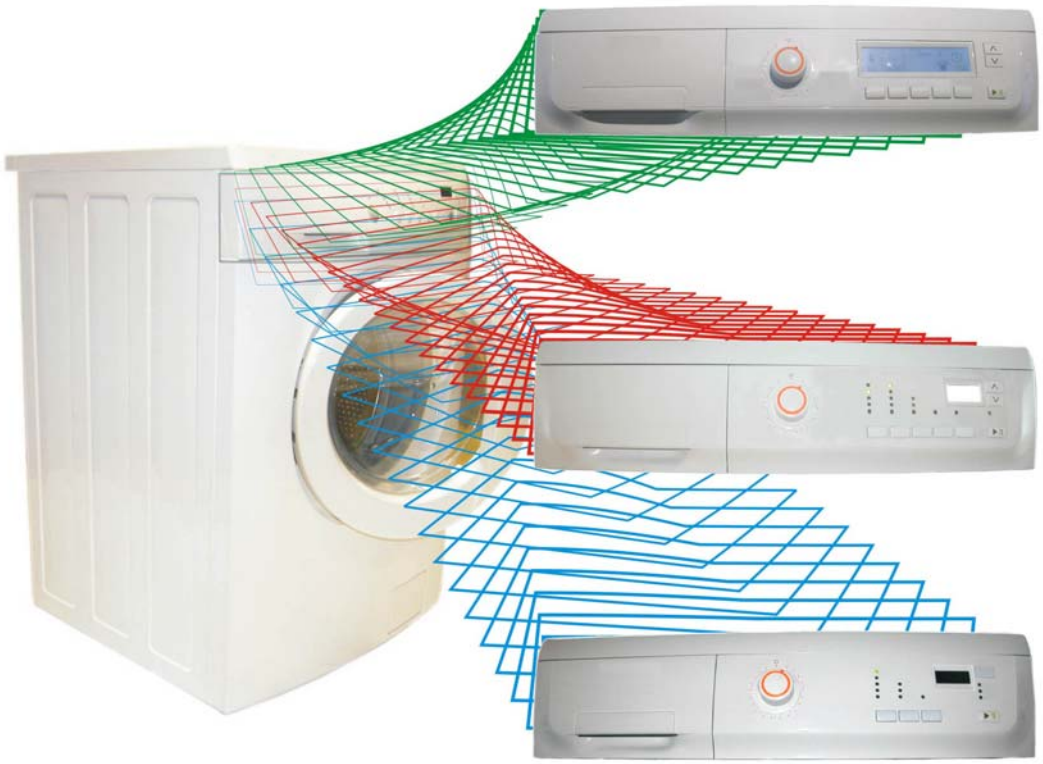
Electrolux
Distriparts

# SERVICE MANUAL

## WASHING





Spares Operations Italy
Corso Lino Zanussi, 30
I - 33080 PORCIA /PN

Fax +39 0434 394096

Edition: 2007-06-04

Publication no.

**599 38 94-46**

EN

**Washing machines**
**&**
**Washer-dryers**

**with electronic control system**

**EWM21xx**
**EWM25xx**

**Technical and functional characteristics**

**ENV06**

**Styling**

**TC 4 / 3 / 2**

# CONTENTS

# 1 Purpose of this manual

The purpose of this manual is to provide service engineers who are already familiar with the repair procedures for traditional washing machines with information regarding 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 are described:

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

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

- *Publication no. 599 35 23-17 for NEXUS-P6000 washing machines*
- *Publication no. 599 34 84-67 for washing machines produced in Spain*
- *Publication no. 599 37 47-13 for HEC washing machines*

### Identification table between styling (TC2/3/4) and functionality (EWM 21xx/25xx)

| Styling | EWM 21xx | | EWM 25xx | |
|---|---|---|---|---|
| | Washing type | Motor | Washing type | Motor |
| **TC2** | •Traditional with ECO-BALL<br>•Jet-System | Universal | •Traditional with ECO-BALL<br>•Jet-System | Three-phase asynchronous with Inverter |
| **TC3** | •Traditional with ECO-BALL<br>•Jet-System | Universal | •Traditional with ECO-BALL<br>•Jet-System | Three-phase asynchronous with Inverter |
| **TC4** | •Traditional with ECO-BALL<br>•Jet-System | Universal | •Traditional with ECO-BALL<br>•Jet-System | Three-phase asynchronous with Inverter |

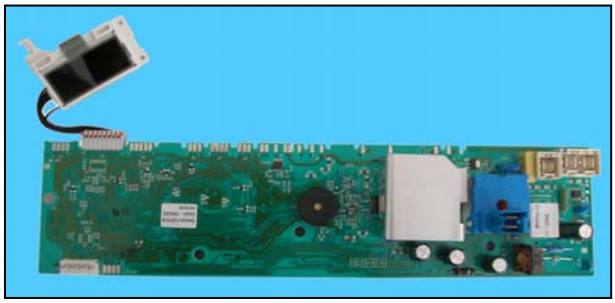
# 2 PRECAUTIONS

- **Electrical appliances must be serviced only by qualified Service Engineers.**
- **Always remove the plug from the power socket before touching 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.**

# 3 TC4

## 3.1 GENERAL CHARACTERISTICS

The ENV060 electronic control system consists of a single PCB, which incorporates the power, control and display (where the display is connected) functions. The programme selector is incorporated in the board.
The PCB is mounted on a casing fitted to the control panel.

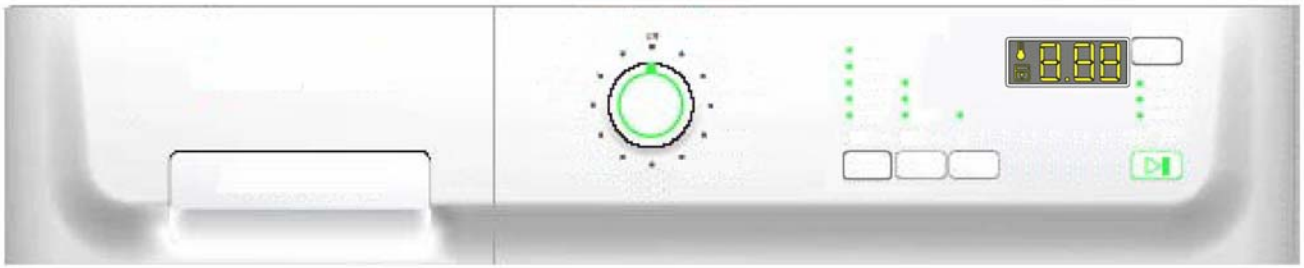


| **Version**<br><br>**TC4** |  |
|---|---|
| **Number of buttons** | ▪ Max. 5 (4 options + start/pause) |
| **Number of LEDs** | ▪ Max. 14 + display |
| **Programme selector** | ▪ 15-21 positions with main switch (incorporated in the PCB ) |
| **Serial port** | ▪ DAAS-EAP communications protocol up to 115.200 baud |
| **Power supply** | ▪ 220/240V<br>▪ 50/60 Hz (configurable) |
| **Type of washing** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Rinsing system** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Motor** | ▪ Collector, with tachometric generator<br>▪ Two-pole asynchronous, with three-phase tachometric generator (with Inverter) |
| **Spin speed** | ▪ 600 ÷ 1600 rpm |
| **Anti-unbalancing system** | ▪ FUCS |
| **Water fill** | ▪ 1 solenoid valve with 1 inlet – 2/3 outlets |
| **Detergent drawer** | ▪ 3 compartments: prewash/stains, wash, conditioners<br>▪ 4 compartments: prewash/stains, wash, conditioners, bleach |
| **Control of water level in the tub** | ▪ Electronic/analogue pressure switch |
| **Door safety device** | ▪ Traditional (with PTC)<br>▪ Instantaneous |
| **Power of heating element** | ▪ 1950W with thermal fuses incorporated |
| **Temperature control** | ▪ NTC sensor incorporated in the heater |
| **Buzzer** | ▪ Traditional incorporated in the electronic board |
| **Sensors** | ▪ Water fill gauge (flowmeter)<br>▪ Aqua control |

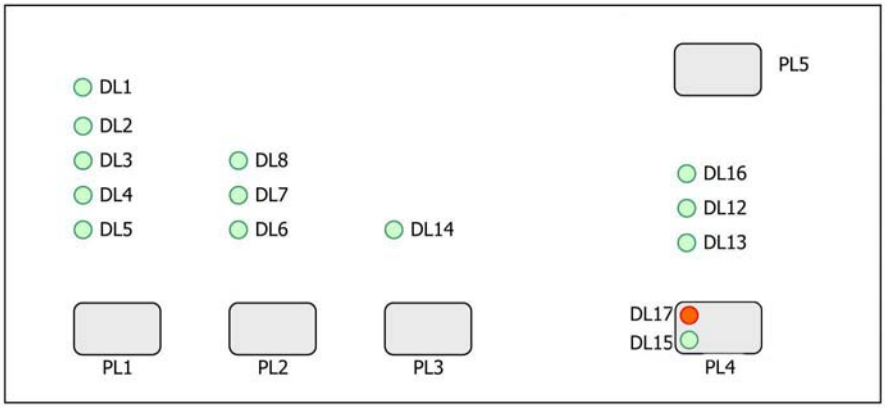
## 3.2 CONTROL PANEL

### 3.2.1 Styling TC4

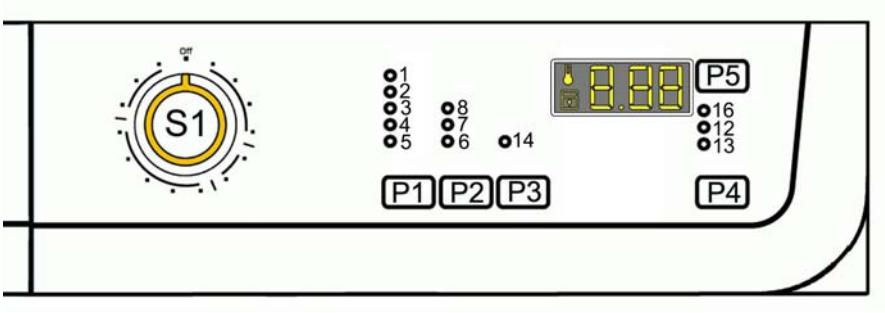
- max. 5 buttons
- 15 or 21-position programme selector
- LEDs 14
- Display



- Disposition of LEDs and buttons



### 3.2.2 Configuration of control panel




***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.***

### 3.2.3 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.

### 3.2.4 Programme configuration

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

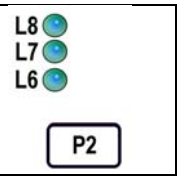
| | |
|---|---|
| **Types of fabric** | Cotton/linen, Synthetic fabrics, Delicates, Wool, Hand-wash, Shoes, Jeans, Duvet, Silk. |
| **Special programmes** | Soak, Miniprogramme, Easy-Iron, Conditioner, Rinses, Delicate rinses, Drain, Delicate spin, Spin. |
| **Temperature** | Normal, Maximum: the initial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

### 3.2.5 Time DRIVEN

The “Time driven” has the function to modify the programme settings according to the type of dirt; so that the wash time can be reduced or prolonged and it is shown by the display.
The reduction levels are represented in the following table:

| COTTON | SYNTHETICS | DELICATES |
|---|---|---|
| Programme (base) | Programme (base) | Programme (base) |
| Daily | Daily | Daily |
| Light | Light | Light |
| Super Quick | Super Quick | Super Quick |

Pressing button P2 sequentially, it is possible to choose one of the three levels and the lighting up of the corresponding LED confirms the selection.

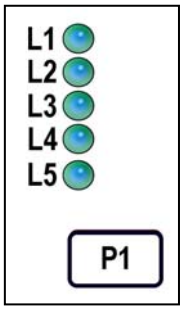
| | | |
|---|---|---|
| L8 | Daily |   |
| L7 | Light | |
| L6 | Super quick | |

The different washing options like: Prewash, Economy, etc. are set obligatory as programme.

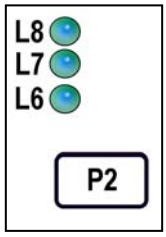
### 3.2.6 Pushbuttons – LEDs and Display

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

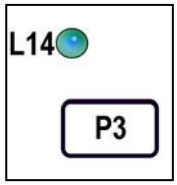
- **Button no. 1**: this button is related to LEDs (L1÷L5); pressing it sequentially the spin speed varies from max., to no spin or rinse hold.




- **Button no. 2**: this button is configurable and is related to LEDs (L6÷L8). (In some appliances it is connected to “Time driver”).




- **Button no. 3**: this button is configurable and is related to LED (L14); it performs the super rinse function.

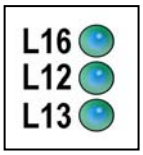



- **Button no. 4**: this button is configurable and has the function of START/PAUSE (inside it there are two LEDs, one red that flashes in case of alarm and one green that flashes when the appliance is in pause or in connection with the red one to indicate the alarm code).


- **Button no. 5**: this button is configurable and has the function of DELAYED START. During the programme selection phase is possible to select a delayed start from 30’ to 20 hours (30’ ☞ 60’ ☞ 90’ ☞ 2h ☞3h… ☞20h ☞0h) and the time is shown by the display. During the last hour, the time decreases minute by minute.

- **LED wash phase indicators**:

The LEDs L13, L12, L16 are configurable and are used as indicators of the wash phases

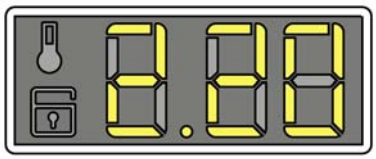



| Indications | |
|---|---|
| **Pre-wash** | Lights during selection mode if the programme includes the pre-wash phase, and during the execution of the pre-wash |
| **Wash** | Lights during selection mode if the programme includes the wash phase, and during the execution of the wash |
| **Pre-wash/Wash** | Lights during selection mode if the programme includes the pre-wash or wash phases, and during the execution of these phases |
| **Rinses** | Lights during selection mode if the programme includes rinse phases, and during the execution of the rinses |
| **Spin** | Lights during selection mode if the programme includes the spin phase, and during the execution of the spin |
| **Rinses / Spin** | Lights during selection mode if the programme includes rinses and spin and during the execution of these phases |
| **Drain** | Lights during selection mode if the programme includes the drain phase, and during the execution of the drain |
| **Extra rinse** | Lights when this option has been memorized (if included in the cycle) |
| **Rinse-hold** | Lights if the programme includes the rinse-hold option and at the end of the cycle, when the appliance stops with water in the tub |
| **Current cycle** | Lights during execution of the cycle |
| **End of cycle** | Lights when the programme has been completed; also used to display alarm conditions |
| **Door locked** | Lights when the door lock prevents opening of the door, and switches off when the door can be opened. Flashes when the interlock is about to release the door (may be seen if PTC devices are used, as these require one or two minutes before releasing the lock) |
| **Child lock** | Lights when the child safety is on and all buttons are deactivated |

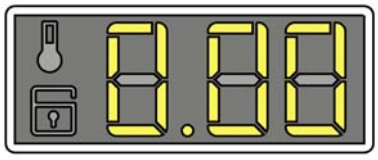
- **Display**

The following information appear on the display:

- **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.

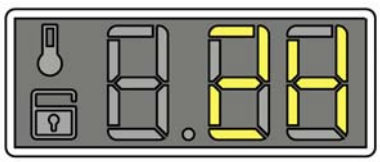


- **The end of the programme** is indicated by **three zero flashing** (when it is possible to open the door).

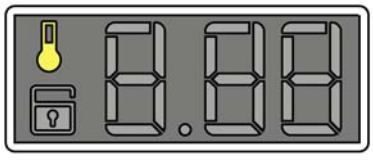


- **The stop of the appliance with water in tub**, after the programmes with RINSE HOLD option, is displayed by **three zero flashing.** The LED that indicates the door remains lit and the LED of the START/PAUSE button switches off.

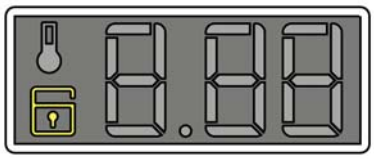
- **The delayed start**, selected through the relative button. After pressing the START/PAUSE button the countdown starts and the delay time decreases hour by hour. In the last 2 hours it diminishes by 30 min.



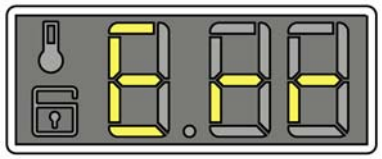
- **The thermometer:** it is always on during the cycle and the icon is animate during the heating phase.



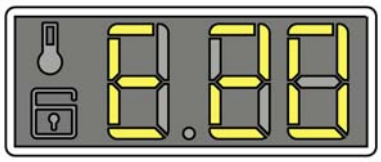
↳ **- The padlock:** when is on, it indicates that all the buttons are disabled to prevent the children from modifying, starting or pausing the cycle.
To disable this function it is necessary to push a key combination.



↳ **- 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 flashes.

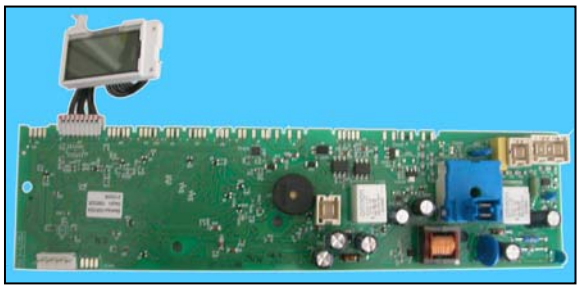


- **Buzzer**
  The buzzer emits:

→ 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.

# 4 TC3

## 4.1 GENERAL CHARACTERISTICS



The ENV060 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.

### 4.1.1 General characteristics WM

| | |
|---|---|
| **Version**<br>**TC3**<br>**(TIME MANAGER)** |  |
| **Version**<br>**TC3**<br>**(PROPORTIONAL)** |  |
| **Number of buttons** | ▪ Max. 8 (5 options + 1 start/pause + 2 for time driven) |
| **Number of LEDs** | ▪ Max. 18 + LCD display |
| **Programme selector** | ▪ 15-21 positions with main switch (incorporated in the PCB ) |
| **Serial port** | ▪ DAAS-EAP communications protocol up to 115.200 baud |
| **Power supply** | ▪ 220/240V<br>▪ 50/60 Hz (configurable) |
| **Type of washing** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Rinsing system** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Motor** | ▪ Collector, with tachometric generator (Universal)<br>▪ Two-pole asynchronous, with three-phase tachometric generator (with Inverter) |
| **Spin speed** | ▪ 600 ÷ 1600 rpm |
| **Anti-unbalancing system** | ▪ FUCS |
| **Water fill** | ▪ 1 solenoid valve with 1 inlet – 2/3 outlets |
| **Detergent drawer** | ▪ 3 compartments: prewash/stains, wash, conditioners<br>▪ 4 compartments: prewash/stains, wash, conditioners, bleach |
| **Control of water level in the tub** | ▪ Electronic/analogue pressure switch |
| **Door safety device** | ▪ Traditional (with PTC)<br>▪ Instantaneous |
| **Power of heating element** | ▪ 1950W with thermal fuse incorporated |
| **Temperature control** | ▪ NTC sensor incorporated in the heater |
| **Buzzer** | ▪ Traditional incorporated in the electronic board |
| **Sensors** | ▪ Water fill gauge (flowmeter)<br>▪ Aqua control |

### 4.1.2 General characteristics WD

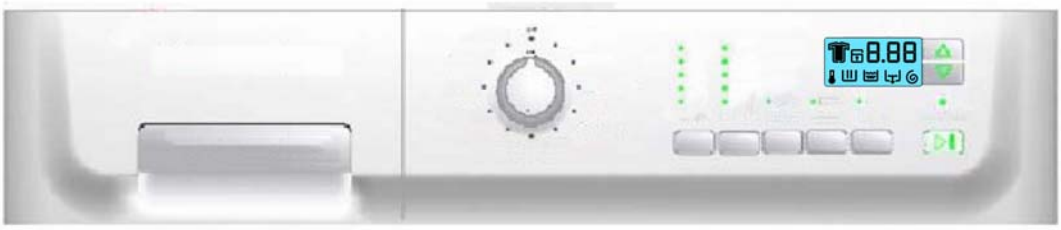
| | |
|---|---|
| **Version**<br><br>**TC3**<br><br>**(TIME MANAGER)** |  |
| **Version**<br><br>**TC3**<br><br>**(PROPORTIONAL)** |  |
| **Number of buttons** | ▪ Max. 8 (5 options + 1 start/pause + 2 for time driven) |
| **Number of LEDs** | ▪ Max. 18 + LCD display |
| **Programme selector** | ▪ 15-21 positions with main switch (incorporated in the PCB ) |
| **Serial port** | ▪ DAAS-EAP communications protocol up to 115.200 baud |
| **Power supply** | ▪ 220/240V<br>▪ 50/60 Hz (configurable) |
| **Type of washing** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Rinsing system** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Motor** | ▪ Collector, with tachometric generator (Universal)<br>▪ Two-pole asynchronous, with three-phase tachometric generator (with Inverter) |
| **Spin speed** | ▪ 600 ÷ 1600 rpm |
| **Anti-unbalancing system** | ▪ FUCS |
| **Water fill** | ▪ 1 solenoid valve with 1 inlet – 2/3 outlets |
| **Detergent drawer** | ▪ 3 compartments: prewash/stains, wash, conditioners<br>▪ 4 compartments: prewash/stains, wash, conditioners, bleach |
| **Control of water level in the tub** | ▪ Electronic/analogue pressure switch |
| **Door safety device** | ▪ Traditional (with PTC)<br>▪ Instantaneous |
| **Power of heating element washing** | ▪ 1950W with thermal fuse incorporated |
| **Power of heating element drying** | ▪ 1840W (920+920) |
| **Washing temperature control** | ▪ NTC sensor incorporated in the heater |
| **Drying temperature control** | ▪ NTC sensor<br>▪ Thermostats |
| **Buzzer** | ▪ Traditional incorporated in the electronic board |
| **Sensors** | ▪ Water fill gauge (flowmeter)<br>▪ Aqua control |

## 4.2 CONTROL PANEL

### 4.2.1 TC3 (TIME MANAGER) Styling

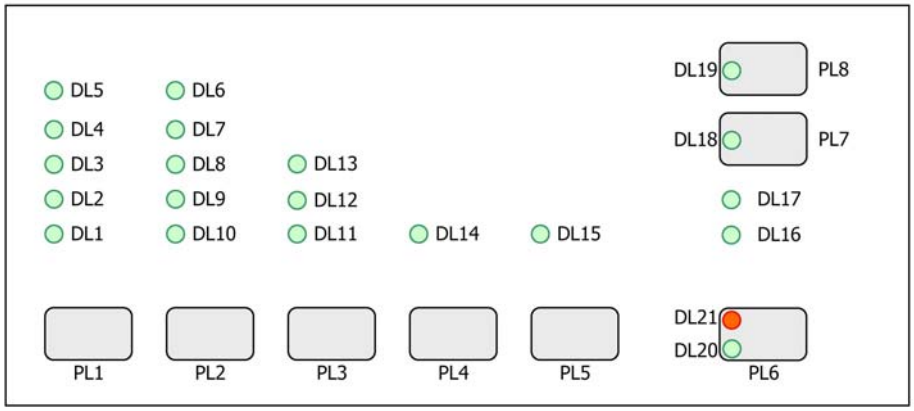
- max. 8 buttons
- 15 or 21-position programme selector
- 18 LEDs
- LCD display

Version **WM**

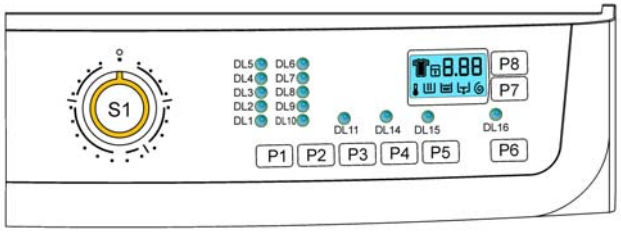
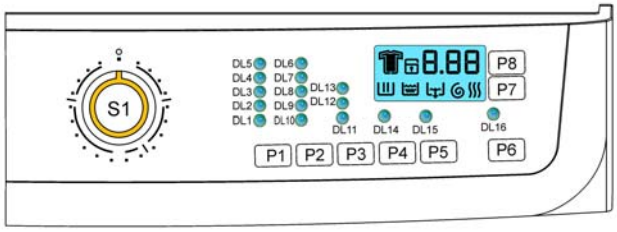


Version **WD**

- Disposition of LEDs and buttons



4.2.1.1 Configuration of the TC3 (TIME MANAGER) control panel

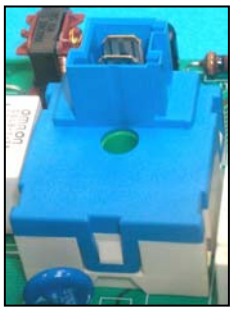
| WM | WD |
|---|---|
|  |  |



**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.**

4.2.1.2 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) and 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.



4.2.1.3 Programme configuration

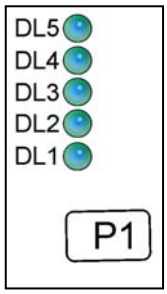
The table below lists the parameters that can be used to define the washing programmes.

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

4.2.1.4 Pushbuttons and LEDs

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

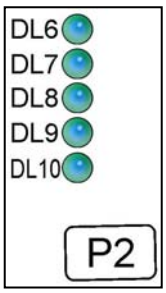
- **Button no. 1**: this button is configurable and is related to LEDs (DL1÷DL5).
  Depending on the configuration of the appliance it can be connected both to the temperature regulation and the spin speed regulation.
  Pressing it in sequence, then you can choose the different regulation.
  Depending 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 | |
|---|---|---|
| DL5 | 90° | 90° |
| DL4 | 60° | 60° |
| DL3 | 40° | 50° |
| DL2 | 30° | 40° |
| DL1 | 0° | 30° |

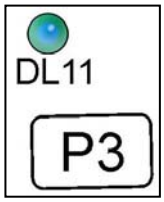
| LEDs | Spin | |
|---|---|---|
| DL5 | 1200 | 1400 |
| DL4 | 900 | 900 |
| DL3 | 700 | 700 |
| DL2 | Night cycle | Night cycle |
| DL1 | Rinse hold | Rinse hold |

- **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.



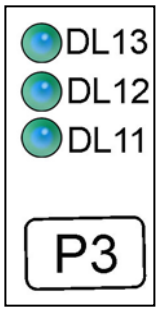

- **Button no. 3**: this button is configurable and is related to LED (DL11).
  Depending on the configuration of the appliance it can perform the function of:

  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.




  In the washer-dryers is related to LEDs (DL11÷DL13) and it can perform the function of automatic drying with three drying levels:

  -Extra
  -Cupboard
  -Iron.

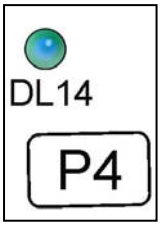



- **Button no. 4**: this button is configurable and is related to LED (DL14);
  In the washing machines can perform the function of:

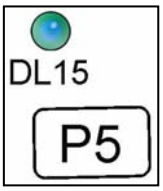
  Normal, daily, light, quick, super quick, intensive, economy, prewash, easy-iron, bleach, stains, super rinse, night cycle, rinse hold, half load, spin reduction, no spin.

  In the washer-dryers, it performs the function of:

  Timed drying



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

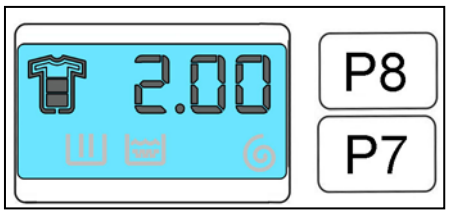



- **Button no. 6**: this button is configurable and has the function of START/PAUSE (inside there are two LEDs, one red that flashes in case of an alarm and one green that flashes when the appliance is in pause mode or in combination with the red one to indicate the alarm code).


- **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).

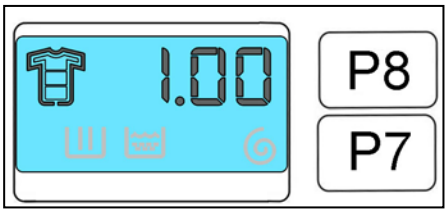

4.2.1.5 Time MANAGER

The “Time MANAGER” has the function to modify the programme setting, 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.

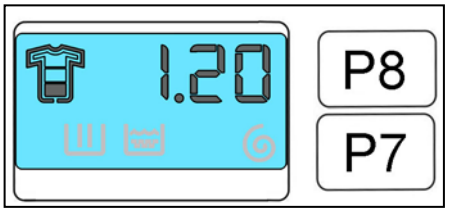



Please find below the various levels combined with the dirt degree.

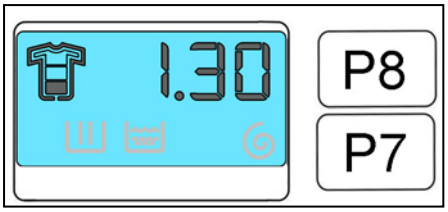
- Super quick (super rapid cycle) indicated for cottons and synthetics with light dirt level, and for half load.



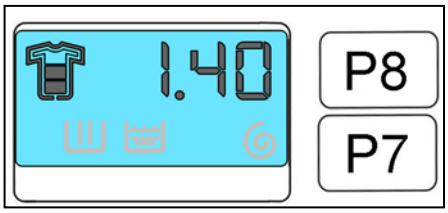

- Quick cycle indicated for clothes used just once.



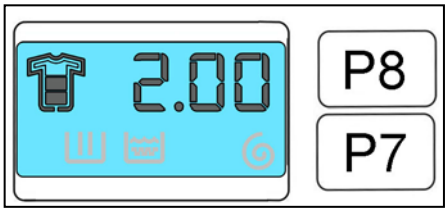

- Light cycle indicated to clothes slightly dirty or of daily use.



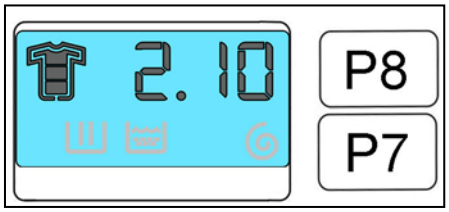
- Daily cycle indicated for quite dirty clothes.




- 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.



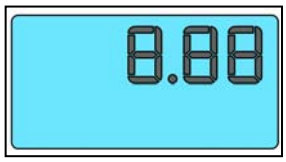

The levels are represented in the following table:

| 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 |

4.2.1.6 LCD Display

The LCD display shows the following information:

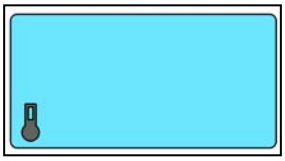
The three digits with seven segments represent:
- Duration of the washing and drying programme
- End of the programme
- Delayed start
- Wrong choice of an option
- Alarm code
- Duration of the drying time



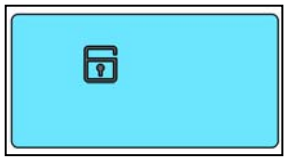

For the explanations refer to the Display description pages 10 and 11.

- Thermometer

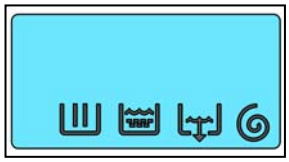
See page 10
(represented as symbol in the washing machines, not represented in the washer-dryer)



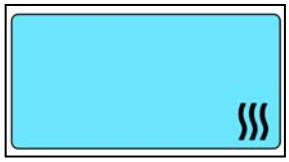
↳ Padlock
See page 11



↳ Washing phases
(both for washing machines and washer-dryers)
Washing, rinses, drain and spin light in the selection mode if the programme includes these phases and during the phase execution.



↳ Drying phase
It lights in the selection mode if the programme includes it and during the execution of the phase.



- Buzzer

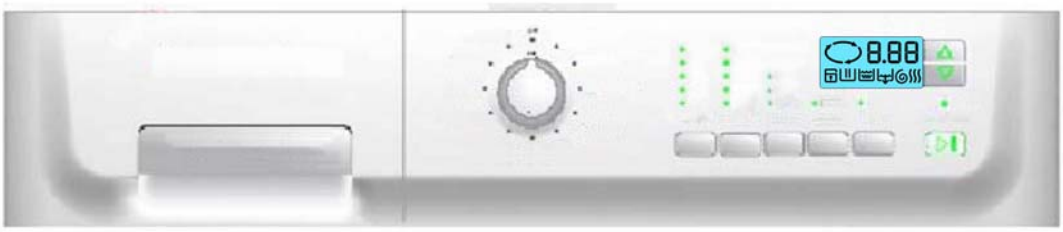
See page 11

### 4.2.2 TC3 (PROPORTIONAL) Styling

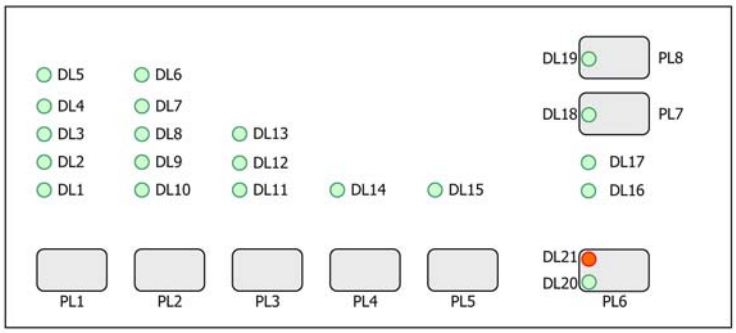
- max. 8 buttons
- 15 or 21-position programme selector
- 18 LEDs
- LCD display

Version **WM**

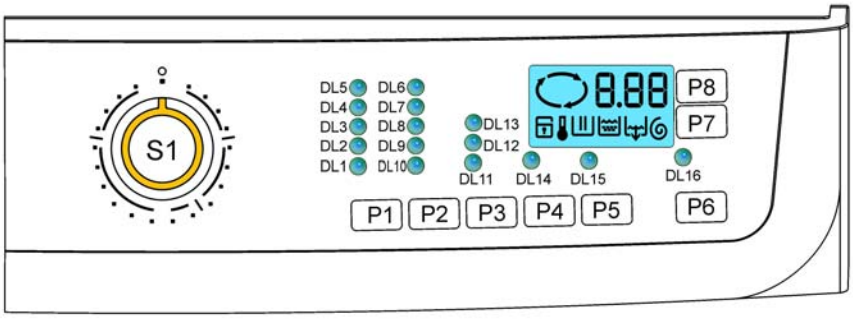
Version **WD**



- Disposition of LEDs and buttons



4.2.2.1 Configuration of the TC3 control panel




Differences between “TC3 TIME MANAGER” and “TC3 PROPORTIONAL”

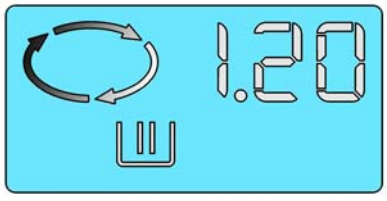
- The P3 button refers to three LEDs (DL11÷DL13).
- The P7-P8 buttons feature the function of “DELAYED START”.
- In the LCD display there is not a t-shirt, but it is replaced by circle composed by three arrows which start to move around when a programme with the “PROPORTIONAL” function is chosen (for the number of the programmes and their position, please refer to the user manual).

4.2.2.2 PROPORTIONAL

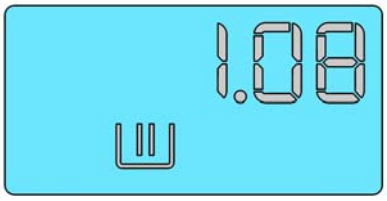
The characteristic of the proportional programmes is that they calculate the time for the washing cycle on the basis of the clothes weight inserted inside the drum, with the measurement of the water quantity absorbed by the clothes. Actually, with a few clothes the water absorption will be lower and consequently also the duration of the washing cycle; while with a bigger weight, the water absorption will be higher and also the time for the washing cycle will last longer.

When a “PROPORTIONAL” programme is selected, the LCD display shows the three digits that indicate the max time of the cycle and all the available options of the programme.


After selecting the desired/featured options for the chosen programme and pushing the START button, the appliance starts the calculation of the effective time to perform the cycle. This is displayed by an animation of three arrows that turn around during this period and the time decreases.




When the appliance has terminated the calculation phase, the digits stop flashing and the animation of the arrows disappears, displaying the effective time of the cycle.



# 5 TC2

## 5.1 GENERAL CHARACTERISTICS

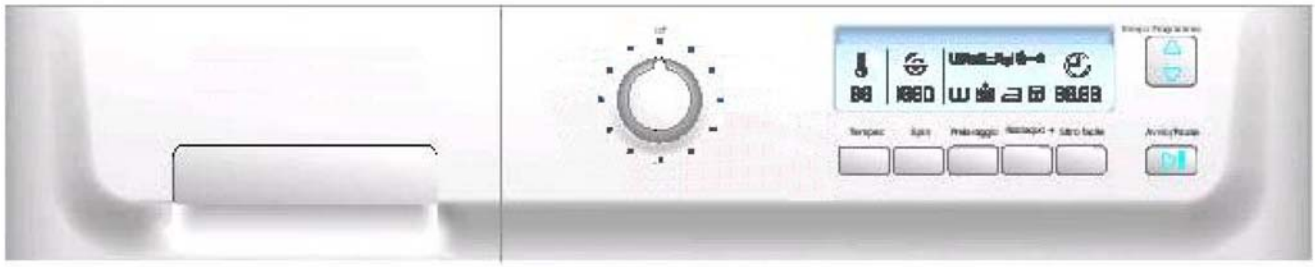
The ENV060 electronic control system consists of a single PCB, which incorporates the power, control and display (where the LCD display is connected) functions and the programme selector is incorporated in the board.
The PCB is mounted on a casing fitted to the control panel.

| | |
|---|---|
| **Version**<br>**TC2 (TIME MANAGER)** |  |
| **Version**<br>**TC2 (PROPORTIONAL)** |  |
| **Number of buttons** | ▪ Max. 8 (5 options + 1 start/pause + 2 for time driven) |
| **Number of LEDs** | ▪ Max. 2 + LCD display |
| **Programme selector** | ▪ 15-21 positions with main switch (incorporated in the PCB ) |
| **Serial port** | ▪ DAAS-EAP communications protocol up to 115.200 baud |
| **Power supply** | ▪ 220/240V<br>▪ 50/60 Hz (configurable) |
| **Type of washing** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Rinsing system** | ▪ Traditional with “eco-ball” sphere<br>▪ Jet-system |
| **Motor** | ▪ Collector, with tachometric generator (Universal)<br>▪ Two-pole asynchronous, with three-phase tachometric generator (with Inverter) |
| **Spin speed** | ▪ 600 ÷ 1600 rpm |
| **Anti-unbalancing system** | ▪ FUCS |
| **Water fill** | ▪ 1 solenoid valve with 1 inlet – 2/3 outlets |
| **Detergent drawer** | ▪ 3 compartments: prewash/stains, wash, conditioners<br>▪ 4 compartments: prewash/stains, wash, conditioners, bleach |
| **Control of water level in the tub** | ▪ Electronic/analogue pressure switch |
| **Door safety device** | ▪ Traditional (with PTC)<br>▪ Instantaneous |
| **Power of heating element** | ▪ 1950W with thermal fuse incorporated |
| **Temperature control** | ▪ NTC sensor incorporated in the heater |
| **Buzzer** | ▪ Traditional incorporated in the electronic board |
| **Sensors** | ▪ Water fill gauge (flowmeter)<br>▪ Aqua control |

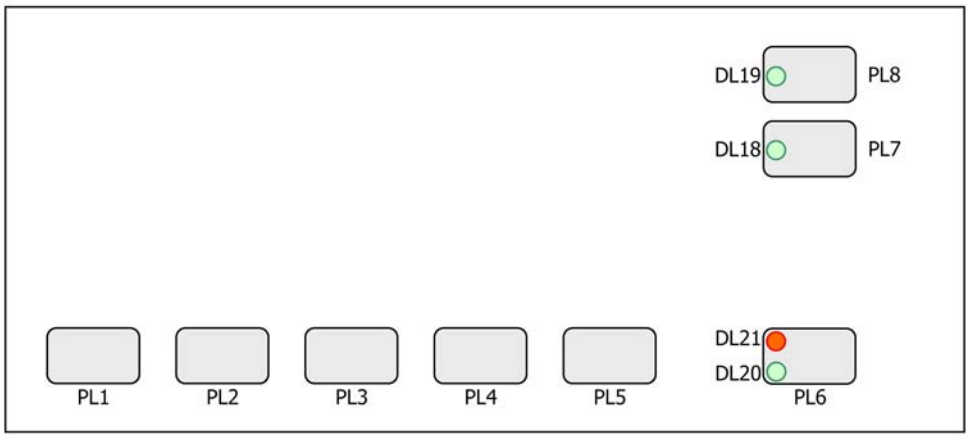
## 5.2 CONTROL PANEL

### 5.2.1 TC2 (TIME MANAGER) Styling

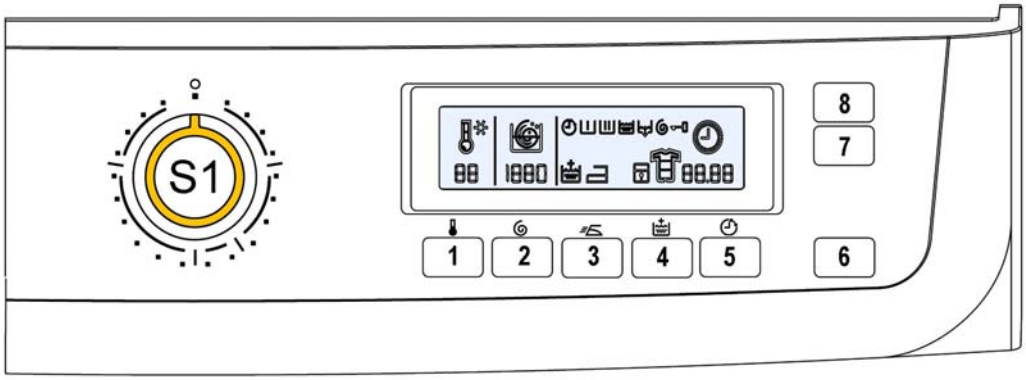
- max. 8 buttons
- 15 or 21-position programme selector
- 2 LEDs
- LCD display



- Disposition of LEDs and buttons



5.2.1.1 Configuration of the TC2 (TIME MANAGER) control panel




**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.**

### 5.2.2 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) and 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.

### 5.2.3 Programme configuration

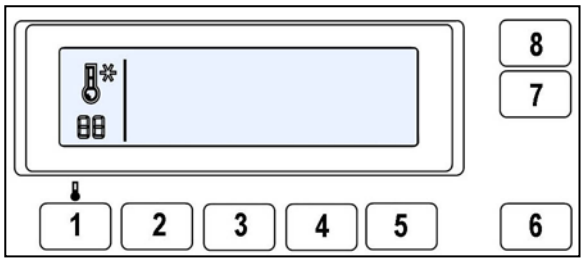
The table below lists the parameters that can be used to define the washing programmes.

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

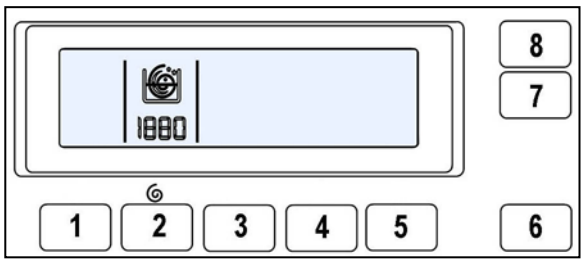
### 5.2.4 Buttons and LCD

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.

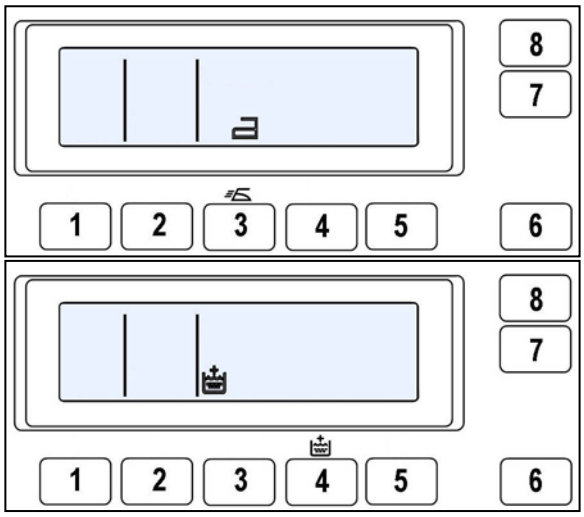



- **Button no. 2: SPIN**
  The spin set by the programme is the maximum one, pressing the button it is possible to vary the speed up to zero, then it passes to NIGHT CYCLE and RINSE HOLD (with relative lighted symbols).

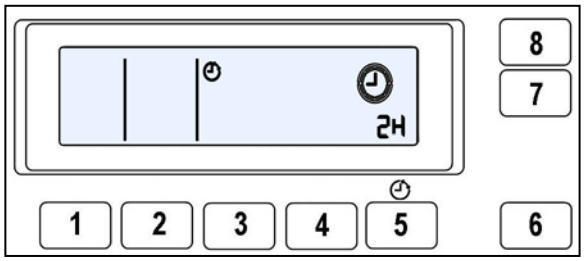



- **Button no. 3: OPTIONS**
  Configurable button. The options available for this button are:
  –Pre-wash (it can be configured also as programme)
  –Easy-iron (it can be configured also as programme)
  –Intensive

- **Button no. 4: OPTIONS**
  Configurable button. The options available for this button are:
  –Super rinse
  –Quick



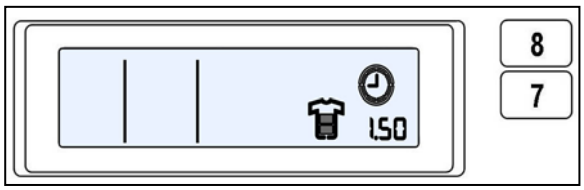

- **Button no. 5: DELAYED START/ SUPER RINSE**
  Configurable button. It can perform the function of:
  - Delayed start
  - Super rinse




- **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).

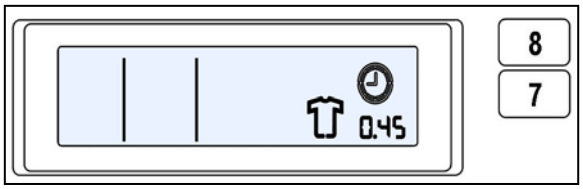
### 5.2.5 Time MANAGER

The “Time MANAGER” has the function to modify the programme setting, 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.

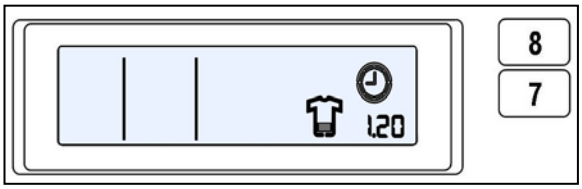



Please find below the various levels combined with the dirt degree:

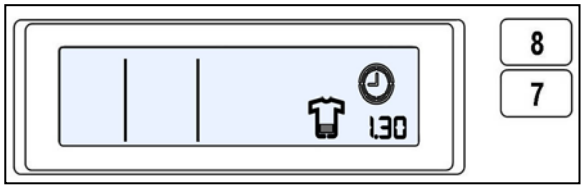
- Super quick (super rapid cycle) indicated for cottons and synthetics with light dirt level, and for half load.



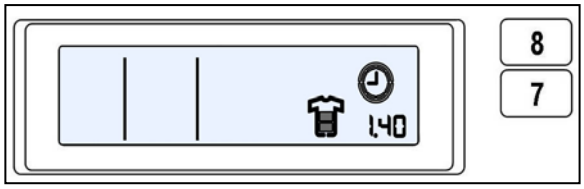

- Quick cycle indicated for clothes used just once.



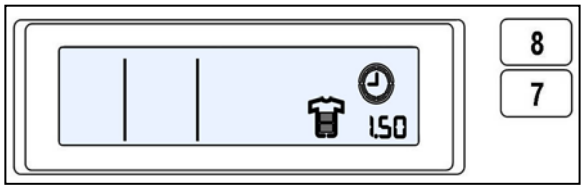

- Light cycle indicated to clothes slightly dirty or of daily use.



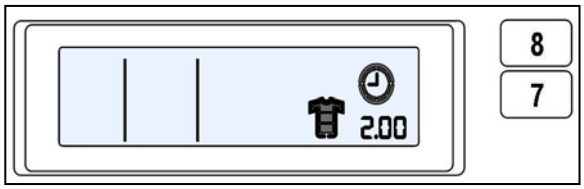

- Daily cycle indicated for quite dirty clothes.




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



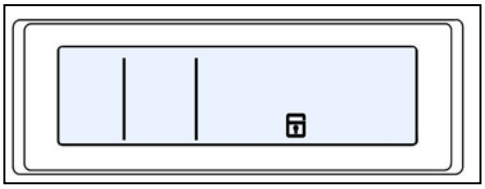

- Intensive cycle indicated for very dirty clothes which need anti-stain treatments, soak and prewash.



The levels are represented in the following table:

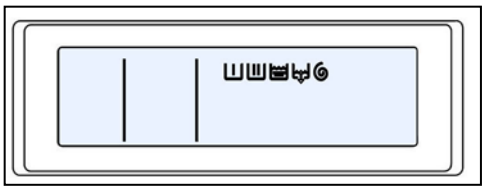
| COTTONS | SYNTHETICS | DELICATES |
|---|---|---|
| INTENSIVE | ---------- | ---------- |
| NORMAL (basic programme) | NORMAL (basic programme) | NORMAL (basic programme) |
| DAILY | DAILY | DAILY |
| LIGHT | LIGHT | LIGHT |
| QUICK | ---------- | ---------- |
| SUPER QUICK | SUPER QUICK | SUPER QUICK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

↳ Padlock
See page 11



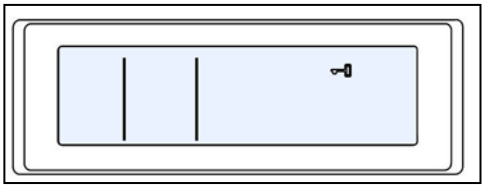
↳ Washing phases

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.



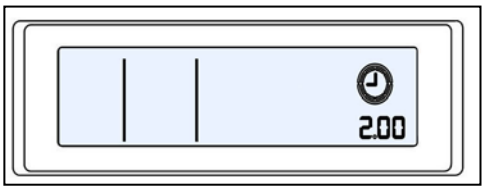
↳ Door lock

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.

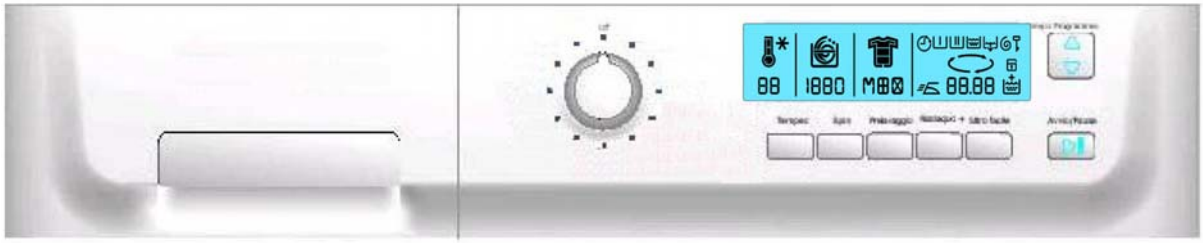



- Buzzer

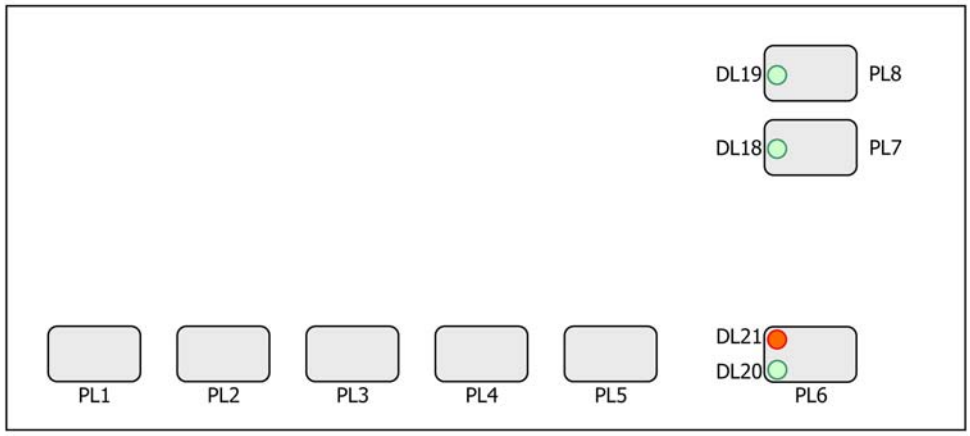
See page 11.

5.2.5.1 TC2 (PROPORTIONAL) Styling

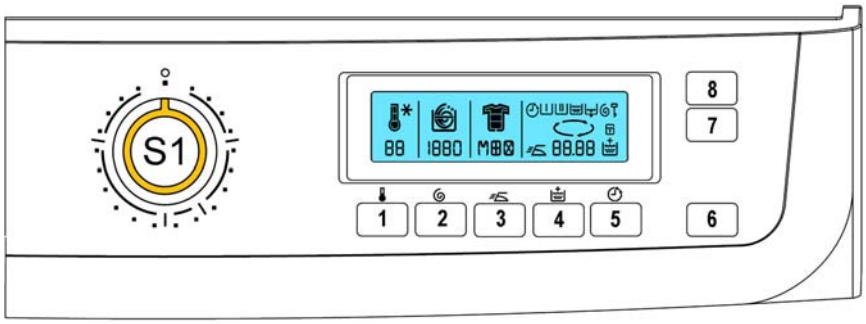
- max. 8 buttons
- 15 or 21-position programme selector
- LEDs 2
- LCD Display



- Disposition of LEDs and buttons

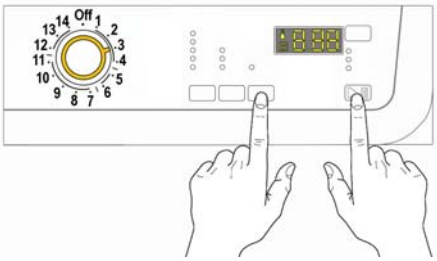
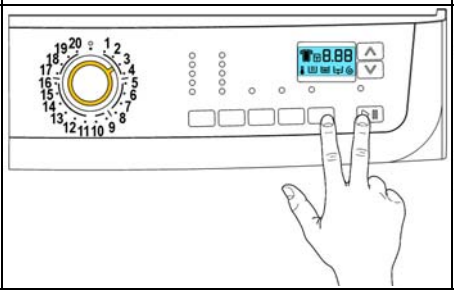
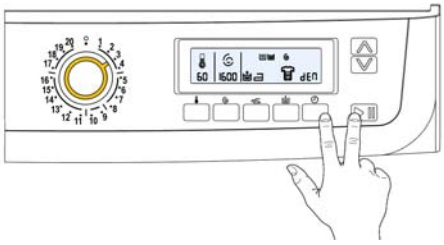



5.2.5.2 Configuration of the TC2 (PROPORTIONAL) control panel




The operation is the same as the one described at page 23.

# 6 DEMO MODE

| Version TC4 | Version TC3<br>“Time Manager” “Proportional” | Version TC2<br>“Time Manager” “Proportional” |
|---|---|---|
|  |  |  |

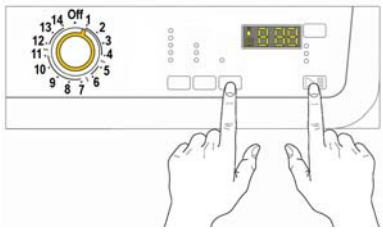
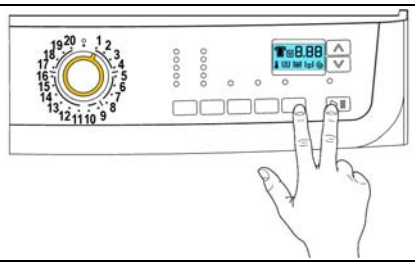
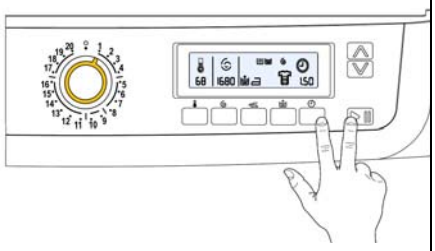
1. Switch off the appliance.
2. Press and hold down **START/PAUSE** button and the nearest **option button** simultaneously (as represented in figure).
3. Holding down both buttons, switch the appliance on by turning the programme selector by **three positions clockwise**.
4. Hold the buttons down till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

## 6.1 Exiting DEMO mode

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

# 7 DIAGNOSTICS SYSTEM

## 7.1 Access to diagnostics mode

| Version TC4 | Version TC3<br>“Time Manager” “Proportional” | Version TC2<br>“Time Manager” “Proportional” |
|---|---|---|
|  |  |  |

1. Switch off the appliance.
2. Press and hold down **START/PAUSE** button and the nearest **option button** (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 and the symbols begin to flash (at least 2 seconds).

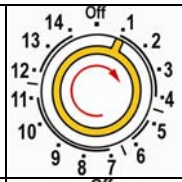
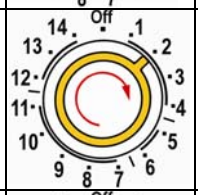
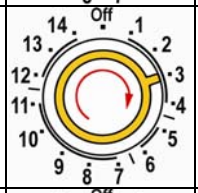
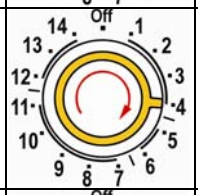
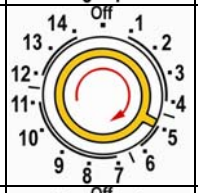
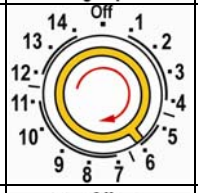
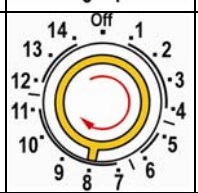
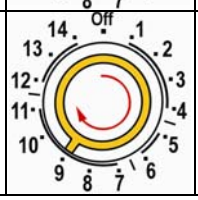
In the first position, the operation of the buttons and the relative LEDs is checked; turning the selector knob **clockwise** the diagnostics cycle for the operation of the various components and the alarm reading is activated.

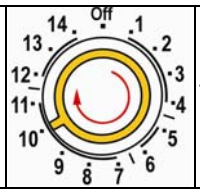
## 7.2 Exiting diagnostics mode

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

## 7.3 Diagnostics 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 diagnostics cycle.

| Selector position | | Components actioned | Operating conditions | Function checked | Display |
|---|---|---|---|---|---|
| **1** |  | - All the LEDs and symbols light in sequence.<br>- When a button is pressed, the corresponding LED or symbol light. | Always activated | Operation of the user interface | |
| **2** |  | - Door interlock<br>- Wash solenoid | Door locked<br>Water level below anti-flooding level<br>Maximum time 5 minutes | Water ducted through washing compartment | Displays the water level in tub |
| **3** |  | - Door interlock<br>- Pre-wash solenoid | Door locked<br>Water level below anti-flooding level<br>Maximum time 5 minutes | Water ducted through pre-wash compartment (bleach) | Displays the water level in tub |
| **4** |  | - Door interlock<br>- Pre-wash and wash solenoids | Door locked<br>Water level below anti-flooding level<br>Maximum time 5 minutes | Water ducted through conditioner compartment | Displays the water level in tub |
| **5** |  | - Door interlock<br>- Bleach/stains solenoids | Door locked<br>Water level below anti-flooding level<br>Maximum time 5 minutes | Water ducted through conditioner/stains compartments | Displays the water level in tub |
| **6** |  | - Door interlock<br>- Wash solenoid if the level of water in the tub does not cover the heater<br>- Heating element<br>- Recirculation pump | Door locked<br>Water level above the heater<br>Maximum time 10 minutes or up to 90°C (*) | Heating<br>Recirculation | Wash water temperature |
| **7** |  | - Door interlock<br>- Wash solenoid if the level of water in the tub does not cover the heater<br>- Motor (55 rpm clockwise, 55 rpm counter-clockwise, 250 rpm impulse) | Door locked<br>Water level above the heater | Check for leaks from the tub | Displays the drum speed (the real value divided by ten) |
| **8** |  | - Door interlock<br>- Drain pump<br>- Motor up to 650 rpm then at maximum spin speed | Door locked<br>Water level lower than anti-boiling level for spinning | Drain, spin and analogic pressure switch calibration | Displays the drum speed (the real value divided by ten) |
| **9** |  | - Door interlock<br>- Drain pump<br>- Motor fan<br>- Condensation solenoid valve<br>- Drying heater | Door locked<br>Water level lower than anti-boiling level | Drying | Displays the air temperature |

| | | | | | |
|---|---|---|---|---|---|
| **10** |  | - Reading/Cancellation of the last alarm | ----- | ---- | |

**(*)** In most cases, this time is sufficient to check the heating. However, the time can be increased by repeating the phase without draining the water: pass for a moment to a different phase of the diagnostics cycle and then back to the heating control phase (if the temperature is higher than 80°C, heating does not take place).
**(**)** The check at the maximum speed occurs without control of the FUCS and no clothes have to be inserted inside the appliance.

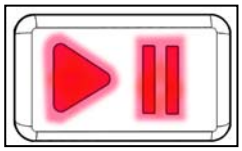
# 8 ALARMS

## 8.1 Displaying the alarms to the user

The alarms are displayed by the red LED of the START/PAUSE button flashing and simultaneously through the LCD or Display.

***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)*
- *EH0 – Voltage or frequency out of the normal values*

***are displayed to the user, but for their solution it is necessary the intervention of the Service.***

***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

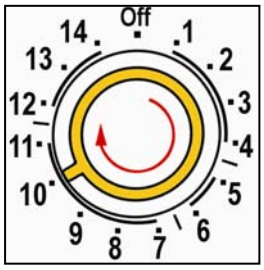
Certain alarm conditions require that a drain phase be performed before the door can be opened for safety reasons:

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

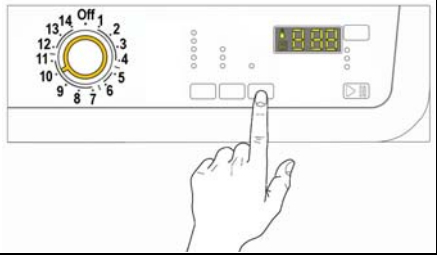
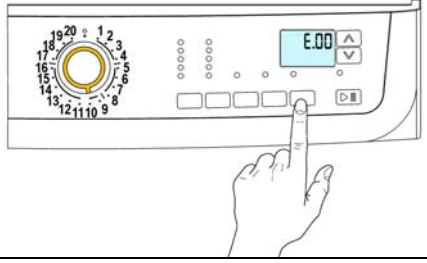
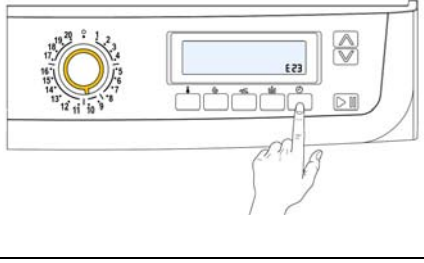
## 8.2 Reading the alarm codes

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

- Enter diagnostics mode (par. 7.1).
- Irrespective of the type of PCB and configuration, turn the programme selector **clockwise** to the **tenth position.**

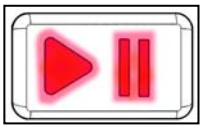


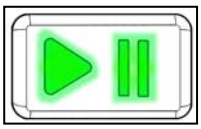

- The last alarm is displayed.
- To display the previous alarms, press sequentially the left button of the START/PAUSE button (as represented in figure).

| Version TC4 | Version TC3<br>“Time Manager” “Proportional” | Version TC2<br>“Time Manager” “Proportional” |
|---|---|---|
|  |  |  |

- 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:

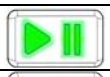
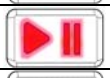
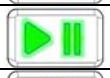
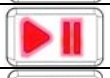
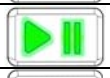
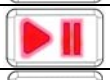
→ **A** is represented by **10** flashes
→ **B** is represented by **11** flashes
→ ...
→ **F** is represented by **15** flashes

- Configuration errors are shown by the flashing of all the LEDs (user interface not configured).

### 8.2.2 Examples of alarm display

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**4**3;
- the sequence of three flashes of the START / PAUSE button with green light, indicates the second number E4**3**;

| 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 diagnostics phase.

## 8.3 Rapid reading of alarm codes

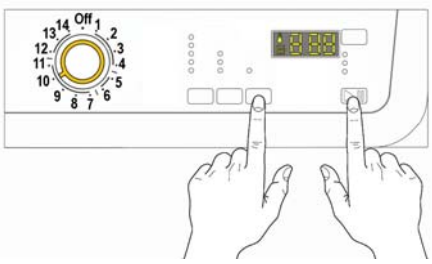
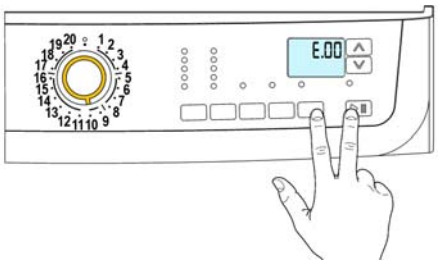
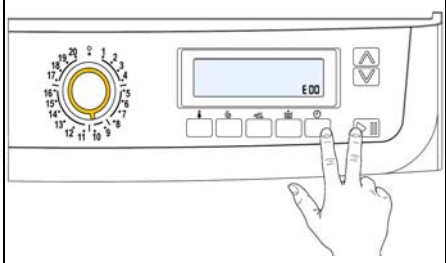
The last three alarm codes can be displayed even if the programme selector is not in the tenth position (diagnostics) or if the appliance is in normal operating mode (e.g. during the execution of the washing programme):

→ Press and hold down **START/PAUSE** and 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 paragraph 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 alarm

It is good practice to cancel the last alarm:

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

| Version TC4 | Version TC3<br>“Time Manager” “Proportional” | Version TC2<br>“Time Manager” “Proportional” |
|---|---|---|
|  |  |  |

1. Select diagnostics mode and turn the programme selector to the **tenth** position (reading of alarms).
2. Press and hold down **START/PAUSE** and the nearest **option button** (as represented in figure).
3. Hold down the buttons till the LEDs stop to flash the LCD display shows “E00” (at least 5 seconds).

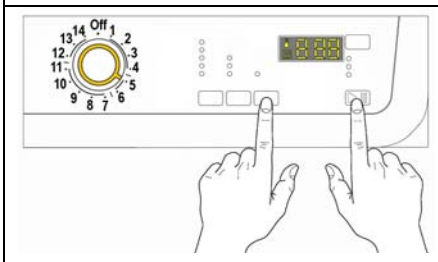
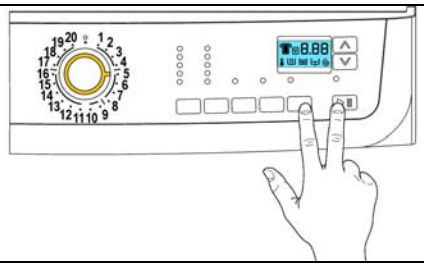
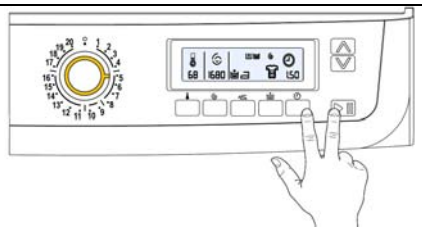
N.B. With this operation all the memorised alarms are deleted.

# 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.
This option is available only on models equipped with a display. 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)

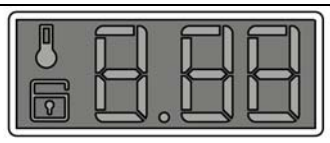
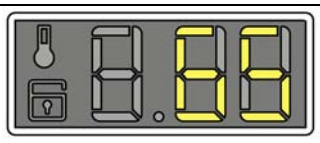
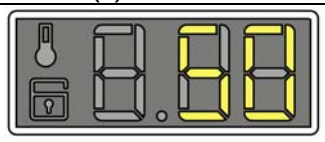
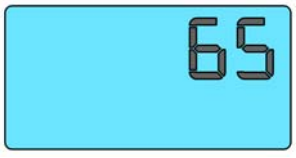
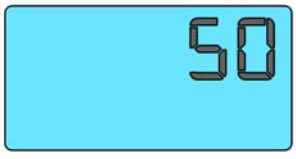
### 9.1.1 Reading of operating time

| Version TC4 | Version TC3<br>"Time Manager" "Proportional" | Version TC2<br>"Time Manager" "Proportional" |
|---|---|---|
|  |  |  |

5. Switch off the appliance.
6. Press the **START/PAUSE** button and the nearest **option button** (see figure) simultaneously.
7. Holding the buttons down, switch on the appliance turning the programme selector of **five positions clockwise**.
8. Hold the buttons down till the LCD or the display show the working hours (at least 5 seconds).

### 9.1.2 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 →** |
|---|---|---|---|
| **Styling** | Nothing is displayed for two seconds | The following digits are displayed for two seconds:<br>↳ thousands (**6**)<br>↳ hundreds (**5**) | The following digits are displayed for the next two seconds:<br>a. tens (**5**)<br>b. units (**0**) |
| **TC4** |  |  |  |
| **TC3** |  |  |  |
| **TC2** |  |  |  |

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 WASHING PROGRAMMES AND OPTIONS

## 10.1 Programmes

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

| Programme | | Temperature (°C) | Number of rinses | Final spin (rpm) |
|---|---|---|---|---|
| **Cotton** | **90** | 82 | 3 | 450/650/850/1000/1200/ 1300/1400/1800 |
| | **90E** | 67(*) | (**) | |
| | **60** | 60 | 3 | |
| | **60E** | 55 (*) | (**) | |
| | **50** | 50 | 3 | |
| | **50/40E** | 44(*) | (**) | |
| | **40** | 40 | 3 | |
| | **30** | 30 | | |
| | **cold** | 20 | | |
| **Synthetic fabrics** | **60** | 60 | 3 | Max. 900 |
| | **60/50E** | 42(*) | (**) | |
| | **50** | 50 | 3 | |
| | **40** | 42 | | |
| | **30** | 30 | | |
| | **cold** | 20 | | |
| **Mini Programme** | **30** | 30 | 3 | Max. 900 |
| | **cold** | 20 | | |
| **Delicates** | **40** | 40 | 3 | Max. 700 |
| | **30** | 30 | | |
| | **cold** | 20 | | |
| **Wool Hand-wash** | **40** | 38 | 3 | Max. 1000 |
| | **30** | 33 | | |
| | **cold** | 20 | | |
| **Shoes** | **40** | 40 | 3 | Max. 1000 |
| | **30** | 30 | | |
| | **cold** | 20 | | |
| **Jeans** | **60** | 60 | 5 | Max. 1200 |
| | **50** | 50 | | |
| | **40** | 40 | | |
| | **30** | 30 | | |
| | **cold** | 20 | | |
| | | | | |
| **Soak** | | 30/20 | ---- | ---- |
| **Rinses** | | ---- | 3 | Max. 1600/1800 |
| **Conditioner** | | ---- | 1 | Max. 1600/1800 |
| **Drain** | | ---- | ---- | ---- |
| **Spin** | | ---- | ---- | Max. 1600/1800 |

The data are indicative.

(*) “Energy label” programmes

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

## 10.2 Options (for appliances EWM 21xx with universal motor)

The table below lists the possible options for the washing programmes, the compatibility of the various options and with the cycle, and when it is possible to select or modify the options.

The options can be selected in three ways:

- using the programme selector: in this case, the options are configured as special programmes;
- using the pushbuttons.

| | | Spin speed | | Temp. | OPTIONS | | | | | | | | | | | | | | | | | Phases | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | Min. | | Rinse-hold | Night cycle | Pre-wash | Stains | Bleach | Extra rinse | Easy-iron | Economy (*) | Intensive | Normal | Daily | Light | Quick | Super Quick | Sensitive | Reduced spin speed | No spin | Half-load | Pre-wash | Wash | Rinses | Spin | Delay | Drying |
| Compatibility with PROGRAMMES | **Cotton** | 1600 | 0 | 90°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 60°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 50°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | |
| | | | | 40°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 30°C | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | cold | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | **Synthetic fabrics** | 900 | 0 | 60°C | X | X | X | X | | X | X | X | | X | X | X | | X | X | X | X | | | | | | |
| | | | | 50°C | X | X | X | X | | X | X | X | | X | X | X | | X | X | X | X | | | | | | |
| | | | | 40°C | X | X | X | X | | X | X | X | | X | X | X | | X | X | X | X | | X | X | X | X | |
| | | | | 30°C | X | X | X | | | X | X | | | X | X | X | | X | X | X | X | | | | | | |
| | | | | cold | X | X | X | | | X | X | | | X | X | X | | X | X | X | X | | | | | | |
| | **Delicates** | 700 | 0 | 40°C | X | X | X | X | | X | | | | X | X | X | | X | | X | X | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | X | X | | X | | X | X | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | X | X | | X | | X | X | | | | | | |
| | **Wool / Hand-wash** | 1000 | 0 | 40°C | X | X | | | | | | | | X | | | | | | X | X | | | | | | |
| | | | | 30°C | X | X | | | | | | | | X | | | | | | X | X | | X | X | X | X | |
| | | | | cold | X | X | | | | | | | | X | | | | | | X | X | | | | | | |
| | **Easy-iron** | 900 | 0 | 60°C | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | | | | 50°C | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | | | | 40°C | X | | X | | | X | X | | | X | | | | | | X | X | | X | X | X | X | |
| | | | | 30°C | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | | | | cold | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | **Duvet** | 700 | 400 | 40°C | | | | | | | | | | X | | | | | | X | | | | | | | |
| | | | | 30°C | | | | | | | | | | X | | | | | | X | | | X | X | X | X | |
| | **Jeans** | 1200 | 0 | 60°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | | | | 50°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | | | | 40°C | X | X | X | | | X | X | | | X | | | | | | X | X | | X | X | X | X | |
| | | | | 30°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | | | | cold | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | |
| | **Shoes** | 1000 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | |
| | **Lingerie** | 900 | 0 | 40°C | X | X | | | | | | | | X | | | | | | X | X | | | | | | |
| | | | | 30°C | X | X | | | | | | | | X | | | | | | X | X | | X | X | X | X | |
| | | | | cold | X | X | | | | | | | | X | | | | | | X | X | | | | | | |
| | **Silk** | 700 | 0 | 30°C | X | X | | | | | | | | | | | | X | | X | X | | | | | | |
| | | | | cold | X | X | | | | | | | | | | | | X | | X | X | | X | X | X | X | |
| | **Baby** | 700 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | |
| | **Mini, Flash, Sport, Light** | 700 | 0 | 30°C | | | | | | | | | | | | | | X | | X | X | | X | X | X | X | |
| | **Hygienize** | 1600 | 0 | 90°C | X | X | X | X | X | X | | | X | | | | | | | X | X | | X | X | X | X | |

Continues in the following page

| | | Spin speed | | Temp. | OPTIONS | | | | | | | | | | | | | | | | | | Phases | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | Min. | | Rinse-hold | Night cycle | Pre-wash | Stains | Bleach | Extra rinse | Easy-iron | Economy (*) | Intensive | Normal | Daily | Light | Quick | Super Quick | Sensitive | Reduced spin speed | No spin | Half-load | Pre-wash | Wash | Rinses | Spin | Delay | Drying |
| Compatibility with PROGRAMMES | **Sport** | 900 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | **Shirts** | 900 | 0 | 30°C | | | | | | | | | | | | | | X | | X | X | | | X | X | X | X | |
| | **Mixed** | 1600 | 0 | 40°C | X | X | X | X | X | X | | X | | | | | | | X | X | X | X | | X | X | X | X | |
| | **Hygienize** | 1800 | 0 | 90°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | | | | | |
| | | | | 60°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | X | X | X | X | |
| | | | | 50°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | | | | | |
| | | | | 40°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | | | | | |
| | **Grass** | 1600 | 0 | 60°C | X | X | X | X | | X | X | | X | | | | | | | X | X | | | | | | | |
| | | | | 50°C | X | X | X | X | | X | X | | X | | | | | | | X | X | | | X | X | X | X | |
| | | | | 40°C | X | X | X | X | | X | X | | X | | | | | | | X | X | | | | | | | |
| | **Curtains** | 700 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | **Automatic** | 1600 | 0 | 60°C | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | | | | | | | | |
| | | | | 50°C | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | | | | | | | | |
| | | | | 40°C | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | | | X | X | X | X | |
| | | | | 30°C | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | | | | | | | | |
| | | | | cold | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | | | | | | | | |
| | **Soak** | 0 | 0 | 30°C | | | X | | | | | | | X | | | | | | | | | X | | | | X | |
| | **Rinses** | 1600 | 0 | | X | X | | | X | X | X | | | | | | | | | X | X | | | | X | X | X | |
| | **Rinses delicates** | 700 | 0 | | X | X | | | | X | | | | | | | | | | X | X | | | | X | X | X | |
| | **Conditioner** | 1600 | 0 | | X | X | | | | | X | | | | | | | | | X | X | | | | X | X | X | |
| | **Delicate conditioner** | 1600 | 0 | | X | X | | | | | X | | | | | | | | | X | X | | | | X | X | X | |
| | **Drain** | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | X | | |
| | **Spin** | 1600 | 400 | | | | | | | | | | | | | | | | | X | | | | | | X | X | |
| | **Delicate spin** | 700 | 400 | | | | | | | | | | | | | | | | | X | | | | | | X | X | |

(*) Economy

- Cotton: 90°C = Eco 67°C; 60°C = Energy Label; 50°= Eco 48°C;40°C = Eco 44°C AA
- Synthetics: 60-60°C = Eco 40°C

X Option included in the programme and cannot be deleted
X Option included in the programme and can be deleted
Only for Jetsystem + Flowmeter

## 10.3 Options (for appliances EWM 25xx with asynchronous motor and inverter)

The table below lists the possible options for the washing programmes, the compatibility of the various options and with the cycle, and when it is possible to select or modify the options.

The options can be selected in different ways:

- using the programme selector: in this case, the options are configured as special programmes;
- using the pushbuttons.

| | | Spin speed | | Temp. | OPTIONS | | | | | | | | | | | | | | | | | Phases | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | Min. | | Rinse-hold | Night cycle | Pre-wash | Stains | Bleach | Extra rinse | Easy-iron | Economy (*) | Intensive | Normal | Daily | Light | Quick | Super Quick | Sensitive | Reduced spin speed | No spin | Half-load | Pre-wash | Wash | Rinses | Spin | Delay | Drying |
| Compatibility with PROGRAMMES | **Cotton** | 1800 | 0 | 90°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | |
| | | | | 60°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 50°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 40°C | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 30°C | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | cold | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | **Synthetic fabrics** | 900 | 0 | 60°C | X | X | X | X | | X | X | X | | X | X | X | | X | X | X | X | | | | | | | |
| | | | | 50°C | X | X | X | X | | X | X | X | | X | X | X | | X | X | X | X | | | | | | | |
| | | | | 40°C | X | X | X | X | | X | X | X | | X | X | X | | X | X | X | X | | | X | X | X | X | |
| | | | | 30°C | X | X | X | | | X | X | | | X | X | X | | X | X | X | X | | | | | | | |
| | | | | cold | X | X | X | | | X | X | | | X | X | X | | X | X | X | X | | | | | | | |
| | **Delicates** | 700 | 0 | 40°C | X | X | X | X | | X | | | | X | X | X | | X | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | X | X | | X | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | X | X | | X | | X | X | | | | | | | |
| | **Wool / Hand-wash** | 1000 | 0 | 40°C | X | X | | | | | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | | | | | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | | | | | | | | X | | | | | | X | X | | | | | | | |
| | **Easy-iron** | 900 | 0 | 60°C | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | | | | 50°C | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | | | | 40°C | X | | X | | | X | X | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | 30°C | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | | | | cold | X | | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | **Duvet** | 700 | 400 | 40°C | | | | | | | | | | X | | | | | | X | | | | | | | | |
| | | | | 30°C | | | | | | | | | | X | | | | | | X | | | | X | X | X | X | |
| | **Jeans** | 1200 | 0 | 60°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | | | | 50°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | | | | 40°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | 30°C | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | | | | cold | X | X | X | | | X | X | | | X | | | | | | X | X | | | | | | | |
| | **Shoes** | 1000 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | **Lingerie** | 900 | 0 | 40°C | X | X | | | | | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | | | | | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | | | | | | | | X | | | | | | X | X | | | | | | | |
| | **Silk** | 700 | 0 | 30°C | X | X | | | | | | | | | | | | X | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | | | | | | | | | | | | X | | X | X | | | | | | | |
| | **Baby** | 700 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | **Mini, Flash, Sport, Light** | 700 | 0 | 30°C | | | | | | | | | | | | | | X | | X | X | | | X | X | X | X | |
| | **Hygienize** | 1800 | 0 | 90°C | X | X | X | X | X | X | | | X | | | | | | | X | X | | | X | X | X | X | |

Continues in the following page

| | | Spin speed | | Temp. | OPTIONS | | | | | | | | | | | | | | | | | | Phases | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | Min. | | Rinse-hold | Night cycle | Pre-wash | Stains | Bleach | Extra rinse | Easy-iron | Economy (*) | Intensive | Normal | Daily | Light | Quick | Super Quick | Sensitive | Reduced spin speed | No spin | Half-load | Pre-wash | Wash | Rinses | Spin | Delay | Drying |
| | | | | | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | **Shirts** | 900 | 0 | 30°C | | | | | | | | | | | | | | X | | X | X | | | X | X | X | X | |
| | **Mixed** | 1800 | 0 | 40°C | X | X | X | X | X | X | | X | | | | | | | X | X | X | X | | X | X | X | X | |
| | **Hygienize** | 1800 | 0 | 90°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | | | | | |
| | | | | 60°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | X | X | X | X | |
| | | | | 50°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | | | | | |
| | | | | 40°C | X | X | | X | | X | X | | | X | | | | | | X | X | X | | | | | | |
| | **Grass** | 1800 | 0 | 60°C | X | X | X | X | | X | X | | X | | | | | | | X | X | | | | | | | |
| | | | | 50°C | X | X | X | X | | X | X | | X | | | | | | | X | X | | | X | X | X | X | |
| | | | | 40°C | X | X | X | X | | X | X | | X | | | | | | | X | X | | | | | | | |
| | **Curtains** | 700 | 0 | 40°C | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | | | | 30°C | X | X | X | | | X | | | | X | | | | | | X | X | | | X | X | X | X | |
| | | | | cold | X | X | X | | | X | | | | X | | | | | | X | X | | | | | | | |
| | **Automatik** | 1800 | 0 | 60°C | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 50°C | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | 40°C | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | |
| | | | | 30°C | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | | | | cold | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| | **Express** | 1200 | 0 | 60°C | X | | | | | X | | | | | | | | X | | X | X | | | X | X | X | X | |
| | **Sensitive plus** | 1800 | 0 | 60°C | X | X | X | X | X | X | | | | X | | X | | | | X | X | | | | X | X | X | X | |
| | **Rapid** | 900 | 0 | 30°C | X | | | | | | | | | X | | | | | | X | X | | | | X | X | X | X | |
| | **Cotton Proportional** | 1800 | 0 | 90°C | X | X | X | X | X | X | X | X | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | 60°C | X | X | X | X | X | X | X | X | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | 50°C | X | X | X | X | X | X | X | X | X | X | | | | X | X | X | X | | | | X | X | X | X | |
| | | | | 40°C | X | X | X | X | X | X | X | X | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | 30°C | X | X | X | | X | X | X | | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | cold | X | X | X | | X | X | X | | X | X | | | | X | X | X | X | | | | | | | | |
| | **Synthetics Proportional** | 900 | | 60°C | X | X | X | X | | X | X | X | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | 50°C | X | X | X | X | | X | X | X | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | 40°C | X | X | X | X | | X | X | X | X | X | | | | X | X | X | X | | | | X | X | X | X | |
| | | | | 30°C | X | X | X | | | X | X | | X | X | | | | X | X | X | X | | | | | | | | |
| | | | | cold | X | X | X | | | X | X | | X | X | | | | X | X | X | X | | | | | | | | |
| | **A++** | 1800 | 0 | 50°C | X | X | X | X | X | X | X | X | | | | | | | X | X | X | X | | X | X | X | X | |
| | **Soak** | 0 | 0 | 30°C | | | X | | | | | | | X | | | | | | | | | X | | | | X | |
| | **Rinses** | 1800 | 0 | | X | X | | | X | X | X | | | | | | | | | X | X | | | | | X | X | X | |
| | **Rinses delicates** | 700 | 0 | | X | X | | | | X | | | | | | | | | | X | X | | | | | X | X | X | |
| | **Conditioner** | 1800 | 0 | | X | X | | | | | X | | | | | | | | | X | X | | | | | X | X | X | |
| | **Delicate conditioner** | 1800 | 0 | | X | X | | | | | X | | | | | | | | | X | X | | | | | X | X | X | |
| | **Drain** | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| | **Spin** | 1800 | 400 | | | | | | | | | | | | | | | | | X | | | | | | | X | X | |
| | **Delicate spin** | 700 | 400 | | | | | | | | | | | | | | | | | X | | | | | | | X | X | |

(*) Economy

- Cotton: 90°C = Eco 67°C; 60°C = Energy Label; 50°= Eco 48°C;40°C = Eco 44°C AA
- Synthetics: 60-60°C = Eco 40°C

X Option included in the programme and cannot be deleted
X Option included in the programme and can be deleted
Only for Jetsystem + Flowmeter

### 10.3.1 Compatibility between Options

| | | OPTIONS | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rinse-hold | Night cycle | Pre-wash | Stains | Bleach | Extra rinse | Easy-iron | Economy | Intensive | Normal | Daily | Light | Super Quick | Intensive | Sensitive | Reduced spin speed | No spin | Half-load |
| Compatibility with OPTIONS | Rinse-hold | ■ | | x | x | x | x | x | x | x | x | x | x | x | x | x | | | x |
| | Night cycle | | ■ | x | x | x | x | | x | x | x | x | x | x | x | | | | x |
| | Pre-wash | x | x | ■ | (*) | (*) | x | x | x | x | x | x | x | x | x | x | x | x | x |
| | Stains | x | x | (*) | ■ | (*) | x | x | x | x | x | x | x | x | x | x | x | x | x |
| | Bleach | x | x | (*) | (*) | ■ | x | x | x | x | x | x | x | x | x | x | x | x | |
| | Extra rinse | x | x | x | x | x | ■ | x | x | x | x | x | x | x | x | | x | x | x |
| | Easy-iron | x | | x | x | x | x | ■ | x | x | x | x | x | x | x | | x | x | x |
| | Economy | x | x | x | x | x | x | x | ■ | | | | | | | x | x | x | x |
| | Intensive | x | x | x | x | x | x | x | x | ■ | | | | | | x | x | x | x |
| | Normal | x | x | x | x | x | x | x | x | | ■ | | | | | x | x | x | x |
| | Daily | x | x | x | x | x | x | x | x | | | ■ | | | | x | x | x | x |
| | Light | x | x | x | x | x | x | x | x | | | | ■ | | | | x | x | |
| | Quick | x | x | x | x | x | x | x | x | | | | | ■ | | | x | x | |
| | Super Quick | x | x | x | x | x | x | x | x | | | | | | ■ | | x | x | |
| | Sensitive | x | | x | x | x | | | x | x | x | x | | | | ■ | x | x | x |
| | Reduced spin speed | | | x | x | x | x | x | x | x | x | x | x | x | x | x | ■ | | x |
| | No spin | | | x | x | x | x | x | x | x | x | x | x | x | x | x | | ■ | x |
| | Half-load | x | x | x | x | | x | x | x | x | x | x | | | | x | x | x | ■ |
| Phases in which selection or modification are possible | Selection | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | x | x | x |
| | Pre-wash | x | x | | | | x | x | | | | | | | | | x | x | |
| | Wash | x | x | | | | x | x | | | | | | | | | x | x | |
| | Rinses | x | | | | | | | | | | | | | | | | | |
| | Spin | | | | | | | | | | | | | | | | | | |
| Drying | | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | x |

(*) Prewash, Stains and Bleach are compatible depending on which detergent drawer is used.

- The delayed start is compatible with all programmes, except for the drain; the max. time that can be selected is 20 hours.
- The spin selection is available for all programmes except for the drain/soak.
  The minimum speed for the Spin / Delicate spin programmes is 400rpm, for the others is 0 rpm.

## 10.4 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 rinse.
→ 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.

- **Soak**

→ Adds a pre-wash phase with water heating to 30°C (or cold, if selected) plus 30' of maintenance with wool movement.
→ Fills water, goes to the end of the cycle and for a max. time of 9+9 hours of maintenance it performs a wool movement.

- **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 DELICATES, 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 40-60 and SYNTHETICS 50/60 programmes in order to reduce energy consumption.
→ Reduces the washing temperature.
→ Increases the duration of the wash phase.

- **Super-rinse**

→ Adds **two** rinses in the COTTON, SYNTHETICS and DELICATES cycles.
→ Eliminates the intermediate spin cycles, with the exception of the final rinse, which is reduced to 450 rpm.

- **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
  - 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.

| **Maximum spin speed (rpm)** | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1550 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Reduction for COTTON (rpm)** | 450 | 450 | 450 | 450 | 500 | 550 | 600 | 650 | 700 | 750 |
| **Reduction for ALL OTHER CYCLES (rpm)** | 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.

- **Intensive**

→ Performs a specific intensive 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.

- **Short**

→ Modifies the structure of the COTTON - SYNTHETICS - DELICATES cycles to obtain very short washing times (optimized for reduced wash loads and very dirty).

→ Reduces the number of rinses (one rinse less).

→ Increases the water level of the other two rinses.

- **Very short**

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

- **Sensitive**

→ Adds one rinse in the COTTON – SYNTHETICS cycles.

→ During the cotton cycles, the movements pass from vigorous to normal.

→ The intermediate spins are reduced.

- **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 selecting a delayed start:
press START/PAUSE, cancel the delay time by pressing the appropriate button, then press START/PAUSE again.

- **Electronic drying** (WASHER-DRYERS – certain models only)

Three different degrees of drying can be selected for COTTON, and one for SYNTHETIC fabrics:

- Extra-dry (cotton only)
- Cupboard-dry (cotton and synthetics)
- Iron dry (cotton only)

The appliance automatically calculates the drying time is selected using “fuzzy logic”.
The drying phase may be performed automatically (i.e. without interrupting the programme) if selected together with a washing programme, or as a separate programme.

- **“Drying time” button**

This button is used to select the drying time for COTTON and SYNTHETIC cycles. The time increases by 5 minutes each time it is pressed (from 10 to 130 minutes).

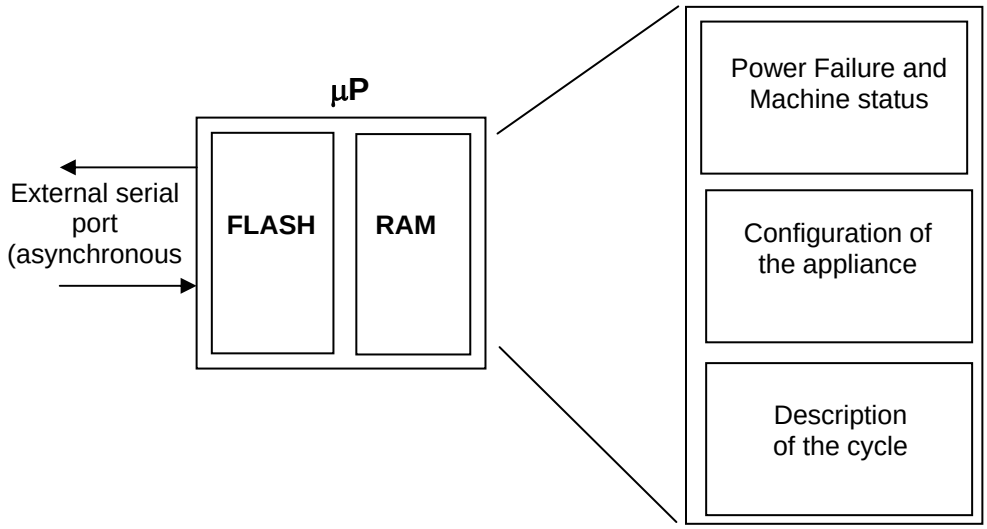
→ The drying function can be selected for automatic execution after a washing cycle, or as a separate programme.

# 11 TECHNICAL CHARACTERISTICS

## 11.1 Control system memory

### 11.1.1 General structure of the memory system

The system features an EEPROM memory module, fitted externally 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.




### 11.1.2 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 the EEPROM 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 (50/60 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. N.
  - 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
  - “IF” conditions (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
  - Alarm control system
  - Sensor parameters (flowmeter etc…)

### 11.1.3 RAM

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

- ⇨ Motor speed
- ⇨ Water temperature
- ⇨ 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 diagnostics mode
- ⇨ Select a cycle and options, and start the cycle

## 11.2 Door interlock

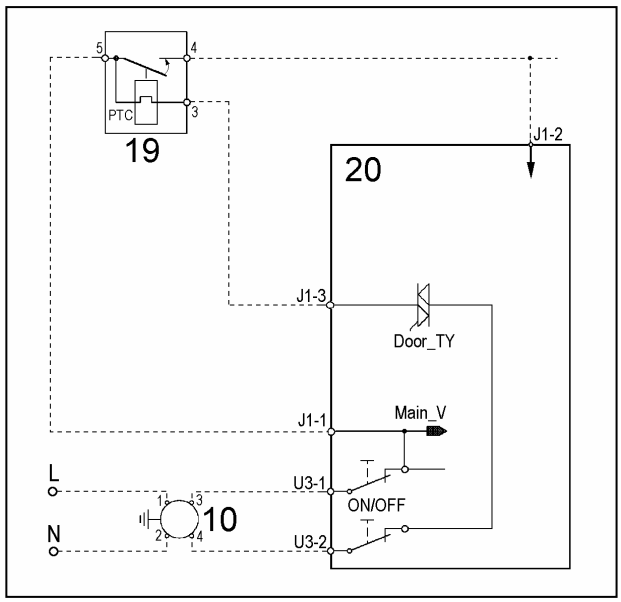
There are two types of door interlock:

- voltmetric with PTC
- instantaneous

### 11.2.1 Voltmetric interlock with PTC

*10 Suppressor*
*19 Door interlock*
*20 PCB*

*ON/OFF = Main switch (programme selector)*




11.2.1.1 Operating principle

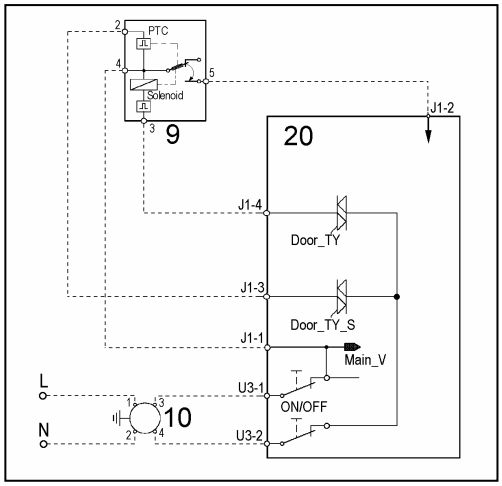
- When the washing programme is started by pressing the START/PAUSE button, the bi-metal PTC (contacts 3-5) is powered by the triac on the PCB: after 2 – 4 seconds, this closes the switch (5-4) which powers the electrical components of the appliance (only if the door is closed).
- The door interlock 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).

### 11.2.2 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 PCB*

*ON/OFF = Main switch (programme selector)*




11.2.2.1 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.

11.2.2.2 Conditions required for opening the door

- Before pulses are sent to open the door, the main board checks for the following conditions:
  - The drum must not be moving (no signal from the tachometric generator).
  - The water level must not be higher than the bottom of the door.
  - The water temperature must not exceed 40º C.

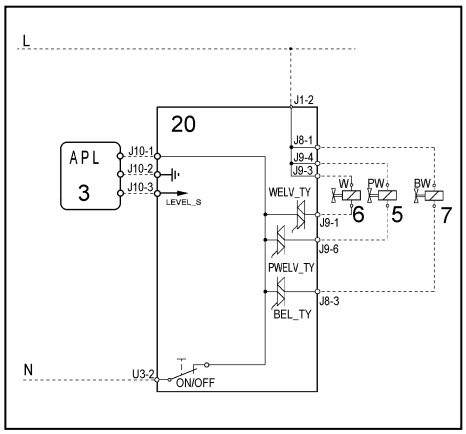
11.2.2.3 Automatic unlock

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.

## 11.3 Water fill system

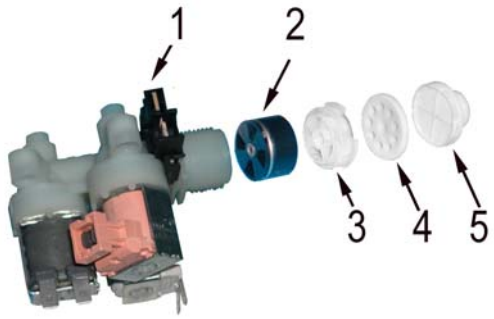
The electric valves are powered by the PCB by means of the triac and the control of the water level in the tub is carried out by the analogue pressure switch.

*3 Analogue pressure switch*
*5 Prewash electric valve*
*6 Wash electric valve*
*7 Bleach electric valve*
*20 PCB*




### 11.3.1 Flow meter

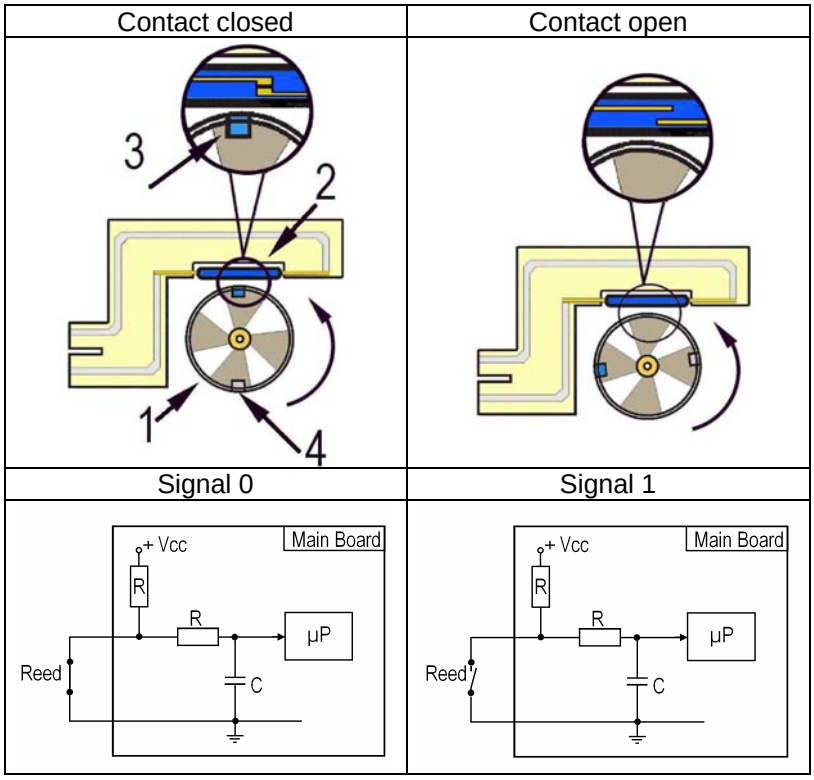
Some models of solenoid valves have a built-in flow sensor which measures the quantity of water in litres that is loaded into the appliance.
If the sensor malfunctions, the water level is controlled by the analogue pressure switch.

| Solenoid valve – exploded view | Main board | Turbine |
|---|---|---|
|  |  |  |
| 1-Circuit board<br>2-Turbine<br>3-Deflector<br>4-Diffuser<br>5-Double filter | 6- Reed switch | 7-Magnet |

### 11.3.2 Operating principle of flow meter

The main components of the flow sensor are:

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




Water entering the solenoid valve rotates the turbine (1) and magnet (3), which passes in front of the reed switch (2), thus closing it. As this contact opens and closes, it generates pulses at a frequency that is a function of water flow.
The turbine completes 230 revolutions for each litre of water. The operating range of the flow sensor is 0.2-10 bar.
Using the signal it receives, the microprocessor can calculate the number of litres of water passing through the solenoid valve.

**Mechanical jamming of solenoid valve**

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

**Low water pressure**

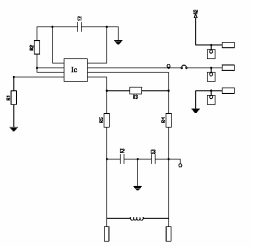
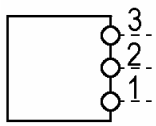
If the flow sensor does not generate a signal during water fill even though power is being applied to the solenoid valve, the cause of this condition may be a closed water tap or clogged filter on the solenoid valve (with consequent low water pressure). If this occurs, a warning will be displayed and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

The solenoid valve controlling residual condensed water operates during the drying phase on washer-dryers.
The alarm is deactivated because the amount of water fill is very small.

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

**General features**

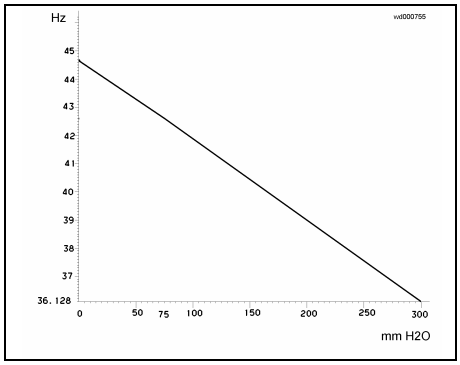
The electronic pressure switch is an analogue device that controls the water level in the tub, used in the models with electronic control and it is directly connected to the main PCB.

| ELECTRONIC PRESSURE SWITCH | | |
|---|---|---|
| Electronic circuit | Electric symbol | |
|  |  |  |

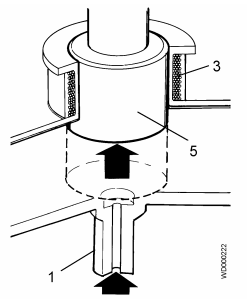
The pressure switch is connected by a hose to the pressure chamber.
When the tub is filled with water, the pressure created inside the hydraulic circuit expands the diaphragm. This in turn modifies the position of the core inside the coil, thus changing the inductance and the frequency of the oscillating circuit.
The electronic PCB, according to the frequency, recognizes the quantity of the water in the tub.

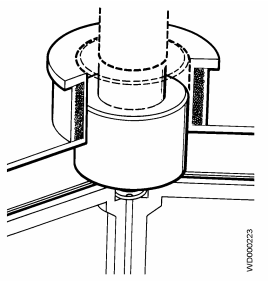
*1 hose*
*3 coil*
*5 core*

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



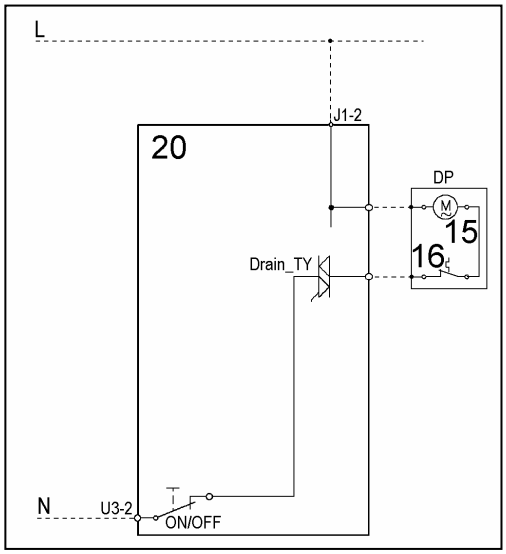

## 11.5



## 11.5 Drain pump

*15 Drain pump*
*16 Thermal protector*
*20 PCB*



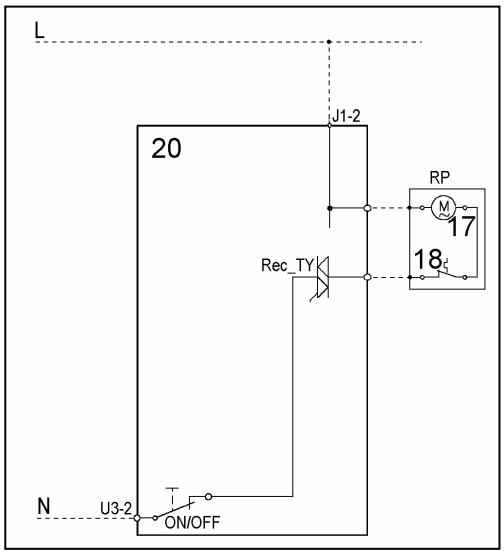

The PCB powers the drain pump via a triac as follows:

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

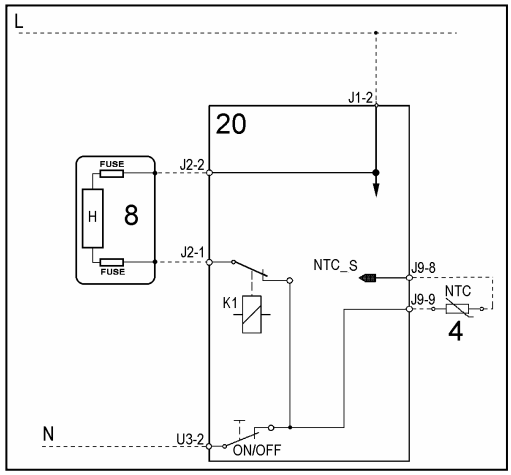
## 11.6 Recirculation pump (if featured)

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

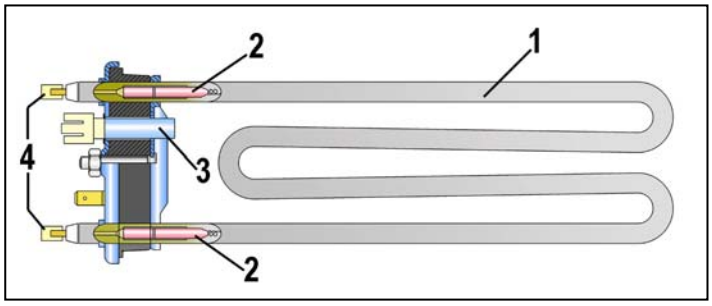
*17 Drain pump*
*18 Thermal protector*
*20 PCB*



## 11.7 Heating




*2 NTC temperature sensor*
*13 Heating element (with thermal fuses)*
*14 PCB*
*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.

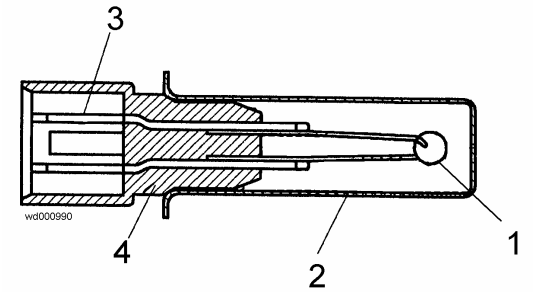
### WARNING

**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.**

## 11.8 Temperature sensor

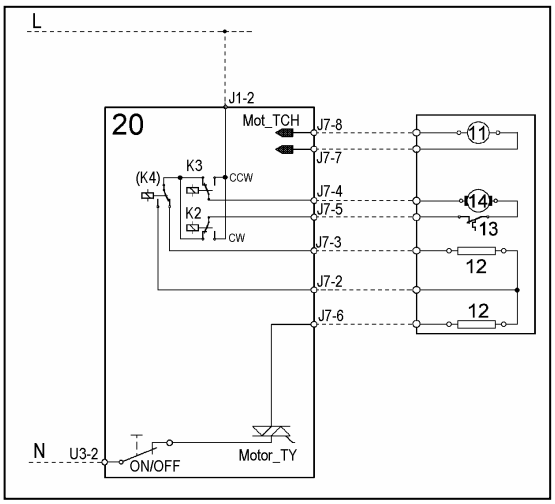
The temperature is controlled by the PCB by means of a NTC temperature sensor incorporated in the heating element.

*1. NTC resistor*
*2. Metallic capsule*
*3. Terminals*
*4. Plastic casing*




| TEMPERATURE (ºC) | RESISTANCE (Ω) | | |
|---|---|---|---|
| | Nominal value | Maximum value | Minimum value |
| 20 | 6050 | 6335 | 5765 |
| 60 | 1250 | 1278 | 1222 |
| 80 | 640 | 620 | 660 |

## 11.9 Universal motor (EWM 21xx)

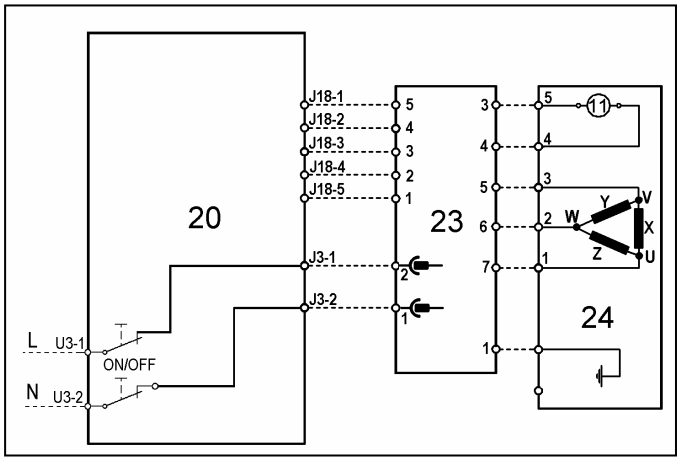



*11 Tachometric generator*
*12 Stator*
*13 Protector*
*14 Rotor*
*20 PCB*

### 11.9.1 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.

## 11.10 Three-phase asynchronous motor (EWM25xx)




*11. Tachometric generator*
*20. PCB*
*23. Inverter*
*24. Motor*

*X-Y-X = Motor windings*

### 11.10.1 Power supply to motor

Three-phase power is fed by the inverter (4) which sends, through the connectors 5-6-7, the three phases to connectors 1-2-3 on the motor (nodes V-W-U), where the windings (Y-X-Z-) are connected. The phase shift between the phases is 120° and peak amplitude is 310V.

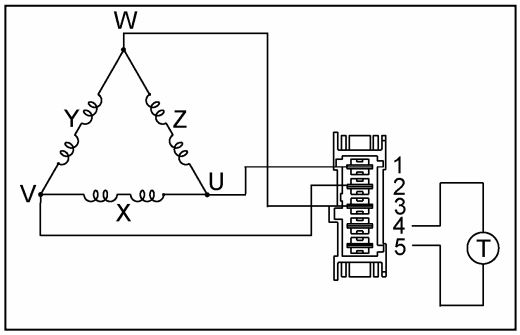
The condition of the motor can be determined by measuring the resistance of the windings:

Winding y ohm 5,4 ~ ±7% (contacts 2-3)

Winding x ohm 5,4 ~ ±7% (contacts 1-2)

Winding z ohm 5,4 ~ ±7% (contacts 1-3)

Winding T (tachometric) ohm 121 ~ ±7% (contacts 4-5)

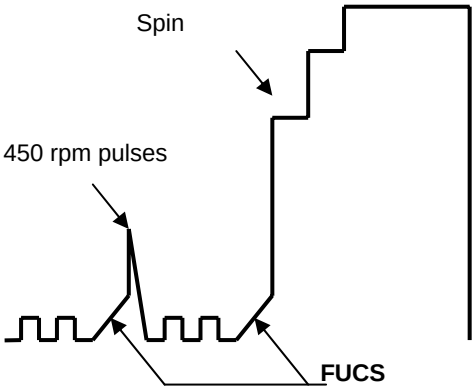



- **The electrical components must be serviced by qualified personnel only.**
- **Unplug the appliance before accessing internal components.**

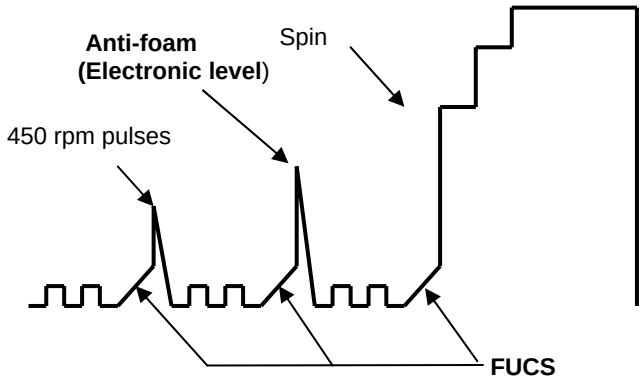
## 11.11 Anti-foam control system

The anti-foam control procedure (if featured) is performed via the electronic pressure switch.

**Spin phase without foam**




**Spin phase with little foam**

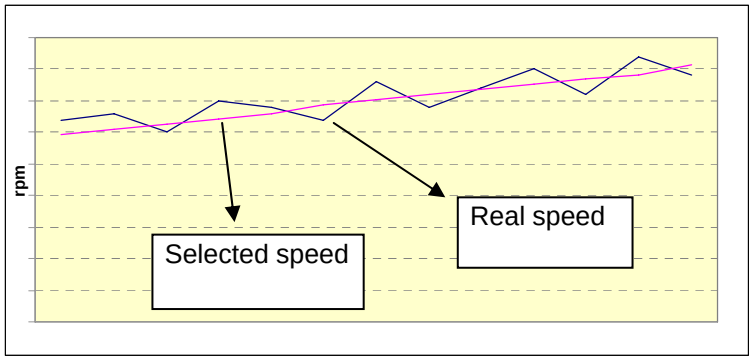



- **Spin with little foam:** if the contact of the electronic pressure switch closes on FULL, the spin phase is interrupted; the drain pump continues to operate and, when the contact returns to EMPTY, the spin phase is resumed.
- **Spin with excessive foam in the tub (critical situation):** The control system detects whether the electronic pressure switch commutates 5 times to FULL. 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.

## 11.12 “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.




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

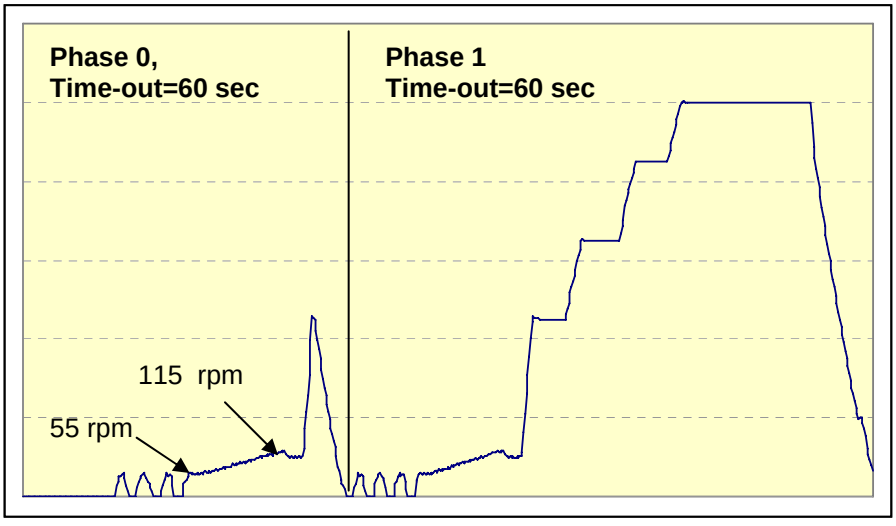
- *an unbalancing index (0-1-2-3)*
- *an unbalancing threshold value (ex: 850, 350, 650, 1100rpm)*
- *a time out (max. time)*

- **Ending of the FUCS balancing phase**

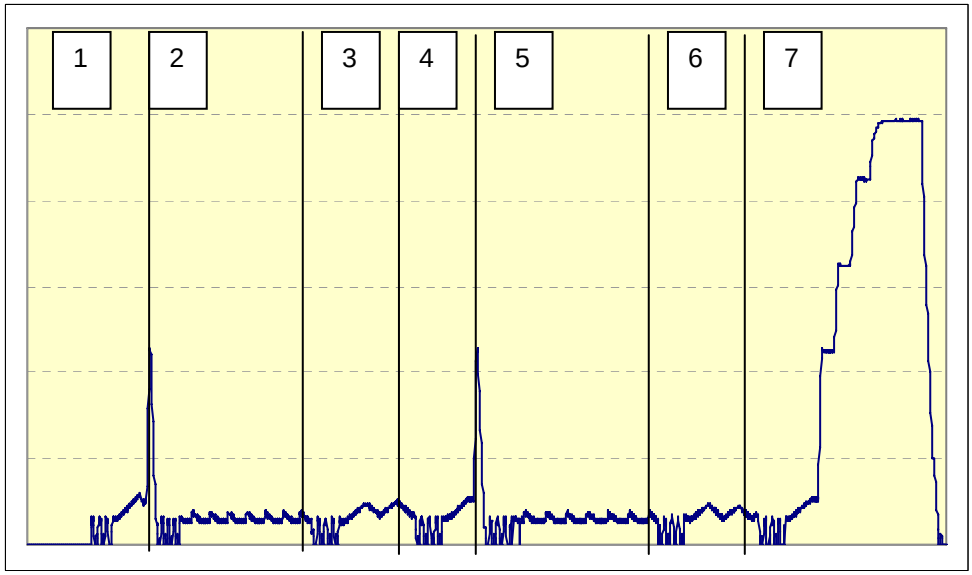
The phase is ended when:

- 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**



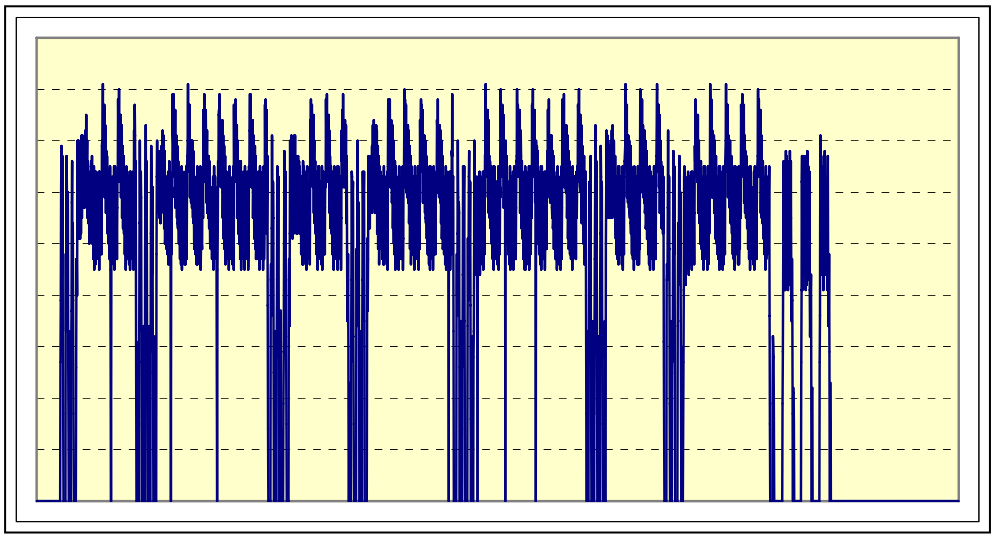
- **Balancing in the available longer interval**




| 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 |

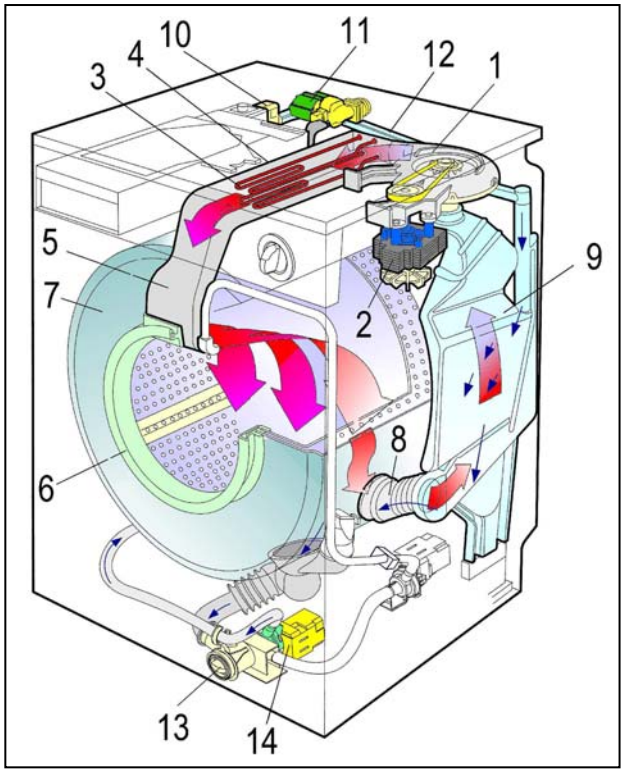
- **Unbalancing after all phases**

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



# 12 DRYING CIRCUIT

1. *Fan*
2. *Fan motor*
3. *Drying heater*
4. *Heater casing*
5. *Duct*
6. *Door seal*
7. *Tub*
8. *Tube from tub to condenser*
9. *Drying condenser*
10. *Coupling*
11. *Water fill solenoid*
12. *Condenser water intake and steam vent tube*
13. *Drain filter*
14. *Drain pump*




***Automatic drying cycles****: the drying time is governed by the microprocessor so that the desired degree of dryness is achieved.*

*The drying cycle can be performed at the end of the washing cycle, or as a separate programme. Various types of drying can be selected:*

- extra-dry
- cupboard-dry
- iron-dry

**Time-controlled cycle***: the drying time is selected by the user (maximum 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 an anti-crease phase of a 10-minute duration is performed.*

**The drying heaters** *are powered directly by the main board via two relays*.
*In cycles for synthetic fabrics, drying is performed with only one heater switched on (half power); in cotton/linen cycles, both the heaters are switched on (full power).*

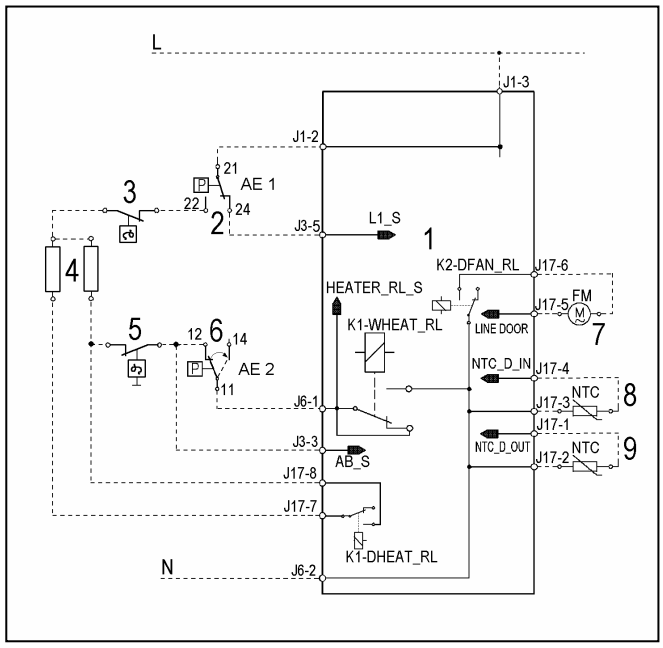
**The fan motor** *is powered via a relay;* the **condensation solenoid** *is powered by a triac*.

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

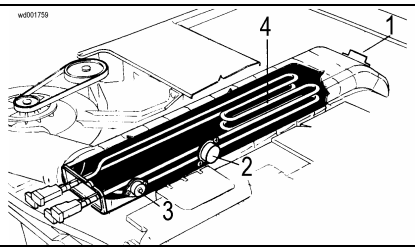
## 12.1 Temperature control

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).

1. *Circuit board*
2. *Anti-boiling pressure switch AE1*
3. *Safety thermostat (auto-reset)*
4. *Drying heater*
5. *Safety thermostat (manual reset)*
6. *Anti-boiling pressure switch AE2*
7. *Fan motor*
8. *Drying control sensor (NTC)*
9. *Humidity control sensor (NTC)*




1. *Drying temperature control thermostat (NTC)*
2. *Safety thermostat (auto reset)*
3. *Manual-reset safety thermostat (150°C)*
4. *Drying heater*

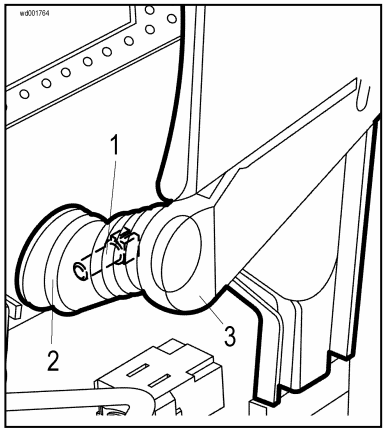



| | | | |
|---|---|---|---|
| **NTC sensor: resistance at 25°C** | | 5000Ω | |
| **Manual-reset safety thermostat** | | Normally closed<br>Opens at 150°±5°C | |
| **Auto-reset safety thermostat** | | Normally closed<br>Opens at 110°±3°C<br>Closes at 94°±5° | |
| **Heater group** | **Power** | 920+920 W | |
| | **Voltage** | 230V | 240V |
| | **Resistance** | 56,5Ω+56,5Ω | 61,5Ω+61,5Ω |
| **Fan capacity** | | 80 $m^3$ – hour | |

**Calculating the drying time:**

In automatic cycles, the NTC sensor fitted to the drying duct is used to calculate the drying time.

1. *NTC temperature sensor*
2. *Tube from tub to condenser*
3. *Drying condenser*



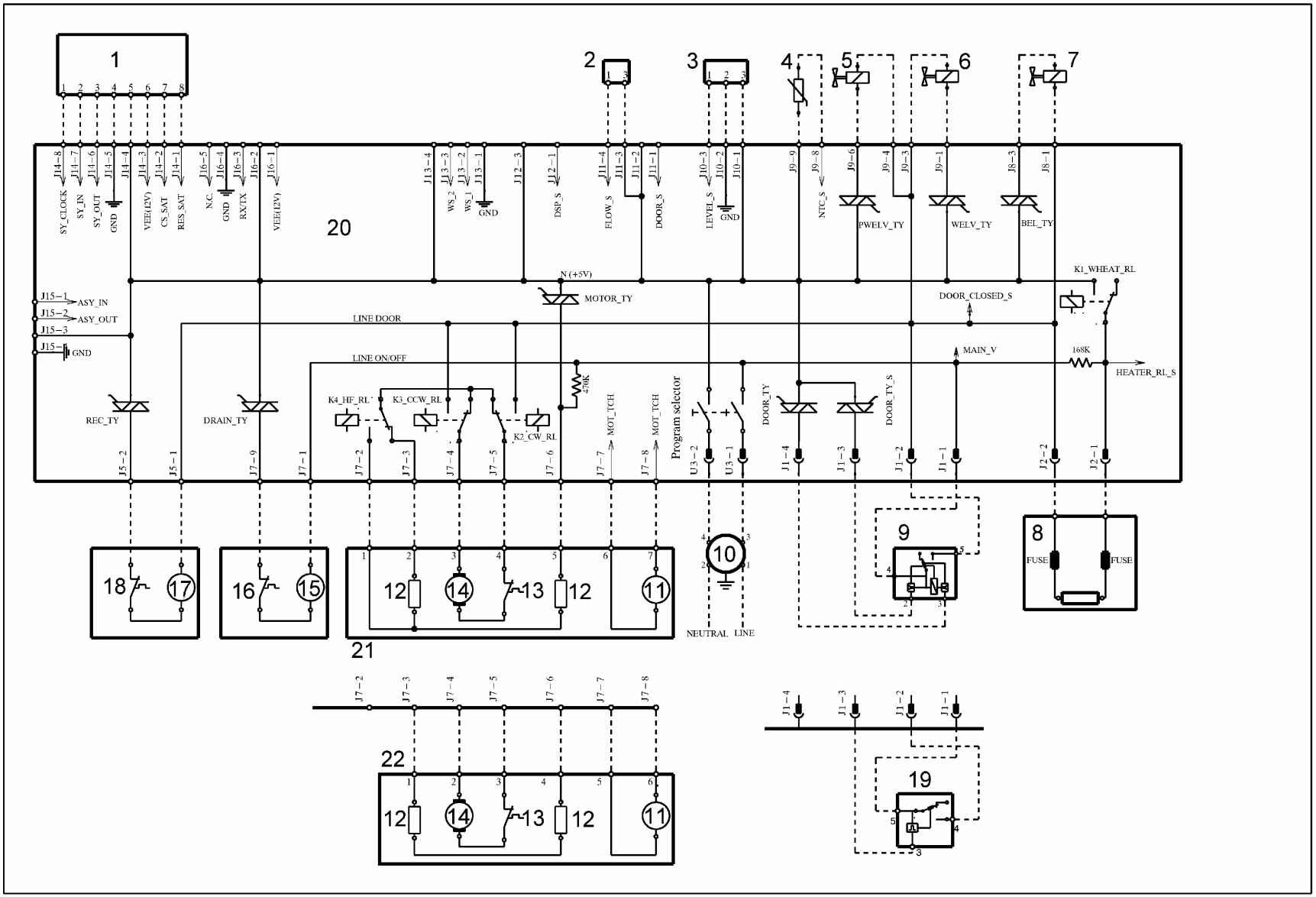
## 12.2 Table of alarm codes

| Alarm | Possible fault | Action/machine status | Reset |
|---|---|---|---|
| **E11** | Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve is faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; PCB faulty. | Cycle is paused with door locked. | START/RESET |
| **E12** | Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve is faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; PCB faulty. | Cycle is paused with door locked. | START/RESET |
| **E13** | Drain tube improperly positioned; Water pressure too low;<br>Water fill solenoid valve is faulty; Water circuit on pressure switch is leaking/clogged; Pressure switch faulty. | Cycle is paused with door locked. | START/RESET |
| **E21** | Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Pressure switch faulty; Wiring faulty; PCB faulty; Electrical current leak between heating element and ground. | Cycle is paused (after 2 attempts). | START/RESET |
| **E22** | Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Pressure switch faulty; Wiring faulty; PCB faulty; Electrical current leak between heating element and ground. | Cycle is paused. | START/RESET |
| **E23** | Drain pump faulty; Wiring faulty; PCB faulty. | Safety drain cycle - Cycle stops with door unlocked. | RESET |
| **E24** | PCB faulty. | Safety drain cycle - Cycle stops with door unlocked. | RESET |
| **E31** | Pressure switch; Wiring; Main PCB. | Cycle stops with door locked. | RESET |
| **E32** | Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump faulty; Leaks from water circuit on pressure switch; pressure switch;<br>Wiring; Main PCB. | Cycle is paused. | START/RESET |
| **E35** | Water fill solenoid valve is faulty; Leaks from water circuit on pressure switch; Pressure switch faulty; Wiring faulty; PCB faulty. | Cycle stops. Safety drain cycle. Drain pump continues to operate (5 min. on, then 5 min. off, etc.). | RESET |
| **E38** | Water circuit on pressure switches;<br>Pressure switches;<br>Motor belt broken. | Heating phase is skipped. | ON/OFF RESET |
| **E3A** | PCB faulty. | Cycle stops with door locked. | RESET |
| **E41** | Door lock unit faulty; Wiring faulty;<br>PCB faulty. | Cycle is paused. | START/RESET |
| **E42** | Door lock unit faulty; Wiring faulty;<br>PCB faulty; Electrical current leak between heating element and ground. | Cycle is paused. | START/RESET |
| **E43** | Door lock unit faulty; Wiring faulty;<br>PCB faulty. | (Safety drain cycle) Cycle stops. | ON/OFF RESET |
| **E44** | PCB faulty. | (Safety drain cycle) Cycle stops. | ON/OFF RESET |
| **E45** | PCB faulty. | (Safety drain cycle) Cycle stops. | ON/OFF RESET |
| **E51** | PCB faulty; current leakage from motor or from wiring. | Cycle blocked, door locked (after 5 attempts). | RESET |

| Alarm | Possible fault | Action/machine status | Reset |
|---|---|---|---|
| **E52** | Motor faulty; wiring faulty; PCB faulty. | Cycle blocked, door locked (after 5 attempts). | RESET |
| **E53** | PCB faulty. | Cycle blocked. | RESET |
| **E54** | PCB faulty; current leakage from motor or from wiring. | Cycle blocked, door locked (after 5 attempts). | RESET |
| **E57** | Motor defective; Wiring defective on inverter for motor, inverter board defective. | Cycle stops with door locked (after 5 attempts). | RESET |
| **E58** | Motor defective; Wiring defective on inverter for motor, inverter board defective, abnormal motor operation (motor overloaded). | Cycle stops with door locked (after 5 attempts). | RESET |
| **E59** | Motor defective; Wiring defective on inverter for motor;<br>Inverter board defective. | Cycle stops with door locked (after 5 attempts). | RESET |
| **E5A** | Inverter board defective. NTC open (on the inverter board).<br>Overheating caused by continuous operation or ambient conditions (let appliance cool down). | Cycle stops with door locked (after 5 attempts). | RESET |
| **E5B** | Wiring defective, Inverter board defective. | Cycle stops with door locked (after 5 attempts). | RESET |
| **E5C** | Inverter board defective, the masters voltage is too high (measure the masters voltage). | Cycle stops with door locked (after 5 attempts). | RESET |
| **E5D** | Line interference, Wiring defective, defective main board or inverter board. | Cycle stops with door locked (after 5 attempts). | RESET |
| **E5E** | Defective wiring between main board and inverter board, Defective inverter board, defective main board. | Cycle stops. | ON/OFF |
| **E5F** | Defective inverter board, Defective wiring, defective main board | Cycle stops with door locked (after 5 attempts). | RESET |
| **E61** | Washing NTC sensor faulty; washing heating element faulty; wiring faulty; PCB faulty. | The heating phase is skipped. | START/RESET |
| **E62** | Washing NTC sensor faulty; washing heating element faulty; wiring faulty; PCB faulty. | Safety drain cycle – Cycle stopped with door open. | RESET |
| **E66** | PCB faulty. | Safety drain cycle – Cycle stopped with door open. | RESET |
| **E68** | Earth-leakage between heater and earth. | Cycle blocked with door open. | RESET |
| **E69** | Washing heating element interrupted (thermofuse open) | ---------- | START/RESET |
| **E71** | Washing NTC sensor faulty; Wiring faulty;<br>PCB faulty. | Heating is skipped. | START/RESET |
| **E72** | Wiring faulty; NTC drying sensor faulty (condenser); PCB faulty... | Drying heating is skipped. | START/RESET |
| **E73** | Wiring faulty; NTC drying sensor faulty (duct); PCB faulty. | Drying heating is skipped. | START/RESET |
| **E74** | NTC sensor improperly positioned; Faulty NTC sensor; Wiring faulty; PCB faulty. | Heating is skipped. | START/RESET |
| **E82** | PCB faulty (Wrong configuration data). Selector, wiring | ---------- | RESET |
| **E83** | PCB faulty (Wrong configuration data). Selector, wiring | Cycle cancelled. | START/RESET |
| **E91** | Wiring faulty; Faulty control/display board<br>PCB faulty. | ---------- | RESET |
| **E92** | Wrong control/display board;<br>Wrong PCB (do not correspond to the model). | Cycle interrupted. | OFF/ON START |
| **E93** | Incorrect configuration data; PCB faulty. | Cycle interrupted. | OFF/ON |
| **E94** | Incorrect configuration data; PCB faulty. | Cycle interrupted. | OFF/ON |

| Alarm | Possible fault | Action/machine status | Reset |
|---|---|---|---|
| **E95** | PCB faulty. | Cycle interrupted. | RESET |
| **E97** | Faulty PCB (Wrong configuration data). | Cycle interrupted. | RESET |
| **E98** | Incompatibility between main board and Inverter. | Cycle interrupted. | OFF/ON |
| **E9B** | Display board. | Cycle interrupted. | ON/OFF RESET |
| **E9C** | Display board. | Cycle interrupted. | ON/OFF RESET |
| **E9D** | Display board. | Cycle interrupted. | ON/OFF RESET |
| **E9F** | Main board. | Cycle interrupted. | OFF/ON |
| **EH1** | Power supply problems (incorrect / disturbance); PCB faulty. | Wait for frequency nominal conditions. | OFF/ON |
| **EH2** | Power supply problems (incorrect / disturbance); PCB faulty. | Wait for voltage nominal conditions. | OFF/ON |
| **EH3** | Power supply problems (incorrect / disturbance); PCB faulty. | Wait for voltage nominal conditions. | OFF/ON |
| **EHE** | Wiring faulty; PCB faulty. | Safety drain cycle – Cycle stopped with door open. | RESET |
| **EHF** | PCB faulty. | Safety drain cycle – Cycle stopped with door open. | RESET |
| **EC1** | Solenoid valve faulty/blocked; PCB faulty. | Cycle interrupted with door closed. Drain pump functions always (5 min., then it stops for 5 min. etc.). | RESET |
| **EC3** | Wiring faulty; Weight sensor faulty; PCB faulty. | ---------- | START/RESET |
| **ED1** | Wiring faulty between PCB and WD board, WD board faulty, PCB faulty | Cycle interrupted. | OFF/ON |
| **ED2** | Wiring faulty between WD board and thermostats, WD board faulty, PCB faulty. | Cycle interrupted with door open. | RESET |
| **ED3** | Wiring faulty between WD board and thermostats, WD board faulty, PCB faulty. | Cycle interrupted with door open. | RESET |
| **ED4** | Wiring faulty, WD board faulty, PCB faulty. | Cycle interrupted with door open. | RESET |
| **EF1** | Drain tube blocked/kinked/too high;<br>Drain filter dirty/blocked. | Warning displayed at the end of cycle (specific LED). | START/RESET |
| **EF2** | Excessive detergent dosing; drain tube kinked/blocked;<br>Drain filter dirty/blocked. | Warning displayed after 5 attempts or by the specific LED. | RESET |
| **EF3** | Water leaks onto base frame; water control system defective. | Machine drains and cycle stops. | ON/OFF RESET |
| **EF4** | Tap closed, water pressure too low. | ---------- | RESET |
| **EF5** | Load too unbalanced, Final spin phases skipped. | ---------- | RESET |
| **E00** | ---------- | ---------- | ---------- |

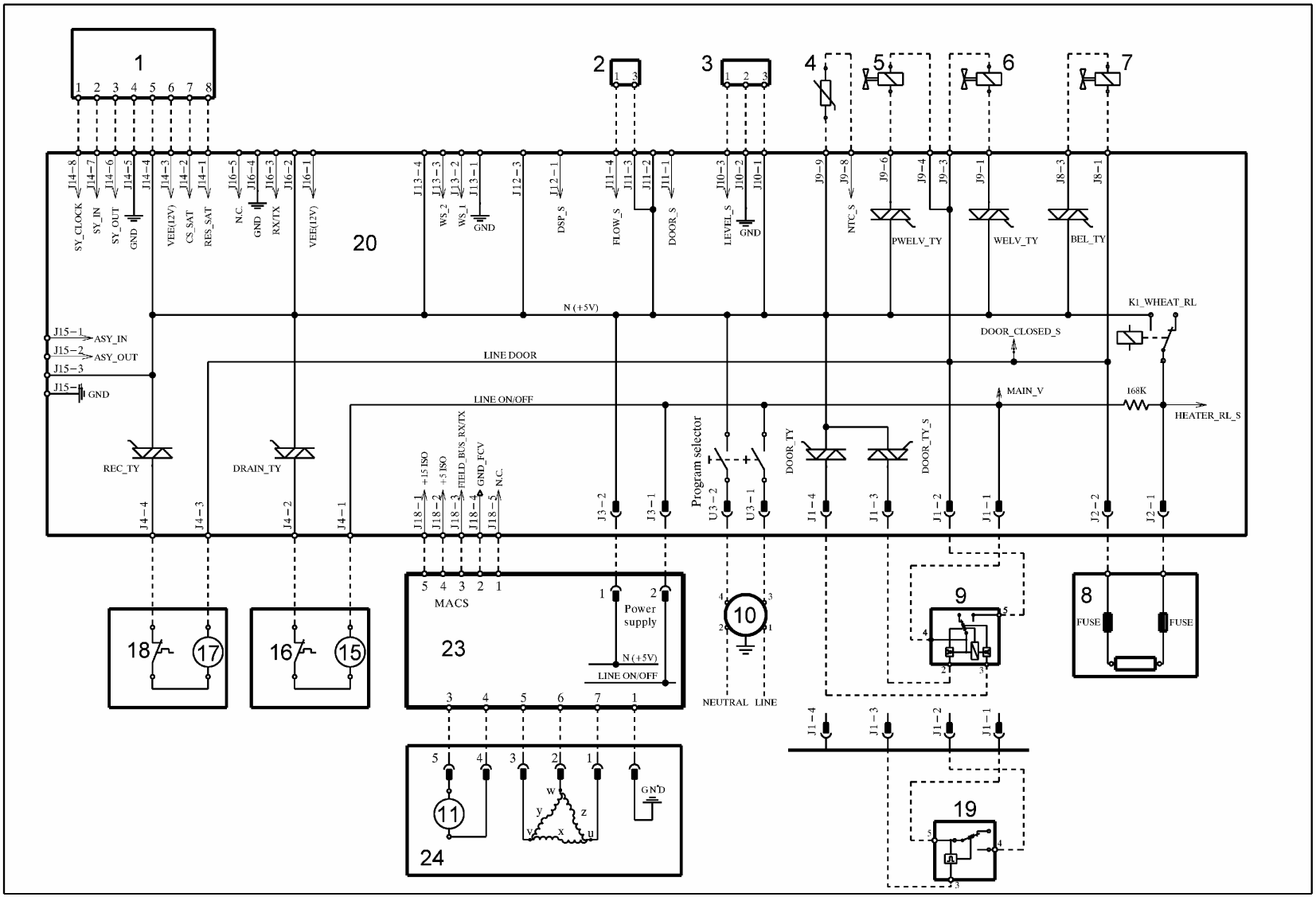
## 12.3 Diagram WM with UNIVERSAL MOTOR EWM 21xx



- Key to diagram WM with UNIVERSAL MOTOR EWM 21xx

| Electrical components on appliance | Components on main board | |
|---|---|---|
| 1. Display board | DOOR_TY | Door interlock Triac |
| 2. Flowmeter | DRAIN_TY | Drain pump Triac |
| 3. Analogue pressure switch | REC-TY | Recirculation pump Triac |
| 4. NTC temperature sensor | K1 | Heating element relay |
| 5. Solenoid valve for prewash | K2 | Motor relay: clockwise rotation |
| 6. Solenoid valve for wash | K3 | Motor relay: anti-clockwise rotation |
| 7. Solenoid valve for bleach | K4 | Motor relay: half field power supply (some models) |
| 8. Heating element (with thermofuses) | | |
| 9. Door interlock (instantaneous) | MOTOR_TY | Motor Triac |
| 10. Suppressor | ON/OFF | Main switch (programme selector) |
| 11. Tachometric generator (motor) | PWELV_TY | Pre-wash solenoid Triac |
| 12. Stator (motor) | WELV_TY | Wash solenoid Triac |
| 13. Thermal cut-out (motor) | BEL_TY | Bleach solenoid Triac |
| 14. Rotor (motor) | | |
| 15. Drain pump | | |
| 16. Thermal cut-out (drain pump) | | |
| 17. Recirculation pump | | |
| 18. Thermal cut-out (recirculation pump) | | |
| 19. Door interlock (with PTC) | | |
| 20. PCB | | |
| 21. Motor with half field | | |
| 22. Motor without field | | |

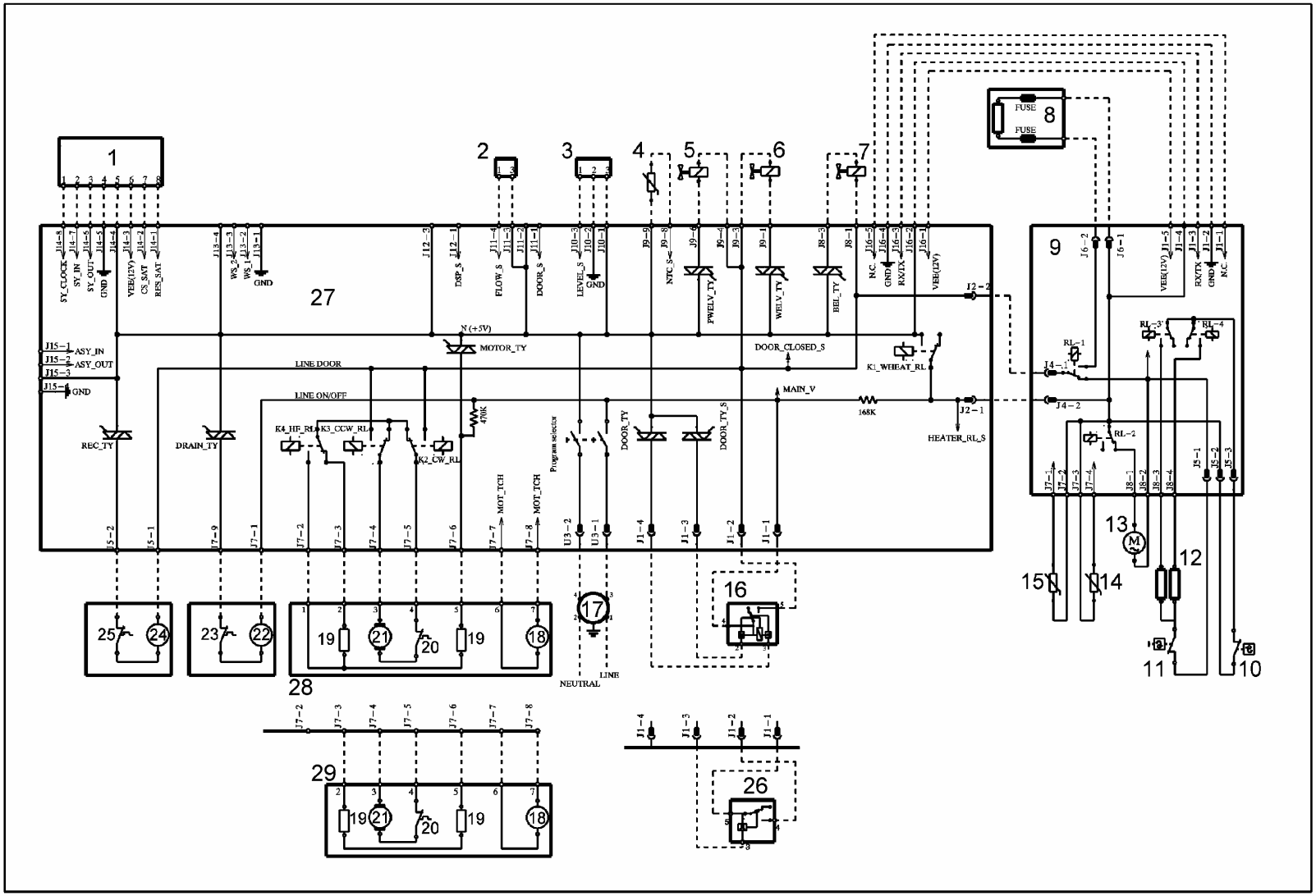
## 12.4 Diagram WM with THREE-PHASE ASYNCHRONOUS MOTOR EWM 25xx



- Key to diagram WM with THREE-PHASE ASYNCHRONOUS MOTOR EWM 25xx

| Electrical components on appliance | Components on main board | |
|---|---|---|
| 1. Display board | DOOR_TY | Door interlock Triac |
| 2. Flowmeter | DRAIN_TY | Drain pump Triac |
| 3. Analogue pressure switch | REC-TY | Recirculation pump Triac |
| 4. NTC temperature sensor | K1 | Heating element relay |
| 5. Solenoid valve for prewash | ON/OFF | Main switch (programme selector) |
| 6. Solenoid valve for wash | PWELV_TY | Pre-wash solenoid Triac |
| 7. Solenoid valve for bleach | WELV_TY | Wash solenoid Triac |
| 8. Heating element (with thermofuses) | BEL_TY | Bleach solenoid Triac |
| 9. Door interlock (instantaneous) | | |
| 10. Suppressor | | |
| 15. Drain pump | | |
| 16. Thermal cut-out (drain pump) | | |
| 17. Recirculation pump | | |
| 18. Thermal cut-out (recirculation pump) | | |
| 19. Door interlock (with PTC) | | |
| 20. PCB | | |
| 23. Inverter | | |
| 24. Three-phase | | |

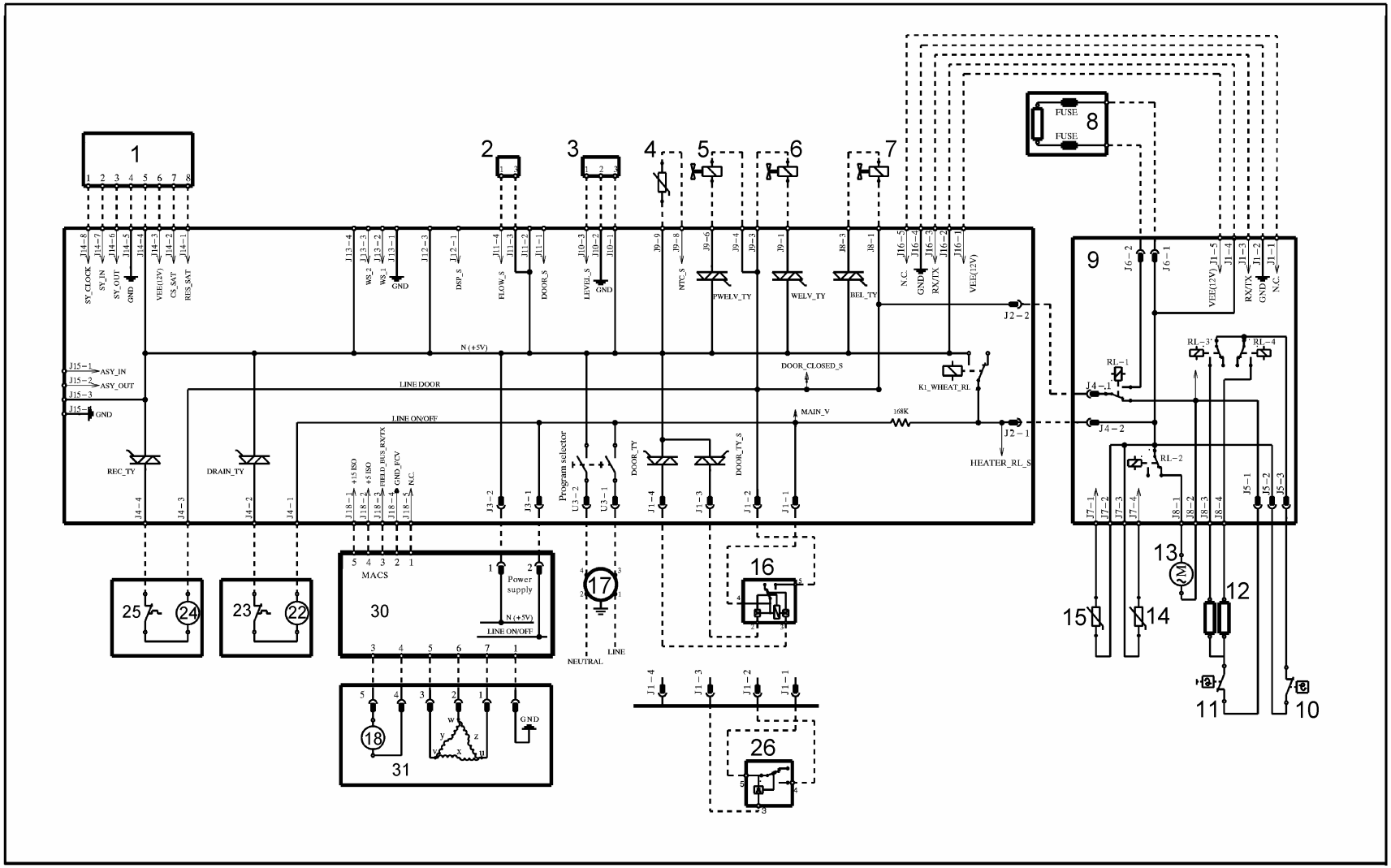
## 12.5 Diagram WD with UNIVERSAL MOTOR EWM 21xx



- Key to diagram WD with UNIVERSAL MOTOR EWM 21xx

| Electrical components on appliance | Components on main board | |
|---|---|---|
| 1. Display board or LCD | DOOR_TY | Door interlock Triac |
| 2. Flowmeter | DRAIN_TY | Drain pump Triac |
| 3. Analogic pressure switch | REC-TY | Recirculation pump Triac |
| 4. NTC temperature sensor (wash) | K1 | Relay |
| 5. Solenoid valve for prewash | K2 | Motor relay: clockwise rotation |
| 6. Solenoid valve for wash | K3 | Motor relay: anti-clockwise rotation |
| 7. Solenoid valve for condensation | K4 | Motor relay: half field power (some models) |
| 8. Washing heating element (with thermofuses) | MOTOR_TY | Motor Triac |
| 9. WD board | PROGRAM SELECTOR | Main switch (programme selector) |
| 10. Safety thermostat R.A. | PWELV_TY | Pre-wash solenoid Triac |
| 11. Safety thermostat R.M. | WELV_TY | Wash solenoid Triac |
| 12. Drying heating element | BEL_TY | Bleach solenoid Triac |
| 13. Motor fan | RL1 | Washing or drying heating element relay |
| 23. NTC temperature sensor (drying) | RL2 | Motor fan power relay |
| 14. NTC temperature sensor (humidity) | RL3 | Power relay of a drying heater branch |
| 15. Door interlock (instantaneous) | RL4 | Power relay of a drying heater branch |
| 16. Interference filter | | |
| 17. Tachometric generator (motor) | | |
| 18. Stator (motor) | | |
| 19. Thermal cut-out (motor) | | |
| 20. Rotor (motor) | | |
| 21. Drain pump | | |
| 22. Thermal cut-out (drain pump) | | |
| 23. Recirculation pump | | |
| 24. Thermal cut-out (recirculation pump) | | |
| 25. Door interlock (with PTC) | | |
| 26. Main PCB | | |
| 27. Motor with half field | | |
| 28. Motor without field | | |

## 12.6 Diagram WD with THREE-PHASE ASYNCHRONOUS MOTOR EWM 25xx



- Key to diagram WD with THREE-PHASE ASYNCHRONOUS MOTOR EWM 25xx

| Electrical components on appliance | Components on main board | |
|---|---|---|
| 1. Display board or LCD | DOOR_TY | Door interlock Triac |
| 2. Flowmeter | DRAIN_TY | Drain pump Triac |
| 3. Analogue pressure switch | REC-TY | Recirculation pump Triac |
| 4. NTC temperature sensor (wash) | K1 | Relay |
| 5. Solenoid valve for prewash | K2 | Motor relay: clockwise rotation |
| 6. Solenoid valve for wash | K3 | Motor relay: anti-clockwise rotation |
| 7. Solenoid valve for condensation | K4 | Motor relay: half field power (some models) |
| 8. Washing heating element (with thermofuses) | MOTOR_TY | Motor Triac |
| 9. WD board | PROGRAM SELECTOR | Main switch (programme selector) |
| 10. Safety thermostat R.A. | PWELV_TY | Pre-wash solenoid Triac |
| 11. Safety thermostat R.M. | WELV_TY | Wash solenoid Triac |
| 12. Drying heating element | BEL_TY | Bleach solenoid Triac |
| 13. Motor fan | RL1 | Washing or drying heating element relay |
| 14. Drying NTC temperature sensor | RL2 | Motor fan power relay |
| 15. Humidity NTC temperature sensor | RL3 | Power relay of a drying heater branch |
| 16. Door interlock (instantaneous) | RL4 | Power relay of a drying heater branch |
| 17. Suppressor | | |
| 18. Tachometric generator (motor) | | |
| 22. Drain pump | | |
| 23. Thermal cut-out (drain pump) | | |
| 24. Recirculation pump | | |
| 25. Thermal cut-out (recirculation pump) | | |
| 26. Door interlock (with PTC) | | |
| 27. Main PCB | | |
| 30. Inverter | | |
| 31. One-phase motor | | |

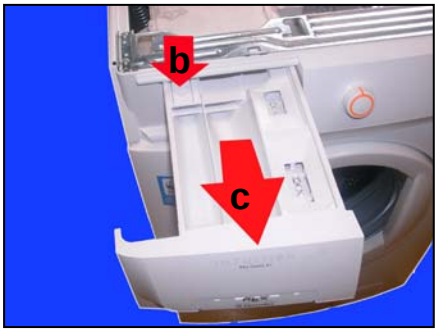
# 13 ACCESSIBILITY TO THE ELECTRONIC CONTROL SYSTEM

### 13.1.1 Work top

### 13.1.2 Top panel

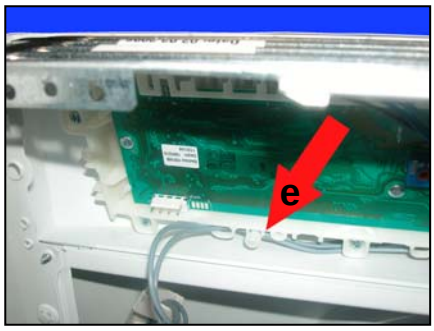
a. Remove the two rear screws, push the top panel towards the rear and release from the cabinet.

### 13.1.3 Control panel

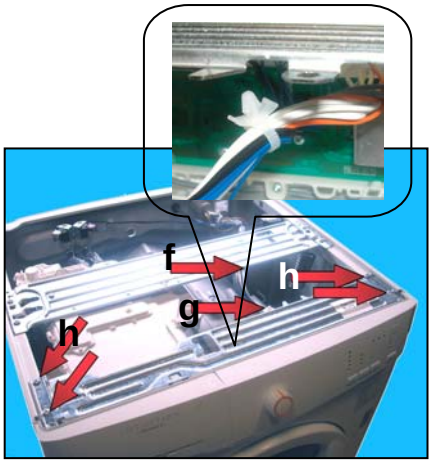



b. Press the drawer lock.
c. Extract.


d. Remove the screw which secures the control panel to the dispenser.

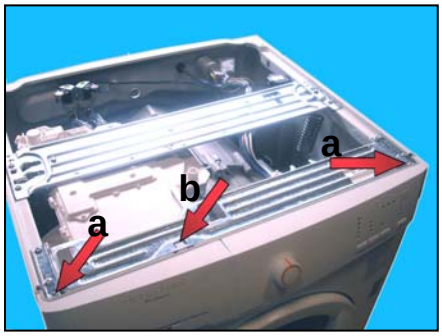



e. Cut the clamp which secures the wiring to the board casing (while re-assembling, put a new clamp).

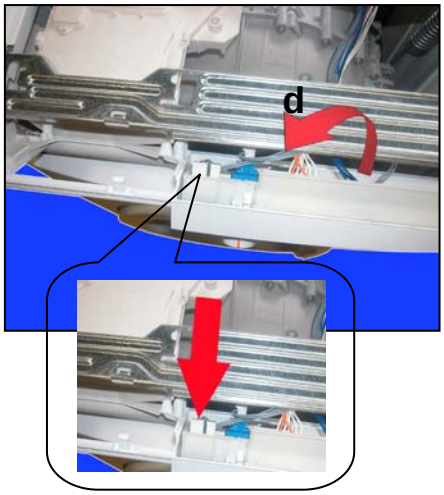



f. Release the wiring from the clamp.
g. Release the clamp from the cross-member.
h. Loosen the screws which secure the cross-member to the cabinet.

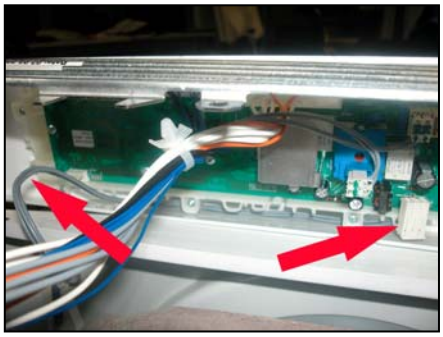
c. Loosen the screws which secure the control panel to the cross-member.
d. Release the hook.
e. Lift the control panel up and extract it.




f. Rotate the control panel.
g. Detach the connector indicated by the arrow.




f. Place the wiring (see fig.).

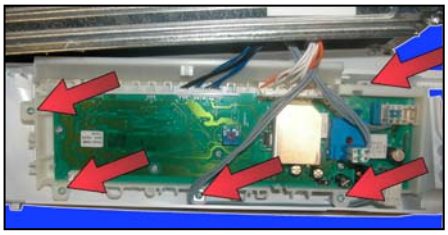


g. Extract the control panel.

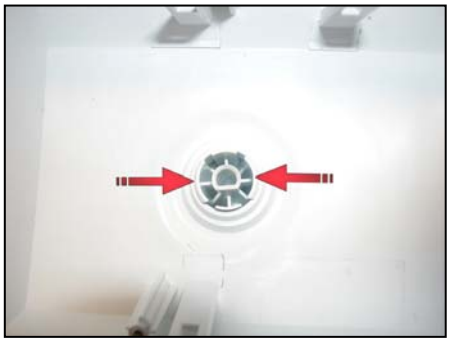
h. Rotate the control panel around itself.

a. Place it as shown in figure.

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



c. Before mounting the new board extract the knob pressing the hooks indicated by the arrows as represented in figure.



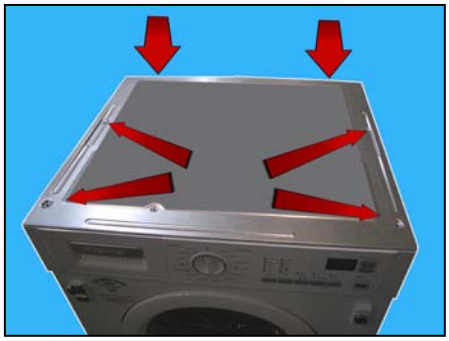
While re-assembling repeat the same operations in reverse order and pay attention to position correctly the knob.

While remounting the work top please pay attention not to position it as in fig. A but as in fig. B.


# 14 ACCESSIBILITY TO THE ELECTRONIC CONTROL SYSTEM WM/WD (NEXUS cabinet)

### 14.1.1 Work top

a. To remove the steel plate panel, remove the four screws placed above the top and the two rear screws.

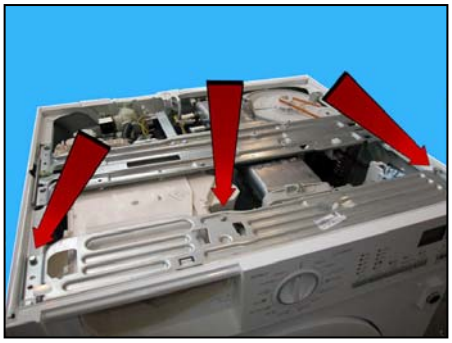


### 14.1.2 Control panel

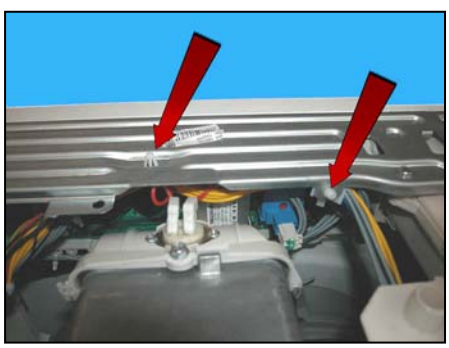
b. Extract the detergent drawer.

c. Remove the 2 screws which secure the control panel to the dispenser.

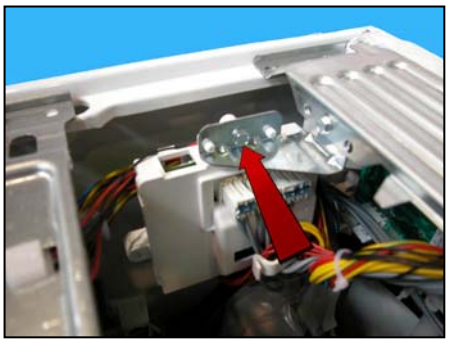
d. Remove the 3 screws which secure the cross-member to the cabinet and the conveyor.



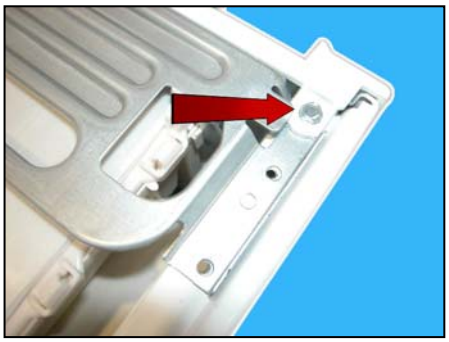
e. Release the wiring supports from the cross-member.



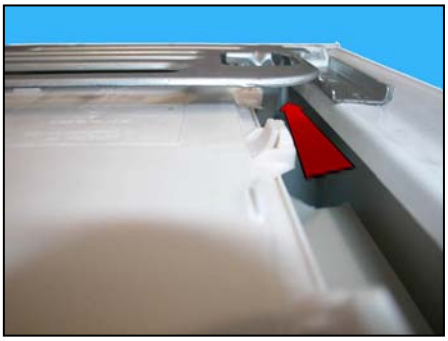
h. Remove the screw which secures the PCB (which controls the WD section) to the bracket, extract it and position it so as it does not interfere with the disassembling of the control panel.



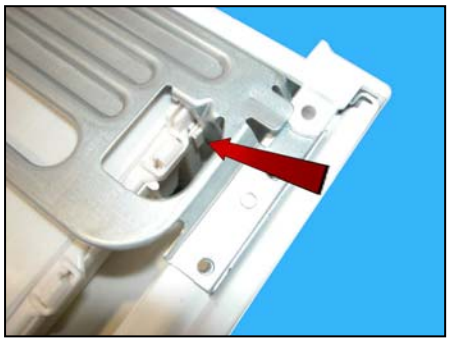
g. Remove the 2 screws which secure the control panel to the cross-member.



h. Release the 2 hooks (one on the right, the other on the left) which secure the control panel to the cabinet.

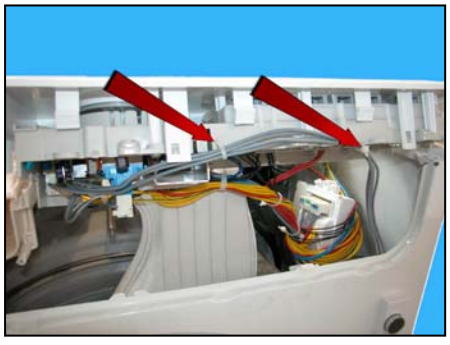


i. Release the hook which secures the cross-member to the conveyor.

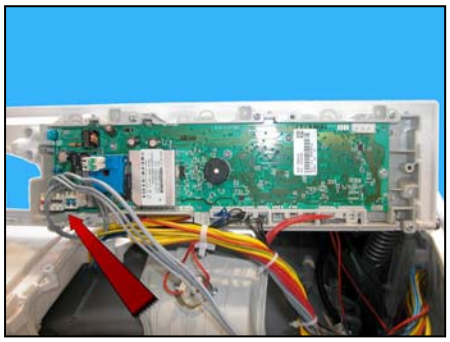


j. Extract the cross-member from the control panel, lift and turn the control panel.

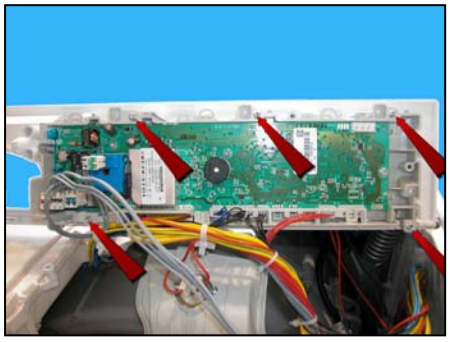
k. Cut the two clamps which lock the wiring of the door microswitch.



l. If problems with the door microswitch wiring should arise, detach the connector from the board.



m. To extract the board unscrew the screws, release the hooks which fits it to the control panel.



Attention: the screws which fit the board can be cross or torx (T20) screws.

In the reassembling operation repeat the same operations in reverse order, replacing the old clamps with some new ones.