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EN

**Washing machines  
Washer-dryers  
with electronic control  
EWM21xx  
Functional, technical  
characteristics and  
accessibility  
ENV06**

**Styling:**

**TC2 & TC3  
B.I.**

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# 1 INTRODUCTION

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 appliances fitted with the ENV06 electronic control system.

The characteristic of the ENV06 electronic control system is to use only an electronic pressure switch to check the various water levels in the tub (with the elimination of the mechanical pressure switches: anti-overflow, anti-boiling, 1st-2nd level), and a new heater with two thermal fuses which interrupt if the temperature degree overcomes the values by which they are calibrated.

The following topics are described:

- General characteristics
- control panel and washing programmes
- technical and functional characteristics
- accessibility

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

- *Publication no. 599 37 47-13 for washing machines with HEC cabinet*

## 1.1 Important



- **Repairs to electrical appliances must be effected only by qualified personnel.**
- **Unplug the appliance before accessing internal components.**
- **In case of replacement of the heater, replace it with one with the same characteristics in order not to compromise the safety of the appliance.**
- **Before laying the appliance on the floor, always drain any water by means of the system placed beside the drain filter.**
- **Never lay the appliance on its right side (i.e. electronic control unit side): this would cause the water in the detergent dispenser to fall onto electrical components, thus damaging them.**

## 2 TC3


### 2.1 General characteristics

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


The PCB is mounted on a casing fitted to the control panel.



#### 2.1.1 General characteristics WM

<b>Version</b>	
<b>TC3</b>	
<b>(TIME MANAGER)</b>	
<b>No. buttons</b>	<ul style="list-style-type: none"> <li>• Max. 8 (5 options + 1 start/pause + 2 for time driven)</li> </ul>
<b>No. LEDs</b>	<ul style="list-style-type: none"> <li>• Max. 16 + LCD display</li> </ul>
<b>Programme selector</b>	<ul style="list-style-type: none"> <li>• 15-21 positions with main switch (incorporated in the PCB)</li> </ul>
<b>Serial port</b>	<ul style="list-style-type: none"> <li>• DAAS-EAP communications protocol up to 115.200 baud</li> </ul>
<b>Power supply</b>	<ul style="list-style-type: none"> <li>• 220/240V</li> <li>• 50/60 Hz (configurable)</li> </ul>
<b>Type of washing</b>	<ul style="list-style-type: none"> <li>• Traditional with "Eco-ball" sphere</li> <li>• Jet-System</li> </ul>
<b>Rinsing system</b>	<ul style="list-style-type: none"> <li>• Traditional with "Eco-ball" sphere</li> <li>• Jet-System</li> </ul>
<b>Motor</b>	<ul style="list-style-type: none"> <li>• Collector, with tachometric generator (Universal)</li> </ul>
<b>Spin speed</b>	<ul style="list-style-type: none"> <li>• 600 ÷ 1400 rpm</li> </ul>
<b>Anti-unbalancing system</b>	<ul style="list-style-type: none"> <li>• FUCS</li> </ul>
<b>Water fill</b>	<ul style="list-style-type: none"> <li>• 1 solenoid valve with 1 inlet - 2/3 outlets</li> </ul>
<b>Detergent dispenser</b>	<ul style="list-style-type: none"> <li>• 3 compartments: prewash/stains, wash, conditioners</li> <li>• 4 compartments: prewash, wash, conditioners, (bleach)</li> </ul>
<b>Control of water level in the tub</b>	<ul style="list-style-type: none"> <li>• Electronic/analogue pressure switch</li> </ul>
<b>Door safety interlock</b>	<ul style="list-style-type: none"> <li>• Traditional (with PTC)</li> <li>• Instantaneous</li> </ul>
<b>Power of heating element</b>	<ul style="list-style-type: none"> <li>• 1950W with thermal fuses incorporated</li> </ul>
<b>Temperature control</b>	<ul style="list-style-type: none"> <li>• NTC sensor incorporated in the heater</li> </ul>
<b>Buzzer</b>	<ul style="list-style-type: none"> <li>• Traditional incorporated in the electronic board</li> </ul>
<b>Sensors</b>	<ul style="list-style-type: none"> <li>• Water fill gauge (flowmeter)</li> <li>• Aqua Control</li> </ul>

## 2.1.2 General characteristics WD

Version TC3 (TIME MANAGER)	
<b>No. buttons</b>	<ul style="list-style-type: none"> <li>• max. 8 (5 options + 1 start/pause + 2 for time driven).</li> </ul>
<b>No. LEDs</b>	<ul style="list-style-type: none"> <li>• max. 16 + LCD display.</li> </ul>
<b>Programme selector.</b>	<ul style="list-style-type: none"> <li>• 15-21 positions with main switch (incorporated in the PCB).</li> </ul>
<b>Serial port.</b>	<ul style="list-style-type: none"> <li>• DAAS-EAP communications protocol up to 115.200 baud.</li> </ul>
<b>Power supply.</b>	<ul style="list-style-type: none"> <li>• 220/240V</li> <li>• 50/60 Hz (configurable).</li> </ul>
<b>Type of washing.</b>	<ul style="list-style-type: none"> <li>• Traditional with "Eco-ball" sphere.</li> <li>• Jet-System.</li> </ul>
<b>Rinsing system.</b>	<ul style="list-style-type: none"> <li>• Traditional with "Eco-ball" sphere.</li> <li>• Jet-System.</li> </ul>
<b>Motor.</b>	<ul style="list-style-type: none"> <li>• Collector, with tachometric generator (Universal).</li> </ul>
<b>Spin speed.</b>	<ul style="list-style-type: none"> <li>• 600 ÷ 1400 rpm.</li> </ul>
<b>Anti-unbalancing system.</b>	<ul style="list-style-type: none"> <li>• FUCS.</li> </ul>
<b>Water fill.</b>	<ul style="list-style-type: none"> <li>• 1 solenoid valve with 1 inlet - 2/3 outlets.</li> </ul>
<b>Detergent dispenser.</b>	<ul style="list-style-type: none"> <li>• 3 compartments: prewash/stains, wash, conditioners.</li> <li>• 4 compartments: prewash, wash, conditioners, (bleach).</li> </ul>
<b>Control of water level in the tub.</b>	<ul style="list-style-type: none"> <li>• Electronic/analogue pressure switch.</li> </ul>
<b>Door safety interlock.</b>	<ul style="list-style-type: none"> <li>• Traditional (with PTC).</li> <li>• Instantaneous.</li> </ul>
<b>Power of heating element, washing.</b>	<ul style="list-style-type: none"> <li>• 1950W with thermal fuses incorporated.</li> </ul>
<b>Power of heating element, drying.</b>	<ul style="list-style-type: none"> <li>• 1400W (700+700).</li> </ul>
<b>Washing temperature control</b>	<ul style="list-style-type: none"> <li>• NTC sensor incorporated in the heater</li> </ul>
<b>Temperature control, drying</b>	<ul style="list-style-type: none"> <li>• NTC Sensor</li> <li>• Thermostats</li> </ul>
<b>Buzzer</b>	<ul style="list-style-type: none"> <li>• Traditional incorporated in the electronic board</li> </ul>
<b>Sensors</b>	<ul style="list-style-type: none"> <li>• Water fill gauge (flowmeter)</li> <li>• Aqua Control</li> </ul>

## 2.2 Control panel

### 2.2.1 Styling TC3 (TIME MANAGER)

- max. 8 buttons
- 15 or 21-position programme selector
- LEDs 16
- LCD Display

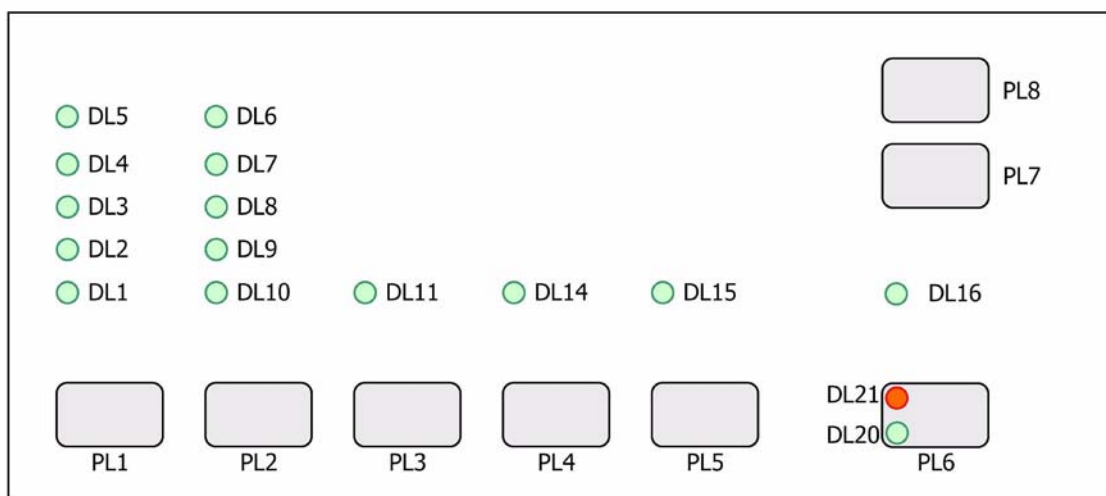
Version **WM**



Version **WD**

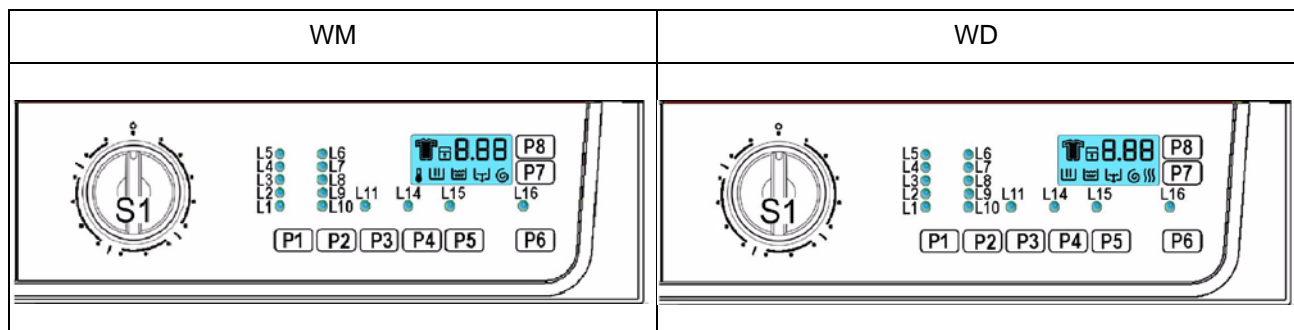


- Disposition of LEDs and buttons





### 2.2.1.1 Configuration of control panel TC3 (TIME MANAGER)



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

### 2.2.1.2 Programme selector (S1)

The selector features 15-21 positions and incorporates the ON/OFF switch. The various positions of the selector may be configured to perform different washing programmes (ex: water level, drum movement, no. of rinses and the washing temperature to be selected according to the type of clothes). It can be turned both clockwise and anti-clockwise. In the first position, the appliance is switched off and the current programme is cancelled. For each programme, the compatible options and other parameters are defined



### 2.2.1.3 Programme configuration

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

<b>Types of fabric</b>	Cotton/linen, Synthetic fabrics, Delicates, Wool, Hand-wash, Shoes, Jeans, Duvet, Silk.
<b>Special programmes</b>	Soak, Miniprogramme, Easy-Iron, Conditioner, Rinses, Delicate rinses, Drain, Delicate spin, Spin, Drying.
<b>Temperature</b>	Normal, Maximum: the initial temperature is the maximum that can be selected for a specific washing programme
<b>Spin</b>	Normal, Minimum, Maximum
<b>Options (Normal/Possible)</b>	Rinse Hold, Night-time cycle, Pre-wash, Stains, Bleach, Extra rinse, Easy-Iron, Economy (energy label), Intensive, Normal, Daily, Light, Short, Very short, Reduced spin speed, No spin, Half-load.
<b>Programme phases</b>	Pre-wash, Wash, Rinses, Spin, Delayed start, Drying.

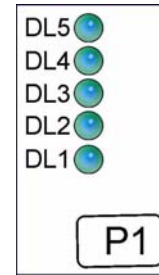
### 2.2.1.4 Pushbuttons and LEDs

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

- **Button no. 1:** this button is configurable and is related to LEDs (DL1÷DL5).

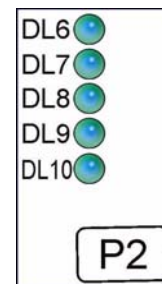
Depending on the configuration of the appliance it can be connected both to the temperature regulation and the spin speed regulation. Pressing it in sequence, you can choose the different regulation.

Depending on the configuration of the appliance it is possible to have different combinations. The following tables represent some examples of combinations between temperature and spin



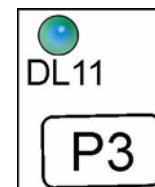
LEDs	Temperature		LEDs	Spin	
DL5	90°	90°	DL5	1200	1400
DL4	60°	60°	DL4	900	900
DL3	40°	50°	DL3	700	700
DL2	30°	40°	DL2	Night cycle	Night cycle
DL1	0°	30°	DL1	Rinse-hold	Rinse-hold

- **Button no. 2:** this button is configurable and is related to LEDs (DL6÷DL10).  
The description of the functions is the same as the one of button 1.



- **Button no. 3:** this button is configurable and is related to LED (DL11).  
Depending on the configuration of the appliance, it can perform the function of:

Normal, daily, light, quick, super quick, intensive, economy, prewash, easy-iron, bleach, stains, super rinse, night cycle, rinse hold, half load, spin reduction, no spin.

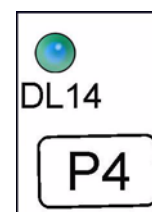


- **Button no. 4:** this button is configurable and is related to LED (DL14);  
depending on the configuration of the appliance it can perform the function of:

Normal, daily, light, quick, super quick, intensive, economy, prewash, easy-iron, bleach, stains, super rinse, night cycle, rinse hold, half load, spin reduction, no spin.

In the washer-dryers it performs the function of:

- Time-drying.



- **Button no. 5:** this button is configurable and is related to LED (DL15); depending on the configuration of the appliance it can perform the function of:

Normal, daily, light, quick, super quick, intensive, economy, prewash, easy-iron, bleach, stains, super rinse, night cycle, rinse hold, half load, spin reduction, no spin.

It can also perform the function of delayed start.



- **Button no. 6:** this button is configurable and has the function of START/PAUSE (inside there are two LEDs, one red that flashes in case of an alarm and one green that flashes when the appliance is in pause mode or in combination with the red one to indicate the alarm code).



- **DL16 Door closed:** It lights up when the safety device stops the door opening and switches off when it is possible to open it. It flashes when the device is about to unlock the door (with door interlock with PTC, which need one or two minutes to open).



### 2.2.1.5 Time MANAGER

The "Time MANAGER" has the function to modify the programme settings according to the type of dirt; so as to obtain a reduction or an increase of the washing time, displaying the dirt level through an icon, represented by a t-shirt and the time through the three digits positioned on the right of the LCD display; this variation can be modified through two buttons P8 and P7 positioned besides the display. The symbol remains lit for the whole duration of the programme.



Please find below the various levels combined with the dirt degree.

- Super quick (super rapid cycle) indicated for cottons and synthetics with light dirt level, and for half load.



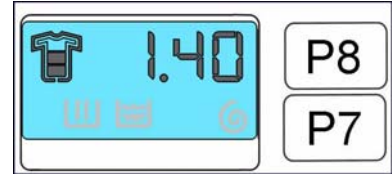
- Quick cycle indicated for clothes used just once.



- Light cycle indicated for clothes slightly dirty or of daily use.



- Daily cycle indicated for quite dirty clothes.



- Normal cycle indicated for quite dirty clothes worn many times.



- Intensive cycle indicated for very dirty clothes which needs anti-stain treatments, soak and prewash.



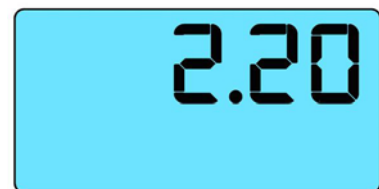
The levels are represented in the following table:

COTTONS	SYNTHETICS	DELICATES
INTENSIVE	-----	-----
NORMAL (basic programme)	NORMAL (basic programme)	NORMAL (basic programme)
DAILY	DAILY	DAILY
LIGHT	LIGHT	LIGHT
QUICK	-----	-----
SUPER QUICK	SUPER QUICK	SUPER QUICK

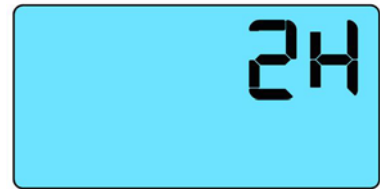
### 2.2.1.6 LCD Display

The LCD display shows the following information:

- **The duration of the washing programme**, which appears after having selected it. This time corresponds to that necessary for the maximum wash load for each programme type. After starting the programme the time decreases minute by minute.
- **The duration of the drying time.**
- **The end of the programme** is indicated by three zero flashing (when it is possible to open the door).
- The stop of the appliance with water in tub, after the programmes with RINSE HOLD option, is displayed by **three zero flashing**, the LED that indicates the door remains lit and the LED of the START/PAUSE button switches off.



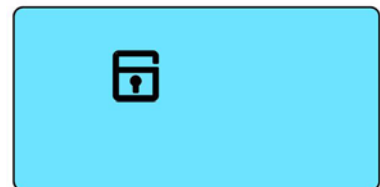
- **The delayed start**, selected through the relative button. After pressing the START/PAUSE button the countdown starts and the delay time decreases hour by hour. In the last 2 hours it diminishes by 30 min. at a time.



- **The thermometer**: it is always on during the cycle and the icon is animated during the heating phase.



- **The padlock**: when is on, it indicates that all the buttons are disabled to prevent the children from modifying, starting or pausing the cycle. To disable this function it is necessary to push a key combination.



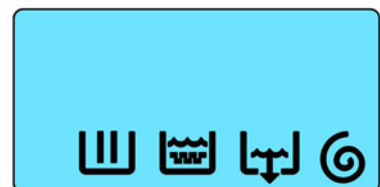
- **Wrong choice of an option**: is displayed by Err, when a function not compatible with the chosen programme is selected. The wrong selection is also signalled by an acoustic alarm.



- **An alarm code**: , indicates an error of the appliance operation; simultaneously to the displaying of the code, the START/PAUSE button flashes



- **Washing phases**: Washing, rinses, drain and spin light in the selection mode if the programme includes these phases and during the phase execution



- **Drying phase (only WD)**: Lights during selection mode if the programme includes the drying phase, and during the execution of the phase



- **Buzzer**

The buzzer emits:

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

## 3 TC2

### 3.1 General characteristics

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

The PCB is mounted on a casing fitted to the control panel.



#### 3.1.1 General characteristics WM

<b>Version</b>  <b>TC2 (TIME MANAGER)</b>	
<b>No. buttons</b>	<ul style="list-style-type: none"> <li>• max. 8 (5 options + 1 start/pause + 2 for time driven).</li> </ul>
<b>No. LEDs</b>	<ul style="list-style-type: none"> <li>• max. 2 + LCD display.</li> </ul>
<b>Programme selector</b>	<ul style="list-style-type: none"> <li>• 15-21 positions with main switch (incorporated in the PCB).</li> </ul>
<b>Serial port</b>	<ul style="list-style-type: none"> <li>• DAAS-EAP communications protocol up to 115.200 baud.</li> </ul>
<b>Power supply</b>	<ul style="list-style-type: none"> <li>• 220/240V.</li> <li>• 50/60 Hz (configurable).</li> </ul>
<b>Type of washing</b>	<ul style="list-style-type: none"> <li>• Traditional with "Eco-ball" sphere.</li> <li>• Jet-System.</li> </ul>
<b>Rinsing system</b>	<ul style="list-style-type: none"> <li>• Traditional with "Eco-ball" sphere.</li> <li>• Jet-System.</li> </ul>
<b>Motor</b>	<ul style="list-style-type: none"> <li>• Collector, with tachometric generator (Universal).</li> </ul>
<b>Spin speed</b>	<ul style="list-style-type: none"> <li>• 600 ±1400 rpm.</li> </ul>
<b>Anti-unbalancing system</b>	<ul style="list-style-type: none"> <li>• FUCS.</li> </ul>
<b>Water fill</b>	<ul style="list-style-type: none"> <li>• 1 solenoid valve with 1 inlet - 2/3 outlets.</li> </ul>
<b>Detergent dispenser</b>	<ul style="list-style-type: none"> <li>• 3 compartments: prewash/stains, wash, conditioners.</li> <li>• 4 compartments: prewash, wash, conditioners, (bleach).</li> </ul>
<b>Control of water level in the tub</b>	<ul style="list-style-type: none"> <li>• Electronic/analogue pressure switch.</li> </ul>
<b>Door safety interlock</b>	<ul style="list-style-type: none"> <li>• Traditional (with PTC).</li> <li>• Instantaneous.</li> </ul>
<b>Power of heating element</b>	<ul style="list-style-type: none"> <li>• 1950W with thermal fuses incorporated.</li> </ul>
<b>Temperature control</b>	<ul style="list-style-type: none"> <li>• NTC sensor incorporated in the heater.</li> </ul>
<b>Buzzer</b>	<ul style="list-style-type: none"> <li>• Traditional incorporated in the electronic board.</li> </ul>
<b>Sensors</b>	<ul style="list-style-type: none"> <li>• Water fill gauge (flowmeter).</li> <li>• Aqua Control.</li> </ul>

## 3.2 Control panel

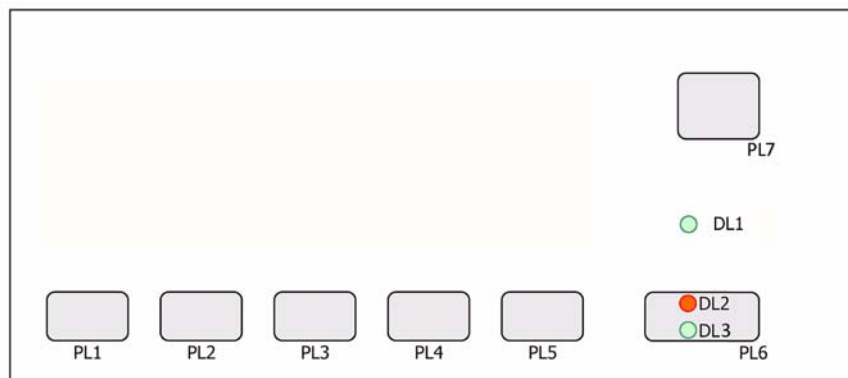
### 3.2.1 Styling TC2 (TIME MANAGER)

- max. 8 buttons.
- 15 or 21-position programme selector.
- 2 LEDs.
- LCD display.

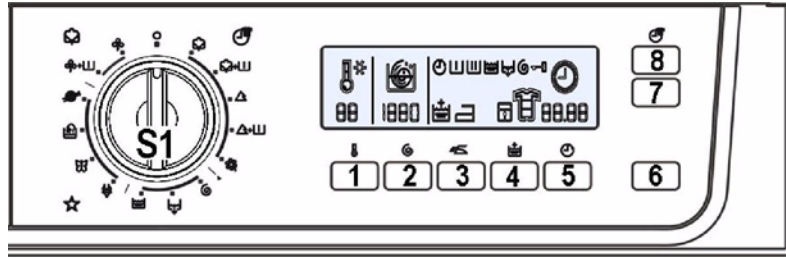
Version **WM**



- Disposition of LEDs and buttons



### 3.2.1.1 Configuration of control panel TC2 (TIME MANAGER)



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

### 3.2.1.2 Programme selector

See page 7

### 3.2.1.3 Programme configuration

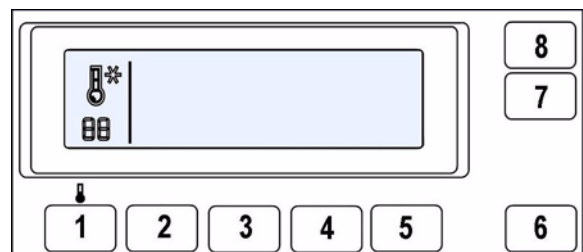
See page 7

### 3.2.1.4 Buttons and LCD

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

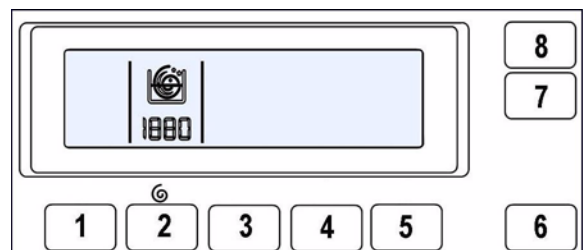
- **Button no. 1: TEMPERATURE**

The temperature set by the programme is the base one, pressing the button it is possible to modify it from a max. to a minimum depending on the programme. Simultaneously the thermometer symbol is modified.



- **Button no. 2: SPIN**

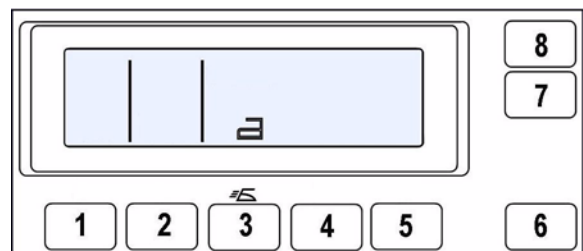
The spin set by the programme is the maximum one, pressing the button it is possible to vary the speed up to zero, then it passes to NIGHT CYCLE and RINSE HOLD (with relative lighted symbols).



- **Button no. 3: OPTIONS**

Configurable button; the options available for this button are:

- Pre-wash (it can be configured also as programme).
- Easy-iron (it can be configured also as programme)
- Intensive.

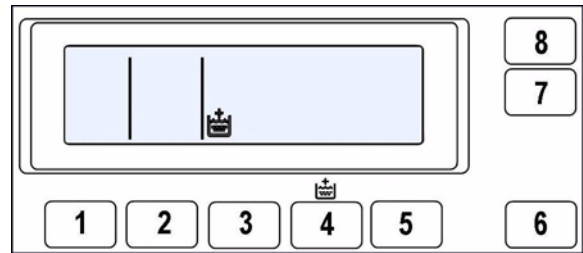




- **Button no. 4: OPTIONS**

Configurable button; the options available for this button are:

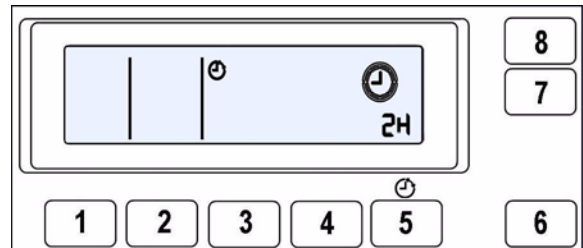
- Super rinse.
- Quick.



- **Button no. 5: DELAYED START/ SUPER RINSE**

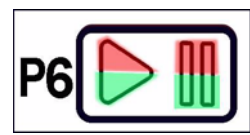
Configurable button; it can perform the function of:

- Delayed start.
- Super rinse.



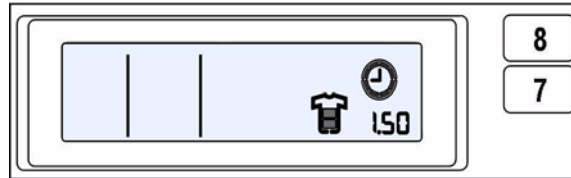
- **Button no. 6: START/PAUSE**

This button is configurable and has the function of START/PAUSE (inside there are two LEDs, one red that flashes in case of alarm and one green that flashes when the appliance is in pause mode or in combination with the red one to indicate the alarm code).



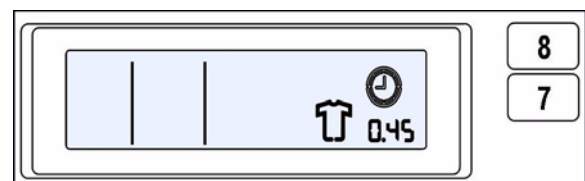
### 3.2.1.5 Time MANAGER

The "Time MANAGER" has the function of modifying the programme settings according to the type of dirt; so as to obtain a reduction or an increase of the washing time, displaying the dirt level through an icon, represented by a t-shirt and the time through the three digits positioned on the right of the LCD display; this variation can be modified through two buttons P8 and P7 positioned besides the display. The symbol remains lit for the whole duration of the programme.

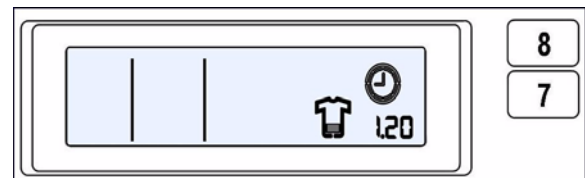


Please find below the various levels combined with the dirt degree

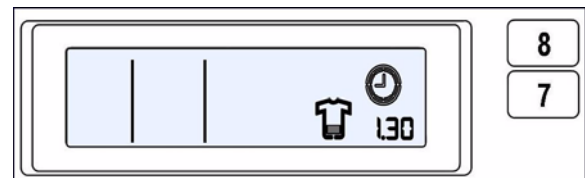
- Super quick (super rapid cycle) indicated for cottons and synthetics with light dirt level, and for half load.



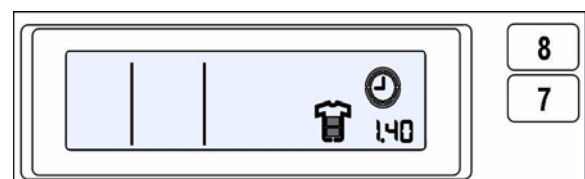
- Quick cycle indicated for clothes used just once.



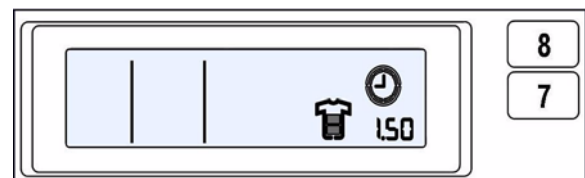
- Light cycle indicated for clothes slightly dirty or of daily use.



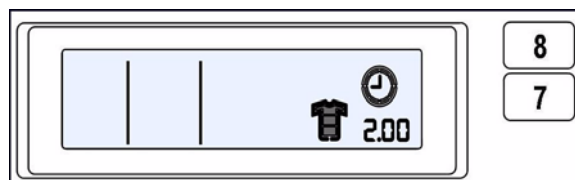
- Daily cycle indicated for quite dirty clothes.



- Normal cycle indicated for quite dirty clothes worn many times.



- Intensive cycle indicated for very dirty clothes which needs anti-stain treatments, soak and prewash.



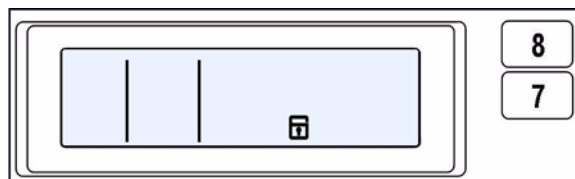
The levels are represented in the following table:

COTTONS	SYNTHETICS	DELICATES
INTENSIVE	-----	-----
NORMAL (basic programme)	NORMAL (basic programme)	NORMAL (basic programme)
DAILY	DAILY	DAILY
LIGHT	LIGHT	LIGHT
QUICK	-----	-----
SUPER QUICK	SUPER QUICK	SUPER QUICK

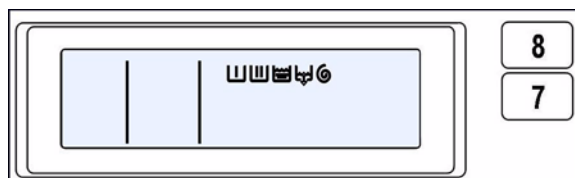
### 3.2.1.6 LCD Display

The LCD display shows the following information:

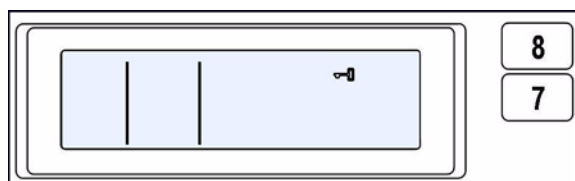
- Padlock  
See page. 11



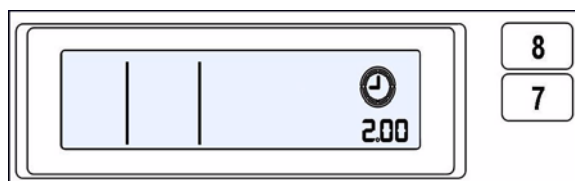
- Washing phases  
Pre-wash, wash, rinses, drain and spin light up in selection mode if the programme includes these phases and during the execution of the phase. Pre-wash lights up when it is configured as option and selected with the relative button.



- Door lock  
It lights up when the door is locked. It switches off when the door is not locked. It flashes when the door is about to unlock (above all in models with door interlock with PTC).



- Duration of the cycle  
Displaying of the time to end of the selected programme.



- Buzzer  
See page. 11

## 4 WASHING PROGRAMMES AND OPTIONS

### 4.1 Possible programmes

The washing programmes can be configured. The basic programmes are listed in the table below.

Programme	Temperature (°C)	No. rinses	Final spin (rpm)
<b>Cotton</b>	<b>90</b>	82	3
	<b>90E</b>	67(*)	(**)
	<b>60</b>	60	3
	<b>60E</b>	55(*)	(**)
	<b>50</b>	50	3
	<b>50/40E</b>	44(*)	(**)
	<b>40</b>	40	3
	<b>30</b>	30	
<b>cold</b>	20		
<b>Synthetic fabrics</b>	<b>60</b>	60	3
	<b>60/50E</b>	42(*)	(**)
	<b>50</b>	50	3
	<b>40</b>	42	
	<b>30</b>	30	
<b>cold</b>	20		
<b>Mini Programme</b>	<b>30</b>	30	3
	<b>cold</b>	20	Max. 900
<b>Delicates</b>	<b>40</b>	40	3
	<b>30</b>	30	
	<b>cold</b>	20	
<b>Wool Hand wash</b>	<b>40</b>	38	3
	<b>30</b>	33	
	<b>cold</b>	20	
<b>Shoes</b>	<b>30</b>	40	3
	<b>40</b>	30	
	<b>cold</b>	20	
<b>Jeans</b>	<b>60</b>	60	5
	<b>50</b>	50	
	<b>40</b>	40	
	<b>30</b>	30	
	<b>cold</b>	20	
<b>Soak</b>			
	30/20	----	----
<b>Rinses</b>			
	----	3	Max. 1400
<b>Conditioner</b>			
	----	1	Max. 1400
<b>Drain</b>			
	----	----	----
<b>Spin</b>			
	----	----	Max. 1400

The data are indicative

(\*) "Energy label" programmes

(\*\*) In some countries the rinses are 3, in others 2

## 4.2 Description of options

- **Rinse hold**
  - Stops the appliance with water in the tub before the final spin cycle.
  - To drain the water, reset the programme and then select a drain or spin cycle.
- **Night cycle**
  - Eliminates all spin phases and adds **three** rinses in COTTON cycles and **two** rinses in SYNTHETICS cycles.
  - Stops the appliance with water in the tub before the final spin cycle.
  - Eliminates the buzzer (if configured).
  - To drain the water, reset the programme and then select a drain or spin cycle.
- **Pre-wash**
  - Adds a pre-wash phase at the start of the cycle with water heating to 30°C (or cold, if selected).
  - In COTTON and SYNTHETICS cycles, performs a short spin before passing to the washing phase.
  - This option cannot be selected for WOOL and HAND-WASH cycles.
- **Stains**
  - Adds a 5-minute motor movement phase after heating to 40°C.
  - Ducts water to the pre-wash/stains compartment in order to introduce the special stain-removal product.
  - This option cannot be selected for WOOL and HAND-WASH cycles.
- **Bleach**
  - Ducts water through the bleach compartment at the beginning of the first rinse in COTTON cycles.
- **Economy / Energy label**
  - Modifies the structure of the COTTON 40÷90 - SYNTHETICS 50/60 programmes in order to reduce energy consumption, guarantying the washing performances.
  - Reduces the washing temperature.
  - Increases the duration of the wash phase.
- **Super-rinse**
  - Adds **two** rinses in the COTTON, **one** in the SYNTHETICS - DELICATES cycles.
  - Eliminates the spin at the end of the washing and the first two intermediate spins.
  - Limits the intermediate spins at 450 rpm.
  - The final spin is performed at maximum speed
- **Half-load**
  - Eliminates one rinse in COTTON programmes.
- **Easy-iron**
  - In COTTON programmes:
    - adds **three** rinse cycles.
    - eliminates the intermediate spin cycles.
    - performs an impulse spin phase before the final one.
    - adds an “untangling” phase after the spin cycle.
  - In SYNTHETICS cycles:
    - reduces the heating temperature in 50/60° cycles to 40°C.
    - increases the washing time.
    - prolongs the cooling phase at the end of the washing phase.
    - adds **one** rinse.
    - adds an “untangling” phase after the impulse spin cycle.

- **Reduced spin speed**

- reduces the speed of all spins as shown in the table.

<b>Maximum spin speed (rpm)</b>	600	700	800	900	1000	1100	1200	1300	1400	1550
<b>Reduction for COTTON (rpm)</b>	450	450	450	450	500	550	600	650	700	750
<b>Reduction for ALL OTHER CYCLES (rpm)</b>	450	450	450	450	450	450	450	450	450	450

- **No spin**

- Eliminates all the spin phases.
- If selected, **three** rinses are added in the COTTON cycle and **one** in the SYNTHETICS cycle.

- **Daily**

- Modifies the structure of the COTTON - SYNTHETICS - DELICATES cycles to obtain a good washing performance with a short time.

- **Light**

- Modifies the structure of the wash phase of the COTTON - SYNTHETICS - DELICATES cycles in a short time.

- **Very short**

- Modifies the structure of the wash phase of the COTTON - SYNTHETICS - DELICATES cycles for half load.

- **Delayed-start time**

- Adds a pause before the start of the programme. The delay time is displayed on the corresponding LEDs starting from a 2-hour till a 20-hour delay (30', 60', 90', 2h, 3h..., 20h. 0h).
- To start the cycle immediately, after having already selected a delayed start: press START/PAUSE button, cancel the delay time by pressing the appropriate button, then press START/PAUSE again.

### 4.3 Modification of rinses on the basis of the options

		No. of rinses with the options							
		Normal	Super rinse	Night cycle	Easy-iron	No spin	Half-load	(Night cycle Easy-iron No spin) and Super rinse	
<b>PROGRAMMES</b>	<b>COTTON (D,N,B) Low</b>	Eco 90°	3	5	6	6	6	2	7
		Eco 60°	2	4	5	5	5	2	6
		Eco 40° - 50°	3	5	6	6	6	2	7
		Intensive	3	5	6	6	6	2	7
		Normal	3	5	6	6	6	2	7
		Daily	3	5	6	6	6	2	7
		Light	2	4	5	5	5	2	6
		Short	2	4	5	5	5	2	6
		Very short	2	4	5	5	5	2	6
	<b>COTTON (I,F,UK,E) Medium</b>	Eco 90°	3	5	6	6	6	2	7
		Eco 60°	3	5	6	6	6	2	7
		Eco 40° - 50°	3	5	6	6	6	2	7
		Intensive	3	5	6	6	6	2	7
		Normal	3	5	6	6	6	2	7
		Daily	3	5	6	6	6	2	7
		Light	2	4	5	5	5	2	6
		Short	2	4	5	5	5	2	6
		Very short	2	4	5	5	5	2	6
	<b>COTTON (SWE) HIGH</b>	Eco 90°	3	5	6	6	6	2	7
		Eco 60°	3	5	6	6	6	2	7
		Eco 40° - 50°	3	5	6	6	6	2	7
		Intensive	3	5	6	6	6	2	7
		Normal	3	5	6	6	6	2	7
		Daily	3	5	6	6	6	2	7
		Light	2	4	5	5	5	2	6
		Short	2	4	5	5	5	2	6
		Very short	2	4	5	5	5	2	6
	<b>SYNTHETICS</b>	Eco 60°	3	4	5	5	5	2	6
		Eco 40° - 50°	3	4	5	5	5	2	6
		Intensive / Normal	3	4	5	5	5	2	6
		Daily	3	4	5	5	5	2	6
		Light	2	3	4	4	4	2	5
		Short / Very short	2	3	4	4	4	2	5
	<b>DELICATES</b>	Intensive / Normal	3	4	5	5	5	2	6
		Daily	3	4	5	5	5	2	6
		Light	2	3	4	4	4	2	5
		Short / Very short	2	3	4	4	4	2	5
	<b>DUVETS</b>	Normal	3	4			4		5
<b>WOOL</b>	Normal	3	3			3		3	
<b>HAND WASH</b>	Normal	3	3			3		3	
<b>SILK</b>	Normal	2	3			4		5	
<b>JEANS</b>	Normal	5				8			

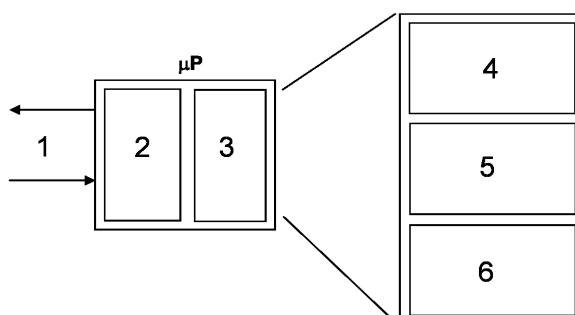
The half-load option reduces of 1 rinse all cotton programmes except the Very short (Quick)

## 5 TECHNICAL CHARACTERISTICS

### 5.1 Control system memory

#### 5.1.1 General structure of the memory system

The system features a FLASH memory module, fitted internally to the microprocessor, which serves to memorize the configuration data, the description of the cycle, the status of the appliance in the event of a power failure, and the alarms.



1. External serial port (asynchronous)
2. FLASH Memory
3. RAM Memory
4. Power Failure and Machine status
5. Configuration of the appliance
6. Description of the cycle

μP = Microprocessor

#### 5.1.2 FLASH

This area memory contains the firmware code relative to the functions of the appliance:

- Control of electrical loads (motor, pump, solenoid valves, etc.).
- Control of the sensors (pressure switches, motor speed, door status etc.).
- Control of the user interface.
- Control of the serial port.
- Control of power failure procedure and alarms.
- Execution of the washing programme.
- Power failure, i.e. the information necessary to restart the appliance in the event of a power failure:
  - Selected cycle and options.
  - Current phase and sub-phase.
- Machine status, used to perform special cycles such as:
  - Electrical test (used in the assembly line).
  - Continuous cycles (used in the factory workshop).
- Machine configuration: the data contained in this portion of memory define the characteristics of the model and are interpreted by the function software. The variables are as follows:
  - Type of appliance (front-loader, top-loader, compact).
  - Type of door interlock (PTC or instantaneous).
  - Anti-flooding safety device.
  - Transmission ratio between drum pulley and motor pulley.



- Structure of the washing group.
- Power supply frequency (50 or 60 Hz).
- Type of PCB (horizontal or vertical buttons).
- Detergent drawer (3 or 4 compartments).
- Final spin speed (600 - 1400 rpm).
- Identification of the appliance:
  - Prod. No.
  - ELC
  - Serial number.
- Configuration of the user interface:
  - Programmes on main selector.
  - Function of secondary selector (if featured).
  - Number and functions of buttons.
  - Functions of the LEDs.
  - Operation of the buzzer.
- Washing cycle tables: each washing cycle consists of a series of phases (steps); the steps are the basic instructions which comprise the description of the cycle, which is common to all appliances having the same characteristics.
  - Water fill.
  - Motor movement.
  - Reset.
  - Heating.
  - Drain.
  - Spin.
  - Conditions "IF" ..... (options, temperatures, etc)
- Configuration of the washing cycle: for each family of appliances, certain parameters associated with the washing programme are defined.
  - Operational limits (voltage/frequency).
  - Transmission ratios.
  - Parameters for control of the signal from the tachometric generator.
  - Parameters for half-range operation of the motor.
  - Structure of the washing group.
  - Control parameters for the FUCS anti-unbalancing system.
  - Water fill control algorithm.
  - Control parameters for drying cycles
  - Sensor parameters (flowmeter etc...).

### 5.1.3 RAM

The RAM (Random-Access Memory) contains the variables, i.e. all the dynamic information used during execution of the programme:

- Motor speed.
- Temperature of the water.
- Alarms.
- Cycle selected.
- Machine status.

The RAM is cancelled when the power supply is disconnected (power failure or appliance switched off).

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

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

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

## 5.2 Door safety interlock

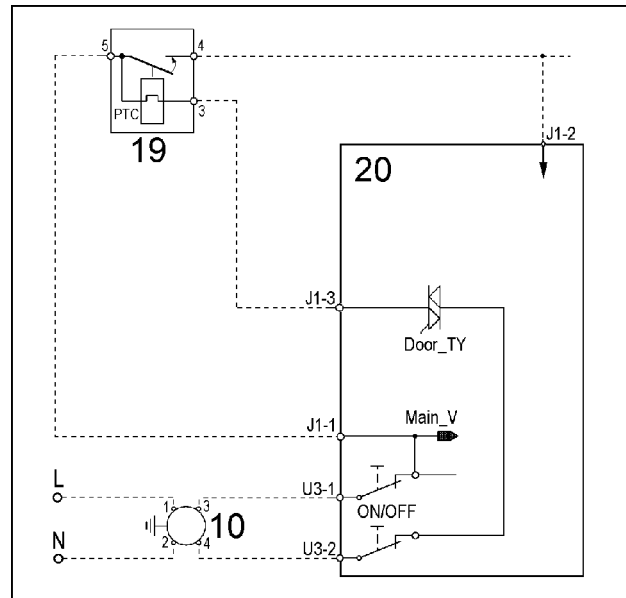
There are two types of door interlock:

- voltmetric with PTC.
- instantaneous.

### 5.2.1 Voltmetric interlock with PTC

10 Suppressor.  
19 Door interlock.  
20 Electronic board.

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



#### 5.2.1.1 Operating principle

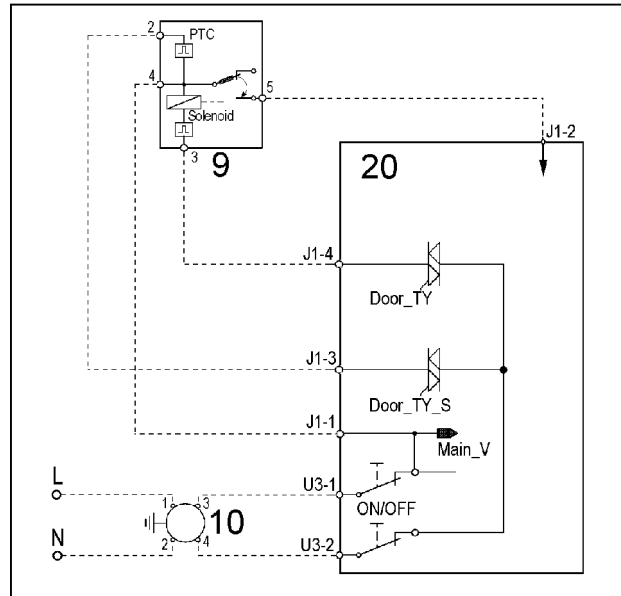
- When the washing programme is started by pressing the START/PAUSE button, the bi-metal PTC (contacts 3-5) is powered by the triac (Door\_TY) on the PCB: after 2-4 seconds, this closes the switch (5-4) which powers the electrical components of the appliance (only if the door is closed).
- The door interlock prevents aperture of the door while the appliance is in operation.
- At the end of the washing programme, the PCB disconnects the interlock from the power supply, but the door remains locked for 1 to 3 minutes (PTC cooling time).

## 5.2.2 Instantaneous door interlock

- With this safety device it is possible to open the door immediately after the end of the cycle

9 Door interlock.  
 10 Suppressor.  
 20 Electronic board.

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



### 5.2.2.1 Operating principle

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

### 5.2.2.2 Door open conditions

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

- the drum must be stationary (no signal from the tachymetric 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.

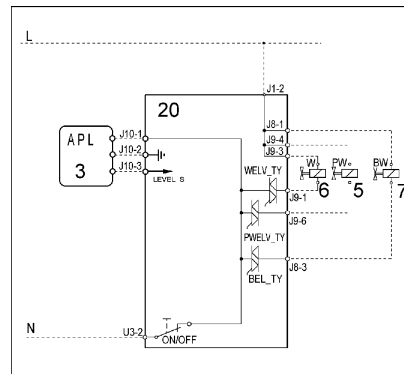
### 5.2.2.3 Automatic release device

If a power failure occurs, if the appliance is shut off, or if the solenoid malfunctions, the bimetallic PTC will cool down and the door will unlock in 1 - 4 minutes.

### 5.3 Water fill system

The electric valves are powered by the PCB by means of the triac and the control of the water level in the tub is carried out by the analogue pressure switch.

- 3 Analogue pressure switch.
- 5 Prewash electric valve.
- 6 Wash electric valve.
- 7 Bleach electric valve.
- 20 Electronic board.



### 5.4 Analogue pressure switch of water level control in the tub

#### General characteristics

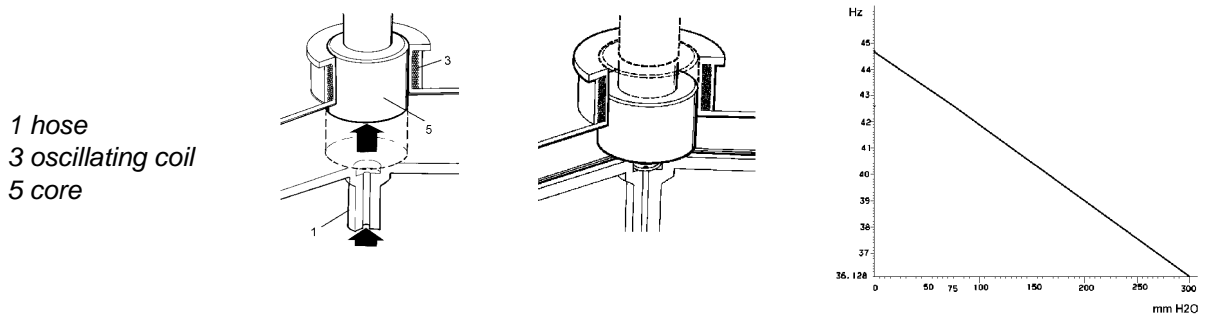
The electronic pressure switch is an analogue device that controls the water level in the tub, used in the models with electronic control and it is directly connected to the main PCB.

ELECTRONIC PRESSURE SWITCH		
Electronic circuit	Electrical symbol	

The pressure switch is connected via tube 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.

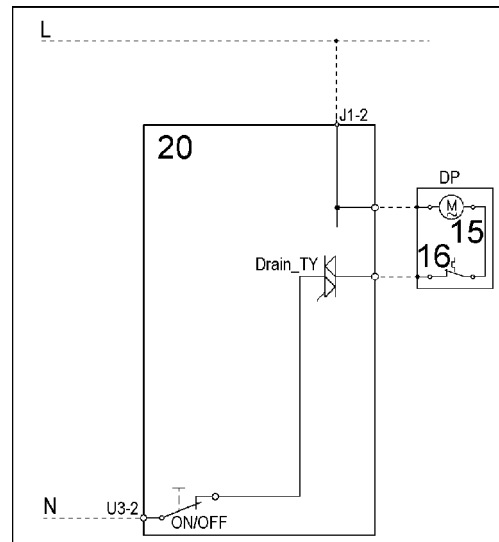
The PCB recognizes how much water has been introduced into the tub according to the frequency.



#### Frequency variation according to the water quantity in the tub

## 5.5 Drain pump

- 15 Drain pump.
- 16 Overload cut-out.
- 20 Electronic board.



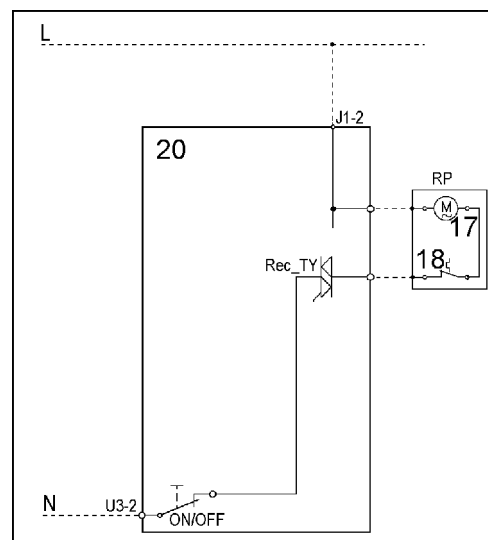
The PCB powers the drain pump via a triac as follows:

- until the anti-boiling pressure switch closes on EMPTY, after which the pump is actioned for a brief period or passes to the subsequent phase.
- for a pre-determined period (and eventually an alarm appears).

## 5.6 Recirculation pump (if featured)

On jetsystem models, the main board powers directly the recirculation pump through a triac.

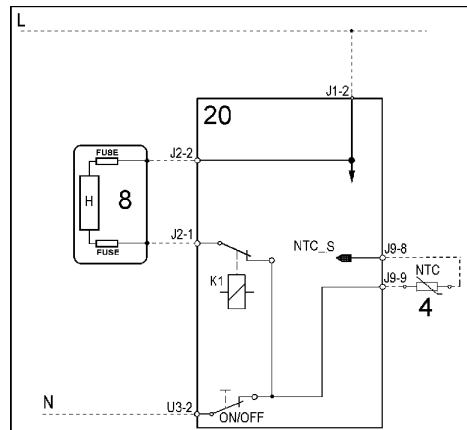
- 17 Drain pump.
- 18 Overload cut-out.
- 20 Electronic board.



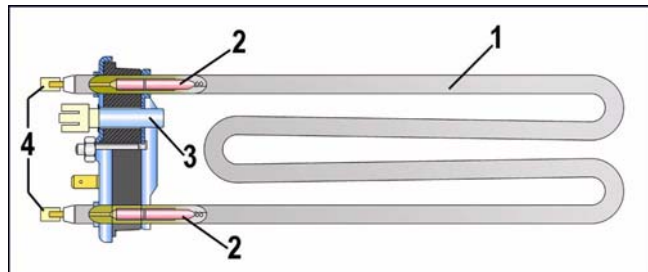
## 5.7 Heating



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



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



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

### WARNING

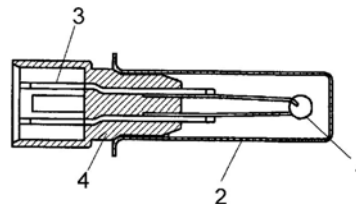


**In case of replacement of the heater, replace it with one with the same characteristics in order not to compromise the safety of the appliance.**

## 5.8 Temperature sensor

The temperature is controlled by the PCB by means of a NTC temperature sensor incorporated in the heating element.

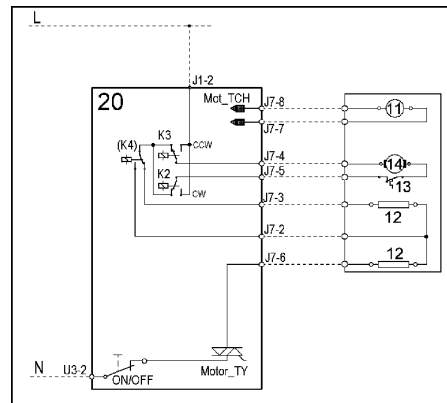
- 1 NTC heater.
- 2 Metallic capsule.
- 3 Terminals.
- 4 Plastic casing.



TEMPERATURE(°C)	RESISTANCE (Ohm)		
	Nominal value	Maximum value	Minimum value
20	6050	6335	5765
60	1250	1278	1222
80	640	620	660

## 5.9 Universal Motor

- 11 Tachometric generator.
- 12 Stator.
- 13 Protector.
- 14 Rotor.
- 20 Electronic board.



### 5.9.1 Power supply to motor

The PCB powers the motor via a triac; the direction of rotation is reversed by switching of the contacts on the two relays (K2-K3), which modify the connection between the rotor and the stator.

In certain models, a third relay (K4) is used to power the stator (full or half field) according to the spin speed.

The speed of rotation of the motor is determined by the signal received from the tachometric generator.

During the spin phases, the microprocessor performs the anti-foam and the anti-unbalancing control procedure.

### 5.10 Power supply to motor

The PCB powers the motor via a triac; the direction of rotation is reversed by switching of the contacts on the two relays (K2-K3), which modify the connection between the rotor and the stator.

In certain models, a third relay (K4) is used to power the stator (full or half field) according to the spin speed.

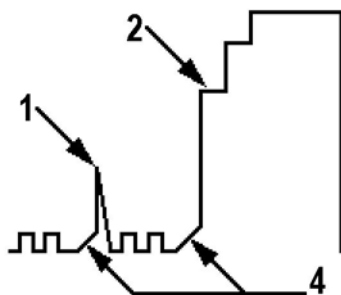
The speed of rotation of the motor is determined by the signal received from the tachometric generator.

During the spin phases, the microprocessor performs the anti-foam and the anti-unbalancing control procedure.

### 5.11 Anti-foam control system

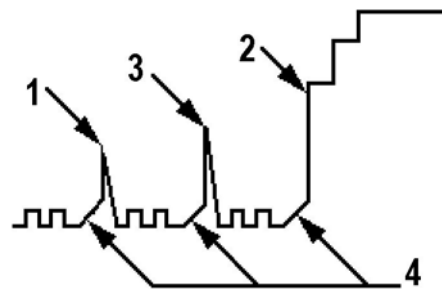
The anti-foam control procedure is performed via the electronic pressure switch.

Spin phase without foam



- 1. 450 rpm pulses
- 2. Spin

Spin phase with little foam



- 3. Anti-foam (electronic level)
- 4. FUCS

- **Spin with little foam:** if the contact of the electronic pressure switch closes on FULL, the spin phase is interrupted; the drain pump continues to operate and, when the contact returns to EMPTY, the spin phase is resumed
- **Spin with excessive foam in the tub (critical situation):** the control system detects whether the electronic pressure switch commutates 5 times to FULL (five spin interruptions). In this case, the spin phase is skipped, and a one-minute drain cycle is performed with the motor switched off; in the case of a washing phase, a supplementary rinse is added

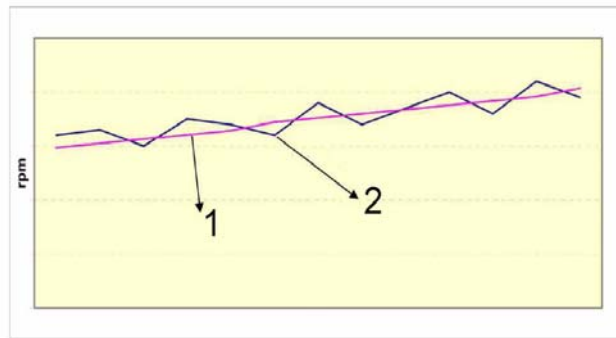


## 5.12 “FUCS”

( **F**ast **U**nbalance **C**ontrol **S**ystem)

The control procedure for unbalanced loads is performed dynamically, before each spin cycle, as follows:

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



1 Selected speed

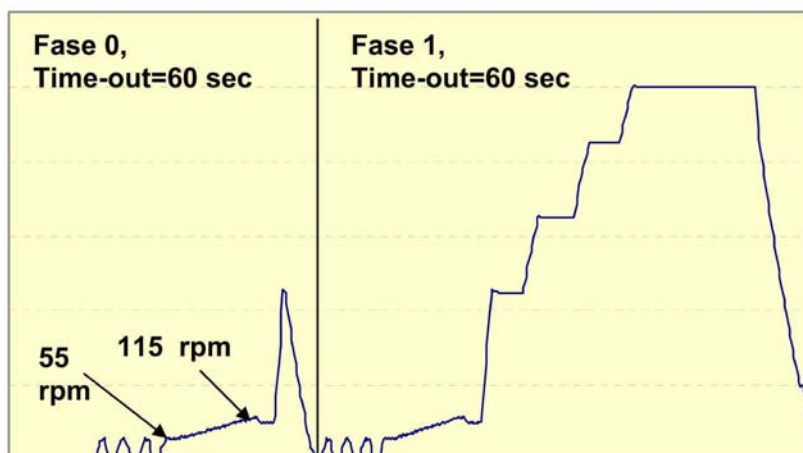
2 Real speed

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

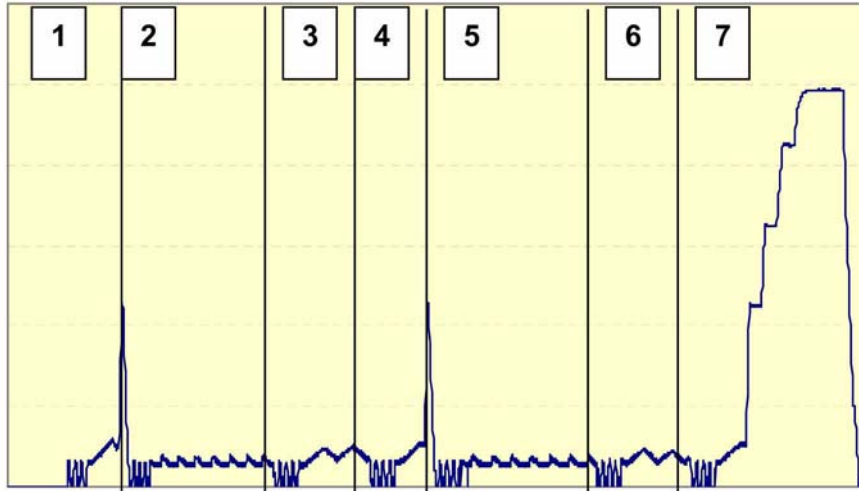
- an unbalancing index (0-1-2-3).
- an unbalancing threshold value (ex: 850, 350, 650, 1100rpm).
- a time out (max. time).
- **Ending of the FUCS balancing phase.**

The phase is ended when:

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



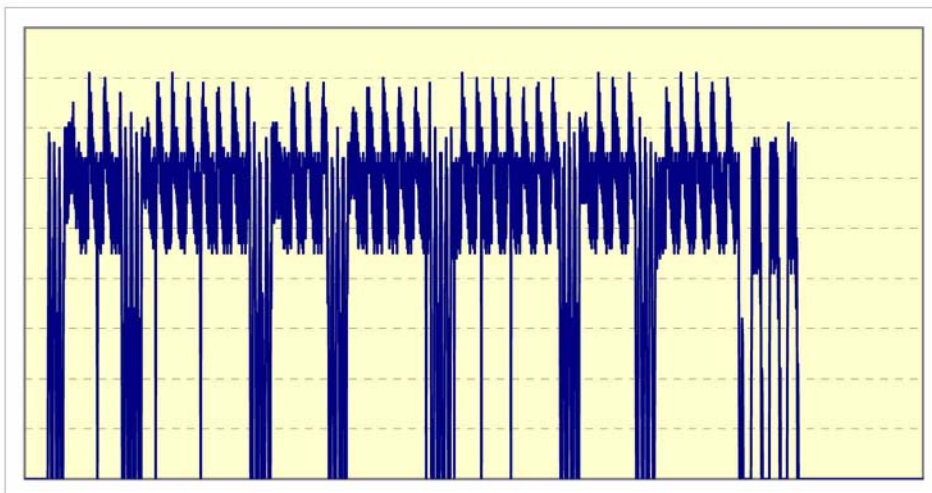
- **Balancing in the available longer interval**



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

- **Unbalancing after all phases**

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



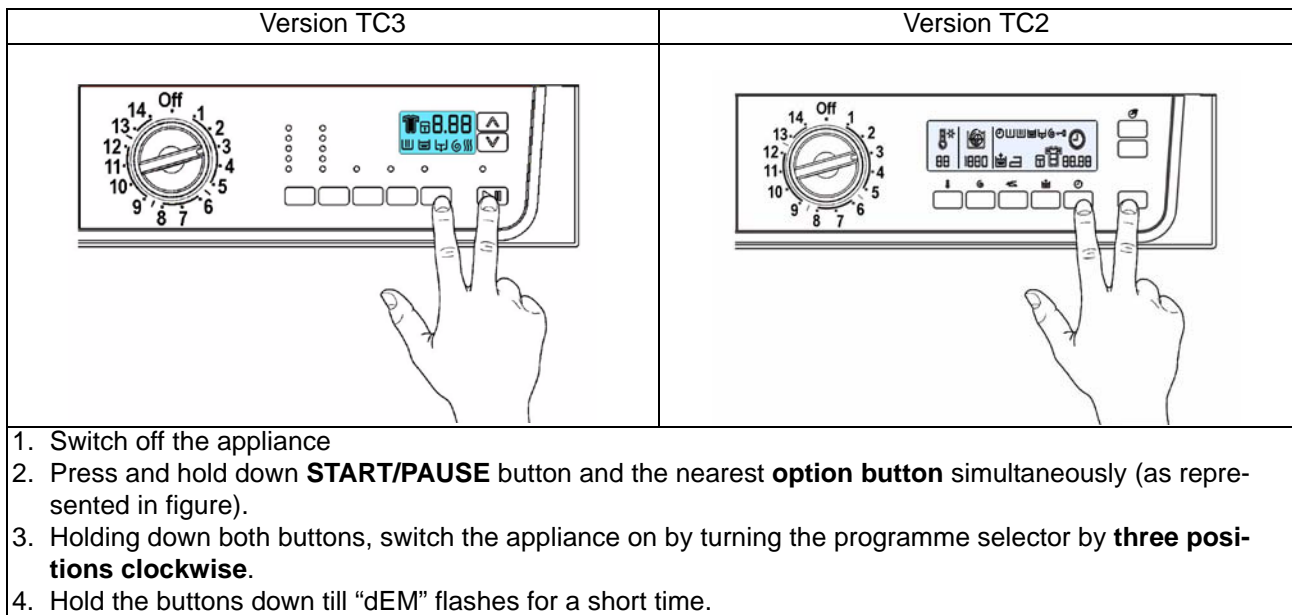
## 6 DEMO MODE SETTING

A special cycle has been created for demonstration of the operation of these appliances in retail outlets without connecting the appliance to the water supply. In this way, the salesman can select any programme; after starting the cycle by pressing START, the appliance will perform certain phases only, and will skip those which cannot be performed (water fill, drain, heating).

The cycle takes place as follows:

- The door locking device is actioned in the normal way (i.e. the door remains locked while the appliance is in operation, and can be opened at the end of the cycle or in pause mode).
- Motor: all low-speed movements are enabled, while the pulse signals and the spin cycle are excluded. The water fill solenoids and the drain pump are disabled.
- Display: since the phases of the cycle take place in rapid succession (1 second of the demo cycle is equivalent to 1 minute of the actual cycle), the time-to-elapsed decreases by 1 unit per second. Remember that the time-to-elapsed does not always correspond to the actual cycle time.
- Alarms: for safety reasons, the following groups of alarms remain enabled: E40 (door closed), E50 (motor) and E90 (communication between the boards/configuration).

All phases are performed in a short time and the cycle depends on the options that have been inserted in the demo cycle.

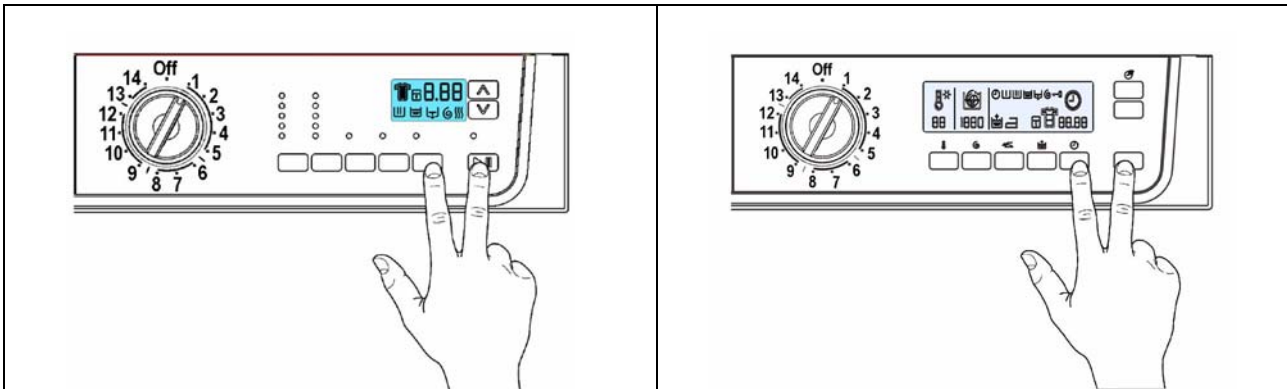


### 6.1 Exiting DEMO mode

To exit the demo cycle, switch the appliance off (programme selector in off/cancel position).

## 7 DIAGNOSTIC SYSTEM

### 7.1 Access to diagnostic mode



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

In the first position, the operation of the buttons and the relative LEDs is checked; turning the programme selector **clockwise** the diagnostic cycle for the operation of the various components and the alarm reading are activated.

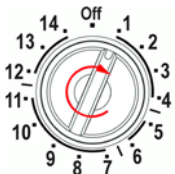




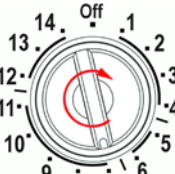

### 7.2 Exiting diagnostic mode

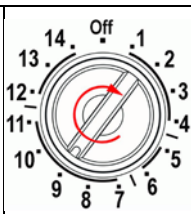
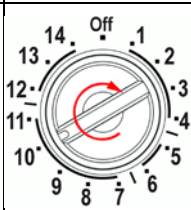
To exit the diagnostic cycle, switch the appliance off, then on, and then off again.

### 7.3 Diagnostic test phases

Irrespective of the type of PCB and the configuration of the programme selector it is possible, after entering diagnostics mode, to perform diagnostics on the operation of the various components and to read the alarms by turning the programme selector clockwise.

All the alarms are enabled during the diagnostic cycle.

Selector position		Components activated	Operating conditions	Function checked
1		<ul style="list-style-type: none"> <li>- All the LEDs and symbols light in sequence.</li> <li>- When a button is pressed, the group, the corresponding LED or symbol light.</li> </ul>	Always activated	Operation of the user interface
2		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Wash solenoid</li> </ul>	Door locked Water level below anti-flooding level Maximum time 5 min.	Water fill to wash compartment
3		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Prewash solenoid</li> </ul>	Door locked Water level below anti-flooding level Maximum time 5 min.	Water fill to prewash compartment (bleach)
4		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Pre-wash and wash solenoid valves</li> </ul>	Door locked Water level below anti-flooding level Maximum time 5 min.	Water fill to softener compartment
6		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Wash solenoid if the level of water in the tub does not cover the heater</li> <li>- Heating element</li> <li>- Circulation pump</li> </ul>	Door locked Water level above the heater Maximum time 10 min. or up to 90°C. (*)	Heating Recirculation
7		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Wash solenoid if the level of water in the tub does not cover the heater</li> <li>- Motor (55 rpm clockwise, 55 rpm counter-clockwise, 250 rpm impulse)</li> </ul>	Door locked Water level above the heater	Check for leaks from the tub
8		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Drain pump</li> <li>- Motor up to 650 rpm then at maximum spin speed (**)</li> </ul>	Door locked Water level lower than anti-boiling level for spinning	Drain and spin

9		<ul style="list-style-type: none"> <li>- Door interlock</li> <li>- Drain pump</li> <li>- Electric fan</li> <li>- Condensation solenoid valve</li> <li>- Dryer heating element</li> </ul>	Door locked Water level below anti-flooding level	Air temperature displaying
10		<ul style="list-style-type: none"> <li>- Reading/Cancellation of the last alarm</li> </ul>	-----	-----

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

(\*\*) The check at the maximum speed occurs without control of the FUCS and no clothes have to be inserted inside the appliance.

## 8 ALARMS

### 8.1 Displaying the alarms to the user

The alarms displayed to the user are listed below:

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

**They are represented through the flashing of the red LED inside the START-PAUSE and can be solved directly by the user;**



**The alarms listed below, instead:**

- EF0 - Water leakage (Aqua Control System)

For its solution, the intervention of the Service engineers is needed.

While for the alarm:

- **EH0 - Voltage or frequency out of the normal values.**

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

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

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

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

Certain alarm conditions require a drain phase 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.

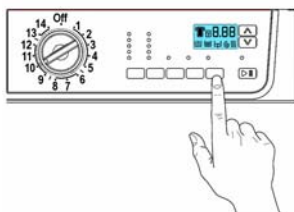
### 8.2 Reading the alarm codes

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

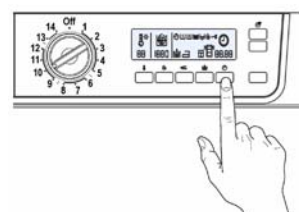
- Enter diagnostic mode (par. 7.1)
- Irrespective of the type of PCB and configuration, turn the programme selector **clockwise** to the **tenth position**
- The last alarm is displayed
- To display the previous alarms, press sequentially the left button of the START/PAUSE button (as represented in figure)



Version TC3



Version TC2



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

## 8.2.1 Displaying the alarm

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

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



These two LEDs are featured in all models.

### Notes:

- The first letter of the alarm code "E" (Error) is not displayed, since this letter is common to all alarm codes.
- The alarm code "families" are shown in hexadecimal; in other words:
  - **A** is represented by **10** flashes
  - **B** is represented by **11** flashes
  - ...
  - **F** is represented by **15** flashes
- Configuration errors are shown by the flashing of all the LEDs (user interface not configured).

## 8.2.2 Example of alarm displaying

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

- the sequence of four flashes of the START / PAUSE button with red light, indicates the first number E**43**;
- the sequence of three flashes of the START / PAUSE button with green light, indicates the second number E**43**;

START / PAUSE button with red light			START / PAUSE button with green light		
ON/OFF	Time (Sec.)	Value	ON/OFF	Time (Sec.)	Value
	0.5	1		0.5	1
	0.5			0.5	
	0.5	2		0.5	2
	0.5			0.5	
	0.5	3		0.5	3
	0.5			0.5	
	0.5	4		2,5	Pause
	0.5				
	1,5	Pause			



### 8.2.3 Operation of alarms during diagnostics

All alarms are enabled during the components diagnostic phase.

### 8.3 Rapid reading of alarm codes

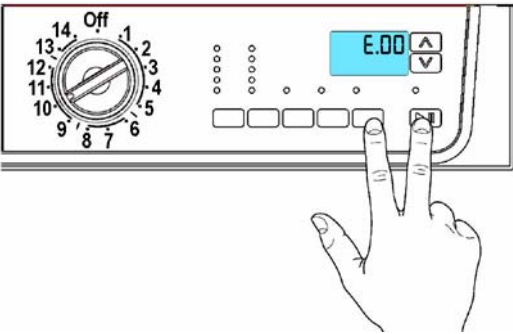
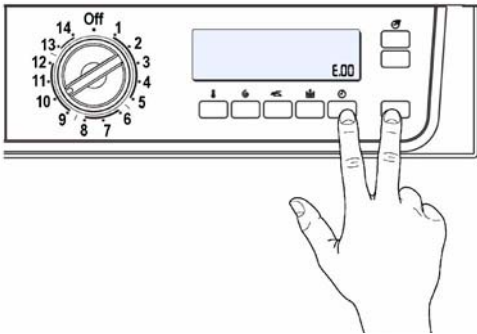
The last three alarm codes can be displayed even if the appliance is in normal operating mode (e.g. during the execution of the washing programme):

- Press and hold down **START/PAUSE** and the nearest **option button** (as to enter the DIAGNOSTICS), for at least two seconds: the LEDs initially switch off, and then display the flashing sequence indicating the last alarm.
- To display the previous alarms press the left button of the START/PAUSE button sequentially.
- To return to the last alarm, press the START/PAUSE button.
- The alarm sequence continues as long as the two buttons are held down.
- The alarm reading system is as described in parag. 8.2.
- While the alarms are displayed, the appliance continues to perform the cycle or, if in the programme selection phase, maintains the previously-selected options in memory.

### 8.4 Cancelling the last memorised alarm

It is good practice to cancel the memorised alarms:

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

Version TC3	Version TC2
	
<ol style="list-style-type: none"><li>1. Select diagnostic mode and turn the programme selector to the <b>tenth</b> position (reading of alarms).</li><li>2. Press and hold down <b>START/PAUSE</b> button and the nearest <b>option button</b> simultaneously (as represented in figure).</li><li>3. Hold down the buttons till the LEDs stop to flash and the LCD display shows "E00" (at least 5 seconds).</li></ol>	

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

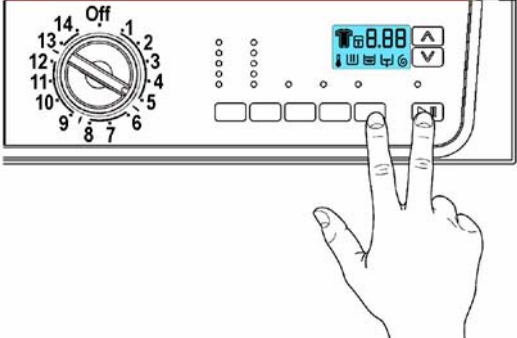
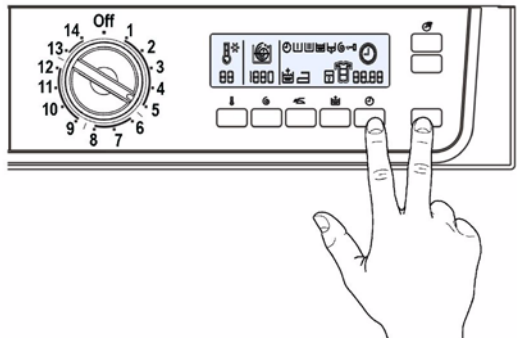
## 9 OPERATING TIME COUNTER

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 **6550** hours of operating time.

- Only the operating time of normal programmes (and not diagnostic programmes) is counted
- The actual operating time for the cycle is counted (which does not include pauses, delayed start time, time of a stop with water in the drum, and soaking phases)
- The precision of the counter is 30 seconds per programme
- Only whole hours of operation are counted (1 hr and 59 min = 1 hr)







### 9.1 Reading of operating time

Version TC3	Version TC2
	
<ol style="list-style-type: none"> <li>1. Switch off the appliance</li> <li>2. Press and hold down <b>START/PAUSE</b> button and the nearest <b>option button</b> simultaneously (as represented in figure).</li> <li>3. Holding the buttons down, switch on the appliance turning the programme selector of <b>five positions clockwise</b>.</li> <li>4. Hold the buttons down till the LCD or the display show the working hours (at least 5 seconds).</li> </ol>	

### 9.2 Display of total operating time with LEDs

This time is displayed two digits at a time: the first two digits indicate the thousands and hundreds. The second two digits indicate the tens and units.

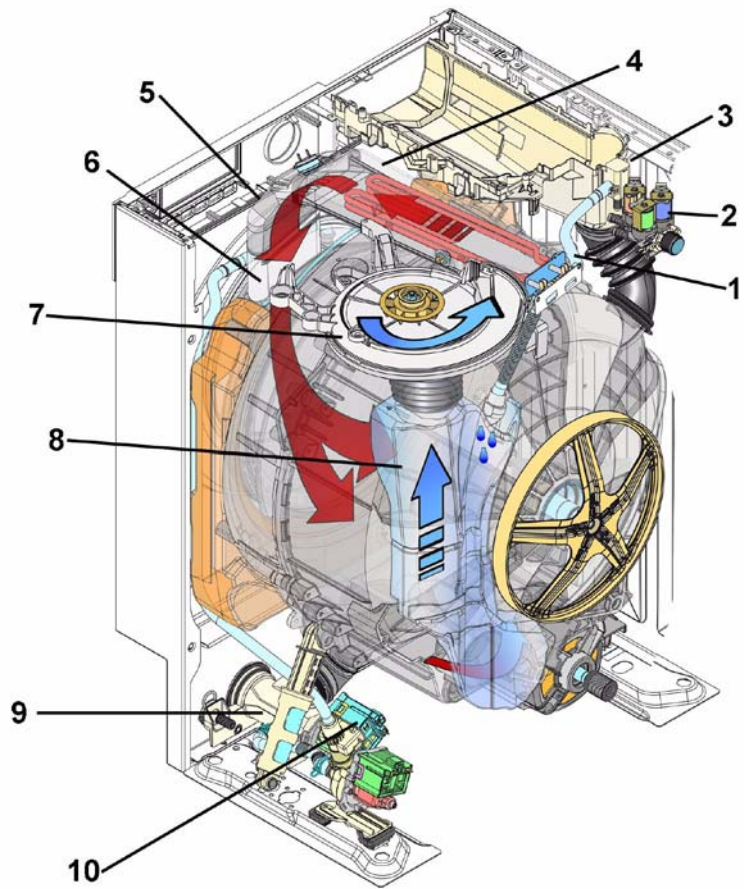
For example, if the operating time is **6550** hours, the display will show the following sequence:

	Phase 1	Phase 2	Phase 3
<b>Styling</b>	Nothing is displayed for <u>two seconds</u> .	The following digits are displayed for <u>two seconds</u> : - thousands (6). - hundreds (5).	The following digits are displayed for the next two seconds: - tens (5). - units (0).
<b>TC3</b>			
<b>TC2</b>			

At the end of the phase 3 (after displaying the tens and units) the cycle repeats. To return to normal mode it is possible to: switch the appliance off or press a button or turn the selector knob.

## 10 DRYING CIRCUIT

1. Condensation intake tube and steam vent tube
2. Solenoid
3. Coupling (Air-Break)
4. Heating element casing
5. Duct
6. Rubber bellow Tub-condenser sleeve
7. Fan
8. Drying condenser
9. Filter body
10. Drain pump



**Time-controlled cycle:** the drying time is selected by the user (max. 130 minutes for cotton and synthetic fabrics).

**Cooling:** a cooling cycle is performed at the end of every drying cycle:

**Anti-crease:** after the cooling phase, a 10-minute anti-crease phase is performed.

The main board powers directly the **drying heaters** by means of two relays.

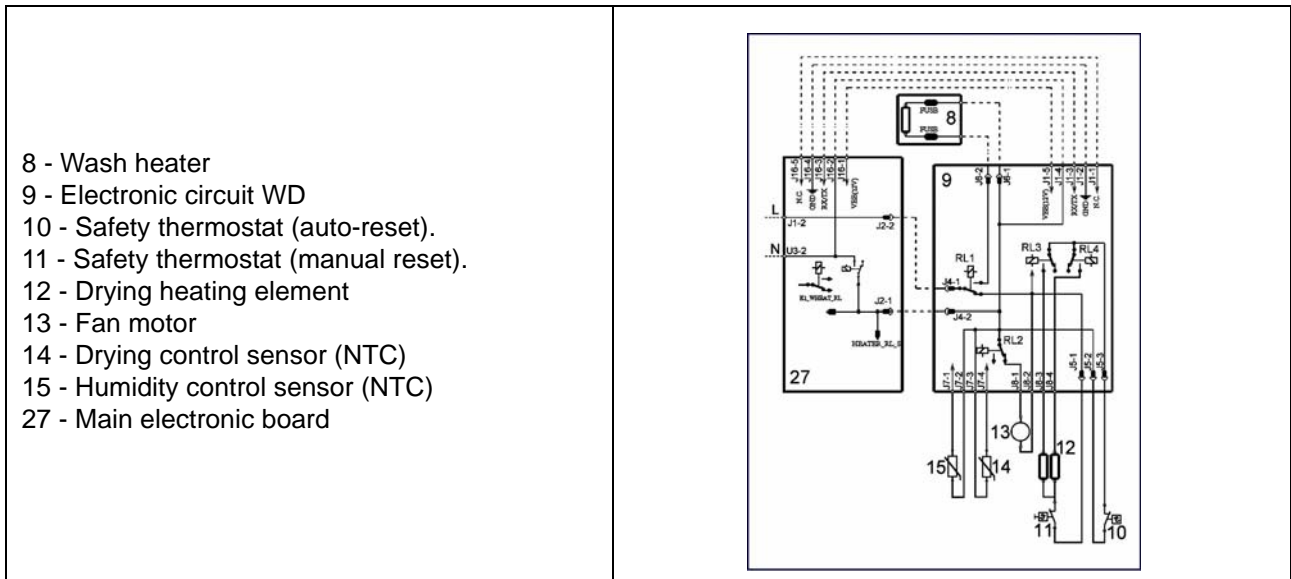
In the cycles for synthetic fabrics, the drying is performed with only one heating element (half power); in the cotton cycles - linen both heating elements are powered (full power).

**The fan motor** is powered via a relay; **the condensation solenoid** is powered by a triac.

The wash of the condenser occurs at the beginning of the last rinse.

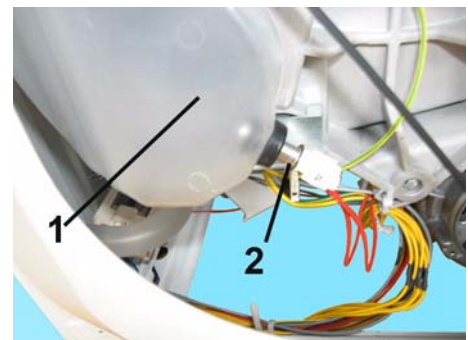
## 10.1 Temperature control

The drying temperature is controlled by an NTC sensor positioned on the duct; the heater casing features two safety thermostats (one of which is a manual-reset type)



<p>1. Drying temperature control NTC sensor.            2. Auto-reset safety thermostat.            3. Manual-reset safety thermostat (150°C)            4. Dryer heating element</p>		
<b>NTC Sensor: heater at 25°C</b>	5000 Ohm	
<b>Manual-reset safety thermostat</b>	Normally closed. Opens at 150°±5°C	
<b>Auto-reset safety thermostat</b>	Normally closed. Opens at 110°±3°C Closes at 94°±5°C	
<b>Heater unit</b>	<b>Power</b>	700+700W
	<b>Voltage</b>	230V      240V
	<b>Resistance</b>	56.5Ohm + 56.5Ohm      61.5Ohm + 61.5Ohm
<b>Fan capacity</b>	about 80 m³/hour	

1. Drying condenser
2. NTC temperature sensor



# 11 ALARM TABLE

## 11.1 Table of alarms

Alarm	Description	Possible fault	Action/machine status	Reset
E00	No alarm	-----	-----	-----
E11	Poor water fill before wash cycle	Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; Main board faulty.	Cycle is paused with door locked	START/ RESET
E12	Poor water fill before drying cycle	Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; Main board faulty.	Cycle is paused with door locked	START/ RESET
E13	Water leaks	Drain tube 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	Poor draining during washing	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Wiring faulty; Drain pump faulty; Pressure switch faulty; Main board faulty.	Cycle is paused (after 2 attempts)	START/ RESET
E22	Poor draining during drying	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Wiring faulty; Drain pump faulty; Pressure switch faulty; Main board faulty.	Cycle is paused	START/ RESET
E23	Faulty triac for drain pump	Wiring faulty; Drain pump faulty; Main board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET
E24	Malfunction in sensing circuit on triac for drain pump (wrong input voltage to microprocessor).	Main board faulty.	Safety drain cycle - Cycle stops with door unlocked	RESET
E31	Malfunction in electronic pressure switch circuit (frequency of signal from pressure switch out of limits).	Wiring; Electronic pressure switch; Main board;	Cycle stops with door locked	RESET
E32	Calibration error of the electronic pressure switch (The electronic pressure switch generates a signal with unstable frequency during the drain phase).	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Water circuit on pressure switch; Wiring faulty; Pressure switch; Drain pump faulty; Main board faulty.	Cycle is paused	START/ RESET

<b>E35</b>	<b>Overflow</b>	Water fill solenoid valve faulty; Leaks from water circuit on pressure switch; Wiring faulty; Pressure switch faulty; Main board faulty.	Cycle interrupted. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off. etc.)	RESET
<b>E38</b>	<b>Internal pressure takeoff is clogged (water level does not change for at least 30 sec. of drum rotation).</b>	Motor belt broken; Water circuit on pressure switches clogged.	Heating phase is skipped	ON/OFF RESET
<b>E3A</b>	<b>Faulty sensing by heating element relay (input voltage to microprocessor always 5V).</b>	Main board faulty.	Cycle stops with door locked	RESET
<b>E41</b>	<b>Door open (after 15 sec.).</b>	Wiring faulty; Door lock unit faulty; Main board faulty.	Cycle is paused	START/ RESET
<b>E42</b>	<b>Problems closing the door.</b>	Wiring faulty; Door lock unit faulty; Electrical current leak between heating element and ground; Main board faulty.	Cycle is paused	START/ RESET
<b>E43</b>	<b>Faulty triac supplying power to door delay system.</b>	Wiring faulty; Door lock unit faulty; Main board faulty.	(Safety drain cycle) Cycle blocked	ON/OFF RESET
<b>E44</b>	<b>Faulty sensing by door delay system.</b>	Main board faulty.	(Safety drain cycle) Cycle blocked	ON/OFF RESET
<b>E45</b>	<b>Faulty sensing by triac on door delay system (wrong input voltage to microprocessor).</b>	Main board faulty.	(Safety drain cycle) Cycle blocked	ON/OFF RESET
<b>E51</b>	<b>Motor power triac short-circuited.</b>	Current leakage from motor or from wiring; Main board faulty.	Cycle blocked (after 5 attempts) with door open	RESET
<b>E52</b>	<b>No signal from motor tachometric generator.</b>	Wiring faulty; Motor faulty; Main board faulty.	Cycle blocked, door locked (after 5 attempts)	RESET
<b>E53</b>	<b>Motor triac sensing circuit faulty (wrong input voltage to microprocessor)</b>	Main board faulty.	Cycle interrupted.	RESET
<b>E54</b>	<b>Motor relay contacts sticking (high voltage level when the relay switches to OFF).</b>	Main board faulty; Current leakage from motor or from wiring.	Cycle blocked (after 5 attempts)	RESET
<b>E59</b>	<b>No signal from tachometric generator for 3 seconds.</b>	Wiring faulty on inverter for motor; Inverter board faulty; Motor faulty	Cycle blocked (after 5 attempts) with door locked	RESET
<b>E5H</b>	<b>Input voltage is lower than 175V.</b>	Wiring faulty; Inverter board faulty	Cycle blocked (after 5 attempts) with door locked	RESET

<b>E5C</b>	<b>Input voltage is too high.</b>	The masters voltage is too high (measure the masters voltage); Inverter board faulty	Cycle blocked (after 5 attempts) with door locked	RESET
<b>E61</b>	<b>Insufficient heating during washing.</b>	Wiring faulty; NTC sensor for wash cycle faulty; Heating element faulty; Main board faulty.	The heating phase is skipped.	START/ RESET
<b>E62</b>	<b>Overheating during washing (temper- ature higher than 88°C for more than 5 min.).</b>	Wiring faulty; NTC sensor for wash cycle faulty; Heating element faulty; Main board faulty.	Safety drain cycle Cycle stops with door open	RESET
<b>E66</b>	<b>Heating element power relay faulty (incongruence between sensing and relay state).</b>	Main board faulty.	Safety drain cycle Cycle stops with door open	RESET
<b>E68</b>	<b>Earth-leakage (value of mains voltage different from main value).</b>	Earth-leakage between heater and earth.	Cycle blocked with door open	RESET
<b>E69</b>	<b>Heater interrupted.</b>	Wiring faulty; Heating element washing interrupted (thermofuse open).	-----	START/ RESET
<b>E71</b>	<b>NTC sensor for wash cycle faulty (short-circuited or open).</b>	Wiring faulty; NTC sensor for wash cycle faulty; Main board faulty.	The washing heating phase is skipped	START/ RESET
<b>E72</b>	<b>Fault in NTC sensor on drying con- denser (voltage out of range, short- circuit or open circuit).</b>	Wiring faulty; Drying NTC sensor (condenser) improperly posi- tioned or faulty; Main WD board faulty.	The heating phase is skipped	START/ RESET
<b>E73</b>	<b>Fault in NTC sensor on drying duct (voltage out of range, short-circuit or open circuit).</b>	Wiring faulty; Drying NTC sensor (duct) improperly positioned or faulty; Main WD board faulty.	The heating phase is skipped	START/ RESET
<b>E74</b>	<b>NTC sensor for wash cycle improv- erly positioned.</b>	Wiring faulty; NTC sensor for wash cycle improperly positioned; NTC Sensor faulty; ; Main board faulty.	The washing heating phase is skipped	START/ RESET
<b>E82</b>	<b>Error in selector reset position.</b>	PCB faulty (Wrong configuration data).	-----	RESET
<b>E83</b>	<b>Error in reading selector.</b>	PCB faulty (Wrong configuration data).	Cycle cancelled	START/ RESET
<b>E91</b>	<b>Communication incongruence between main PCB- display board.</b>	Wiring faulty; Control/display board faulty Main board faulty.	-----	RESET
<b>E92</b>	<b>Communication incongruence between main PCB- display board. (versions not compatible)</b>	Control/display board wrong; Wrong PCB (do not correspond to the model).	Cycle interrupted.	OFF/ON
<b>E93</b>	<b>Incorrect configuration of appliance.</b>	PCB faulty (Wrong configuration data).	Cycle interrupted.	OFF/ON
<b>E94</b>	<b>Incorrect configuration of washing cycle.</b>	PCB faulty (Wrong configuration data).	Cycle interrupted.	OFF/ON
<b>E95</b>	<b>Communication error between micro- processor and EEPROM</b>	Main board faulty.	Cycle interrupted.	RESET

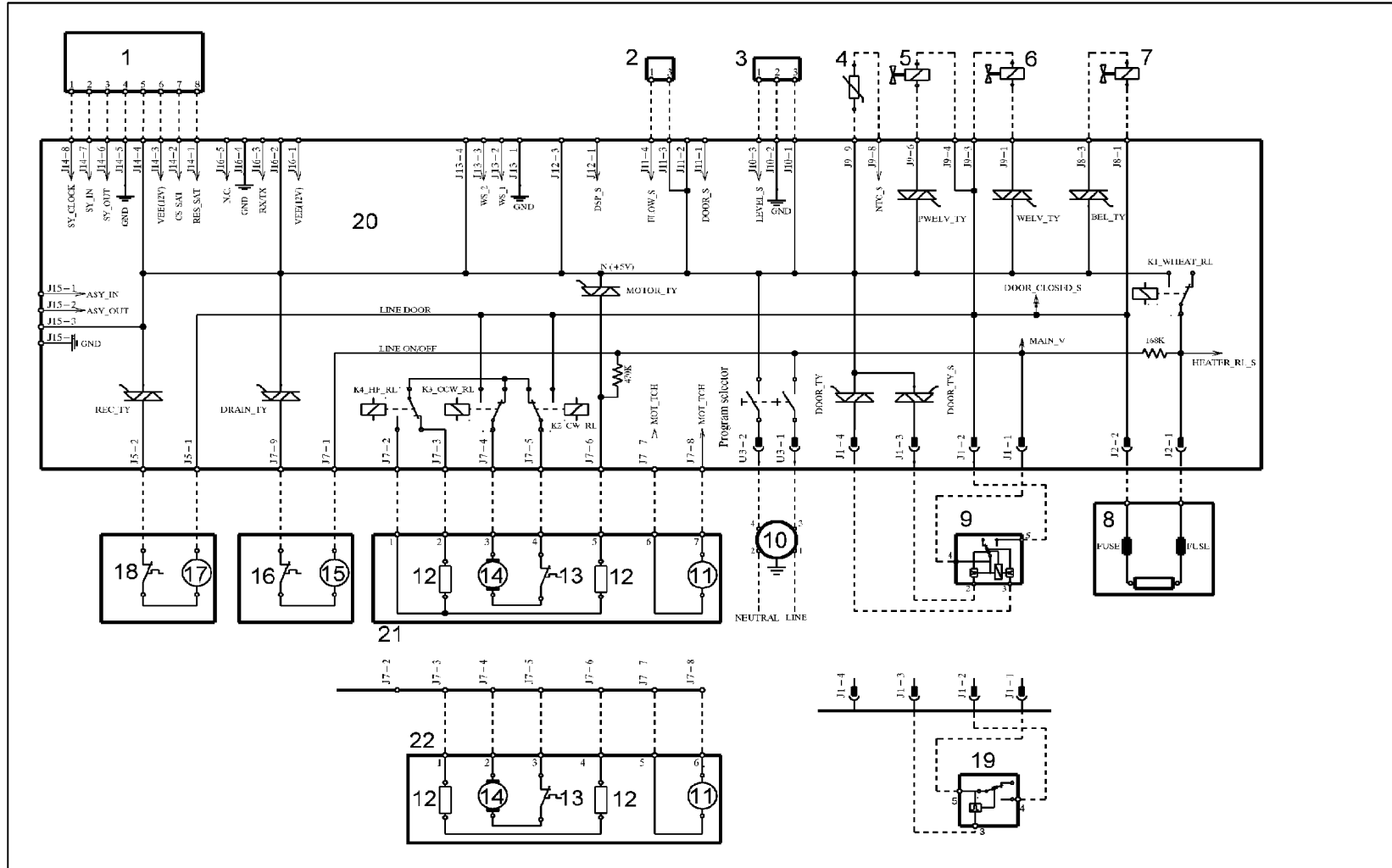
<b>E97</b>	<b>Incongruence between programme selector and cycle configuration</b>	PCB faulty (Wrong configuration data).	Cycle interrupted.	RESET
<b>E9b/ E9H</b>	<b>Communication error between micro-processor and FLASH memory.</b>	Display board	-----	OFF/ON RESET
<b>E9C</b>	<b>Incorrect configuration of appliance.</b>	Display board	-----	OFF/ON RESET
<b>E9d</b>	<b>Clock faulty.</b>	Display board	-----	OFF/ON RESET
<b>EC1</b>	<b>Solenoid valve blocked with operating flowmeter.</b>	Wiring faulty; Solenoid valve blocked; Main PCB faulty.	Cycle interrupted with door closed Drain pump continues to operate (5 min. then stops for 5 min. etc.)	RESET
<b>EC3</b>	<b>Problems with weight sensor (missing signal or out of the limits).</b>	Wiring faulty; Weight sensor faulty; Main PCB faulty.	-----	START/ RESET
<b>Ed1</b>	<b>Data transfer error between WD board and main board.</b>	Wiring faulty between main board and WD board; WD Board faulty; Main PCB faulty.	Cycle interrupted.	OFF/ON
<b>Ed2</b>	<b>Drying heater relay 1 faulty.</b>	Wiring between WD board and thermostats faulty; Thermostats faulty; WD Board faulty; Main PCB faulty.	Cycle blocked with door open	RESET
<b>Ed3</b>	<b>Drying heater relay 2 faulty.</b>	Wiring between WD board and thermostats faulty; Thermostats faulty; WD Board faulty; Main PCB faulty.	Cycle blocked with door open	RESET
<b>Ed4</b>	<b>Relay which commutates the power between the washing and drying heater (in the WD board).</b>	Wiring faulty; Electrical current leak between drying heater and ground; WD Board faulty; Main PCB faulty.	Cycle blocked with door open.	RESET
<b>EF1</b>	<b>Drain filter clogged (too long drain phase).</b>	Drain tube blocked/kinked/too high; Drain filter dirty/blocked.	Warning displayed at the end of cycle (specific LED)	START/ RESET
<b>EF2</b>	<b>Overdosing of detergent (too much foam during drain phases).</b>	Excessive detergent dosing; Drain tube kinked/blocked; Drain filter dirty/blocked.	Warning displayed after 5 attempts or by the specific LED	RESET
<b>EF3</b>	<b>Control water intervention.</b>	Water leaks onto base frame; Water control system faulty.	Machine drains and cycle stops	ON/OFF RESET
<b>EF4</b>	<b>Water fill pressure too low, no signal from flow meter and solenoid valve is open.</b>	Tap closed; Water pressure too low	-----	RESET
<b>EF5</b>	<b>Unbalanced fill.</b>	Final spin phases skipped	-----	RESET
<b>EF6</b>	<b>Reset.</b>	-----	No action to be performed, if continues, replace the main board.	-----
<b>EH1</b>	<b>Frequency of appliance out of the limits.</b>	Power supply problems (incorrect/disturbance); Main board faulty.	Wait for frequency nominal conditions	OFF/ON



<b>EH2</b>	<b>Voltage too high.</b>	Power supply problems (incorrect/disturbance); Main board faulty.	Wait for voltage nominal conditions	OFF/ON
<b>EH3</b>	<b>Voltage too low.</b>	Power supply problems (incorrect/disturbance); Main board faulty.	Wait for voltage nominal conditions	OFF/ON
<b>EHE</b>	<b>Incongruence between safety relay (in the main board) and safety “sensing” circuit.</b>	Wiring faulty; Main board faulty.	Safety drain cycle Cycle stops with door open	RESET
<b>EHF</b>	<b>Safety “sensing” circuit faulty (wrong input voltage to microprocessor).</b>	Main board faulty.	Safety drain cycle Cycle stops with door open	RESET

# 12 DIAGRAMS

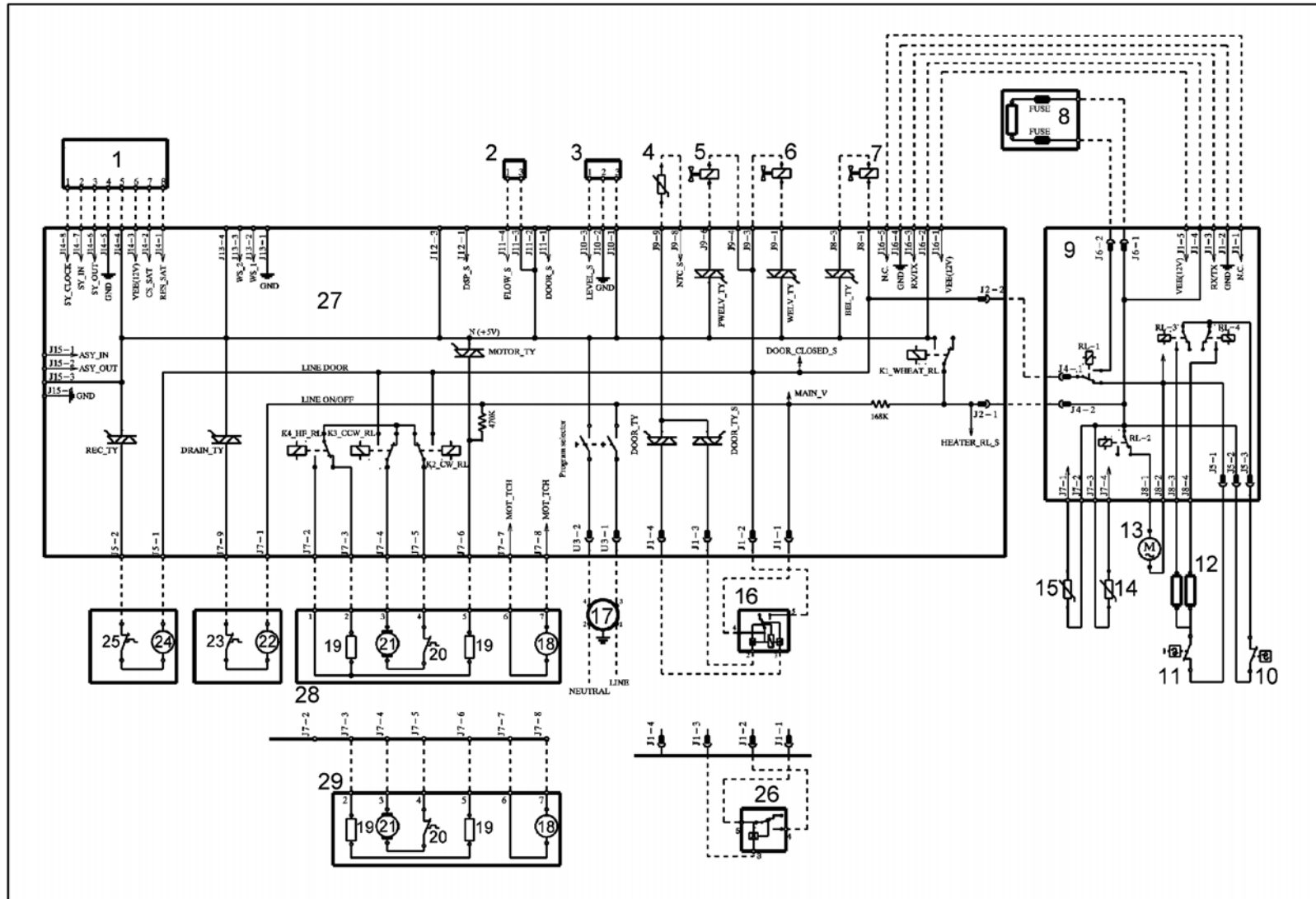
## 12.1 Circuit diagram WM



- Key to circuit diagram WM

Electrical components on appliance	Components on main board
<ol style="list-style-type: none"> <li>1. Display board</li> <li>2. Flowmeter</li> <li>3. Analogue pressure switch</li> <li>4. NTC temperature sensor</li> <li>5. Prewash solenoid</li> <li>6. Wash solenoid</li> <li>7. Bleach solenoid</li> <li>8. Heating element (with thermofuses)</li> <li>9. Door interlock (instantaneous)</li> <li>10. Suppressor</li> <li>11. Tachometric generator (motor)</li> <li>12. Stator (motor)</li> <li>13. Overheating cut-out (motor)</li> <li>14. Rotor (motor)</li> <li>15. Drain pump</li> <li>16. Thermal cut-out (drain pump)</li> <li>17. Circulation pump</li> <li>18. Thermal cut-out (recirculation pump)</li> <li>19. Door interlock (with PTC)</li> <li>20. Electronic board</li> <li>21. Motor with half field</li> <li>22. Motor without field</li> </ol>	<p>DOOR_TY Door interlock Triac  DRAIN_TY Drain pump Triac  REC_TY Recirculation pump Triac  K1 Heating element relay  K2 Motor relay: clockwise rotation  K3 Motor relay: counter-clockwise rotation  K4 Motor relay: half field power supply (some models)  MOTOR_TY Motor Triac  ON/OFF Main switch (programme selector)  PWELV_TY Pre-wash solenoid Triac  WELV_TY Wash solenoid Triac  BEL_TY Bleach solenoid Triac</p>

## 12.2 Circuit diagram WD



- Key to circuit diagram WD

Electrical components on appliance	Components on main board
1 Display board or LCD 2 Flowmeter 3 Analogue pressure switch 4 NTC temperature sensor (washing) 5 Prewash electric valve 6 Wash electric valve 7 Condensation solenoid valve 8 Washing heating element (with thermofuses) 9 WD Board 10 Auto-reset safety thermostat. 11 Manual-reset safety thermostat. 12 Drying heating element 13 Fan motor 14 NTC temperature sensor drying 15 NTC temperature sensor humidity 16 Door interlock (instantaneous) 17 Suppressor 18 Tachometric generator (motor) 19 Stator (motor) 20 Overheating cut-out (motor) 21 Rotor (motor) 22 Drain pump 23 Thermal cut-out (drain pump) 24 Circulation pump 25 Thermal cut-out (recirculation pump) 26 Door interlock (with PTC) 27 Main electronic board 28 Motor with half field 29 Motor without half field	DOOR_TY Door interlock Triac DRAIN_TY Drain pump Triac REC-TY Recirculation pump Triac K1 Heating element relay K2 Motor relay: clockwise rotation K3 Motor relay: counter-clockwise rotation K4 Motor relay: half field power supply (some models) MOTOR_TY Motor Triac PROGRAM SELECTOR Main. switch (programme selector) PWELV_TY Pre-wash solenoid Triac WELV_TY Wash solenoid Triac BEL_TY Bleach solenoid Triac RL1 Relay: washing or drying heating element power supply RL2 Relay: fan motor power supply RL3 Relay: power supply of one drying heating element branch RL4 Relay: power supply of one drying heating element branch

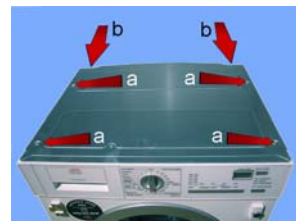
## 13 ACCESSIBILITY

### 13.1 From the work top you can access

To the following components:

- Analogue pressure switch
- Power filter
- Solenoid
- Control panel
- Electronic board
- Light diffuser
- Button support
- Buttons
- Detergent dispenser
- Front panel

After unscrewing the four screws which fit the undercounter top to the upper part (a) and the two screws in the rear part (b), remove the top.



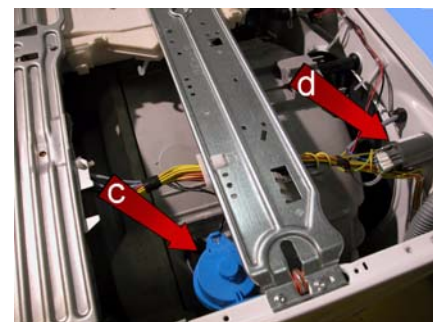
#### 13.1.1 Analogic pressure switch and Power filter

##### Analogue pressure switch

- Remove the work top.
- Detach the connector of the pressure switch (c).
- Extract it from the hole.
- Detach the hose which connects the pressure switch to the pressure chamber.

##### Power filter

- Remove the work top.
- Detach the connector of the filter (d).
- Remove the nut which fits it to the rear panel.



#### 13.1.2 Solenoid

- Remove the work top.
- Remove the hoses that connect the solenoid to the connection (e).
- Push the retainers (f) inside the appliance and simultaneously turn the solenoid, extracting it.

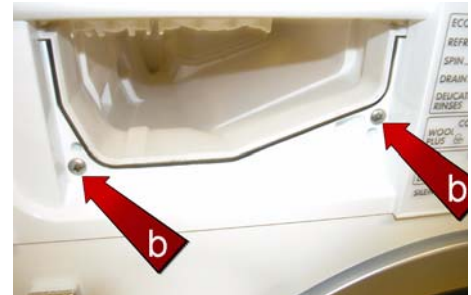


### 13.1.3 Control panel, electronic board

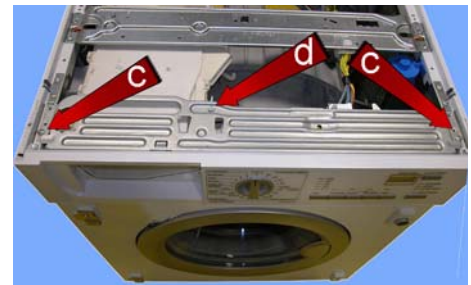
- Remove the work top.
- Extract the drawer (a).



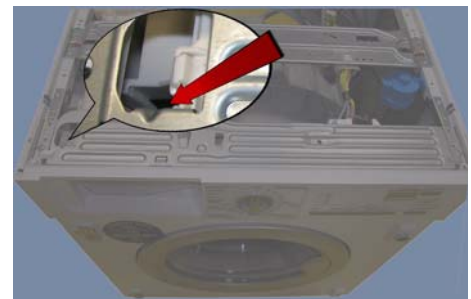
- Unscrew the two screws (b) which secure the control panel, placed under the detergent drawer, remove the gasket (the black thread around the detergent dispenser).



- Remove the two screws (c) which secure the cross-member to the cabinet.
- Remove the screw (d) which secures the detergent dispenser to the cross-member.



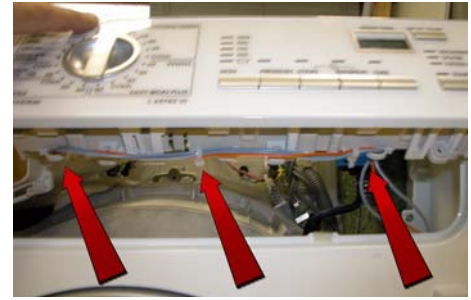
- Insert a screwdriver and release the hook which secures the detergent dispenser to the cross-member.



- Release the hooks (right and left) which secure the control panel to the front panel.



- Turn the control panel so as to be able to cut the clamps and remove the wiring.
- During the reassembling, position again the wiring correctly using new clamps.



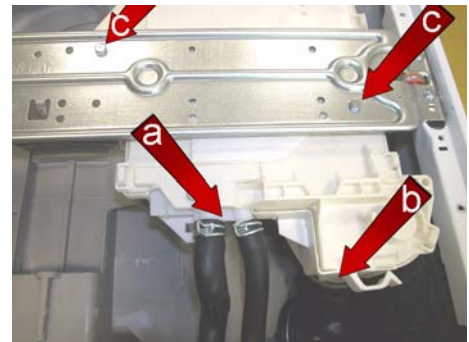
- Pay attention to interpose something to protect the varnished parts.
- Place the control panel as in figure.
- Now it is possible to access the board, the light diffuser, the button springing system and the buttons.



While reassembling the board to the control panel, check if the knob is in the correct position compared to the selector shaft.

### 13.1.4 Detergent dispenser

- Remove the work top.
- Extract the hoses from the connection (a).
- Extract the detergent fill hose (b).
- Remove the screws (c) which secure the detergent dispenser to the central cross-member.
- Lift up the control panel as previously described.
- Extract the detergent dispenser from the front part.



### 13.1.5 Front panel

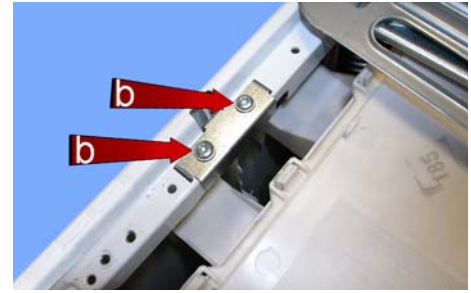
- Remove the work top.
- Remove the control panel (see relative paragraph).
- Remove the rubber bellow from the front panel after removing the ring.
- Loosen the screws which secure the door micro to the front panel.



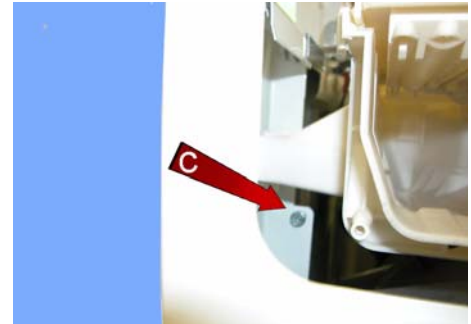
Release the recirculation hose fitted to the front panel (if featured).



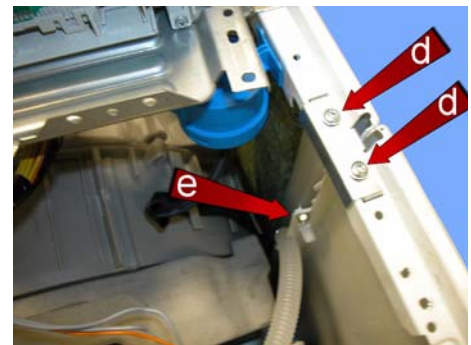
- Remove the screws (b) which secure the bracket to the left.



- Remove the screw (c) which secures the front panel to the cabinet on the left side.



- Remove the screws (d) which secure the right bracket and the screw (e) which secures the front panel to the cabinet.



- Incline the appliance.
- Remove the three screws which secure the front panel to the lower part of the cabinet.



While removing the front panel, pay attention because it is inserted into the centring pegs and the union between the front panel and the cabinet is in the middle of the steam exhaust of the detergent dispenser. Therefore, if the removal of the front panel on the right side of the appliance is easy, on the left side it is necessary to extract the panel from the peg, move it towards left to avoid the interference with the steam exhaust of the detergent dispenser.

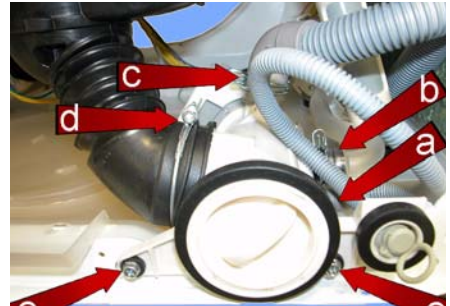
## 13.2 From the front panel

### 13.2.1 Drain pump body

After emptying the drain circuit through the draining hose.

- Remove the work top, the control panel and the front panel (see relative paragraphs).
- Loosen the clamps and detach the hoses:
  - Draining hose (a).
  - Recirculation hose (b) (where featured).
  - Drain hose (c).
  - Drain hose to tub (d).
  - Remove the two screws (e) which fit it to the cross-member.

Remove the drain pump body.

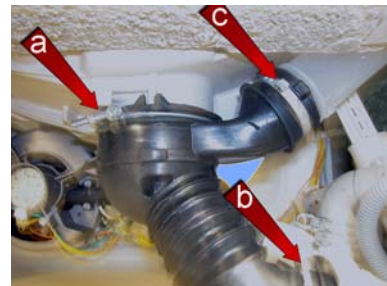


### 13.2.2 Drain hose tub-filter body

After emptying the drain circuit through the draining hose.

- Remove the work top, the control panel and the front panel (see relative paragraphs).
- Loosen the screws from the clamps (a and b).
- Extend the clamp (c).
- Extract the drain hose to tub.

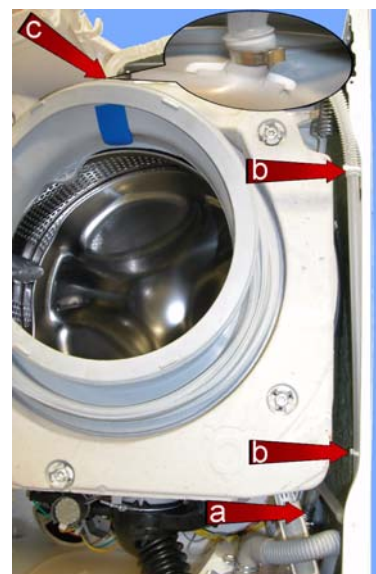
While remounting the hose, use the new clamps to replace the broken or the damaged/deformed ones.



### 13.2.3 Circulation tube (where featured)

- Remove the work top, the control panel and the front panel (see relative paragraphs).
- Loosen the clamp (a) which secures it to the circulation pump.
- Cut the two plastic clamps (b) which secure the work top to the cabinet.
- Extend the clamp (c) which secures it to the rubber bellow.
- Extract the circulation hose.

While reassembling use new clamps (with the same characteristics of the ones replaced), secure the hose to the side panel properly, so as it does not cause vibrations during the washing cycles.



### 13.2.4 Pressure chamber

After emptying the drain circuit through the draining hose.

- Remove the work top, the control panel and the front panel (see relative paragraphs).
- Remove the screw (a) which secures the pressure chamber to the tub.
- Extend the clamp (b) which secures the pressure chamber to the drain hose.

While reassembling use a new clamp with the same characteristics.

- Detach the hose which connects it to the pressure switch.



### 13.2.5 Welded tub assembly

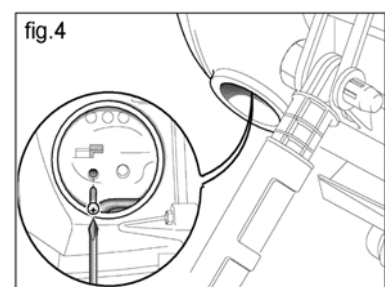
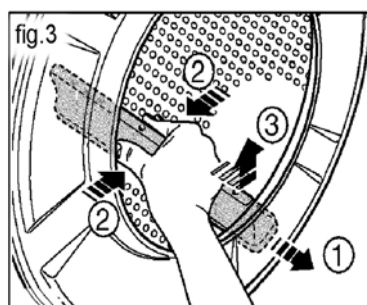
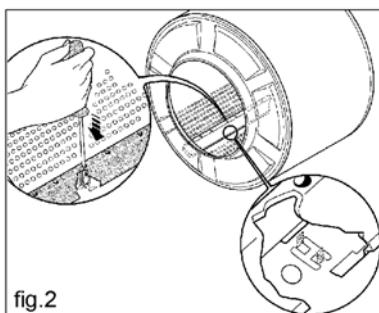
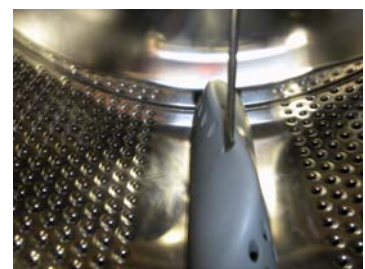
After emptying the drain circuit through the draining hose.

- Remove the work top, the control panel, the front panel (see relative paragraphs), the hoses connected to the pressure chamber, the springs and the dampers.
- Remove the tub.
- **It is no more possible to replace the bearings and the drum assembly, because the tub is welded.**



### 13.2.6 Drum lifter

- Insert a screwdriver into the hole (as indicated in the picture).
- Push downwards the two wings which block the drum lifter (fig.2).
- Pull the drum lifter towards the door and remove it (fig.3).
- While remounting the new drum lifter repeat the operations in reverse order and raise the two wings with a screwdriver so as to stop the lifter.
- If necessary, through the hole where the drain hose-pump body is fitted, it is possible to fix the screw to stop the drum lifter (fig.4).



### 13.3 From the rear panel

- Wash heater
- Belt
- Drain pump
- Circulation pump
- Motor
- Drain hose

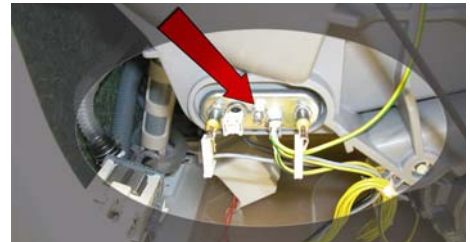
- Remove the screws which secure the rear panel to the cabinet.



#### 13.3.1 Wash heater

- Remove the rear panel
- Detach the connectors from the heater and from the NTC sensor.
- Loosen the nut, push it inside so as to allow removing the heater from the tub.

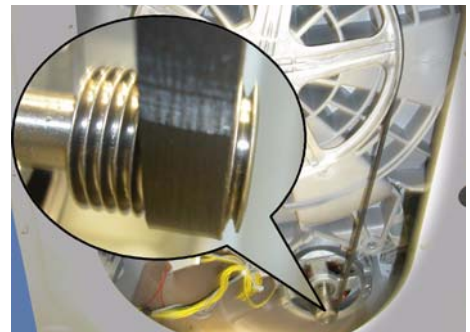
While remounting, pay attention to insert the heater into the support spring placed inside the tub.



#### 13.3.2 Belt

- Togliere lo schienalino

While reassembling, position again the belt on the pulley as represented in figure.





### 13.3.3 Drain pump

- Remove the rear panel

After emptying the drain circuit through the draining hose.



1) Remove the protection

2) Detach the connectors

3) Turn the pump counter-clockwise and remove it

While remounting the pump, check if the "O-ring" is correctly positioned so as to avoid water leakages.

### 13.3.4 Recirculation pump (if featured)

- Remove the rear panel
- Detach the connectors.
- Push the hook (a) which secures it.
- Turn it clockwise and remove it.

While remounting the pump, check if the "O-ring" is correctly positioned so as to avoid water leakages



### 13.3.5 Motor

- Remove the rear panel
- Detach the connector.
- Unscrew the four screws which secure it to the tub.

While reassembling put the wiring as in figure, so as to avoid problems if the belt frays.



### 13.3.6 Drain hose

After emptying the drain circuit through the draining hose.

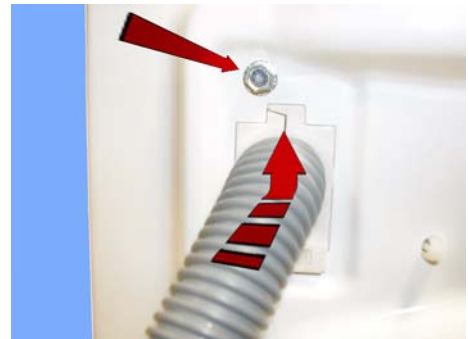
- Remove the work top
- Remove the rear panel
- Use pliers to loosen the metallic clamp and remove the drain hose from the pump body.



- Remove the drain hose from the hooks which secure it to the cabinet.



- Remove the screw.
- Push the hose holder inside the appliance.
- Lift it up to remove it from the cabinet.
- Open the hose holder to remove the drain hose.



After the replacement, place the drain hose in the same position of the old one, so as to avoid that during the drain phase or the spin phase it causes noise.

## 14 Accessibility (WD)

### 14.1 From the work top you can access

To the following components

- Main WD board
- Fan unit
- Coupling
- Condenser
- Manually-reset thermostat
- Automatic reset thermostat
- Drying sensor (NTC sensor)
- Drying heater

After removing the four screws which fit the work top

#### 14.1.1 Main WD board

- Unscrew the screw (g) which secures the WD board
- Insert a screwdriver and release the hook (h) which secures the detergent dispenser to the cross-member



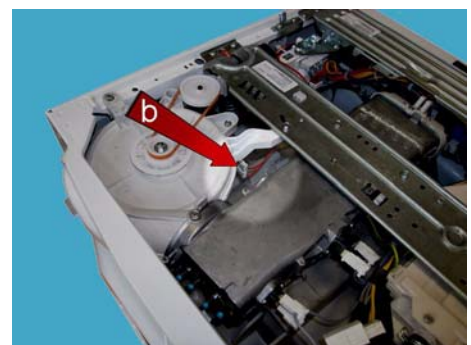
To operate:

On the fan unit, on the coupling (bellow that joints: the fan unit to the condenser) or on the condenser assembly, it is necessary to extract all the three components.

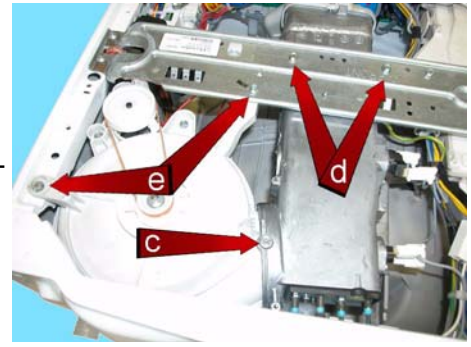
- Remove the work top
- Remove the rear panel
- Remove the sensor (a)



- Detach the connectors of the motor fan (b)



- Remove the screw (c) which secures the fan unit scroll to the drying heater casing.
- Remove the two screws (d) which secure the heating element casing to the central cross-member
- Remove the two screws (e) which fit it to the fan unit.



- Extract the fan unit from the heater casing.



- Unscrew the screw (f) which secures the condenser to the rear shell.

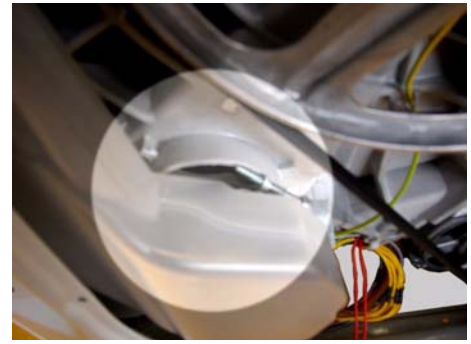


- Remove the screw of the clamp (g) placed between the condenser and the rear shell

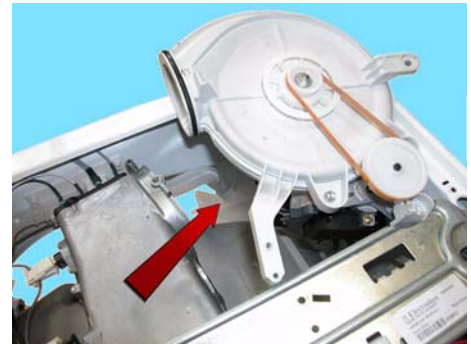




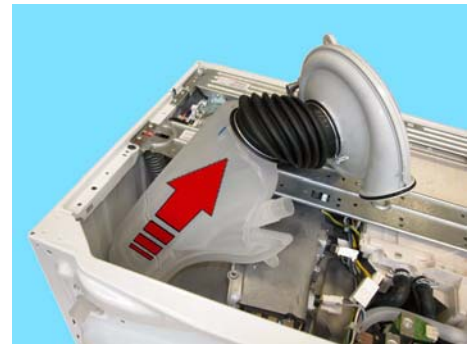
- Push the washing unit inside the appliance
- Remove the condenser



- Lift up the fan unit so as to allow removing the condensation hose from the condenser



- Extract all:
  - Ass. fan
  - Bellow
  - Condenser



### 14.1.2 Reassembly Condenser/bellow/fan unit

For a correct mounting of the components, in order to avoid twisting the bellow, perform what below described.

The bellow that connects the fan unit with the condenser is provided with two references: as indicate the arrows **a** and **b** (see figure).

- Arrow **a**: indicates the triangular-shaped reference placed on the side where the condenser is inserted.
- Arrow **b**: indicates an index placed on the side where the fan unit is inserted (in the picture is white-coloured)



- Insert the condenser into the bellow and pay attention that the reference (triangular-shaped) is positioned in correspondence to the reference of the condenser, also triangular-shaped (in the picture is brown-coloured).
- Tighten the screw of the clamp.



- Position the fan unit on a horizontal top as shown in the figure



- In the lower scroll, where the bellow is inserted, there are some hooks (indicated by the small arrows) which determine the correct position of the coupling. As reference see the one indicated by arrow **(c)** and is positioned in the centre of the date indicated by arrow **(d)**.



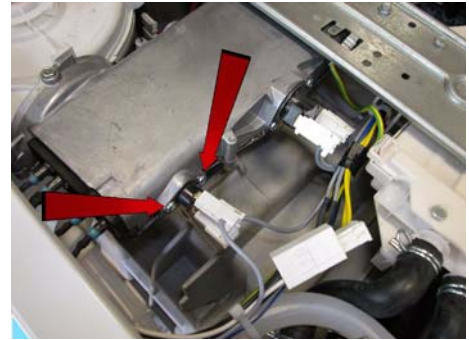
- While inserting the coupling, pay attention that the two references are correctly positioned as represented in figure.
- Tighten the screw of the clamp



Reposition the three components assembled inside the appliance.

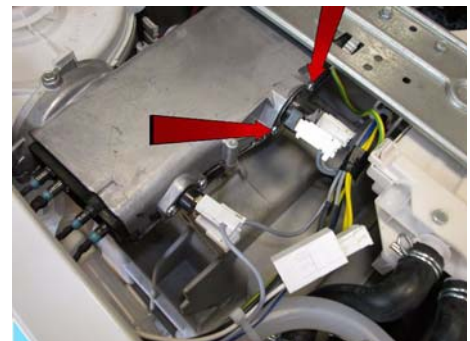
### 14.1.3 Manually-reset thermostat

- Remove the work top
- Detach the connectors
- Remove the screws which secure it to the drying heater casing



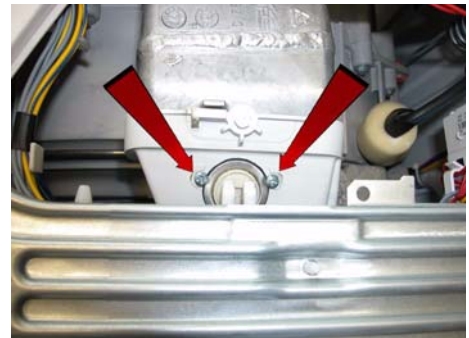
### 14.1.4 Automatic-reset thermostat

- Remove the work top
- Detach the connectors
- Remove the screws which secure it to the drying heater casing



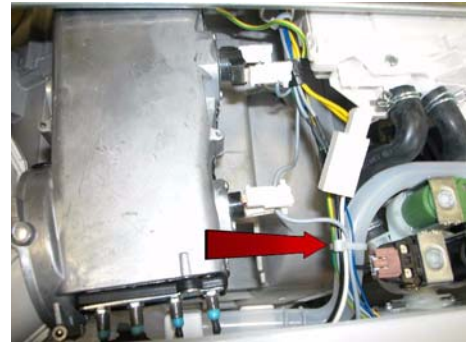
### 14.1.5 NTC Sensor (drying)

- Remove the work top
- Detach the connectors
- Unscrew the screw which secures it to the duct



## 14.1.6 Dryer heating element

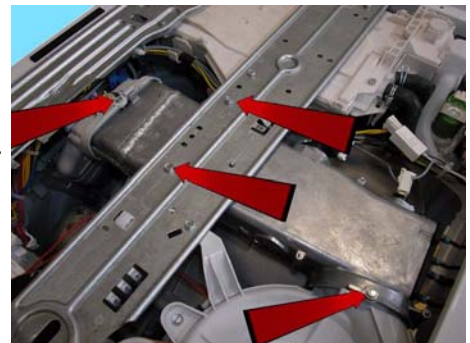
- Remove the work top
- Cut the clamp



- Detach the connectors of the thermostats



- Unscrew the screws which secure the heater casing: to the cross-member, the duct and the fan unit.



- Remove the heater casing from the duct and the fan unit

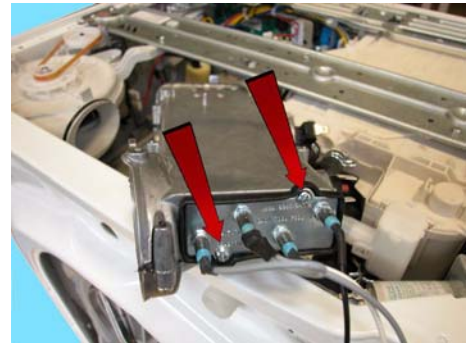


- Extract it from the appliance





- To extract the heater, remove the two screws which secure it to the casing.



- Remove the heater



- While remounting the heater, pay attention that the branches insert in the right position of the spring, positioned in the front part of the heater casing.



## 14.1.7 From the rear panel

To the following components:

- NTC Sensor

### 14.1.7.1 NTC Sensor (humidity)

- Remove the rear panel
- Detach the connectors
- Remove the condenser

