setting the time of day

After the language has been selected, the text line shows "Time of day" prompting you to set the time.

After approximately 3 seconds, you will be prompted to turn the selector, which will change the time by an hour (in the digits) every time it is moved. Once the correct time has been set, confirm by pressing the START/PAUSE sensor.

The digits relating to the minutes start to flash. Again, turn the selector dial to adjust them too and confirm with the START/PAUSE sensor. Now the time of day has also been set.

To change the language or time, see the key combination in the table below.

Language Configuration	Time Configuration
	
<p>Once the appliance has been turned on during the selecting phase you are given the opportunity to change language. Touch the sensors as shown in the figure, and for the next 3 seconds you can choose your new language.</p>	<p>Once the appliance has been turned on during the selecting phase you are given the opportunity to set the time. Touch the sensors as shown in the figure, and for the next 3 seconds you can modify the time.</p>

5.1.1.4 Programme selector (S1)

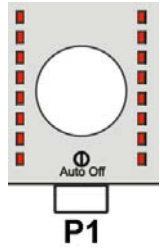


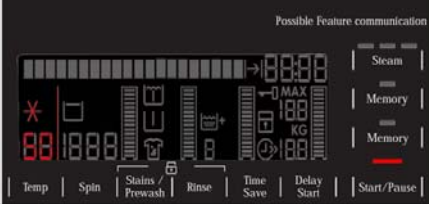

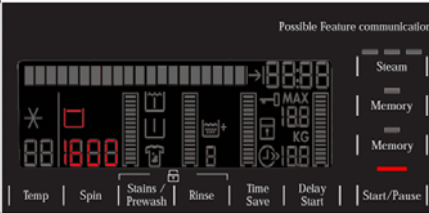
See para. 3.1.1.3 page 10

5.1.1.5 Programme configuration

See para. 3.1.1.4 page 10

5.1.1.6 Pushbuttons – LEDs and LCD

The functions of each button are defined by the configuration of the appliance.

<ul style="list-style-type: none"> • Button no. 1: ON/OFF <p>See description on page 11</p> <p>Unlike the other versions, in the SERIES 9, after pressing the ON/OFF button the LCD displays the time of day (for two seconds) to allow the user to check it and if necessary update it) followed by the programme information.</p>	 <p style="text-align: center;">P1</p>
<ul style="list-style-type: none"> • Sensor no. 1: TEMPERATURE <p>It is related to the part of the LCD display (see figure) where the temperature of the washing cycle is shown. The initial temperature displayed is that set for the chosen programme. Touch the sensor with your finger to lower it. Once you have reached the lowest one, the selection starts off again from the highest temperature. The cold cycle is represented by the cold symbol  and by two dashes  to replace the Digits.</p> <p>The temperatures available (displayed in °C) are: 95°C, 60°C, 50°C, 40°C, 30°C, 20°C, cold cycle. Concurrently with the display of the temperature in degrees, the name of the selected function appears at the top of the display in the text line.</p>	 <p style="text-align: center;">s1</p>
<ul style="list-style-type: none"> • Sensor no. 2: SPIN SPEED <p>It is related to the part of the LCD display (see figure) where the spin speed of the washing cycle is shown. The initial speed shown on the LCD display is that configured for the selected programme. Touch the sensor with your finger to lower the speed. Once the lowest speed has been reached, the next selection is “Rinse Hold” and the related symbol lights up  (where compatible with the chosen programme), which is also lit during the “Extra Silent” programme. The next selection will be the speed configured for the programme.</p> <p>The spin speeds are: 1600–1400–1200–1000–800–600–400– “Rinse Hold” cycle. When no speed is selected, or the “Rinse Hold” cycle is selected, the LCD display shows three dashes “ - - - ”.</p> <p>Concurrently with the display of the spin speed in rpm, the name of the selected function appears at the top of the display (in the text line).</p>	 <p style="text-align: center;">s2</p>

The settings described below not only have the symbols of the options, but they are also accompanied by a graphic bar within a frame. If the latter is lit, this means the option is enabled for the chosen programme. Otherwise it remains off.

When all its segments are lit, it will start from scratch again the next time it is pressed.





• **Sensor no. 3: OPTION**

It is related to the part of the LCD display (see figure) where a graphic bar and the symbols relating to the options are displayed, depending on the chosen programme.

Touch the sensor with a finger and the graphic bar starts to light up. The symbol for Stains is turned on at the same time.

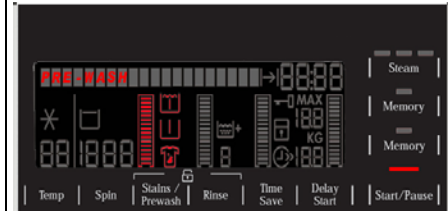
As you continue the Prewash symbol lights up.

The selection order is as follows:

1. Stains 
2. Pre-wash 
3. Stains + Prewash 
4. Stains + Soak 
5. No Option

It may happen that it is not possible to select the option(s) where the stains item is displayed, due to the washing temperature being too low, and consequently the options are skipped.

Concurrently to the displaying of the symbol for the option, as the graphic bar is gradually illuminated, the name of the chosen option is displayed in the text line in the top left.



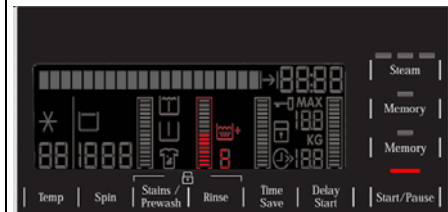
s3

• **Sensor no. 4: EXTRA RINSE**

It is related to the part of the LCD display (see figure) showing: the graphic bar, a digit and the symbol for the “Extra rinse” option.

Touch the sensor with your finger and the graphic bar begins to light up. Concurrently, the symbol lights up and you can choose the number of rinses to add to the programme, which are displayed by the digit (depending on the programme).

Concurrently to the displaying of the symbol for the option, as the graphic bar is gradually illuminated, the name of the option is displayed in the text line in the top left.



s4

• **Sensor no. 5: OPTION**

It is related to the part of the LCD display (see figure) showing: the graphic bar and the “Time save” option.

Touch the sensor with your finger, half or all of the graduated scale may light up, depending on the configuration and the related symbol also lights simultaneously.

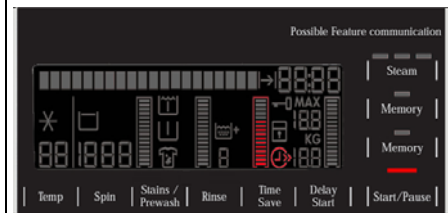
Touch once

– and the chosen option is “Daily”.

touch again and the graduated scale lights up completely

– The chosen option is “Super Quick”.

Concurrently to the displaying of the symbol for the option, as the graphic bar is gradually illuminated, the name of the chosen option is displayed in the text line in the top left.



s5

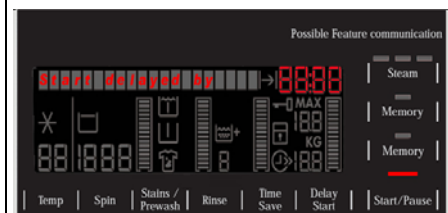
• **Sensor no. 6: DELAYED START**

It is related to the part of the LCD display (see figure) showing: the four digits and the text bar.

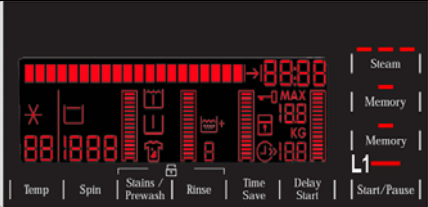
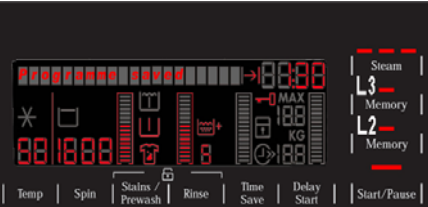
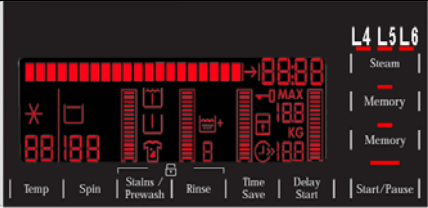
Touch the sensor with your finger. The LCD display is updated according to the status of the door: if the door is open, the words “Start delayed by” are displayed and the delay time is displayed in the digits for approximately 5 seconds, whereas if the door is closed, the words “Programme ending at” are displayed along with the programme end time.

During the last hour, the time decreases minute by minute.

To cancel the delayed start time, after the cycle has started, pause the washing machine using the related sensor (s7) and cancel the option.





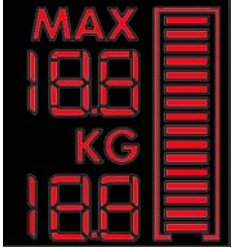





s6

<ul style="list-style-type: none"> Sensor no. 7: START/PAUSE Touch the sensor with your finger to START or PAUSE the appliance. It is related to LED (L1), which flashes when the appliance is on pause, whereas it is lit continuously when the appliance is performing a washing cycle. 	 <p style="text-align: right;">s7</p>
<ul style="list-style-type: none"> Sensor no. 8/9: MEMORY Touch one of these sensors with your finger to store or recall a stored programme. When the selected programme has been optimised with the desired options, it can be saved in one of the two memories by touching the related sensor (s8/9) for approximately 3 seconds. The buzzer “beeps” once and the LED (L2/3) corresponding to the memory lights up and the words “Programme saved” are displayed in the text line to show that the operation was successful. To recall the stored programme, simply touch the sensor (s8/9) of the memory concerned, the corresponding LED (L2/3) lights up and the LCD displays the settings of the programme saved (selector LED, options, time left and the words “Memory programme” are displayed in the text line for approximately 3 seconds. If a sensor of the memory which contains no stored programmes is touched, the buzzer “beeps” once and the corresponding LED stays on and the words “Memory is empty” are displayed in the text line for approximately 3 seconds. 	 <p style="text-align: right;">s9 s8</p>
<ul style="list-style-type: none"> Sensor no. 10: STEAM (where featured) Touch this sensor with your finger in sequence to select among the three steam intensity levels shown by the lighting of LEDs L4/L5/L6. The text line displays the status of the option. 	 <p style="text-align: right;">s10</p>

- **LCD**

The information described below is also displayed on the LCD:

<ul style="list-style-type: none"> • Padlock: The icon lights up when the “child lock” is on. To indicate that all the sensors are disabled to prevent children from modifying, starting or pausing the cycle. A sensor combination needs to be pressed to activate/deactivate it. It may be silk-screen printed on the control panel or described in the instruction manual. 	
<ul style="list-style-type: none"> • Door lock: Lights up when the safety device stops door opening and switches off when the door can be opened. It flashes when the device is about to unlock the door (it is noticed with PTC delaying devices, which need one or two minutes to open). 	
<ul style="list-style-type: none"> • Cycle time: It lights up to indicate the cycle time 	
<ul style="list-style-type: none"> • Time left: It lights up to indicate the time left until the end of the cycle. 	
<ul style="list-style-type: none"> • Weight sensor: Group of icons representing the weight information of the laundry inside the drum. These represent the maximum load possible and the actual weight of the laundry inside the drum, and suggest the quantity of detergent to pour into the detergent dispenser. See Chapt. 5.1.1.7 on page 29 	
<ul style="list-style-type: none"> • Delayed start Selected on the related sensor. After the START/PAUSE sensor has been touched, the countdown starts and the delay time decreases hour by hour, from a delay of 2 hours up to 20 hours (☞ 30' ☞ 60' ☞ 90' ☞ 2h ☞ 3h... ☞ 20h ☞ 0h). During the last 2 hours, it decreases by 30 mins at a time. Touch the sensor in sequence to increase the delay by 30' up to 10 hours, whereas from 10 hours to 20 hours, the increase is of 1 (one) hour every time the button is pressed. During the programme selection phase, a delayed start can be selected, from 30' to 20 hours (30' ☞ 60' ☞ 90' ☞ 10h ☞ 11h... ☞ 20h ☞ 0h) and the time is shown on the LCD display; during the last one, the time decreases one minute at a time. To cancel the delayed start time, after the cycle has started, pause the washing machine using the related button and cancel the option. 	
<ul style="list-style-type: none"> • Wrong selection The words “Not possible” are displayed in the text line. 	

<ul style="list-style-type: none"> • End of cycle <p>See description on page 14</p>	
<ul style="list-style-type: none"> • Alarm code <p>See description on page 14</p>	

5.1.1.7 Weight sensor (where featured)

Appliances fitted with the weight sensor (inserted inside a shock absorber) are designed - thanks to the LCD display - to inform the user of the weight of the laundry inside the drum while at the same time suggesting the quantity of detergent to pour into the dispenser provided.

For it to operate, the appliance needs to be in selecting phase with the door open. When the laundry is being placed inside the drum, the LCD displays the weight in kg with a resolution of 0.5 kg.

The exact sequence to have the correct weight information is as follows:

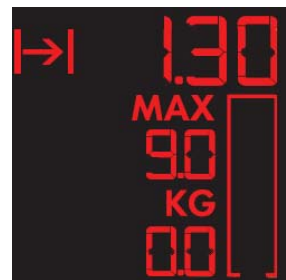
The appliance must be turned off and the drum must be empty.

Turn the washing machine on, select the programme, choose the options, and if the door was closed on starting, open it.

The LCD displays the maximum weight declared for the selected programme and 0.0 kg the weight of the laundry inside the drum (empty drum) and the words "Load laundry" are displayed in the text line.

The graduated scale lights up in proportion to the weight of the laundry inside the drum, the maximum weight displayed for the programme corresponds to the complete lighting of the graduated bar.

Concurrently to the loading of the laundry in the drum, the LCD display is updated for both the weight and time left until the end of the cycle.

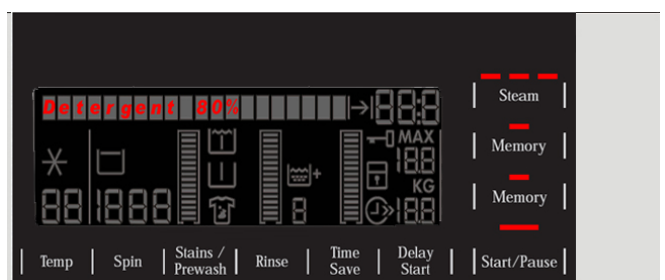


In the event of an overload in a programme (Cottons), the LCD display will continue to show the maximum weight without warning that the load is excessive.

Whereas in other programmes (Synthetics, delicates and special programmes) if the weight exceeds by just 0.5 kg, the words "Load laundry" in the text line change to "Loading completed", to indicate that loading must end. If the load exceeds by more than 1 kg, the graphic bar is completely lit, and the words "Max. load exceeded" are displayed in the text line. The word MAX and the maximum weight related to the appliance flash.

In some cases, you will have to take some of the laundry out to guarantee optimum washing performance.

Once the laundry has been loaded, close the door, the LCD display cancels all the weight details and the percentage detergent to be poured into the dispenser is shown in the text line, considering 100% to be the quantity of detergent required for the maximum load for the chosen programme (a value that remains fixed even in the case of an overload).



Once the detergent has been poured in, and the START/PAUSE button has been pressed, the washing cycle will begin. The information about the weight of the laundry and the percentage detergent disappears and will not be displayed again for the entire cycle.

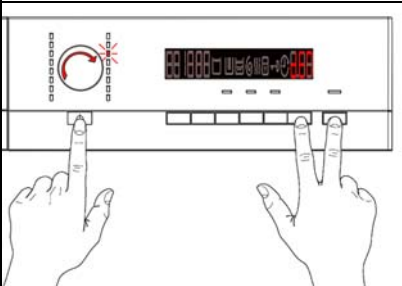
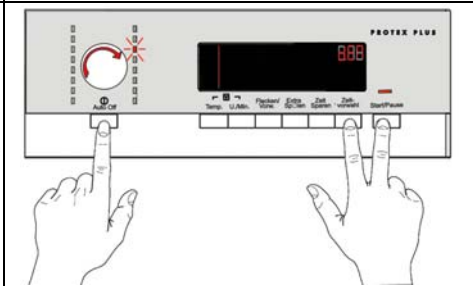
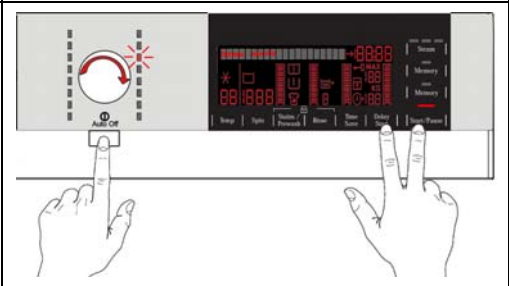
6 “DEMO” MODE

A special cycle is designed to demonstrate the operation of these appliances in shops, without connecting them to the water mains. This way, any one of the programmes can be selected and, once the start button/sensor has been pressed/touched (START/PAUSE), the appliance will only perform some of the phases of the programme, skipping those which cannot be performed (water fill, drain, heating).

The cycle takes place as follows:

- ↪ the door lock is enabled regularly (door locked during operation, possibility of opening it at the end of the cycle or when paused)
- ↪ motor: all low speed movements are enabled, the pulses and spin are disabled,
- ↪ the water fill solenoid valves and the drain pump are disabled.
- ↪ display: since the cycle phases are very rapid (one second of the demo cycle corresponds to approximately one minute of the actual cycle), the time left decreases by one unit every second. Keep in mind that the time left does not always correspond to the actual cycle time.

6.1 Accessing the DEMO setting

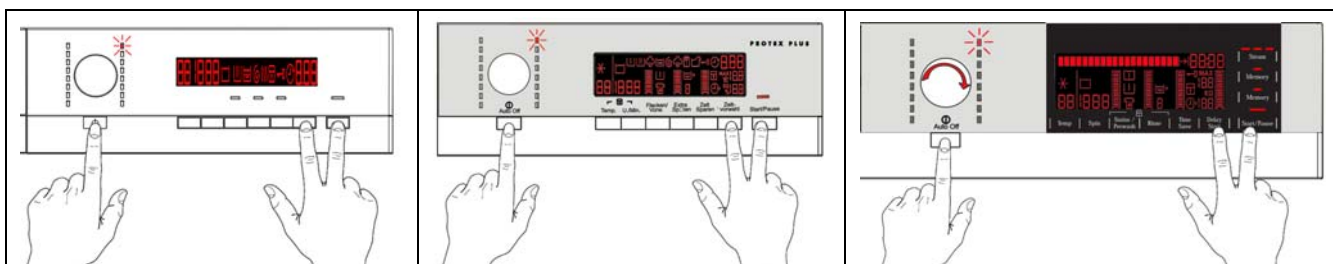
SERIES 7	SERIES 8	SERIES 9
		
<p style="text-align: center;"><u>Do not start the procedure with the combination buttons pressed</u></p> <ol style="list-style-type: none">1. Turn the appliance on at the ON/OFF switch2. Turn the selector dial until the third LED in the right-hand row is on.3. Press the START/PAUSE button and the nearest option button simultaneously (as shown in the figure).4. Hold the buttons down (approximately three or five seconds) until “dEM” flashes for a short time.		

6.2 Exiting DEMO mode

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

7 DIAGNOSTIC SYSTEM

7.1 Accessing diagnostics



Do not start the procedure with the combination buttons pressed

1. Turn the appliance on at the ON/OFF switch and the first LED in the right-hand row turns on.
2. Press the **START/PAUSE** button and the nearest **option button** simultaneously (as shown in the figure).
3. Hold the buttons/sensors down/pressed until the LEDs and symbols begin to flash in sequence (approximately 3 seconds).

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 testing on the following page).

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.










7.2 Quitting the diagnostics system



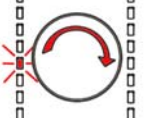

→ To exit the diagnostic cycle, switch the appliance off, then back on and then off again.

7.3 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).

Selector position	Components activated	Working conditions	Function tested	LCD display
1	<ul style="list-style-type: none"> The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence, Press a button/sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time. 	Always active	User interface functions	
2	<ul style="list-style-type: none"> Door safety interlock Wash solenoid 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to wash compartment	 Water level in the tub (mm)
3	<ul style="list-style-type: none"> Door safety interlock Pre-wash solenoid 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to pre-wash compartment	 Water level in the tub (mm)
4	<ul style="list-style-type: none"> Door safety interlock Solenoid valve pre-wash and wash 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to conditioner compartment	 Water level in the tub (mm)
5	<ul style="list-style-type: none"> Door safety interlock Third solenoid valve 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to third solenoid valve compartment	 Water level in the tub is displayed (mm)
6	<ul style="list-style-type: none"> Door safety interlock Fourth solenoid valve (hot water where featured) 	Door closed Water level below anti-flooding level Maximum time 5 mins.	Water fill to fourth solenoid valve compartment	 Water level in the tub is displayed (mm)
7	<ul style="list-style-type: none"> Door safety interlock Wash solenoid, if the water in the tub is not enough to cover the heating element. Heating element Weight sensor (an extra litre of water is filled if featured) Circulation pump 	Door closed Water level above the heating element. Maximum time 10 mins or up to 90°C. (*)	Heating Recirculation	 Temperature in °C measured using the NTC probe.
8	<ul style="list-style-type: none"> Door safety interlock Wash solenoid, if the water in the tub is not enough to cover the heating element. Motor (55 rpm clockwise, 55 rpm anti-clockwise, 250 rpm pulse) 	Door closed Water level above the heating element	Check for leaks from the tub.	 Drum speed in rpm/10
9	<ul style="list-style-type: none"> Door safety interlock Drain pump Motor up to 650 rpm then at maximum spin speed (**) 	Door closed Water level lower than anti-boiling level for spinning.	Drain, calibration of analogue pressure switch and spin.	 Drum speed in rpm/10
10	-----	-----	-----	-----

11		<ul style="list-style-type: none"> - Reading/Deleting the last alarm 	----	----	
12 ÷ 16		<ul style="list-style-type: none"> - The LEDs, groups of symbols in the LCD screen and the backlight of the display are turned on in sequence, - Press a button/sensor to turn on the group of icons in the LCD screen or the corresponding LED and the buzzer sounds at the same time. 	Always active	User interface functions	

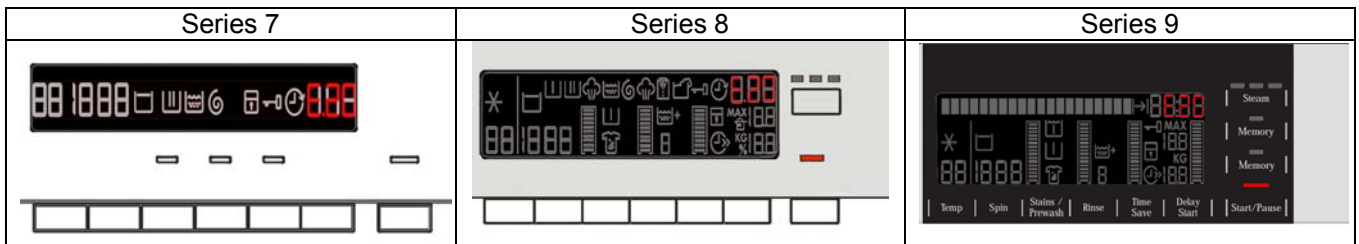
(*) In most cases, this time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostic cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating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

(**) The check at the maximum speed occurs without control of the A.G.S. and no garments must be inside the appliance.

8 ALARMS

8.1 Displaying user alarms

When a problem arises in the appliance, which generates a “WARNING” or an “ALARM”, this is displayed with three digits, where the time until the end of the cycle 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)

For its solution, the intervention of a Service engineer is required

While for the alarm:

- ↵ EH0 – Voltage or frequency outside the normal values

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

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

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

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

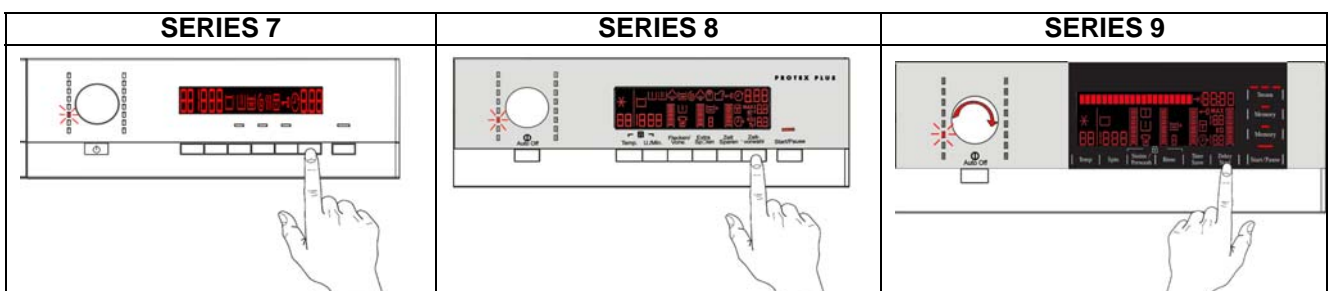
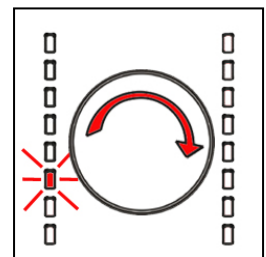
Certain alarm conditions require a drain phase to be performed before the door can be opened for safety reasons:

- 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 time.

8.2 Reading the alarms

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

- Enter the diagnostic mode (para. 7.1)
- Irrespective of the type of PCB and configuration, turn the programme selector knob **clockwise** to the **eleventh position**
The last alarm will be displayed.
- To display previous alarms, press/touch the button/sensor to the left of the START/PAUSE button in sequence (as shown in the figure)
- To return to the last alarm, press/touch the START/PAUSE button/sensor.



8.3 Rapid reading of alarms

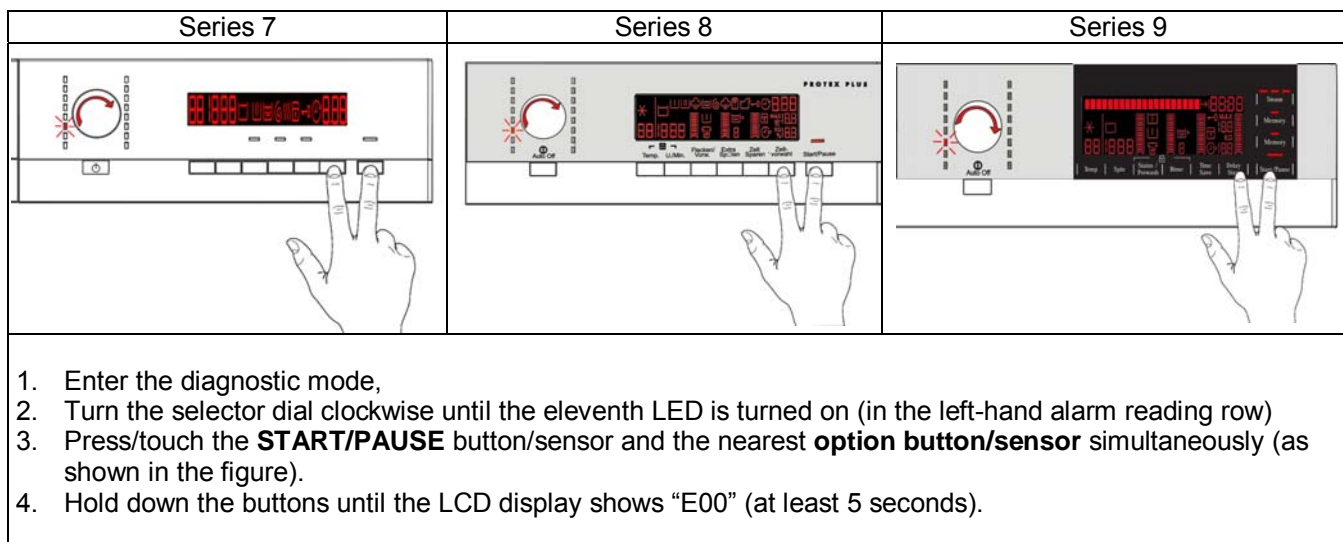
The last alarms can be displayed even if the selector is not in the tenth diagnostic position or if the appliance is in normal operating mode (for example when performing a wash programme):

- 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 continues to be displayed until a button is pressed.
- The alarm reading system is as described in para. 8.2
- During the time that the alarm is displayed, the appliance continues to perform the cycle or, if you are in the programme selection phase, it retains the options selected previously in memory.

8.4 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.

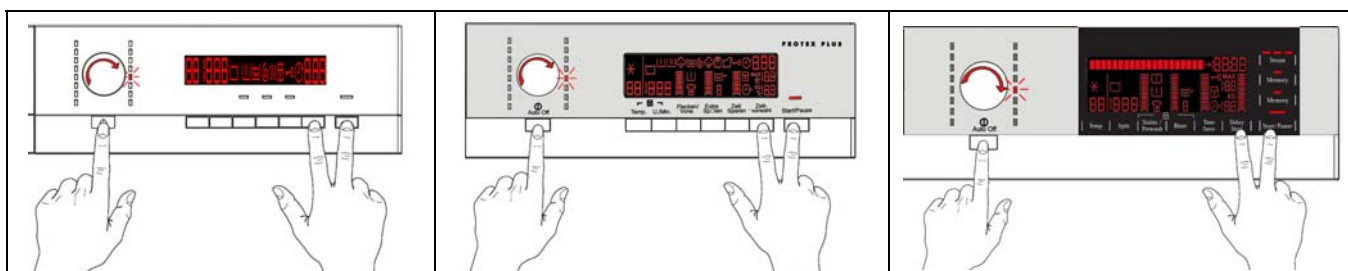
9 OPERATING TIME COUNTER

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 (1hr and 59 min = 1hr)

9.1 Reading the operating time



Do not start the procedure with the combination buttons pressed

1. Turn the appliance on at the ON/OFF switch
2. Turn the selector dial clockwise until the **fifth** LED in the right-hand row is on.
3. Press the **START/PAUSE** button and the nearest **option button** simultaneously (as shown in the figure).
4. Hold down the buttons until the hours of operation appear on the display (at least 5 seconds).

9.2 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 the SERIES 7 and 8, while the time is displayed in a single sequence for SERIES 9.

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

	Phase 1	Phase 2	Phase 3
	For <u>two seconds</u> , the following is displayed: Hr	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).
<u>SERIES</u> 7/8			
<u>SERIES</u> 9	Phase 1 		Phase 2

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.

9.2.1 Compatibility between options

		OPTIONS																
		Rinse hold	Night cycle	Prewash/Soak (*)	Stains	Extra rinse	Easy-iron	Economy (*)	Normal	Daily	Super Quick	Sensitive	Reduced spin speed	No spin	Aquasol	Max steam	Medium steam	Min steam
Compatibility with OPTIONS	Rinse hold			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
	Prewash/Soak (*)	X	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	X
	Super rinse	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
	Economy	X	X	X	X	X	X				X	X	X	X		X	X	X
	Normal	X	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	X
	Super Quick	X	X	X	X	X	X	X					X	X	X	X	X	X
	Sensitive	X		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
	No spin			X	X	X	X	X	X	X	X	X			X	X	X	X
	Aquasol	X	X	X	X	X	X		X	X	X	X	X	X				
	Max steam	X	X	X	X	X	X	X	X	X	X	X	X	X				
Medium steam	X	X	X	X	X	X	X	X	X	X	X	X	X					
Min steam	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	
	Pre-wash	X	X			X	X						X	X	X	X	X	
	Wash	X	X			X	X						X	X	X	X	X	
	Rinses	X																
	Spin																	

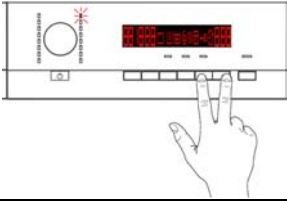
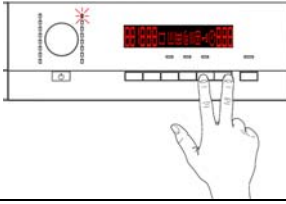
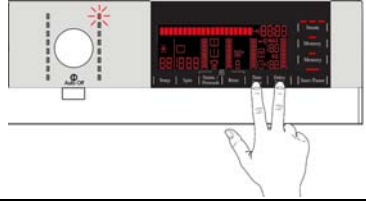
(*) Prewash and Soak cancel each other out

Pre-wash+Stains and Soak+Stains are compatible with one another depending on the detergent dispenser used

- The delayed start is compatible with all programmes. The maximum delay is of 20 hours.
- The selection of the spin cycle is available for all programmes, except for Drain/Soak/Extra Silent.

9.3 Description of options

- **Rinse hold**
 - During the cycle, performs the rinses and the intermediate spins.
 - Stops the appliance with water in the tub before the final spin cycle.
 - To drain the water, simply press the START/PAUSE button to perform the drain phase and the 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 COTTONS 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.
- **Prewash**
 - Adds a pre-wash phase with heating to 30°C (or cold, if selected) plus 30' hold with HAND WASH movement.
 - Complete Cycle
- **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 WOOL and HAND WASH cycles.
- **Super rinse (SERIES 7)**
 - Adds **two** rinses to the COTTONS cycle, one to the SYNTHETICS - DELICATES cycles.
 - Eliminates the spins at the end of the washing.
- **Super rinse (SERIES 8/9 key combination).**
 - Adds **two** rinses to the COTTONS cycles, adds **one** rinse to the SYNTHETICS - DELICATES cycle
 - Eliminates the spins at the end of the washing.
- **EXTRA rinse (SERIES 8/9)**
 - Adds **up to five** rinses in the COTTONS - SYNTHETICS - DELICATES cycles
 - When the rinses are five or more, it eliminates the spins at the end of the washing.
Maximum of 8 rinses in total.

ENABLING/DISABLING SUPER RINSE KEY COMBINATION		
Appliances which do not envisage the SUPER RINSE option combined with a button can enable it through a key combination.		
Series 7	Series 8	Series 9
		
During the selecting phase, press the two buttons shown in the figure simultaneously for a few seconds until the related icon lights up. This option also remains enabled for subsequent cycles. To disable it, repeat the same procedure until the related icon is turned off.		

- **No spin**
 - It eliminates all the spin phases.
 - It adds three rinses to the COTTONS cycle and one to the SYNTHETICS cycle.
- **Daily**
 - Modifies the structure of the COTTONS - SYNTHETICS - DELICATES cycles to obtain good washing performance in a short space of time.

- **Super quick**

→ Modifies the structure of the wash phase of the COTTONS - SYNTHETICS - 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 three digits

→ See page 12 series 7, page 20 series 8, and page 28 series 9.

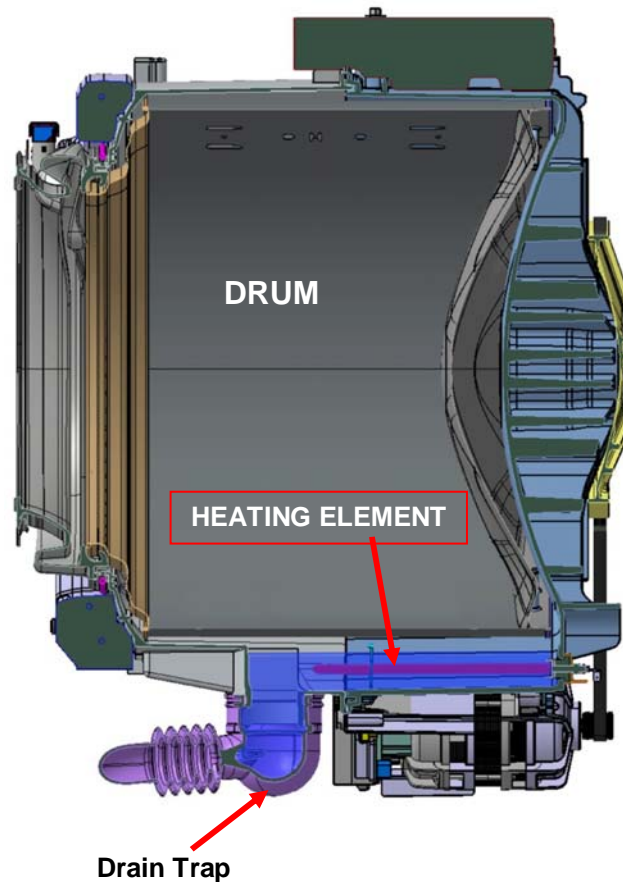
→ To start the cycle immediately after the countdown to the delayed start has already begun:
press the Start/Pause button, cancel the delay time by pressing the relevant button, then press Start/Pause again.

9.3.1 Generating STEAM

In SERIES 8 and 9 certain programmes can be configured to generate steam, which is used to refresh the laundry or to remove some creases and make ironing easier.

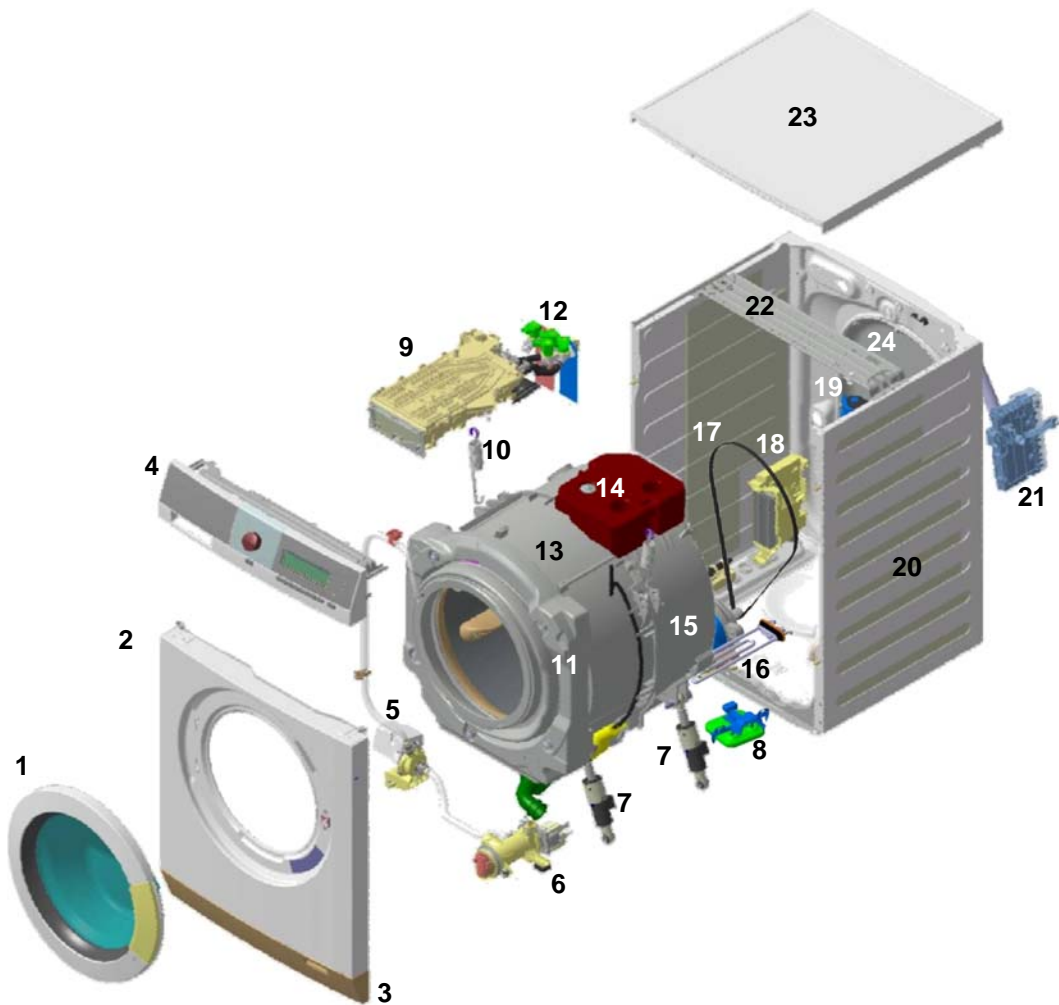
To obtain steam, during these programmes, the quantity of water filled in the tub must be enough to cover the heating element and the maximum temperature to reach is 60°C/75°C.

During the water filling and the movement of the drum, the laundry must not get wet.



10 TECHNICAL CHARACTERISTICS

10.1 Construction

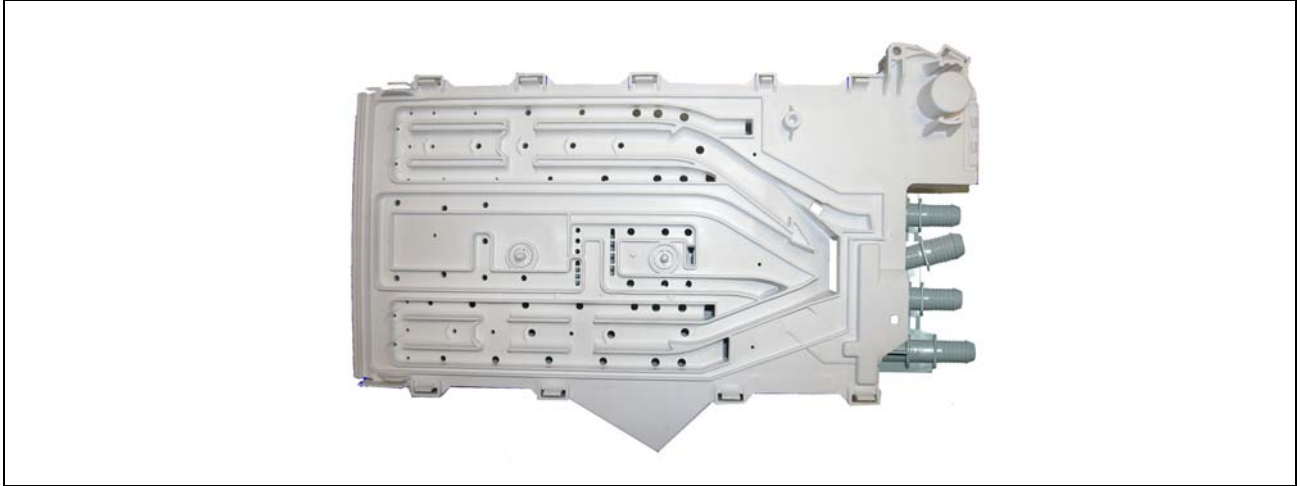


- | | |
|-------------------------------------|----------------------------------|
| 1. Door | 13. Washing unit |
| 2. Front panel | 14. Upper counterweight |
| 3. Kick plate | 15. Motor |
| 4. Control panel | 16. Heating |
| 5. Circulation pump | 17. Belt |
| 6. Drain pump | 18. Inverter motor control board |
| 7. Shock absorbers | 19. Analogue pressure switch |
| 8. Aqua control | 20. Mobile rear casing |
| 9. Detergent dispenser | 21. Main circuit board |
| 10. Washing unit suspension springs | 22. Crossbar |
| 11. Front counterweight | 23. Worktop |
| 12. Solenoid valves | 24. Back panel |

10.2 Detergent dispenser



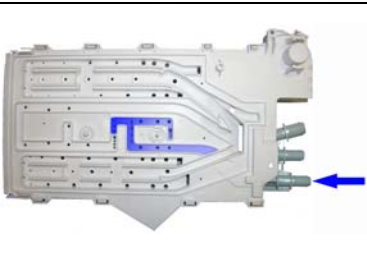
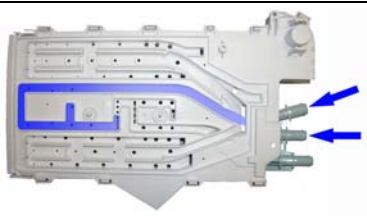
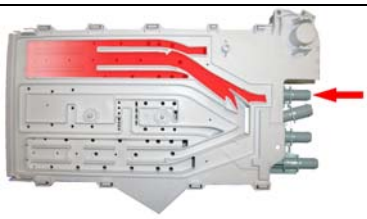
10.2.1 Detergent dispenser with multi-way solenoid valves

The water in the detergent dispenser is filled through a solenoid valve for cold water (with one inlet, and 2 or 3 outlets) and where featured one for the hot water (with one inlet and one outlet); The detergent dispenser has 4 compartments.

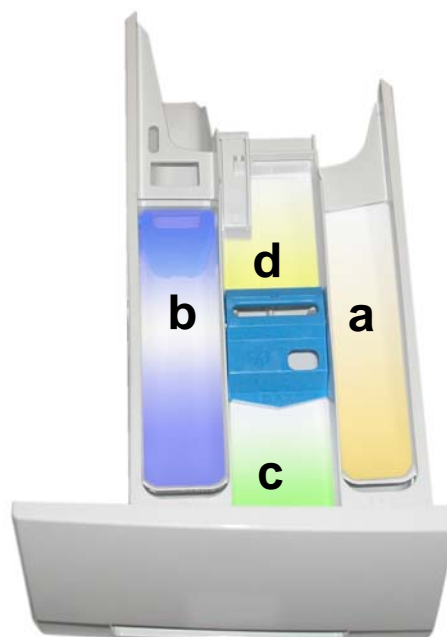


- Tray conveyor
- 4-way water inlet nozzle
- 4-compartment detergent dispenser

10.2.2 Operating principle of 4-compartment conveyor

<p style="text-align: center;">Water fill to pre-wash compartment (pre-wash solenoid)</p> <ul style="list-style-type: none"> This solution is used with the four compartment tray: the detergent in compartment "a" is loaded at the start of the pre-wash phase. 	
<p style="text-align: center;">Water fill to wash compartment (wash solenoid)</p> <ul style="list-style-type: none"> In all models: compartment "b" is used to contain the detergent loaded at the start of the washing. 	
<p style="text-align: center;">Water fill to activating wash compartment</p> <ul style="list-style-type: none"> In models with 4-compartment dispenser trays, the filling in tray "d" is performed by a purpose-provided solenoid valve during washing, when the water has reached 40°C. In models with 3-compartment dispenser trays, this section is not used. 	
<p style="text-align: center;">Water fill to conditioner compartment (pre-wash and wash solenoid valves)</p> <ul style="list-style-type: none"> In all models: compartment "c" is used for the conditioner, which is loaded at the start of the final rinse. The prewash and wash solenoid valves are activated simultaneously. 	
<p style="text-align: center;">Hot water filling (hot water solenoid)</p> <ul style="list-style-type: none"> In models with a hot water solenoid valve, the hot water solenoid valve is activated to fill water into the wash compartment. 	

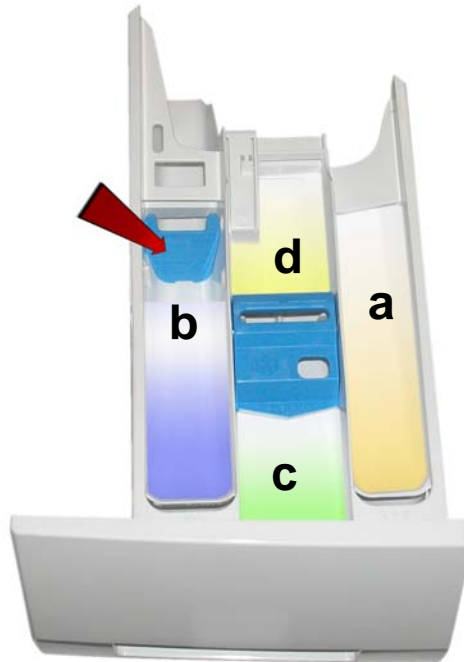
10.3 Detergent dispenser



10.3.1 Prearranging the flap in the detergent dispenser

The detergent dispenser is designed for use with: powder detergent or liquid detergent.

A flap (indicated by the arrow) has been fitted inside compartment “b” where the detergent is introduced, which can be flipped up or down.



With the flap flipped up, the appliance is ready for use with powder detergent (this is the factory setting) - see figure opposite.



To modify the position of the flap, pull the detergent dispenser out (see page 76).

With the flap flipped down, the appliance is ready for use with liquid detergent.

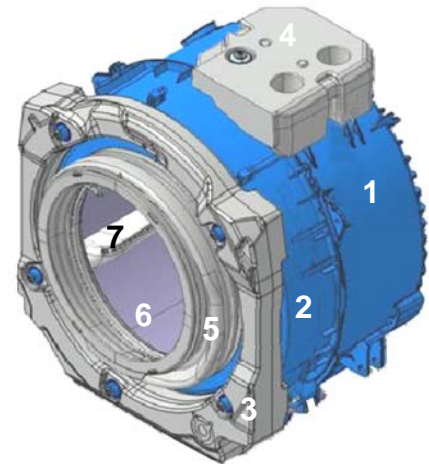


For further details, read the instruction manual.

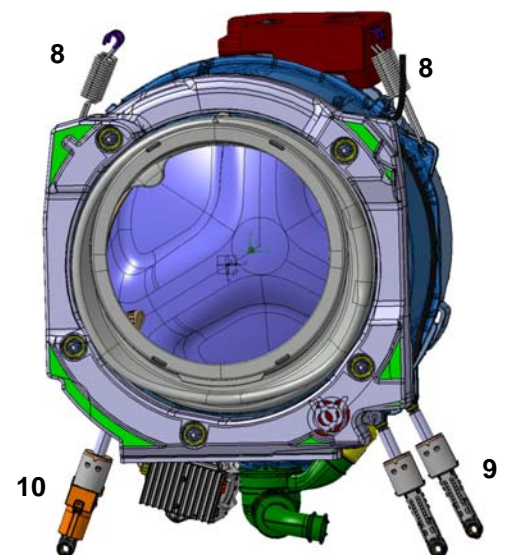
10.4 Washing unit

WASHING UNIT		
Type	Load capacity (cottons)	Drum volume
	max.	
G60	9 kg	66 litres

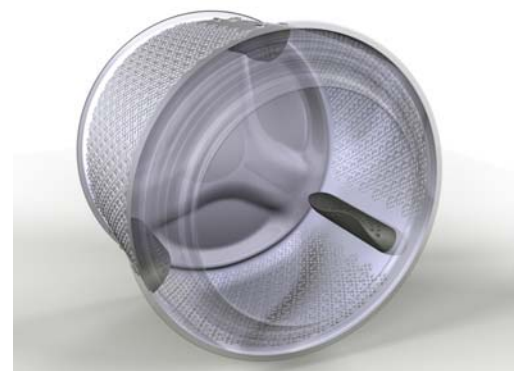
The washing unit is made up of: a rear casing (1), a front casing (2) welded together, making up the welded tub. Inside, it contains the drum (6) (made of stainless steel) with three blades (7) clicked in place (made of carboran). To balance the unit during the washing movements and during the spin phases, the counterweights are secured in place with screws: a front counterweight (3) and a rear one (4). The bellow seal (5) is fastened at the front.



The washing unit is suspended by two coil springs (8) attached to the top crossbar, and the oscillations are dampened by three shock absorbers, two on the right (9) and one on the left (10) (looking straight at the front of the appliance). In the SERIES 7, all three shock absorbers are the same, whereas in the SERIES 8 and 9 the left one (10) has an incorporated weight sensor (for further details please read about the weight sensor on page 55).



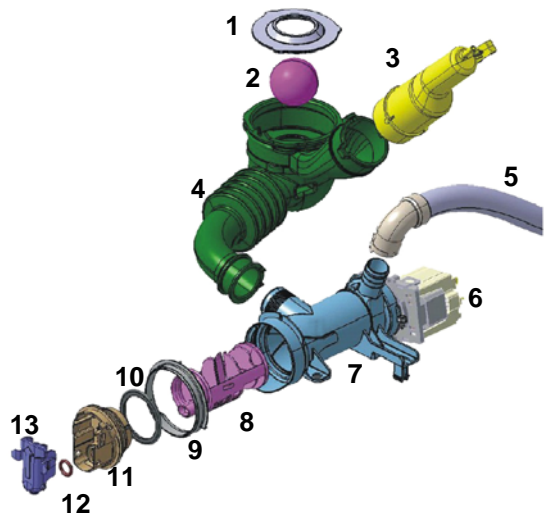
Drum with three blades inside.



10.5 Water circuit

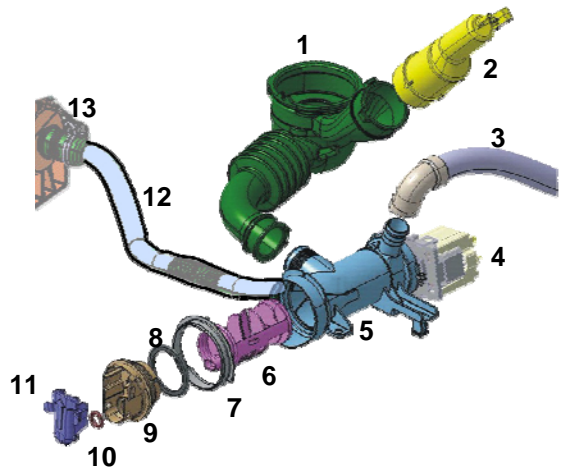
10.5.1 OKO version drain circuit

1. Sphere locking ring
2. Sphere
3. Pressure chamber
4. Filter body tub pipe
5. Drain pipe
6. Drain pump
7. Filter body
8. Filter
9. Filter body seal
10. Filter knob seal
11. Filter knob
12. Closing lever seal
13. Closing lever



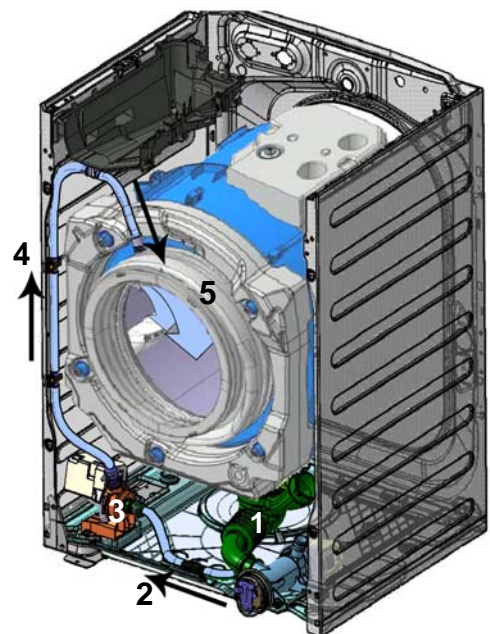
10.5.2 JET version drain circuit

1. Filter body tub pipe
2. Pressure chamber
3. Drain pipe
4. Drain pump
5. Filter body
6. Filter
7. Filter body seal
8. Filter knob seal
9. Filter knob
10. Closing lever seal
11. Closing lever
12. Circulation pump suction tube
13. Circulation pump



10.5.3 JET circuit

The water circulating through the drain circuit (1) during the washing is suctioned along the tube (2) by the circulation pump (3) which conveys it through the tube (4) into the bellow seal and from here into the laundry in the drum.



10.5.4 New filter knob

Below is the existing procedure to empty out the drain circuit so far:

- ↪ For some appliances, the drain hose needs to be detached from the back panel and positioned as low down as possible to drain the water left inside the drain circuit.
- ↪ In other appliances, at the bottom of the front panel, there is a flap granting access to the filter knob. Beside it, there is a small tube to drain the water once the plug has been removed.
- ↪ For appliances manufactured with the new filter knob: open the flap at the bottom of the front panel. The filter knob is as shown in fig. 1

To drain the water, simply:

- press the two tabs that secure the closing lever to the plug fig. 2.
- simultaneously remove the top part of the lever as indicated by the yellow arrow in fig. 3.
- arrange the closing lever as shown in fig. 4.

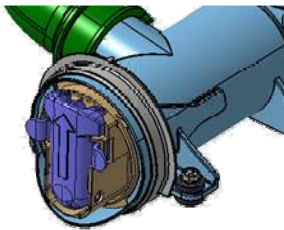


Fig. 1

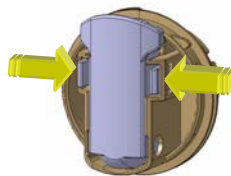


Fig. 2

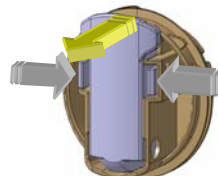


Fig. 3

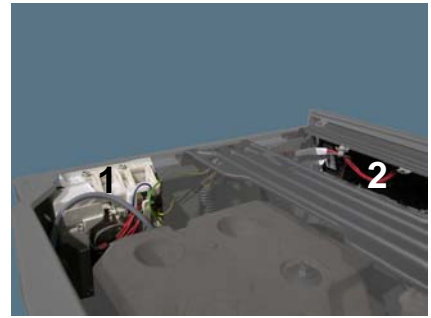


Fig. 4

10.6 Electronic control

The electronic control is made up of:

1. Main circuit board
2. Control/display circuit board
3. INVERTER motor control board (not shown in figure)



The control/display circuit board contains: the selector dial, to select the washing programme, the LCD display, to display the programme information; the buttons to adjust the temperature, the spin speed and possibly select an option, the Start/PAUSE button and lastly the ON/OFF button (in SERIES 9, there is only the ON/OFF button as the other buttons have been replaced by touch sensors).

The commands received by the display board (by turning the selector dial, selecting an option, etc...) are sent to the main circuit board, which powers all the electrical components (cold and hot water solenoid valve - where featured, motor control board - Inverter, drain pump, circulation pump - where featured, heating element, door safety interlock, drum light).

It controls the level of water via the analogue pressure switch.

It controls the status of the door.

It controls the speed of the motor.

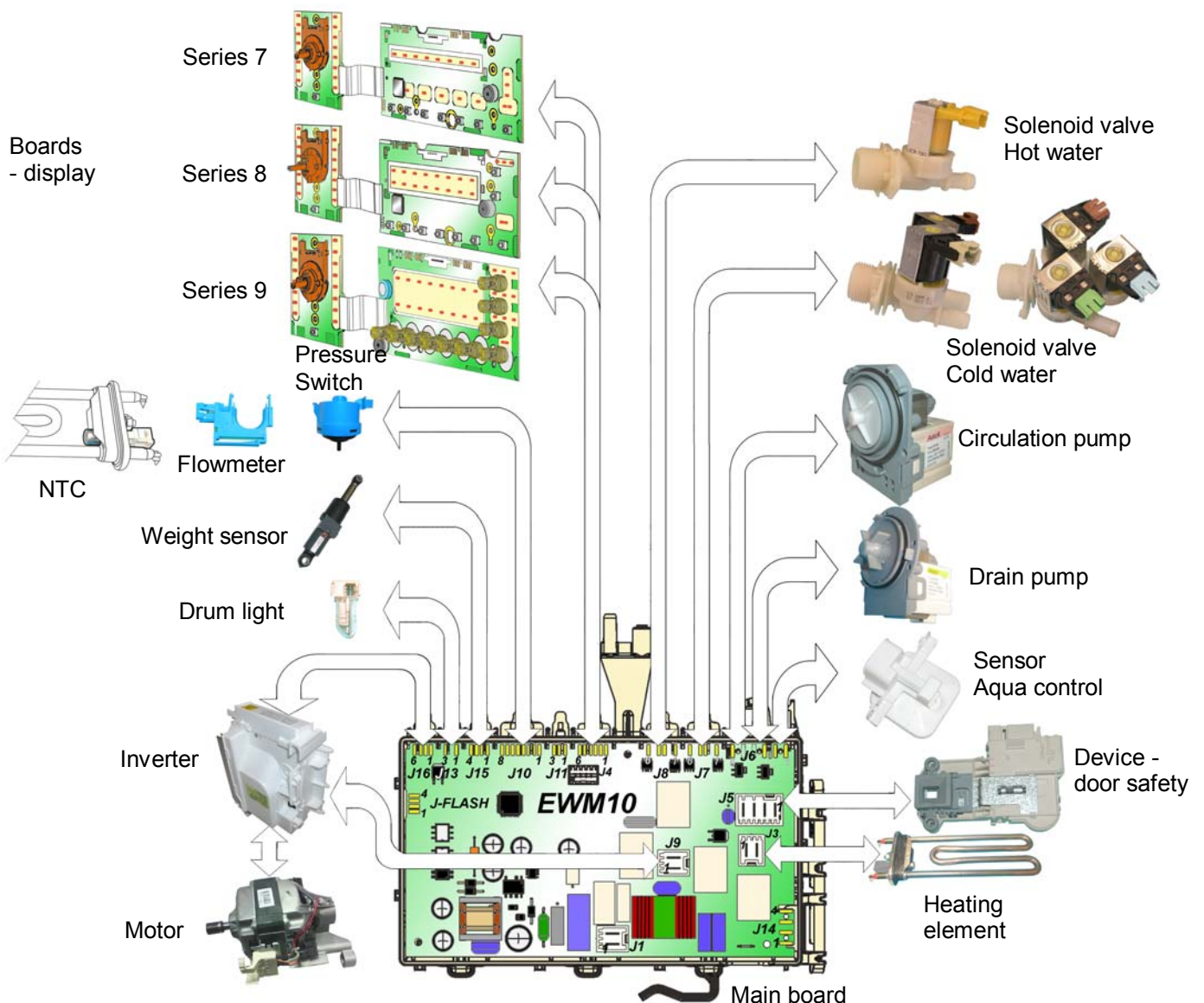
It controls the temperature of the washing water via the NTC probe inserted in the heating element.

It controls the voltage and frequency of the electricity supply, making sure they are close to nominal values.

It controls the weight of the laundry in the drum, via the weight sensor.

It controls the flow of water through the solenoid valve via the flowmeter.

It simultaneously controls their functioning to guarantee the correct performance of the washing cycle.



11 ELECTRICAL COMPONENTS



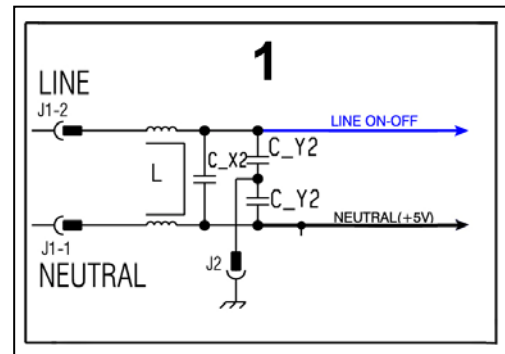
- **When replacing any of the components, please refer to the code shown in the list of spare parts relating to the appliance being repaired.**

11.1 Anti-disturbance filter

11.1.1 General characteristics

This device is connected to the electricity power line input of the appliance and avoids the emission of radio frequency disturbance in the electricity mains. It is incorporated into the main board.

1. Main circuit board



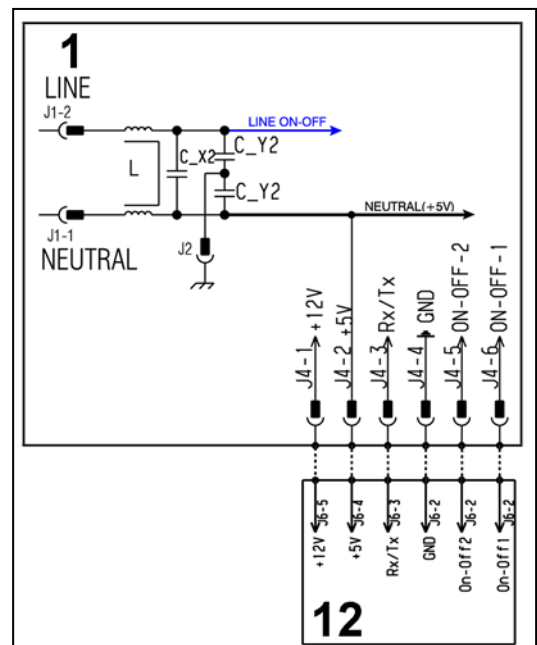
11.2 Display board

The main circuit board (1) supplies the power supply voltage to the control/display board (12).

Turn the selector dial to select the programmes, press the buttons to choose the options and press the START/PAUSE button to start or pause the appliance.

The buzzer - where featured - is powered by the display board.

- 1. Main circuit board
- 12. Display board



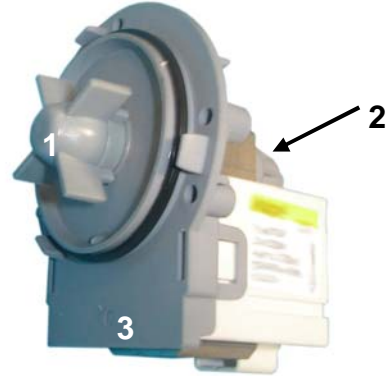
11.3 Drain pump – Aqua control



- When replacing the pump, please refer to the code shown in the list of spare parts relating to the appliance.

11.3.1 General characteristics

1. Wheel
2. Rotor
3. Stator



The pump, which drains the water at the end of the various washing cycle phases, is centrifugal and is actuated by a synchronous motor. The rotor consists of a permanent magnet and the direction of rotation can be either clockwise or anticlockwise. The rotor can turn by approximately a quarter of a revolution without turning the wheel. Consequently, if a foreign body is stuck in the wheel, the rotor can perform small movements clockwise and anticlockwise until the foreign body is released. The flow rate of these pumps is approximately 18 ÷ 20 l/min, and the maximum head is 90 cm. Fitted with thermal cut-out.

Important!

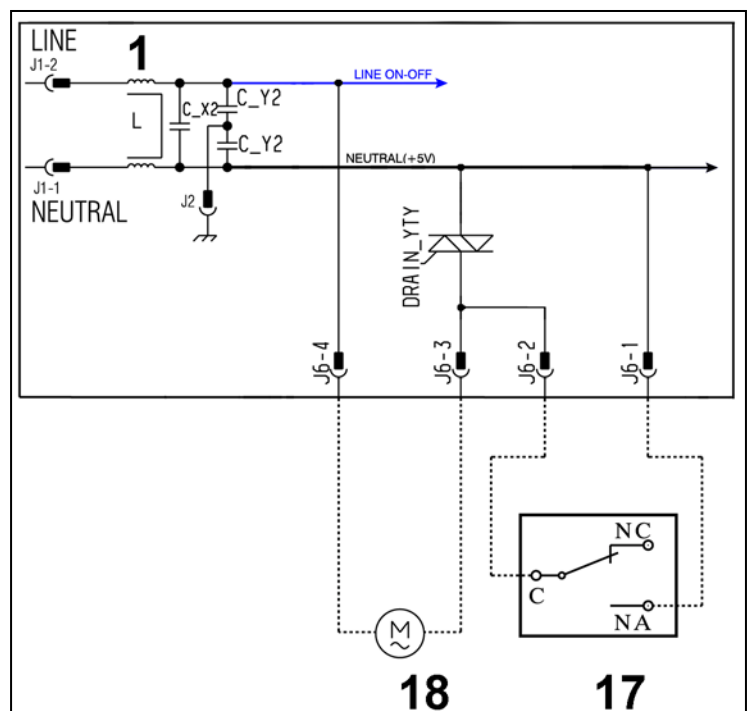
Synchronous pumps, when powered on empty (disconnected from the water circuit), may not start in some cases because their very construction makes them need an antagonist torque on the wheel to allow the rotor to move in one of the two directions.

The pumps should therefore only be tested once fitted to the appliance, after a little water has been filled.

The drain pump is powered by the main circuit board through a triac, as follows:

- ↳ for a pre-determined period (and an alarm might be displayed, see table of alarms).
- ↳ until the electronic pressure switch closes on empty, after which the pump is actuated for a brief period or passes to the subsequent phase.

1. Main circuit board
17. Aquacontrol sensor
18. Drain pump



11.4 Aqua control

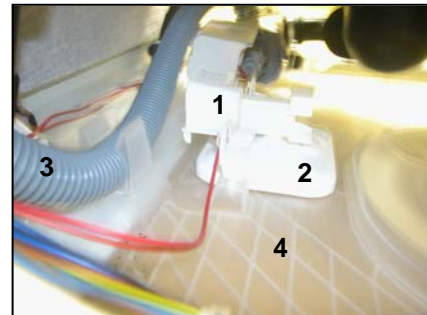
11.4.1 General characteristics




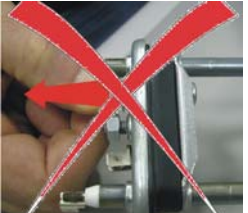
The Aqua control is a sensor placed touching the bottom of the appliance which detects any water leaks inside the washing machine and powers the drain pump (not only during normal operation but also when the appliance is turned off but plugged in).

In the lower part of the washing machine, there is a plastic bottom in the shape of a tray, which collects any water leaks (from the tub, from the pipes and hoses, etc.), that all collect in the area where the float is positioned (made of polystyrene), which in the presence of water is raised and triggers the micro-switch, which powers the drain pump. When it is triggered, the LCD displays an ALARM (if the appliance is on) - see table of alarms.

1. *micro-switch*
2. *float*
3. *drain pipe*
4. *Aqua control bottom*



11.5 Heating element

	<ul style="list-style-type: none"> • When replacing the heating element, please refer to the code shown in the list of spare parts relating to the appliance. • It is strictly forbidden to tamper with the heating element in any way!!! (e.g. changing the NTC probe, etc...) 	
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11.5.1 General characteristics

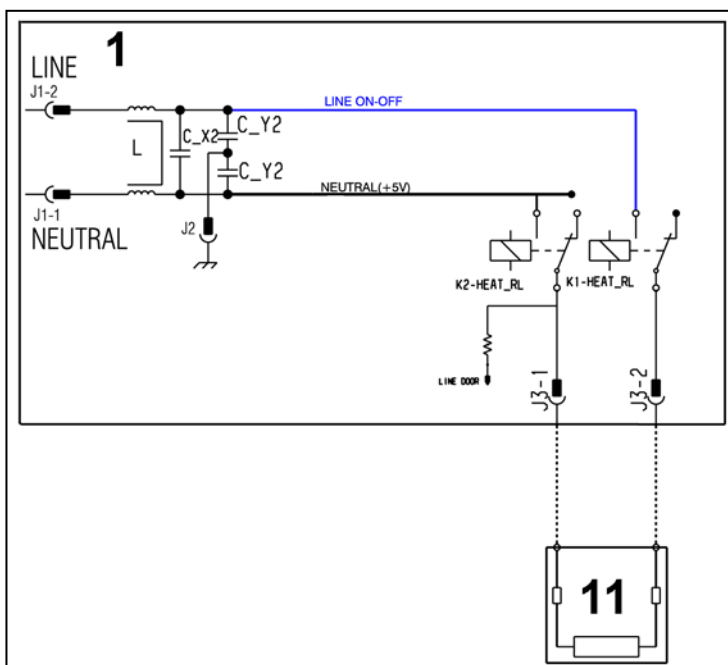
1. NTC probe
2. Heating element




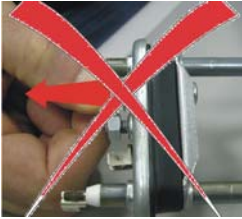
The heating element of the washing water is armoured, i.e. it is inserted in sealed tubular stainless steel casing.

It is powered by two relays (K1, K2) situated in the circuit board. It is fitted with two thermal fuses which trip if the temperature of the heating element exceeds the values for which they were calibrated. (In the event of a fault, an alarm is displayed - see table of alarms).

1. Main circuit board
11. Heating element

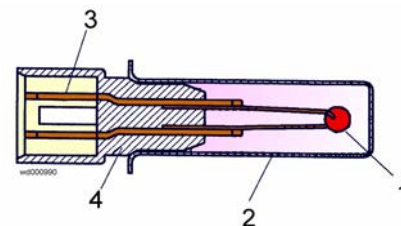


11.6 Temperature sensor

	<ul style="list-style-type: none"> • When replacing the heating element, please refer to the code shown in the list of spare parts relating to the appliance. • It is strictly forbidden to tamper with the heating element in any way!!! (e.g. changing the NTC probe, etc...) 	
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11.6.1 General characteristics

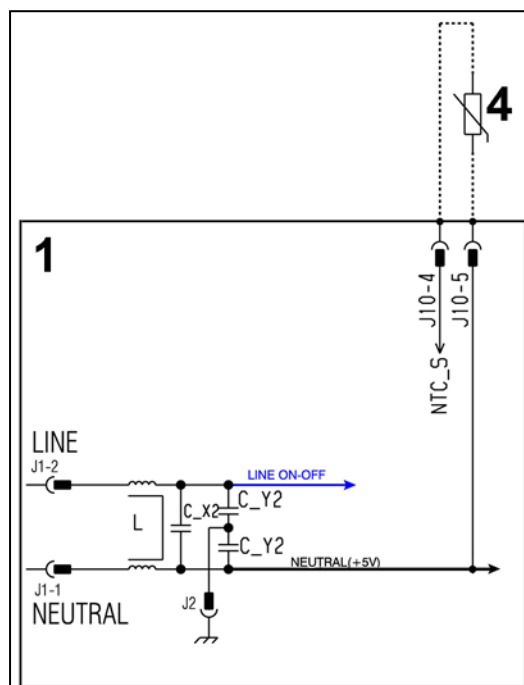
1. NTC heating element
2. Metal capsule
3. Terminals
4. Plastic casing



An NTC type probe is used to control the washing temperature: it is built in such a way that its internal resistance decreases as the temperature rises. This drop in resistance is detected by the electronic control which, when the desired temperature is reached, disconnects the heating element.

The temperature of the water is controlled by the circuit board by means of an NTC probe incorporated in the heating element.

1. Main circuit board
4. NTC probe

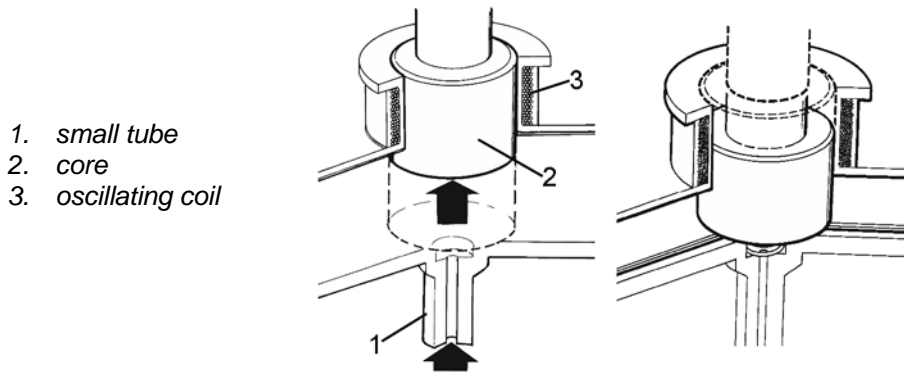


In the event of a fault (short-circuit or failure), an alarm is displayed - see table of alarms.

11.7 Analogue pressure switch

11.7.1 General characteristics

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



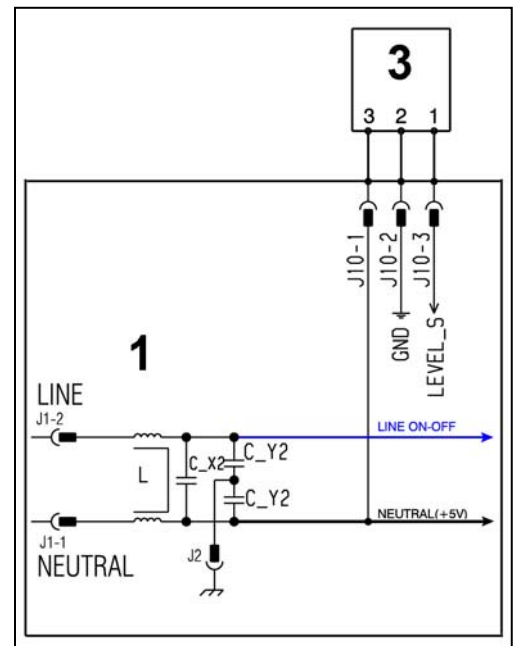
1. *small tube*
2. *core*
3. *oscillating coil*

The pressure switch is connected via a pipe to the pressure chamber.

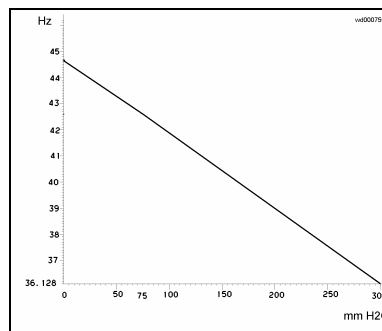
When water is introduced into the tub, this creates a pressure inside the hydraulic circuit that causes the membrane to change position. This in turn modifies the position of the core inside the coil, thus changing the inductance and the frequency of the oscillating circuit.

The PCB recognises how much water has been introduced into the tub according to the frequency.

1. *Main circuit board*
3. *Analogue pressure switch*



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

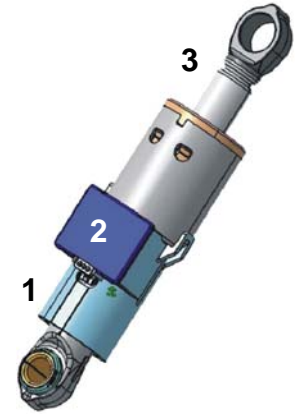


In the event of a fault, an alarm is displayed - see table of alarms.

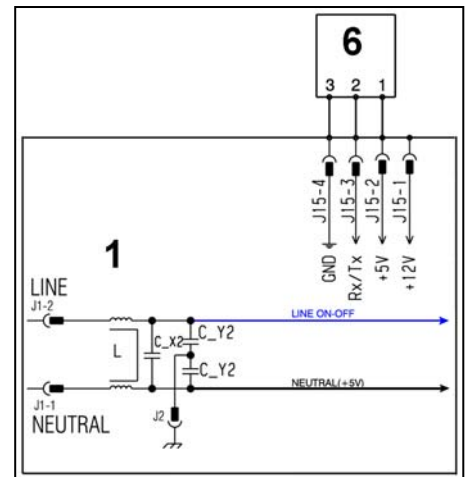
11.8 Shock absorber with weight sensor (where featured)

11.8.1 General characteristics

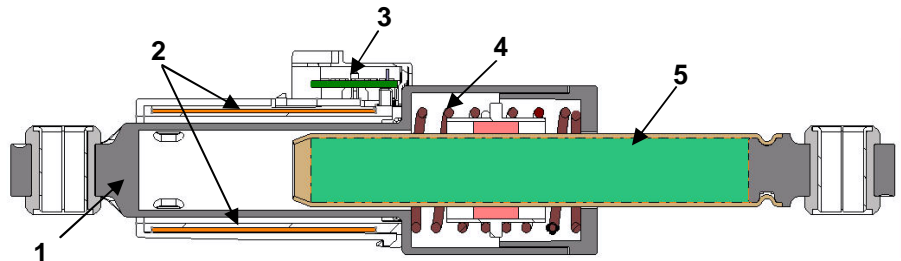
1. Plunger
2. Weight sensor
3. Piston



1. Main circuit board
6. Weight sensor



1. Plunger
2. Oscillating Coil
3. PCB
4. Spring
5. Piston

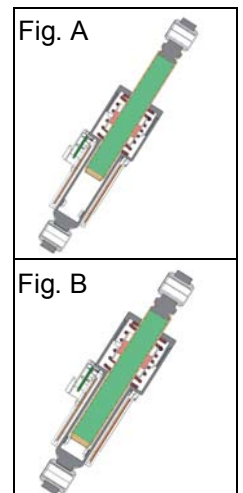


The weight sensor incorporated into the shock absorber is made up of an oscillator (which generates a frequency) consisting of the circuit board (3) and coil (2).

If there is no laundry in the drum when the appliance is turned on, the position of the piston compared to the plunger is considered as the zero value (fig. A).

When laundry is placed in the drum, this causes the washing unit to be lowered, with the consequent compression of the shock absorber (fig. B); the movement of the piston inside the plunger changes the inductance of the coil, and consequently changes the frequency, which is processed by the circuit board and communicated to the display board and the LCD displays the weight of the laundry in kg.

If there is laundry in the drum when the appliance is turned on, the position of the piston is different from when the drum is empty, moving the zero value and offsetting the final measurement.



Efficacy check

To check the efficacy of the weight sensor:

- Check that the inside of the drum is empty.
- Plug the appliance into the mains socket, press P1 button to turn on the appliances and select the desired programme.
- Open the door if it isn't already opened
- Place an item of known weight inside the drum (no more than the maximum weight for which the appliance is sold) and check that the value represented on the LCD display corresponds (with an accuracy of ± 1 kg and ± 1.5 kg for heavy loads).

Diagnostics

During diagnostic mode, position 7 (see paragraph entitled "Diagnostics system" on page 32).

The appliance fills water until the first level to perform the heating function. Next, another litre of water is filled through the solenoid valve (measuring it with the flowmeter) if the weight sensor is efficient, the variation is recognised, otherwise the alarm EC3 is displayed on the LCD.

11.9 Door safety interlock

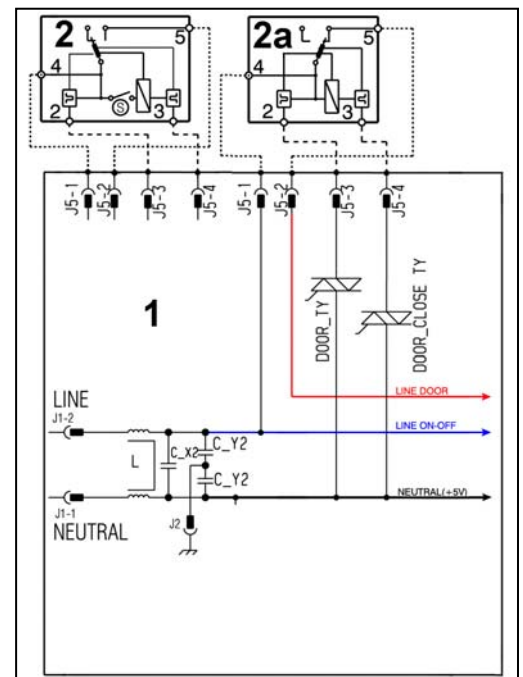
11.9.1 General characteristics



The instantaneous door interlock allows the door to be opened as soon as the drum stops. If the conditions described further are met.

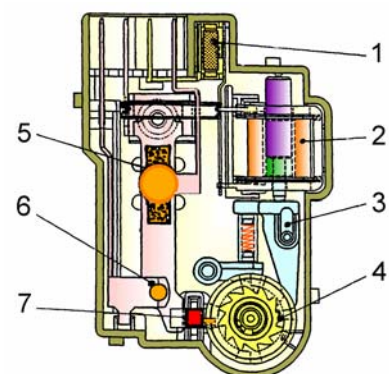
In appliances with a drum light, a door safety interlock is fitted with an integrated switch (piloted via a slide from the door latch). The information about the position of the switch is sent to the main circuit board and consequently powers the LED or not.

- 1 Main circuit board
- 2 Door safety interlock (with light micro-switch)
- 2a Door safety interlock (without light micro-switch)



11.9.2 Operating principle

- 1. Solenoid protection PTC
- 2. Solenoid
- 3. Lifting assembly
- 4. Cam
- 5. PTC - bi-metal
- 6. Electrical contacts (main switch)
- 7. Ratchet



- When the programme starts (start/pause button), the main circuit board sends a voltage pulse, lasting 20 msec, to the solenoid (at least 6 seconds must have passed since the appliance was turned on), which turns the position of the cam: the ratchet which locks the cursor of the door safety interlock is raised and simultaneously closes the contacts of the main switch, which powers all the appliance components.
- When the programme ends, the circuit board sends two additional 20 msec pulses (200 msec apart):
 - the first pulse moves the cam by another position, without releasing the ratchet
 - the second pulse (which is only sent if everything is in working order) moves the cam to another position, which causes the ratchet to return to its position and therefore release the interlock; the contacts of the main switch are simultaneously opened.

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.

– Automatic release device

In the event of a power failure, turn the appliance off at the ON/OFF button, solenoid fault, the bi-metal PTC cools in between 55 seconds and about 4 minutes (with temperature of 65°C) and therefore releases the door.

– Solenoid protection

A PTC is connected in series to the solenoid to limit the current (and therefore any overheating) in the following cases:

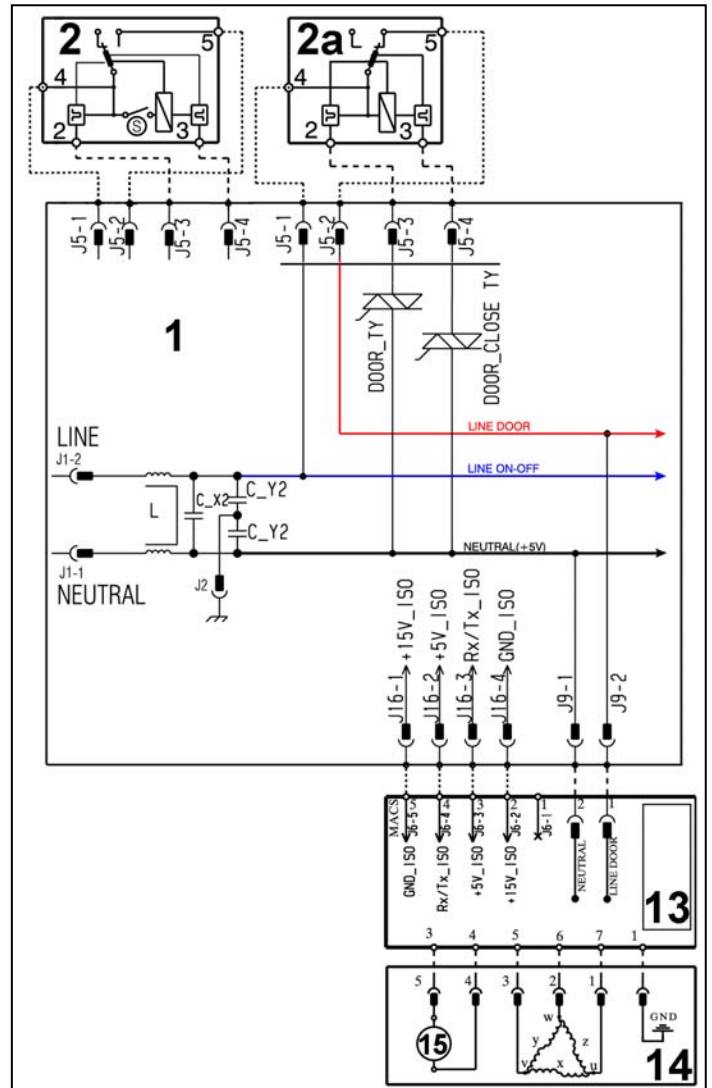
- main circuit board triac short circuit
- many consecutive pressings of the start/pause button (more than 10 times)

11.10 Three-phase asynchronous motor - Inverter

11.10.1 General characteristics

1. Main circuit board
2. Door safety interlock (with light micro-switch)
- 2a. Door safety interlock (without light micro-switch)
13. Inverter
14. Motor
15. Tachometric generator

X-Y-X = Motor windings

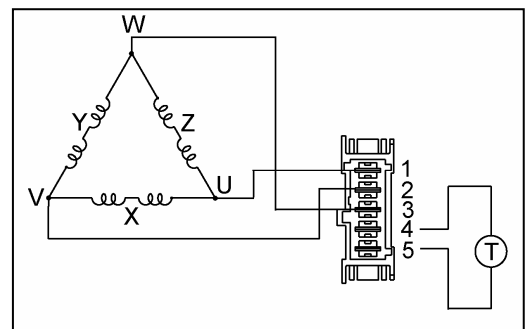


11.10.2 Power supply to motor

Three-phase power is fed by the inverter (13), which sends through the connectors 5-6-7 the three phases to connectors 1-2-3 on the motor (nodes U-W-V), where the windings (Y-X-Z-) are connected. The phase shift between the phases is 120° and peak amplitude is 310 V.

It is possible to get an idea of the efficiency of the motor by measuring the resistance of the coils:

- Coil y ohm 5.8 ~ ±7% (contacts 2-3)
- Coil x ohm 5.8 ~ ±7% (contacts 1-2)
- Coil z ohm 5.8 ~ ±7% (contacts 1-3)
- Coil T (tachometric) ohm 181.5 ~ ±7% (contacts 4-5).



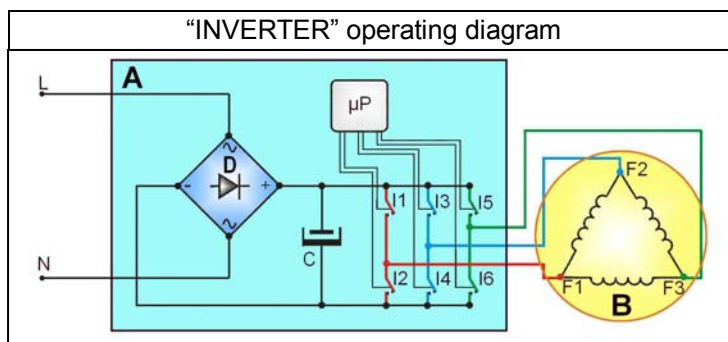
11.11 Inverter

11.11.1 General characteristics

The EWM10931 electronics use a new asynchronous motor, with 2 poles, three-phase, with high performance and low noise levels.

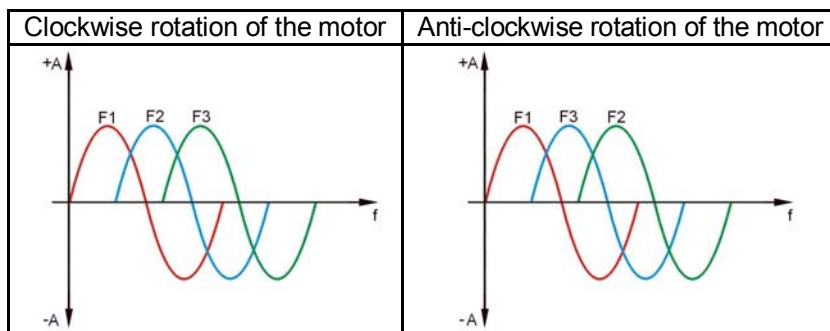


- L = Phase
- N = Neutral
- A = "INVERTER" board
- B = Motor
- C = Condenser
- D = Diodes
- I1 ÷ 6 = Switches
- F1 ÷ 3 = Motor connectors
- μP = Micro Processor



To transform the single-phase electricity (available in our homes) into three-phase electricity, a new circuit board is used (A) to transform the energy from single-phase to three-phase, which can be modulated in breadth and frequency respectively to adjust the power and number of revolutions of the motor.

Single-phase electricity (applied to connectors L-N), is rectified by the diode jumper (D), so there is a direct voltage of 310 V at the ends of condenser C, which through the combination of the opening and closing of switches I1 ÷ I6 (piloted by the μprocessor) determines the piloting voltage and frequency of the motor.



The speed of rotation of the motor is determined by the signal received from the tachometric generator (T). During the spin phases, the microprocessor can perform, depending on the software configuration, the anti-foam check, where featured, and the anti-unbalancing check.



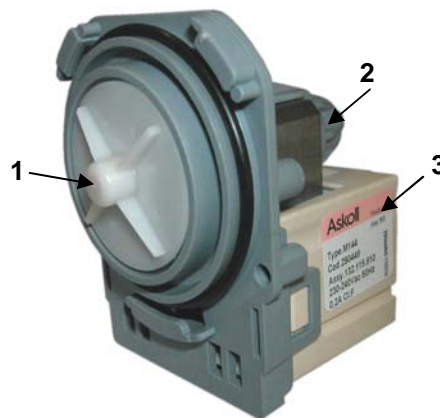
- **Any work on electrical appliances must only be carried out by qualified technicians.**
- **Unplug the appliance before accessing internal components.**
- **When replacing the "INVERTER" board, do not open the plastic casing, because some parts are subject to high voltage values and some condensers remain loaded for a long time at dangerous voltage levels even after being unplugged.**
- **Accidental physical contact may cause electric shocks.**

11.12 Circulation pump (where featured)

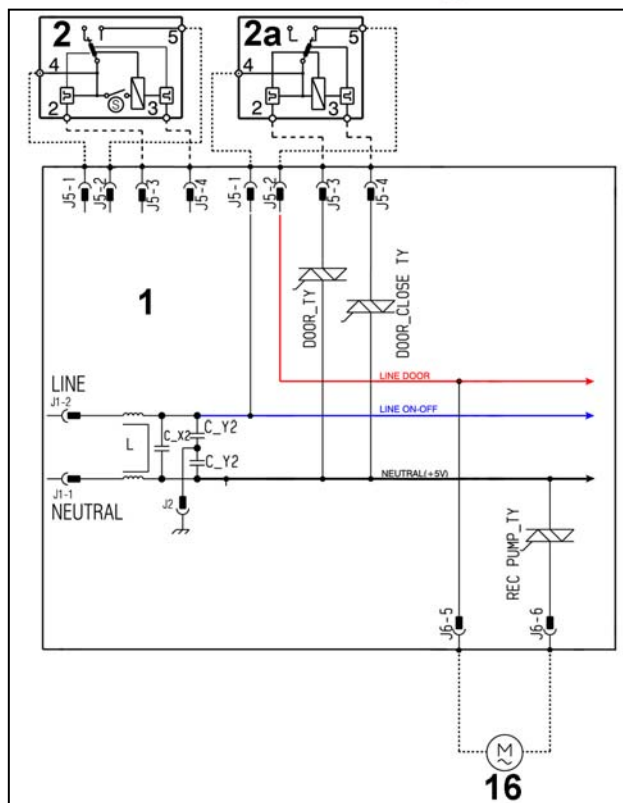
11.12.1 General characteristics

In models with Jetsystem washing, a synchronous circulation pump is fitted, which is designed to circulate water continuously, withdrawing it from the filter body and introducing it into the tub through the bellow seal. It is powered directly by the main circuit board via a triac and is fitted with a thermal cut-out.

1. Wheel
2. Rotor
3. Stator



1. Main circuit board
2. Door safety interlock (with light micro-switch)
- 2a. Door safety interlock (with without light)
16. Circulation pump



Important!

Synchronous pumps, when powered on empty (disconnected from the water circuit), may not start in some cases because their very construction makes them need an antagonist torque on the wheel to allow the rotor to move in one of the two directions.

The pumps should therefore only be tested once fitted to the appliance, after a little water has been filled.

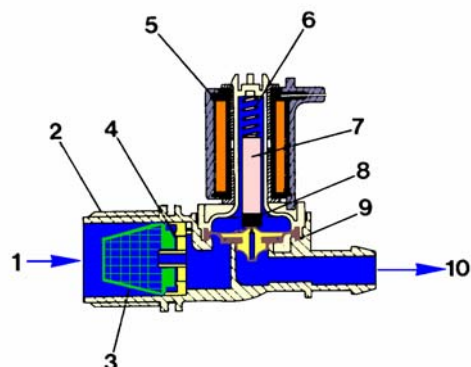
11.13 Solenoid valves

11.13.1 General characteristics



This component introduces water into the detergent dispenser and is controlled electrically by the main circuit board via Triac. The level of water in the tub is controlled by the analogue pressure switch.

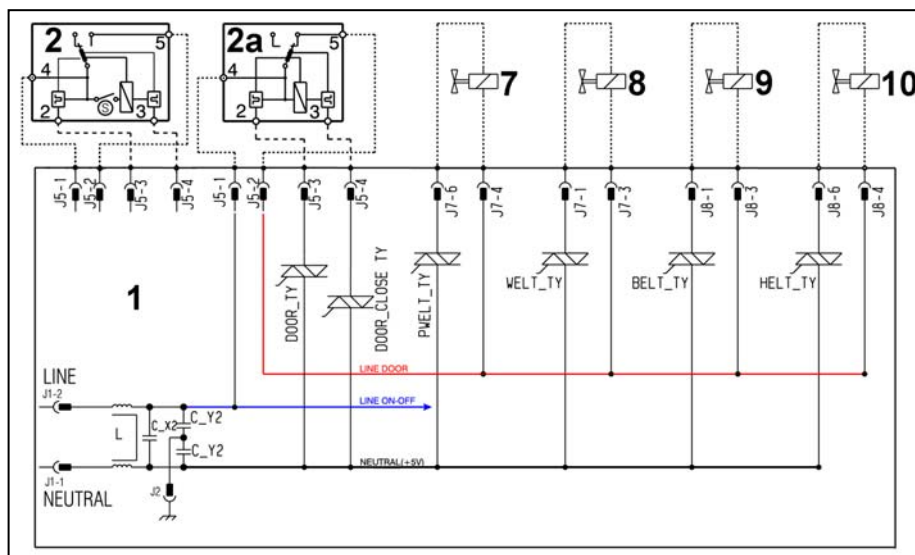
1. Water inlet
2. Solenoid valve body
3. Filter
4. Flow reducer
5. Coil
6. Spring
7. Moving core
8. Rubber
9. Membrane
10. Water outlet



11.13.1.1 Operating principle

When idle, the core, pushed by a spring, keeps the central hole of the membrane closed and so the latter hermetically seals access to the water inlet duct.

When the coil is powered, the core is attracted, releasing the central hole of the membrane. Consequently the valve opens.



1. Main circuit board
2. Door safety interlock (with light micro-switch)
- 2a. Door safety interlock (without light micro-switch)
7. Pre-wash solenoid
8. Wash solenoid
9. Solenoid valve
10. Hot water solenoid

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 flow 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.

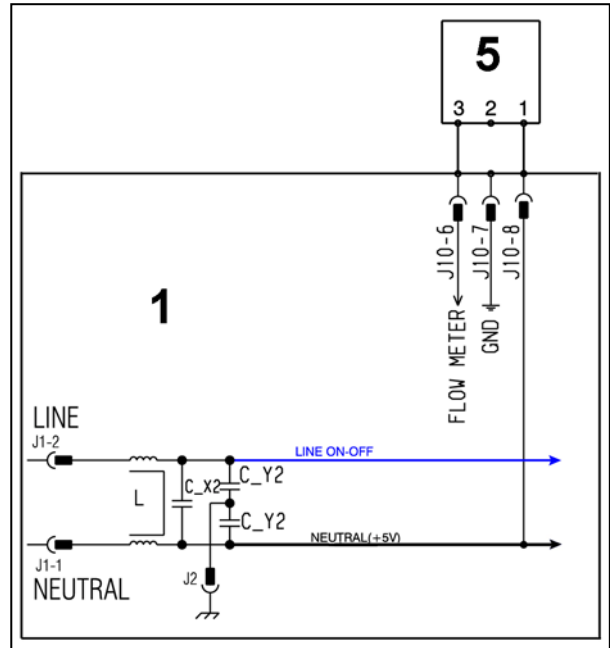
11.14 Flowmeter

11.14.1 General characteristics

Flowmeter



- 1. Main circuit board
- 5. Flow sensor



Some models of solenoid valves have a built-in flow sensor, which measures the quantity of water in litres that is loaded into the appliance.

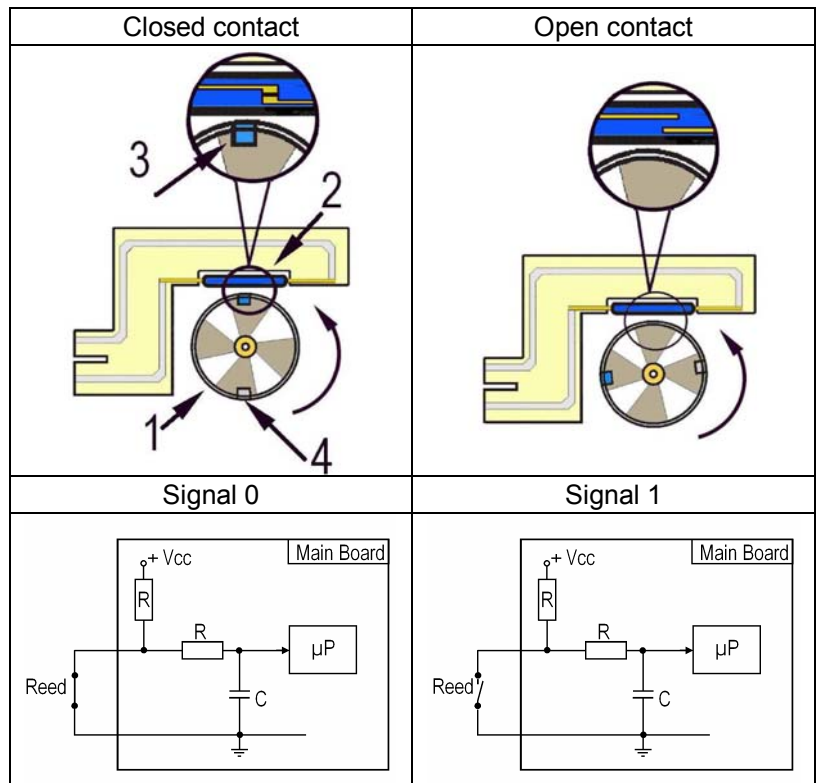
In the event of a sensor failure, the water level is controlled by the analogue pressure switch.

Electronically controlled valve, exploded view	PCB	Turbine
1-PCB 2-Turbine 3-Deflector 4-Diffuser 5-Double filter	6-Reed contact	7-Magnet

11.14.2 Operating principle of the flowmeter

The main components of the flowmeter are:

1. Turbine (with magnet and counterweight mounted on the outside)
2. Reed contact (normally open)
3. Magnet
4. Counterweight



Water entering the solenoid valve rotates the turbine (1) and magnet (3), which passes in front of the Reed contact (2), thus closing it. As this contact opens and closes, it generates pulses at a frequency that depends on the water flow rate).

The turbine completes 230 revolutions for each litre of water. The operating range of the flow sensor is 0.2 ÷ 10 bar. Using the signal it receives, the micro-processor can calculate the number of litres of water passing through the solenoid valve.

11.15 Drum light (where featured)

The drum light consists of a high luminosity LED.

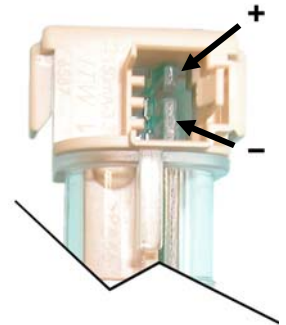
When the appliance is in the selecting phase (START/PAUSE LED flashing), if the door is opened, the LED lights up and illuminates the inside of the drum. Vice versa, when the door is closed the LED is turned off.



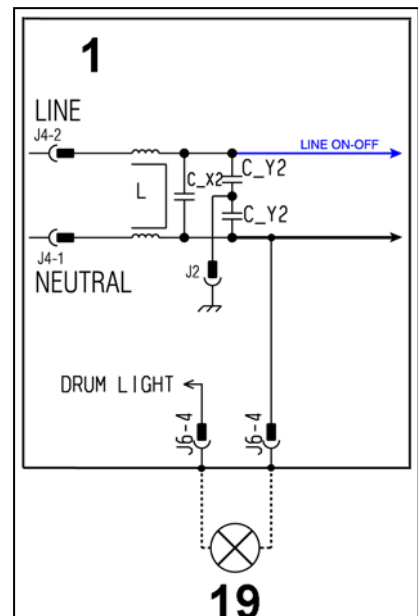
IMPORTANT: Do not look straight at the light beam emitted by the LED when it is on.

To check the efficiency of the LED, power it with constant direct current of 150 mA and a voltage of 3.3 V.

For the power supply, please refer to the polarities in the figure opposite.



- 1. Main circuit board
- 19. Drum light



11.16 Alarm Summary Table

Alarm	Description	Possible fault	Machine status/action	Reset
E00				
E11	Water fill difficulty during washing	Tap closed or water pressure too low; Drain pipe improperly positioned; Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; Main PCB faulty.	Cycle is paused with door locked	START/RESET
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 pipe kinked/clogged/improperly positioned; Drain filter clogged/dirty; Wiring faulty; Pressure switch faulty; Drain pump rotor blocked; Drain pump faulty; Main PCB faulty.	Cycle paused (after 2 attempts)	START ON/OFF 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 sensing circuit on triac for drain pump	Main circuit board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET
E31	Malfunction in electronic pressure switch circuit	Wiring; Electronic pressure switch; Main PCB.	Cycle stops with door locked	RESET
E32	Calibration error of the electronic pressure switch	Drain pipe kinked/clogged/improperly positioned; Solenoid valve faulty; Drain filter clogged/dirty; Drain pump faulty; Leaks from pressure switch hydraulic circuit; Pressure switch faulty; Wiring; main PCB.	Cycle 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 switch clogged.	Heating phase is skipped	RESET
E41	Door open	Check whether the door is closed properly; Wiring faulty; Door safety interlock faulty; Main circuit board faulty.	Cycle paused	START/RESET
E42	Problems with door lock	Wiring faulty; Door safety interlock faulty; Electrical current leak between heating element and ground; Main PCB faulty.	Cycle paused	START/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	RESET
E44	Faulty sensing by door delay system	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET

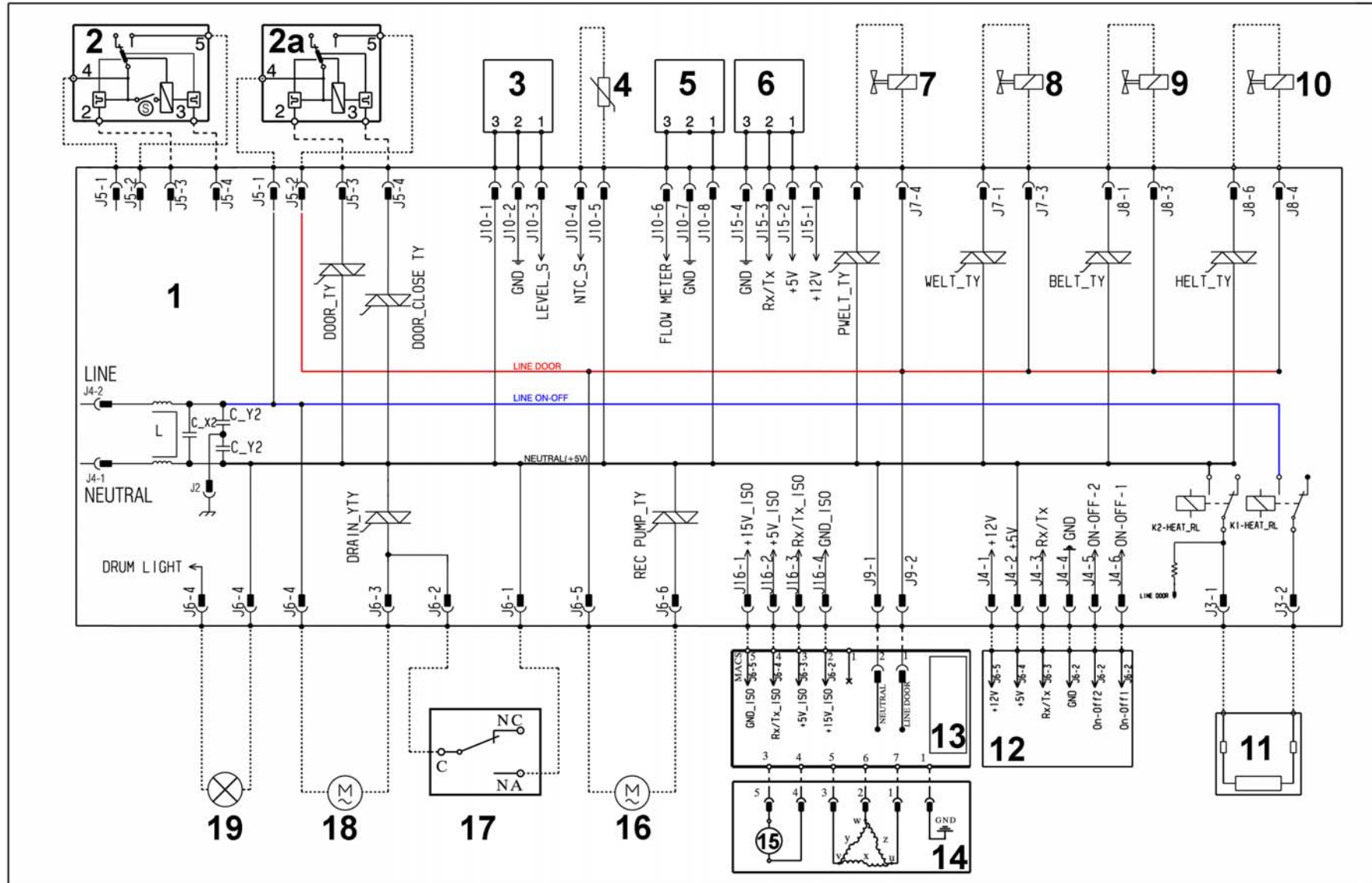
Alarm	Description	Possible fault	Machine status/action	Reset
E45	Faulty sensing by door delay system triac	Main circuit board faulty.	(Safety drain cycle) Cycle blocked	RESET
E52	No signal from motor tachometric generator	Wiring faulty; Motor faulty; Inverter board faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET
E57	Inverter is drawing too much current (>15A)	Wiring faulty on inverter for motor; Inverter PCB faulty; Motor faulty.	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET
E58	Inverter is drawing too much current (>4.5A)	Motor malfunction (overload); Wiring faulty on inverter faulty; Motor faulty; Inverter PCB faulty	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET
E59	No signal from tachometric generator for 3 seconds	Wiring faulty on inverter for motor; Inverter PCB faulty; Motor faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET
E5A	Overheating on heat dissipator for Inverter	Overheating caused by continuous operation or ambient conditions (let appliance cool down); Inverter PCB faulty. NTC open (on the Inverter PCB)	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET
E5C	Input voltage is too high	Input voltage is too high (measure the grid voltage); Inverter PCB faulty	Cycle stops with door locked (after 5 attempts)	ON/OFF RESET
E5d	Data transfer error between Inverter and main PCB	Line interference; Wiring faulty; Faulty main PCB or Inverter PCB.	-----	ON/OFF RESET
E5E	Communication error between Inverter and main PCB	Faulty wiring between main PCB and inverter PCB; Inverter PCB faulty; Main PCB faulty;	Cycle blocked (after 5 attempts)	ON/OFF RESET
E5F	Inverter PCB fails to start the motor	Wiring faulty; Inverter PCB faulty; Main PCB faulty;	Cycle stops with door open (after 5 attempts)	ON/OFF RESET
E5H	Input voltage is lower than 175 V	Wiring faulty; Inverter PCB faulty;	Cycle stops with door locked (after 5 attempts)	ON/OFF 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 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	Wiring faulty; Heating element for washing interrupted (thermal fuse open); Main PCB faulty.	-----	START ON/OFF RESET
E6A	Heating relay sensing faulty	Main circuit board faulty.	Cycle stops with door locked	RESET
E6H	Heating element power relay faulty (inconsistency between sensing and relay status)	Wiring faulty; Earth-leakage between heating element and earth; Main PCB faulty.	Safety water fill Cycle stops with door closed.	ON/OFF RESET
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

Alarm	Description	Possible fault	Machine status/action	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	RESET
E83	Error in reading selector	Main PCB faulty (Incorrect configuration data).	Cycle cancelled	START/RESET
E86	Selector configuration error	Display board	-----	START ON/OFF RESET
E87	User Interface microcontroller defective	Display board	No action to be taken	START ON/OFF 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
E94	Incorrect configuration of washing cycle	Main PCB faulty (incorrect configuration data);	Cycle blocked	ON/OFF
E97	Inconsistency between programme selector and cycle configuration	Main PCB faulty (incorrect configuration data).	Cycle blocked	RESET
E98	Communication error between main PCB - Inverter	Incompatibility between main PCB and Inverter	Cycle blocked	ON/OFF
E9C	Display board configuration error	Display board faulty	-----	START ON/OFF RESET
E9E	Display board sensor/touch key faulty	Display board faulty	-----	ON/OFF
EC1	Electronically controlled valve blocked with operating flowmeter	Wiring faulty; Solenoid valve faulty/blocked, Main PCB faulty,	Cycle stops with door locked Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
EC2	Communication error between main PCB - weight sensor	Wiring faulty; Weight sensor faulty, Main PCB faulty,	No action to be taken	START/RESET
EC3	Problems with weight sensor (no signal or outside the limits)	Wiring faulty; Weight sensor faulty; Main PCB faulty;	-----	START/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 system faulty.	Appliance drains	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

Alarm	Description	Possible fault	Machine status/action	Reset
EF5	Unbalanced load	Final spin phases skipped.	-----	START/RESET
EF6	Reset	If it continues, replace the main board.	No action to be taken	-----
EH1	Power supply frequency of appliance outside the limits	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal frequency conditions	ON/OFF
EH2	Supply voltage too high	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF
EH3	Supply voltage too low	Problem with the power supply network (incorrect/disturbed); Main PCB faulty.	Wait for nominal voltage conditions.	ON/OFF
EH4	0Watt relay malfunction	Main circuit board faulty.	-----	ON/OFF RESET
EHE	Inconsistency between FCV relay (in the main board) and safety "sensing" circuit	Faulty cabling; Main circuit board faulty	Safety drain cycle Cycle stops with door open	RESET
EHF	Safety sensing circuit faulty (wrong input voltage to microprocessor)	Main circuit board faulty	Safety drain cycle Cycle stops with door open	RESET

12 DIAGRAMS

12.1 WM diagram with THREE-PHASE ASYNCHRONOUS MOTOR



12.2 Key to diagram

Appliance electrical components		PCB components	
1.	Main circuit board	DRAIN_YTY	Drain pump Triac
2.	Door safety interlock (with light micro-switch)	DOOR_TY	Door interlock Triac
2a	Door safety interlock (without light micro-switch)	DOOR_CLOSE_TY	Door interlock Triac
3.	Electronic pressure switch	REC PUMP_TY	Circulation pump TRIAC switch
4.	NTC (washing)	PWELT_TY	Pre-wash solenoid Triac
5.	Flow sensor	WELV_TY	Wash solenoid Triac
6.	Weight sensor	BELT_TY	Electronically controlled TRIAC bleach valve
7.	Pre-wash solenoid		
8.	Wash solenoid	HELT_TY	Hot water solenoid triac
9.	Bleach solenoid valve	K1	Heating element relay
10.	Hot water solenoid	K2	Heating element relay
11.	Heating element		
12.	Display board		
13.	Motor control board (Inverter)		
14.	Triple-phase motor		
15.	Tachometric generator (motor)		
16.	Circulation pump		
17.	Aqua control sensor		
18.	Drain pump		
19.	Drum light		

13 ACCESS

13.1 Worktop

Remove the screws that secure it to the back panel.

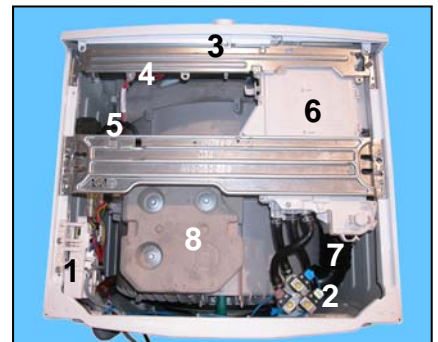


Remove it from the rear



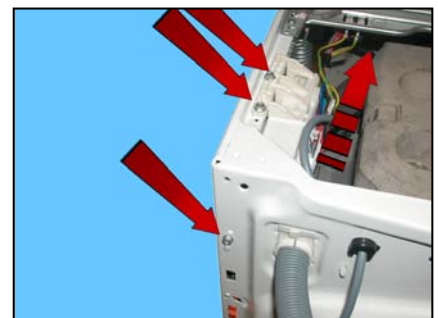
13.2 From the worktop, you can access:

1. Main board
2. Solenoid valves
3. Control panel
4. Display board/light diffuser/buttons/buttons springs assembly
5. Electronic pressure switch
6. Detergent dispenser
7. Detergent loading pipe
8. Upper counterweight

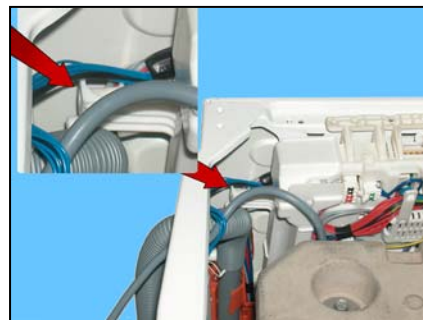


13.2.1 Main board

Remove the worktop (see relevant paragraph).
Unfasten the three screws securing it to the cabinet
Move it in the direction shown by the arrow.



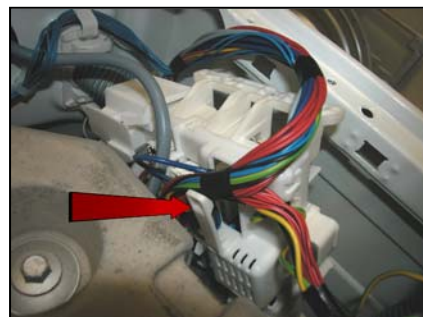
Place the wiring behind the hook securing the board to the back panel



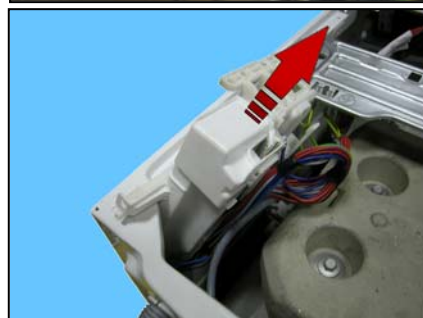
Remove the wiring from the side hook of the board protection.



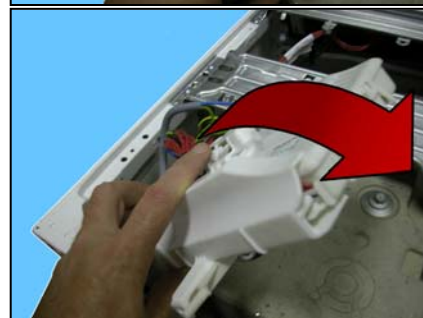
Remove the wiring from the central hook



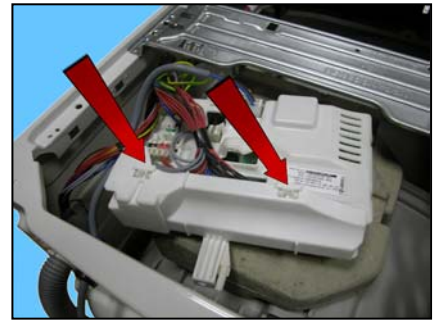
Remove the main board.



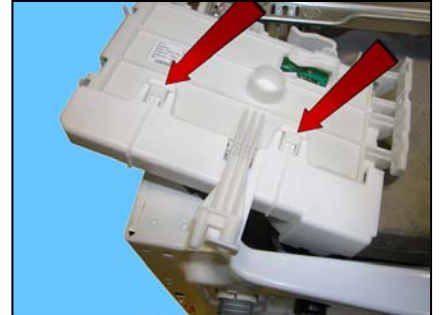
Turn it



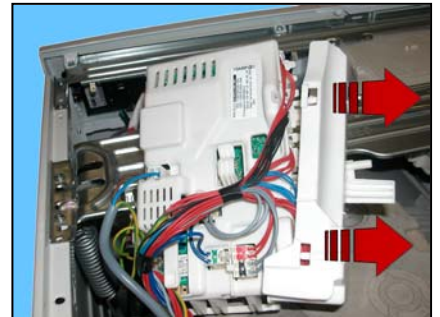
Release the hooks securing the connectors' protection on one side



on the other



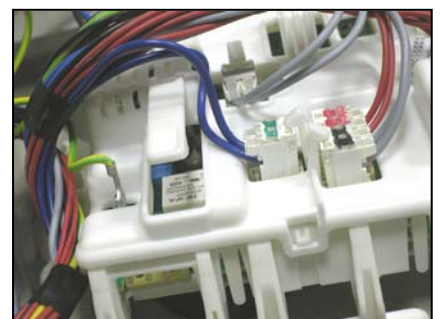
Remove the connectors' protection



Pull out the connectors positioned beside the board.



Pull out the other connectors, taking care as they are retained by hooks.

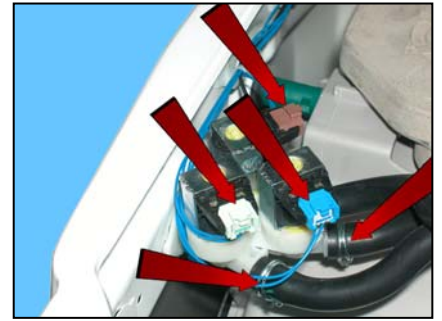


13.2.2 Solenoid valve

Remove the worktop (see relevant paragraph).

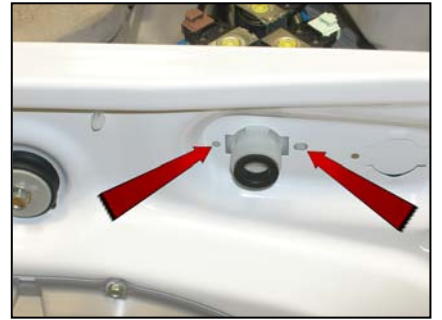
Disconnect the connectors.

Pull out the pipes which connect the solenoid valve to the detergent dispenser.



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.



13.2.3 Control panel

Remove the worktop (see relevant paragraph).

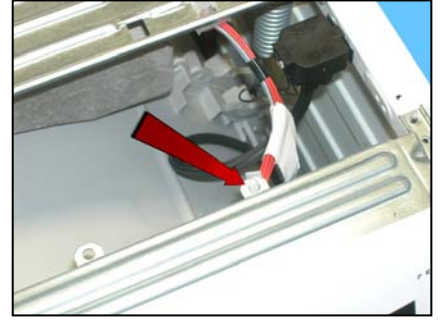
Pull out the detergent dispenser and at the same time press the tab that locks it in place.



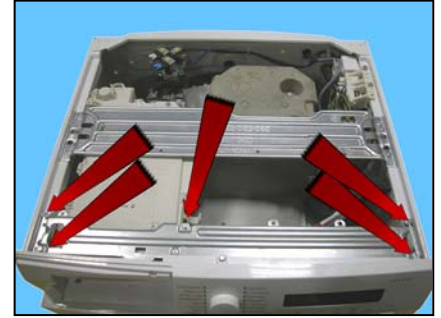
Loosen the screws that attach the control panel to the detergent dispenser.



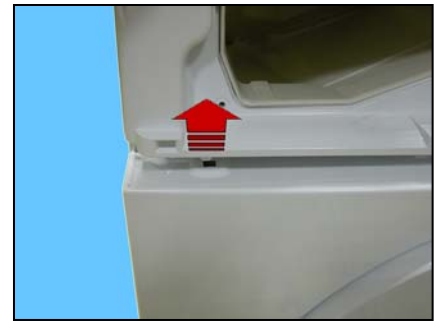
Pull out the clamp from the crosspiece



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



Raise both sides of the control panel so as to pull out the hooks which
Secure 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.

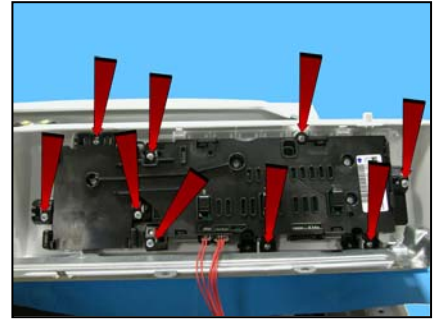


13.2.4 Display board/light diffuser/buttons springs/buttons

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

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

The knob and knob cover remain secured to the control panel.



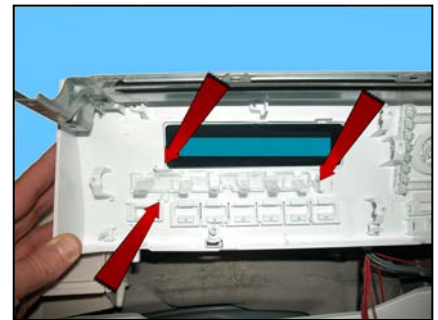
- Buttons spring

Detach it from the control panel and pull it out of the two side pins.



- Light diffuser

Release the three hooks securing it to the control panel



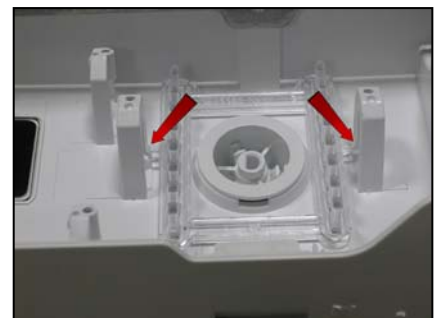
- Buttons

The buttons have a number printed on them. See the figure for the numbering.



- Selector light diffuser

To remove it, release the hooks securing it to the control panel

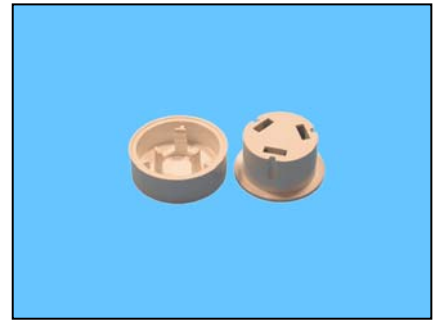


When reassembling the display board assembly to the control panel,

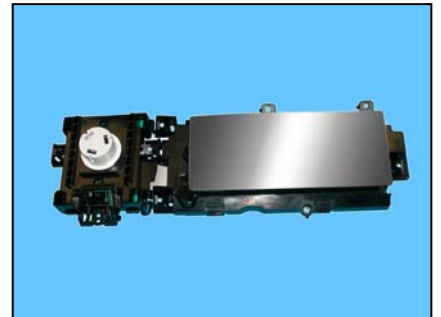
Remove the knob from the knob cover.
Release the hooks fastening one to the other, all secured to the control panel.



Representation of knob and knob cover.



Insert the knob onto the selector pin



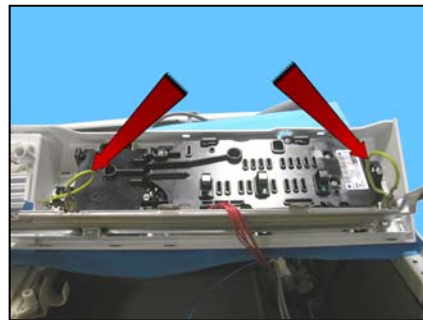
Insert the display board in its seat in the control panel



Insert the knob cover.



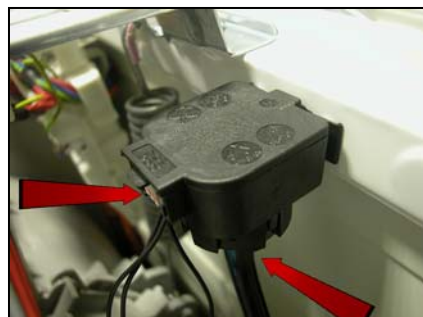
SERIES 9 if the two earth wires connecting the front panel have been disconnected, reconnect them to the fastons of the control panel crosspiece.



13.2.5 Analogue pressure switch

Remove the worktop (see relevant paragraph).

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



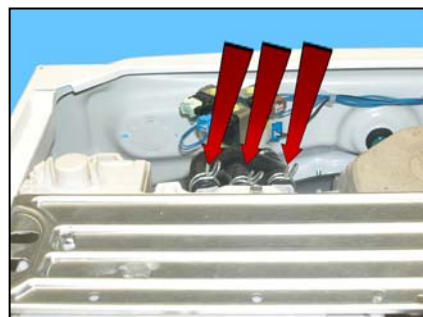
Tighten the two tabs which secure it to the cabinet and remove it.



13.2.6 Detergent dispenser

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

Pull out the pipes that connect it to the solenoid valves (cold water and where featured hot water)



Unfasten the two screws securing it to the central crosspiece.



Unfasten the screw in the clamp that fixes the detergent loading pipe to the tub and remove it from its seat.



If the appliance is a Jet System, pull out the pipe from the detergent dispenser hook



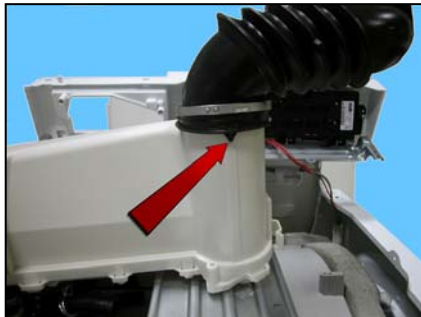
Remove the detergent dispenser.



13.2.7 Detergent loading pipe

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the detergent dispenser (see relevant paragraph).

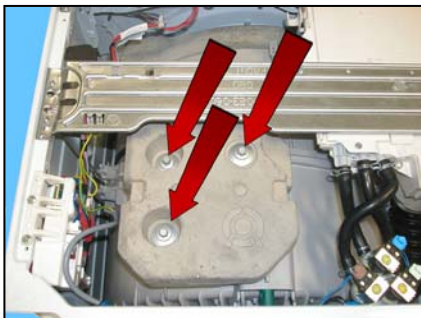
Pull out the pipe from the detergent dispenser after breaking/loosening the clamp between the detergent dispenser and the detergent loading pipe.
When reassembling, use a new clamp with the same characteristics.
The size of the clamp to use is 65.5mm.
When introducing the pipe into the dispenser, make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



13.2.8 Upper counterweight

Remove the worktop (see relevant paragraph).
Remove the three screws that secure it to the welded tub

When reassembling:
If the tub assembly is new, tighten the screws at a torque of 20 Nm.
If the tub assembly is old, tighten the screws at a torque of 15 Nm.



13.3 Accessing the front part

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

13.3.1 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.



13.3.2 Door safety interlock

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



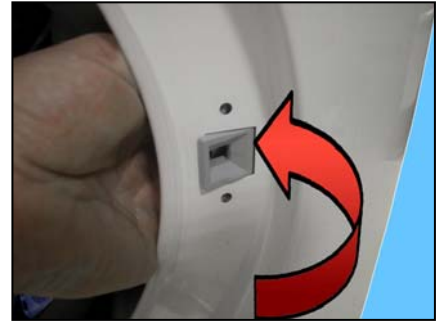
Unfasten the two screws securing the door safety interlock to the front panel.



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.

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.



13.3.3 Drum light

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

Remove the wiring from the lamp holder.



Take out the hook securing it to the bellow seal.



Take the lamp out of its seat.



13.3.4 Bellow seal

Remove the iron ring securing the bellow seal to the cabinet.
Release the bellows seal from the front panel.
Take the drum light out of its seat (see related paragraph).

Take the circulation pipe out of its seat in the bellow seal after breaking the clamp
(when reassembling, use a new clamp with the same characteristics and size 20.5).

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.

13.3.5 Blade

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

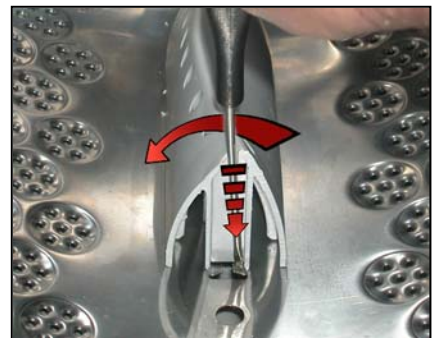
To remove it from the drum:

Insert a flat-tip screwdriver into the central slot of the left row.

The screwdriver with the handle tilted towards the right push the left-hand tab down.

The screwdriver with the handle tilted towards the left push the right-hand tab down;

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.



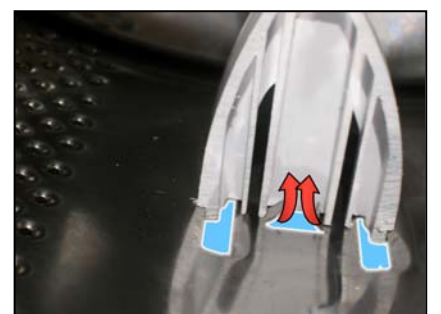
Insert the screwdriver (in the central slot of the left-hand row) at a right angle to the blade, so as to position it at the centre of the two drum tabs. Tilt it towards the right so that the left tab moves upwards.



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.



13.3.6 Front panel

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

Open the filter flap and remove it.

Loosen the two screws that secure the plinth to the front.

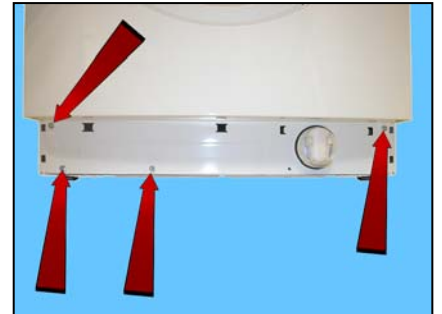
Release the two hooks that secure it to the front (indicated by the arrows).

Remove the plinth by turning it downwards in order to pull out the pins that secure it to the lower part of the front panel.

Loosen the screws that secure the lower part of the front panel to the cabinet casing.

Release the cable clamp secured to the centre of the front panel (where the lamp is featured). Unfasten the four screws securing the front panel to the sides (indicated by the arrows).

Remove the front panel



13.4 From the front panel, you can access

1. The JET water circuit
2. The front counterweight
3. The shock absorbers with/without weight sensor
4. The drain water circuit
5. The pressure chamber
6. The welded tub assembly
7. Tub suspension springs

13.4.1 JET water jet

Jet pipe (1)

Pull it out of the circulation pump, while you will have to break/widen the clamp from the bellow seal (when reassembling, use a new clamp with the same characteristics with size 20.5)

- Circulation pump

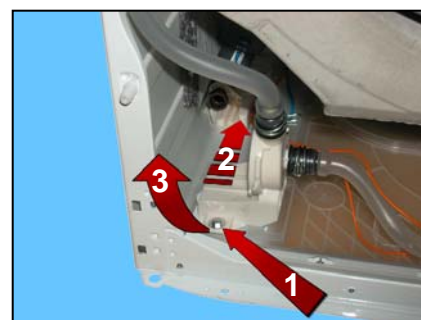
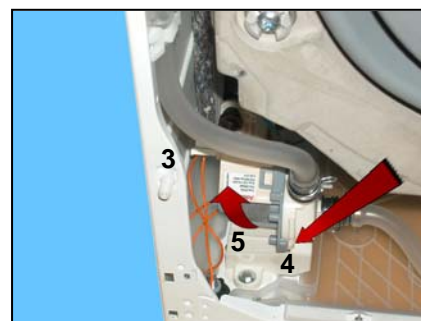
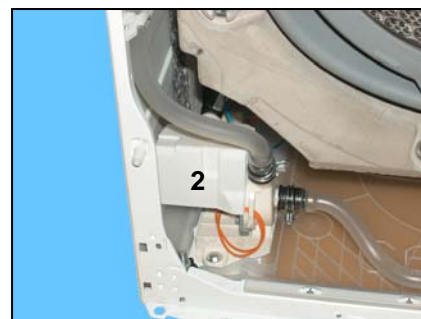
Remove the protection (2)

Disconnect the connectors (3)

Move the lock catch (4) with some pliers (take care not to break it).
Turn the pump in the direction shown by the arrow (5).

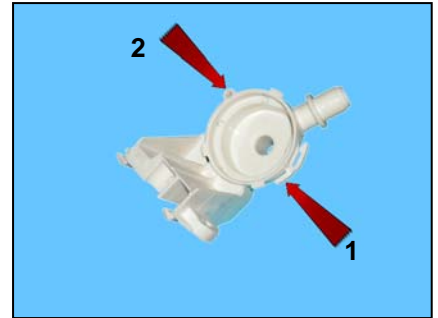
Remove the pump

To remove the circulation pump screw: take out the pipes, loosen the screw (1) securing it to the crosspiece, push it towards the inside of the appliance (2) and lift it (3).



If the catch (1) securing the circulation pump to the screw accidentally breaks. Secure the pump to the screw and secure the latter using a screw, screwing the latter into the slot (2).

Size of the screw 3.5x19 Code 5024 79 51- 00/2



When reassembling, make sure the seal is in its seat in order to avoid water leaks.



13.4.2 Front counterweight

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the iron ring securing the bellow seal to the front panel.
Unfasten the screws securing the door safety interlock (see related paragraph).
Remove the front panel (see relevant paragraph).
Pull out the Jet pipe (see related paragraph).
Pull out the lamp from its seat
Unfasten the five screws securing the front counterweight to the welded tub assembly.

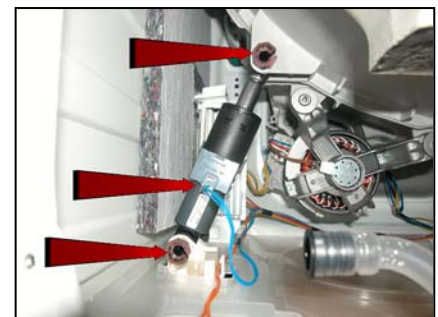


13.4.3 Shock absorber with/without weight sensor

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the iron ring securing the bellow seal to the front panel.
Unfasten the screws securing the door safety interlock (see related paragraph).
Remove the front panel (see relevant paragraph).
Remove the circulation pump with the screw (see related paragraph).

Remove the connector if the shock absorber is fitted with a weight sensor
Pull out the pins securing it to the tub and crosspiece.

To reposition the pins, see para. 12.4.7 on page 93



13.4.4 Drain water circuit

- Tub drain pipe

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the iron ring securing the bellow seal to the front panel.
Unfasten the screws securing the door safety interlock (see related paragraph).
Remove the front panel (see relevant paragraph).
Pull out the main drain pipe (1)
Loosen the screw of the clamp securing the tub drain pipe to the tub (2)
Pull out the pipe from the analogue pressure switch connecting the pressure chamber.
Release the pressure chamber (*See pressure chamber description*)
Pull out the tub drain pipe and pull out the pressure chamber (3).
Where clamps are present, you will need to open/break them. When reassembling, use clamps with the same characteristics.



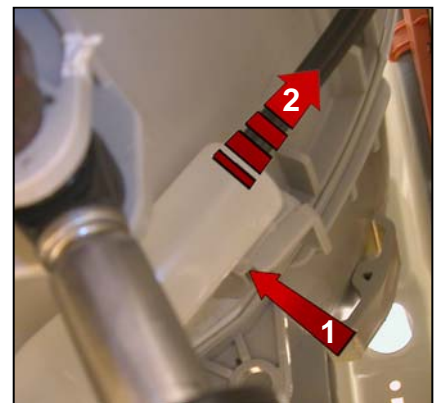
13.4.5 Pressure chamber

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the iron ring securing the bellow seal to the front panel.
Unfasten the screws securing the door safety interlock (see related paragraph).
Remove the front panel (see relevant paragraph).
Pull out the pipe from the analogue pressure switch and hooks securing it to the welded tub.

Unfasten the screw in the clamp that fixes the drain pipe to the welded tub and remove it from its position, pulling it out.



Push the hook (1) while at the same time lifting the chamber (2) from the support securing it to the tub.



Turn the chamber under the tub and pull it out.



Make a note of the latch and hook with which it is secured to the tub.



When repositioning the pressure chamber in the tub drain pipe, pay attention to the references.

The size of the clamp to use is 52.5mm.



When reassembling the pressure chamber, reposition the pipe connecting the pressure switch so that it never actually touches the cabinet.

- Filter body

Remove the worktop (see relevant paragraph).
Remove the control panel (see relevant paragraph).
Remove the iron ring securing the bellow seal to the front panel.
Unfasten the screws securing the door safety interlock (see related paragraph).
Remove the front panel (see relevant paragraph).
Loosen the screws securing it to the front crossbar (1)
Pull out the main drain pipes (2) and circulation pump connection pipe.
Raise it to remove the support inserted in the side crossbar (3)
Remove the pump protection



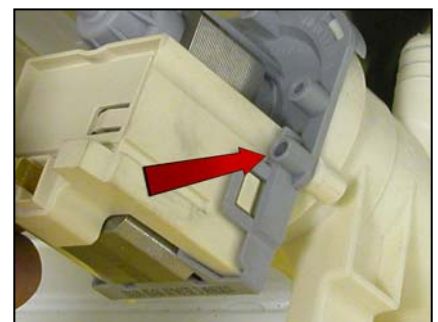
- Drain pump

Release the connectors
Move the lock catch with some pliers (take care not to break it)
Turn and pull out the pump



If the lock catch securing the pump to the filter body breaks.
Secure the pump to the filter body, securing it in place using a screw, screwing the latter in the slot shown by the arrow.

Size of the screw 3.5x19 Code 5024 79 51- 00/2



13.4.6 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 dispenser (see relevant paragraph).

Remove the upper counterweight (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

13.4.7 Tub suspension springs

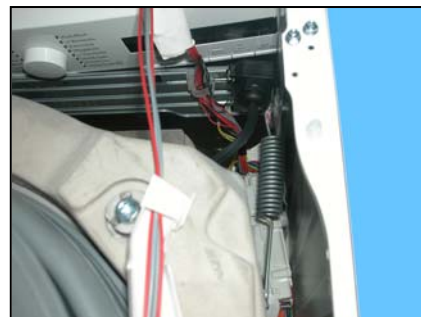
- Left spring

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



- Right spring

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



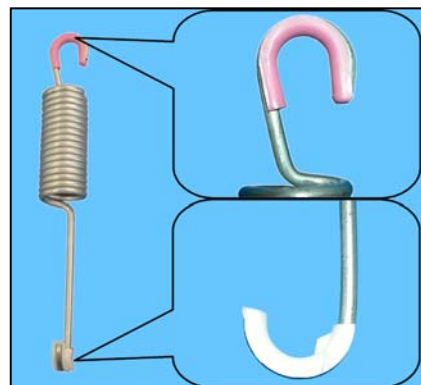
When reattaching the springs (after repair work which required their removal), make sure that the bushings shown in the figure are featured on both ends.

Pay attention to the differences between the bushings (see enlarged details).

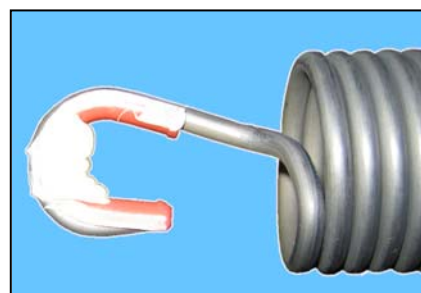
Spare bushings are available, under the following codes:

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

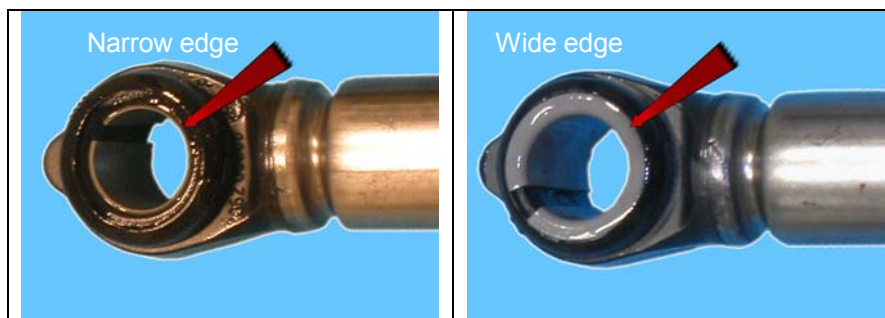


Attachment position of springs to top crosspiece.

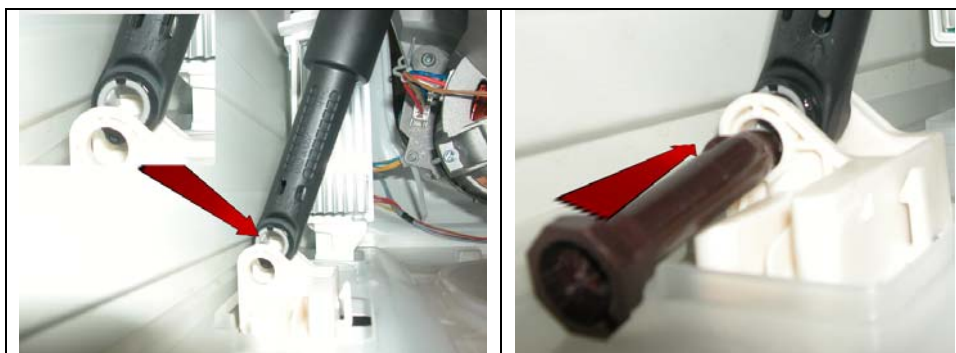


13.5 Shock absorber pin

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).

13.6 Accessing the rear part

13.6.1 Back panel

Loosen the screws that fix it to the cabinet



13.7 From the back panel, you can access

1. Belt
2. Plastic pulley
3. Inverter
4. Motor
5. Heating
6. Aqua control
7. Rear shock absorber

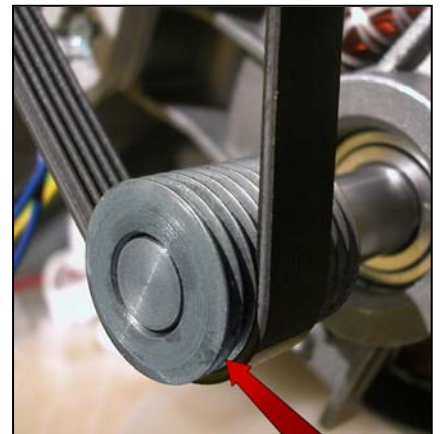


13.7.1 Belt

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



When reassembling, position the belt onto the pulley as shown in the figure, leaving two grooves free (as shown by the arrow in the figure).



13.7.2 Plastic pulley

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

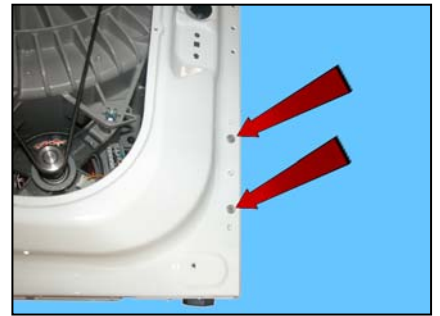
Tighten the screw at a torque of 60 Nm.



13.7.3 Inverter

Remove the back panel (see relevant chapter).

Loosen the two screws that fix it to the cabinet



Remove the wiring from the hook of the inverter casing and move it inwards.



Turn it and position it as shown in the figure



Push the washing unit towards the inside and remove the inverter.



Open the wiring protection and disconnect the connectors.



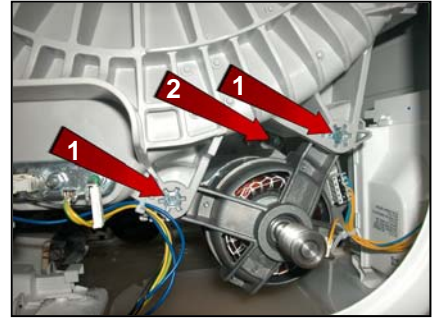
When repositioning the inverter in its seat, pay attention that the hook is inserted in its position in the crosspiece



13.7.4 Motor

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

Loosen the two front fastening screws (1) and the rear ones (2).
Disconnect the connectors: for the power supply and earthing



When reassembling, restore the connections.

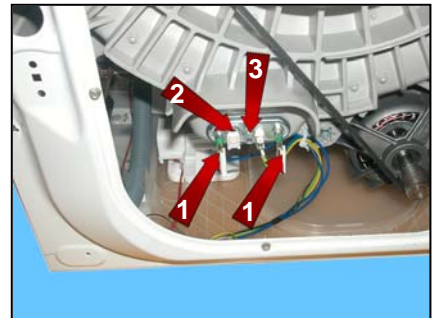
If the clamp securing the wiring to the motor breaks, replace it with a new one.

Tighten the screws at a torque of 5 Nm.

13.7.5 Heating

Remove the back panel (see relevant chapter).

Disconnect the connectors of the heating element (1) and NTC probe (2).
Loosen the nut (3) and pull it out.



Tighten the nut at a torque of 4 Nm.

13.7.6 Aqua control

Remove the back panel (see relevant chapter).

Release the hooks securing it to the bottom and disconnect the connector.



13.7.7 Rear shock absorber

Remove the back panel (see relevant chapter).

To take the pins out of their seats, push the locking tooth and at the same time remove it with pliers.

Perform the same operations for the other pin.
Take the shock absorber out.

