Electrolux

East Asia Quartz tumble dryer machine

Service Manual
(EDR18Q2x)

1. Power supply management

Depending on the characteristics of the main circuit board, and irrespective of the model, the appliance can be completely cut off from the mains, or alternatively set to a special, lower energy consumption mode.

When the 0 Watt power supply circuit is inserted in the main circuit board, the appliance consumption is automatically cut to 0. Without this circuit, for users to get a power absorption of 0 (zero) Watts, they have to cut off the electricity supply by unplugging the appliance.

In either case, the user interface behaviour is the same.
To turn the appliance on, simply press the ON/OFF button briefly. The appliance beeps once (if the buzzer is enabled), and depending on the selected programme, the display shows the time required to complete drying.

To turn off the appliance, hold down the button for approximately 1 second.

After this time, the user interface beeps once (if the buzzer is enabled) and all the lights and the display are turned off. After turning off the dryer, all the options selected and the programme are deleted.

Behaviour in Stand-Off mode
In order to minimise electricity wastage when the cycle is not under way, appliances in this platform offer the auto-off function which, when teamed with the Zero-Watt circuit, provide two ways of enabling a low consumption mode:

1. When you press the ON/OFF button to turn off the appliance, the supply voltage is cut off and the tumble dryer is secured (motor off, display off, etc...), the cycle and any options selected are reset, so that the next time the appliance is turned on, it is ready to perform a new programme.

2. If, during the programme and options selection phase or after the end of the cycle, the appliance receives no further instructions for at least 5 minutes, it is automatically turned off (for energy savings in conformity with the standards on energy consumption).

- If this occurs during the setting phase, the programme and the options selected are cancelled and the basic programme appears when the appliance is turned back on.

- If the cycle has ended, all the settings are stored so that when the appliance is turned back on, the user can see that the cycle ended normally, and can restart it if necessary.

If an alarm occurs while a programme is under way, the auto off function is disabled, and an alarm is displayed.

2. WARNING

● Any work on electrical appliances must only be carried out by qualified personnel.
● Before carrying out work on the appliance, use suitable instruments to check that the power supply system in the house is fully efficient.
● This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to disconnect the power supply.
● When the servicing is completed, ensure that all the connections have been made properly and that all the appliance's safety conditions are as good as new.
● The connection between the earth terminal and the earthed metallic parts must have a low resistance.
● All the work to be performed inside the appliance requires specific skills and knowledge and may only be carried out by qualified and authorised service engineers.
● Some of the components in the mechanical part could cause injuries, so wear suitable protection and proceed with caution.
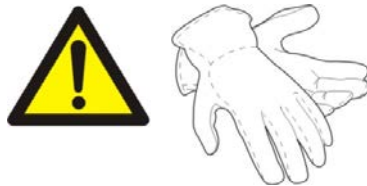

3. Introduction

This document specifies the UI which are unique to Quartz VTD models for SEA region. Here is the list of documents needed to fully understand the hardware and software interaction.
● Control Panel Specification: Defines the graphical layout of various components in the control panel that meets the engineering & design requirements.
● UI Requirements: Defines the behavior and functionality of the buttons, and LED indicators on the control panel.

Without Mist
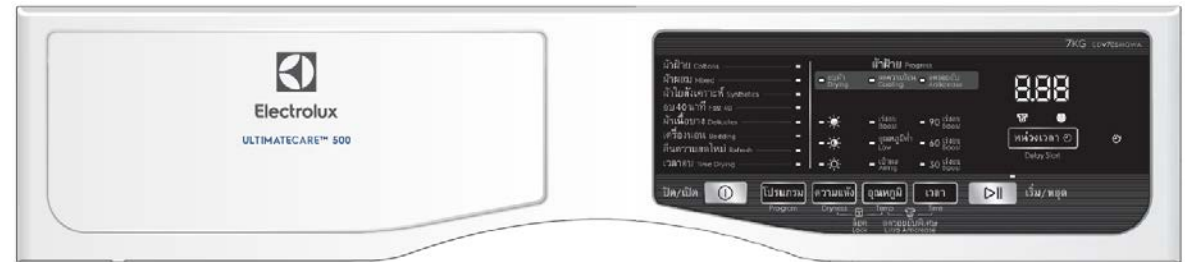
With Mist
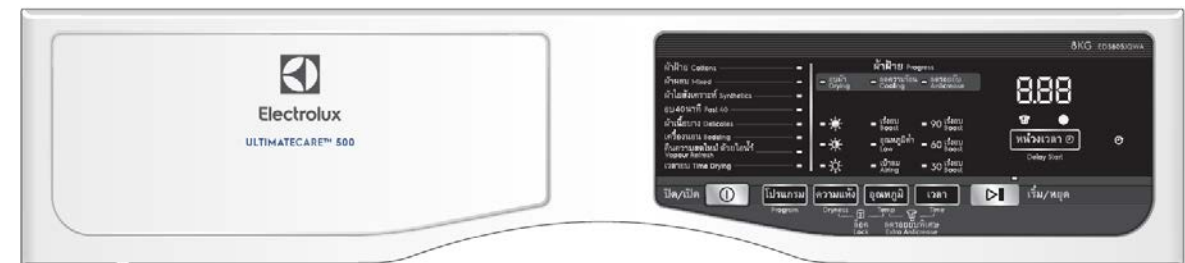
4. Features & Functions

This section specifies the UI features and functions in the Quartz VTD models.

FEATURES SET	WITHOUT MIST	WITH MIST
PROGRAM BUTTON	• Cottons • Mixed • Sythetics • Fast 40 • Delicates • Bedding • Refresh • Time Drying	• Cottons • Mixed • Synthetics • Fast 40 • Delicates • Bedding • Vapour Refresh • Time Drying
DRYNESS BUTTON	• Extra Dry • Cupboard Dry • Iron Dry	
TEMP BUTTON	• Boost • Low • Airing	
TIME BUTTON	• 90 mins. • 60 mins. • 30 mins.	
DELAY START	30min, 60min, 90min, 2Hr - 20Hr (1 hour increments)	
OPTION BUTTONS (Secondary Functions)	Child Lock Extra Anticrease	

3. Types of Control Panels

Panel Layouts and Controls
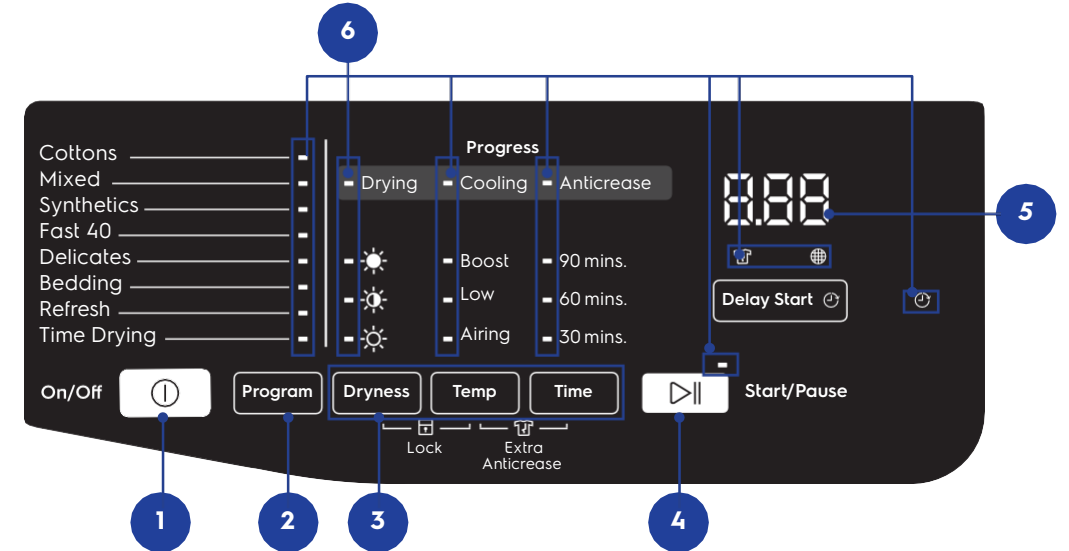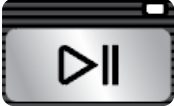
	FUNCTION	COMPONENT TYPE
1.	Power Button	Mechanical button
2.	Program Button	Touch button
3.	Options button • Dryness • Temp • Time • Delay Start	Touch buttons
4.	Start/Pause button	Touch button
5.	Time Digits display	LED Segments display
6.	Selection & Status Indicators	Independent LEDs

4. UI Structure

4.1 Keys Behavior

The table below shows a list of buttons that appear on the control panel and their behavior descriptions. All buttons have sound feedback when tapped.
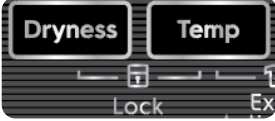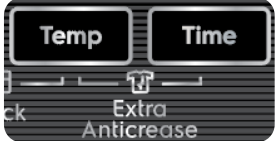
FUNCTION	IMAGE	ACTION	BEHAVIOUR
Power	(power icon)		**Controls power state of appliance.** Turn On the appliance if it is in the Off state. When in On state, button is tap to turn Off the appliance.
Program	Program	• Quick tap • Short tap & hold	This button selects the next Drying Cycle.
Dryness Level	Dryness	• Quick tap • Short tap & hold	This button selects the next available dryness level.
Temperature	Temp	• Quick tap • Short tap & hold	This button selects the next available Temperature Option.
Time Dry	Time	• Quick tap • Short tap & hold	This button activates Time Dry and sets the drying time.
Start/Pause	▷‖	• Quick tap	**Start or pause a wash/ dry cycle.** Tap this button to start or pause the wash/dry cycle at any time.

FUNCTION	IMAGE	ACTION	BEHAVIOUR
Delay Start	Delay Start ⏱	• Quick tap • Short tap & hold	This buttons activates Delay Start and adjust the duration of delay.
Child Lock	Dryness Temp Lock Ex	•Long tap & hold for 2s	**Toggles child lock function.** Long tap & hold Dryness & Temp buttons to activate or deactivate Child Lock.
Extra Anticrease	Temp Time ck Extra Anticrease	•Long tap & hold for 2s	**Toggles Extra Anticrease function.** Long tap & hold Temp & Time buttons to add an additional anticrease dura- tion after the default anticrease phase.

5. Machine States

There are 7 different states in Quartz range of vented dryers.

1. Idle State
   ● After appliance is powered on.
   ● Allows user to setup, select drying program and adjust settings.
2. Stand-off State
   ● Appliance goes into Stand-off state after 5 mins of inactivity when in Idle state.
3. Execute State
   ● Drying cycle starts.
   ● Buzzer will sound after main drying and cooling phases ends, at the start of anticrease phase.
4. Paused State
   ● Drying cycle paused.
5. Delayed State
   ● Delay Start is activated before starting wash cycle.
6. Delayed Pause State
   ● When user pauses appliance after Delay Start is activated.
7. End State
   ● Drying cycle and Anticrease phase completed.
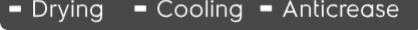
The table shows how the display and Start/Pause pilot LED behave in each state:

	STATES	SEGMENTED DISPLAY	PROGRESS INDICATORS	DELAY END ICON	START/PAUSE LED
1.	Idle State	•Shows Dry cycle duration •LEDs static	■ Drying ■ Cooling ■ Anticrease • All LEDs Static	-	▷‖ •LED pulses
2.	Stand-Off State	• All LEDs Off	• All LEDs Off	•All LEDs Off	• All LEDs Off
3.	Execute State	•Timer counts down (Drying or Cooling phases) •"." LED blinks at rate of 1s	■ Drying ■ Cooling ■ Anticrease •Drying or Cooling LED blinks at rate of 1s during respective phase. •LED dismisses after phase has ended.	-	▷‖ • LED static
		•After timer goes to "0.00" (Anticrease phase), •Shows "End" & Lint filter icon	■ Drying ■ Cooling ■ Anticrease • Anticrease LED blinks at rate of 1s.	-	▷‖ • LED static
4.	Paused State	•LEDs static	■ Drying ■ Cooling ■ Anticrease • LEDs static	-	▷‖ • LED blinks at a rate of 1s

5. Machine States

	STATES	SEGMENTED DISPLAY	PROGRESS INDICATORS	DELAY END ICON	START/PAUSE LED
5.	Delayed State	**4h** •Shows no. of hours delayed •LEDs static	■ Drying ■ Cooling ■ Anticrease • All LEDs Static	(blinking clock) •LEDs blink at a rate of 1s	▷‖ •LED static
6.	Delayed Paused State	**4h** • Shows no. of hours delayed • LEDs static	■ Drying ■ Cooling ■ Anticrease • All LEDs Static	(clock) • LEDs static	▷‖ • LED blinks at a rate of 1s
7.	End State	**End** •LEDs static •Shows "End" & Lint filter icon	■ Drying ■ Cooling ■ Anticrease • All LEDs Off	-	▷‖ • LED Off

5. Types of Control Panels

- **5.1 Drying programmesymbols**

☀ Extra Dry	☀ Iron Dry
◑ Cupboard Dry	

- **5.2 Drying programme phase icons**

👕 Extra Anti-crease guard phase

- **5.3 Available**

🕐 Delaying the start time	🔒 The Child Safety Device

- **5.4 Warnings**

⊞ Clean fluff filter warning

6.1 General characteristics

The TC4 aesthetic level can be used on both Standard Condense and Heat Pump machines. The control panel layout is only one for all the applications.

The control/display board, which is inserted in a plastic container fixed to the control panel (the figure shows: the display board with the side socket in which the selector is fixed, connected together by a flat cable, and the display board assembly).
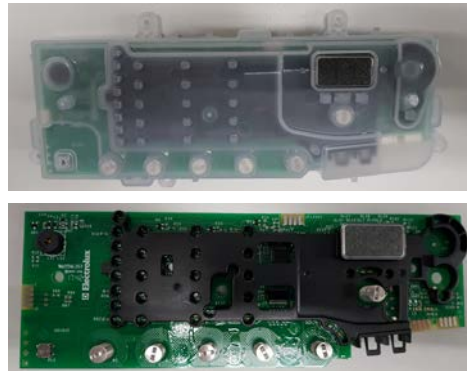
Without Mist
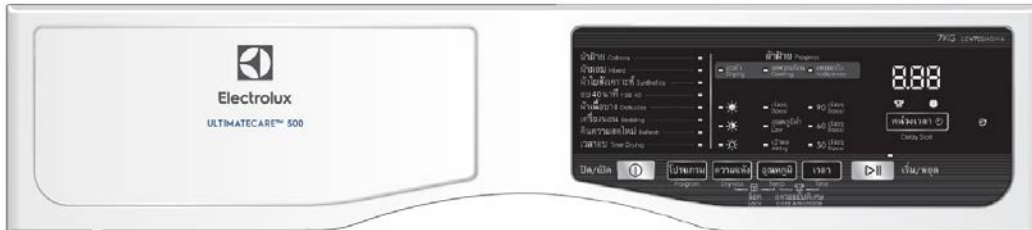
With Mist
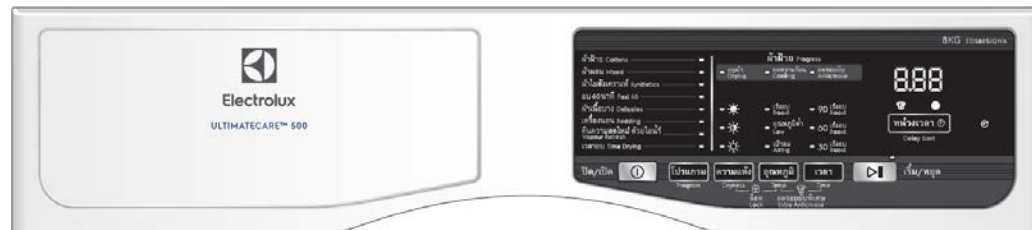
The main characteristics are:
- On/Off mechanical tact-switch button always present
- Up to 6 functional touch buttons:
    - Program button with 8 associated LEDs
    - Dryness button with 3 associated LEDs
    - Temperature Options button with 3 associated LEDs
    - Time Dry button with 3 associated LED
    - Extra Anti-crease with 1 associated LED
    - Clean fluff filter warning with 1 associated LED
    - Delay Start button with 1 associated LED
    - Start/Pause button with 1 associated LED
- Digits display for cycle time indication
- All the LEDs are white colour
- Supplementary LED for alarms indication,
- Buzzer for simple sounds/jingles

6. TC4 STYLING

6.2 On/Off button

This button is used to switch on and off the machine. The selected program/running cycle is cancelled when switching the machine off.

6.3 Selection key

All the keys (On/Off button excluded) are touch sensitive type. A lightly touch on the center of button area is sufficient to detect the key and recall the associated function, but for the Start/Pause button it is necessary to keep pressed the key for a bit longer time than other ones in order to avoid unwanted starting or pausing of the cycle. Once a button is pressed, to repeat the function it is necessary to lift the finger at least by 1 centimeter for at least half a second before touching again the same button, otherwise the key is not able to detect that it has been released and pressed a second time. Most of the keys have a repetitive type function, that is, the selected value continues to change as long as the button is kept pressed.

6.3.1 Program selection key

This button is used to select the desired drying program. The number of positions is 8 in all UI levels, due to LEDs layout constraints. Selection order is described below.
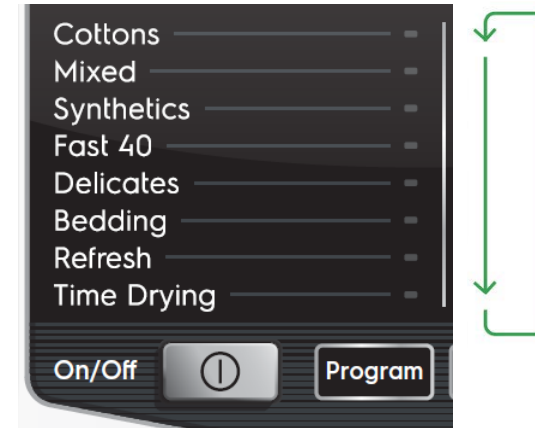
At machine switching-on the program in 1st position (top LED) is selected; there has to be configured the most important program requested by default.

The illuminated LED indicator at the right side of the program name indicates the currently selected program. When the key is pressed the program below the currently selected program is indicated meaning you loop from top to bottom. If the last program is the current program then the next press will indicated the first program in the list.

Keep pressed the button for a fast scroll of drying programs. After cycle start, programs cannot be changed.

6.3.2 Dryness key

This button is used to select the desired level of dryness. The selection order and symbols meaning are described below.
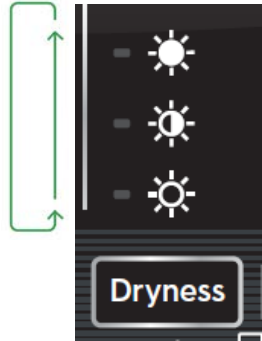
After selecting a drying program the user can adjust the level of dryness to suit their preference.

When the key is pressed, the dryness level is increased. Once the highest level is reached, the selection starts from the lowest available setting. The selected dryness level is indicated by the LED next to corresponding printed symbol. The indication moves from bottom to top. Keep pressed the button for a fast scroll of dryness levels.

Extra Dry   Cupboard Dry   Iron Dry

6.3.3 Dryer temperature key

This button is used to select the dryer temperature options for the selected program. The range of available drying options and selected program.
Each
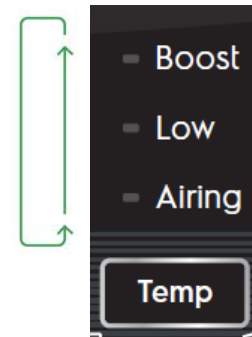
Each Dyer temperature level has a LED next to the printed option name. Pressing the key when no options are active will illuminate the LED next to the first option compatible with selected program.

6.3.4 Time Dryer key
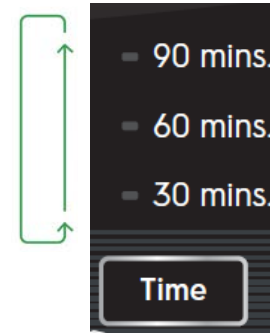
This button is used to set drying time, user must first select Time Drying under Programs. This would enable the Time button (which is otherwise disabled when other Programs are selected), allowing user to select 1 of the 3 time options.

Note: When Time Drying program is selected, Dryness Level will be disabled.

6.3.5 Child Lock

Child Lock is a function that allows the user to leave the appliance unsupervised, without having to worry that children might be injured by, or cause damage to the appliance.
The basic points are:
• all push buttons are disabled (except On/Off);
• program cancelling after start not allowed when switching machine off and on;
• There is no Child Lock icon on Quartz range of washing machines and dryers.
● Activating/Deactivating Lock is triggered by pressing and holding Dryness and TEMP Mode button for 2 seconds.
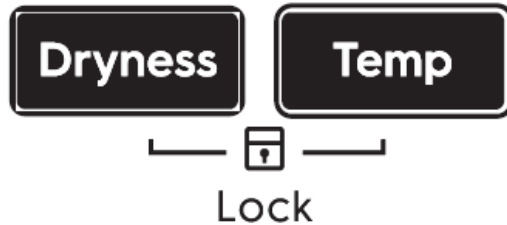
Upon activation, "LOC"   Upon deactivating, "unL"

All push buttons are disabled as long as Child Lock is active. Only On/Off and keys combination to unlock machine and to enter in diagnostic mode are always enabled.

To cancel a running program after cycle start, Child Lock has to be deactivated first pressing the foreseen buttons combination and then the machine has to be switched-off.

If the machine is switched-off and on during cycle execution without unlocking it, cycle status will be restored like after a power failure situation (in pause).

Child Lock buttons combination can be printed on control panel serigraphy to highlight the function and related configured buttons.

6.3.6 Extra Anticrease

By default, at the end of the drying and cooling cycle, the venter dryer will run an Anticrease phase for 1 hour. User can activate Extra Anticrease to extend an additional 2 hours of Anticrease.

● Activating/Deactivating Extra Anticrease is triggered by pressing and holding Dryness and TEMP Mode button for 2 seconds.

Extra Anticrease

Upon activation   Upon deactivating
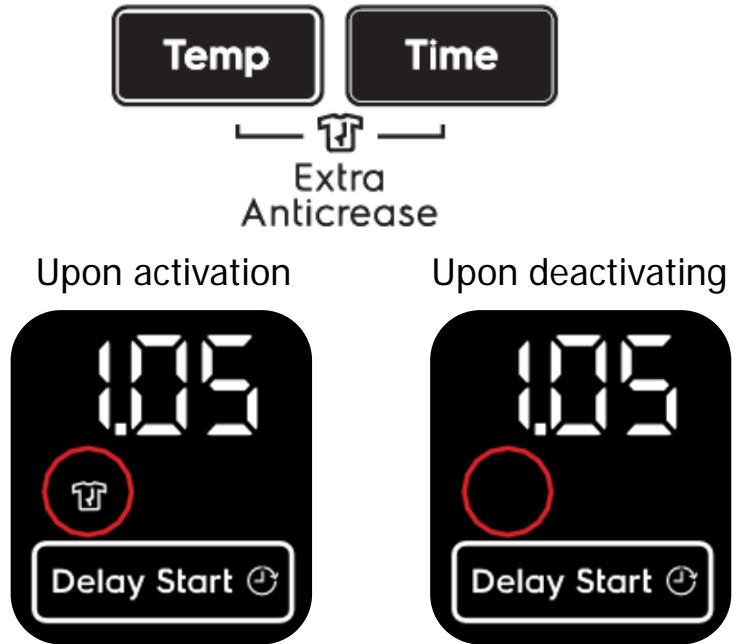
6.3.7 Delay Start

Tapping the Delay Start button allows user to delay the start time of the dry cycle.

The display will show the delay time set (in .mm or Xh format) and the Delay Start icon will light up together. Long tap and hold gesture activates the auto repeat function.

User taps on Delay Start button

User taps on Delay Start button

Display shows length of delay

(1st selection is .30)

Example:

User taps on Delay Start button

3s

Display shows TTE after 3s of inactivity
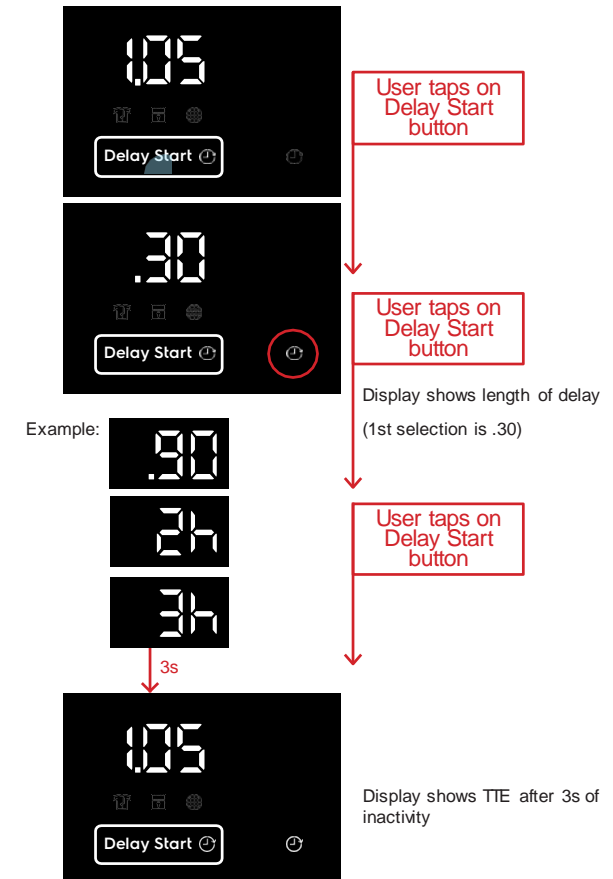
While in Idle State, if the user adjusts any other settings after setting Delay Start, the display will reflect the updated TTE accordingly as the user taps on the option keys and the Delay icon remains lit. The cycle duration will remain on the display and not switch back to delay time.

Note: Changing of program will cancel any Delay timing set and the Delay icon will be dismissed.

User taps on Temp button

Display shows updated TTE.

Delay Start icon still lit.
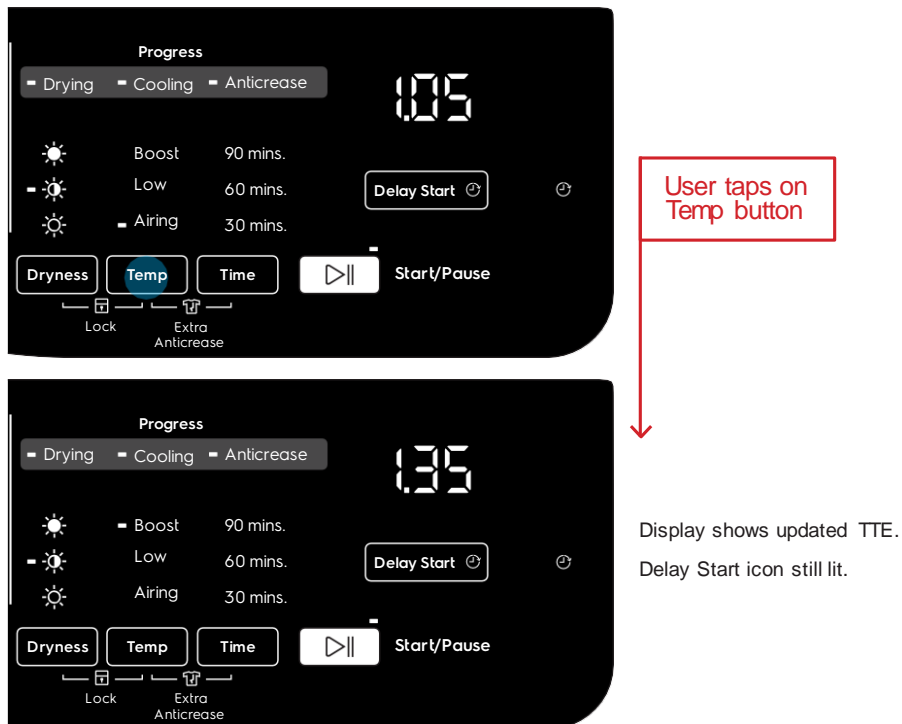
If user presses the Delay Start button, show the current selected delay settings for 3s before reverting to cycle duration

User taps on Delay Start button

Display shows current delay settings

3s

Display shows TTE
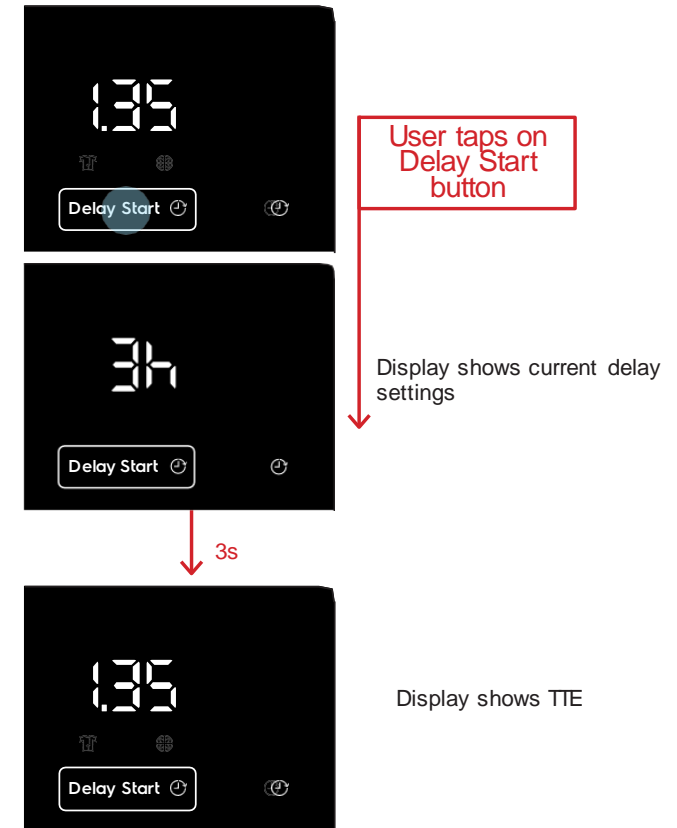
When Delay Start is activated (Delayed State)

Once the user presses Start/Pause, Delay Start information takes priority over cycle duration.

The timer will start counting down and the display will show the hours (Xh format) until it reaches 90 mins delay. Afterwhich, it will show .90 > .60 > .59 > .58 > .... > .01 > cycle duration (e.g. 2:00) with the Delay Start icon turned off and the cycle starts running.

If the user pause the machine when delay start is set, pressing on any available settings/options will display updated cycle duration. The display will switch back to show delay start time after 3s of inactivity.
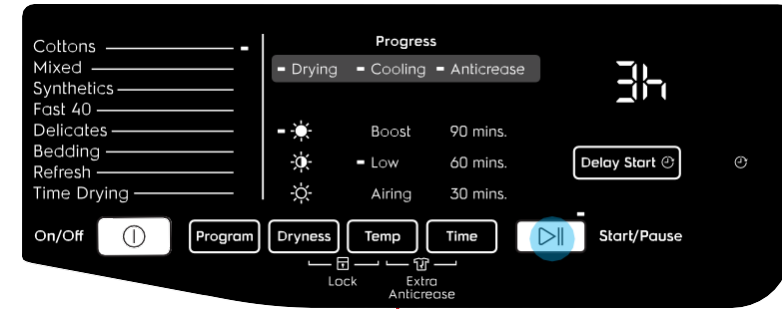
User taps on Start/Pause

Count down timer starts

30min

30min

1min
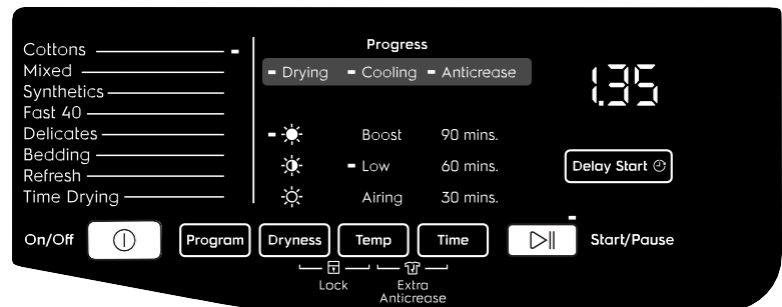
Cycle starts

Show cycle time on display

Delay Start icon LED dismisses

Display time counts down

Cancelling Delay Start

1. During setup (Idle State):

To cancel Delay, press Delay Start button until it cycles through the options to select 0h.

4H > 5h > .... > 20h

2s

User taps on Start/Pause

User taps on Delay Start

When display shows "0h",

Delay Start icon LED is dismissed.

Delay Start is cancelled.
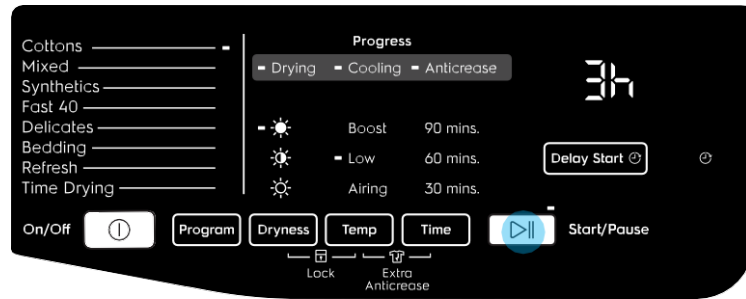
Display shows cycle time after 2s
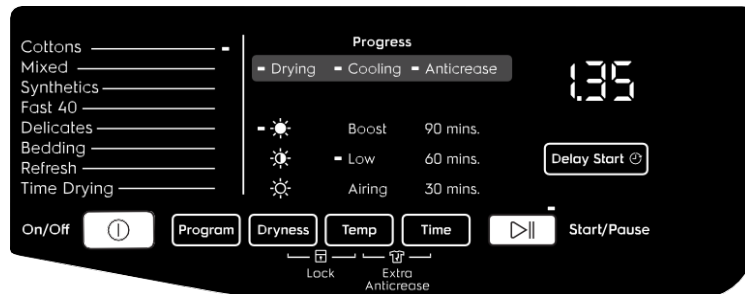
2. After pressing Start (Delayed State):

If the user has pressed Start/Pause button while Delay Start is activated, the appliance goes into a Delayed Pause State. Pressing the Delay Start button again will jump to 0h and the Delay Start previously set will be cancelled.

However, if the user press Delay Start button again, Delay Start will be activated again starting from the first available option (e.g. 30min).

6.3.8 Start cycle

After selecting the program and closing the door, pressing the Start/Pause button will start the drying cycle. The Start/Pause LED turns steady and display time then decreases and updated minute by minute. All buttons except the Start/Pause button will be disabled.

Progress Indicators

The progress of the drying cycles are indicated by the blinking of the progress indicators. During setup, the progress indicator LEDs will light up if they are applicable to the selected program and settings. When the drying cycle has started, the progress indicator LED will blink at a rate of 1 second . during the duration when that particular phase is active. The LED will then be dismissed one by one after the end of each phase.

Progress — Drying — Cooling — Anticrease

User taps on Start/Pause

During Drying phase

During Cooling phase

During Anticrease phase
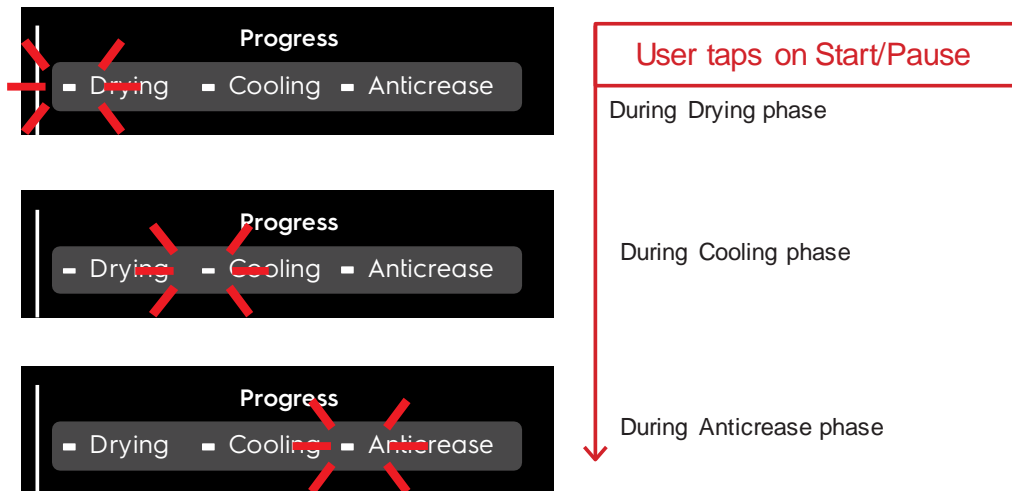
Opening the door during cycle.

Opening the door during drying and cooling phases would put the machine to Paused State. If the door is closed within a time limit (3 seconds as specified by R&D), the cycle will resume automatically. Otherwise, user can press Start/Pause to continue the cycle.

If the user opens the door during Anticrease phase, Anticrease would stop and the machine goes into End State.

6.3.9 Pause Cycle

Pressing the Start/Pause during the cycle will pause the appliance. During paused state, drying options may be changed but not the program.

6.3.10 Cycle End and Anticrease Phase

When the cycle is completed, the segmented digits will change TTE to "End". All program and settings LED indicators will go off, leaving only the segmented display, the Extra Anticrease icon (if activated) and Lint Alert icon. At the same time, Anticrease phase will start.
If the buzzer is enabled, Tone CycleEnd will be played 6 times by sequence.

During this time, if the user touches any button on the control panel or opens the door, sound will be cut immediately.

6.3.11 Anticrease Phase

The Anticrease progress indicator will start blinking during the time anticrease phase is running. (See 6.8.1 Progress Indicators). During this period, Start/Pause LED will still remain static until the anticrease phase has ended completely and the appliance goes into End State.

User can also terminate the anticrease phase by:Pressing On/Off button - machine goes into Stand-Off State

Pressing Start/Pause button - machine goes into End State. Anticrease stops and Anticrease progress LED is dismissed. "End" remains on the display.

Opening the door - machine goes into End State. Anticrease stops and Anticrease progress LED is dismissed. "End" remains on the display.

1. End of Cycle, during Anticrease phase
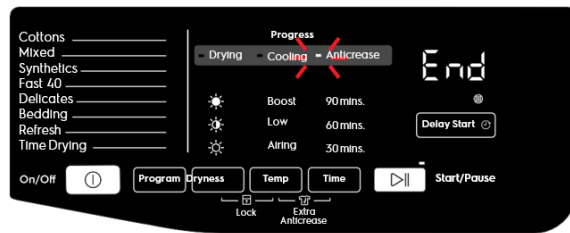
Display shows "End"and Start/Pause LED is static. All other LEDs are dismissed except:

- Anticrease icon - blinks at rate of 1s
- Lint Filter icon LED - lit

2. End of Anticrease phase (End State)
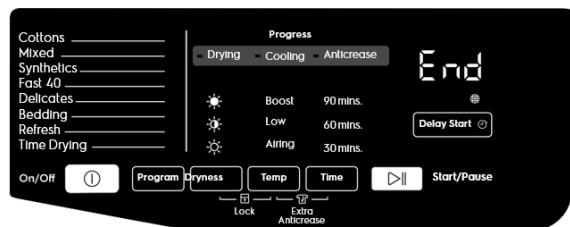
Display shows "End" and Lint filter icon. All other LEDs are dismissed.

6.3.12 Lint Alert

The lint icon appears after every drying cycle has completed to remind user to clean the lint filter. Lint filter icon will light up after the Cooling phase, during the Anticrease process, as well as in the End State.

The Lint filter icon will never show during Idle State. If the appliance goes into Stand-Off State automatically, the next time it is powered On, it will show the End State with Lint filter icon lit. Once appliance goes into Idle State (when user touches the control panel or opens the door), the Lint filter icon will be dismissed.
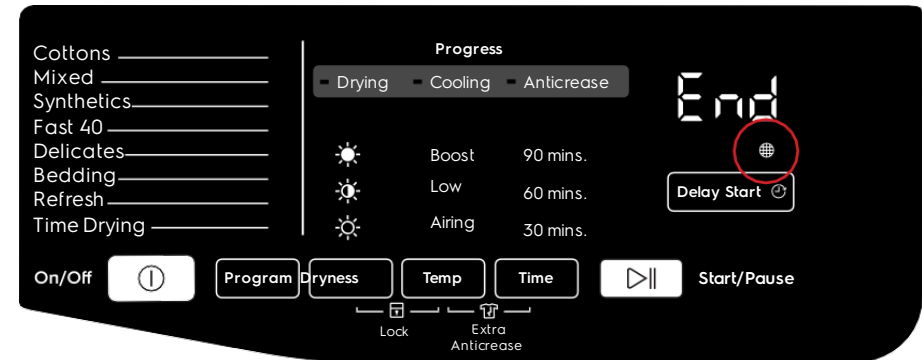
6.3.13 Inverted Mounting Mode

The vented dryer allows for inverted wall mounting and user is able to set the dryer to an Inverted Mounting Mode through a hidden key combination. This would adjust the display to read correctly when it is wall-mounted up-side-down

To set the appliance to Inverted Mounting Mode, press and hold Program & Time buttons for 3 seconds. and waiting play Tone KeyAccept to confirm and the inverted mode will operate on display.
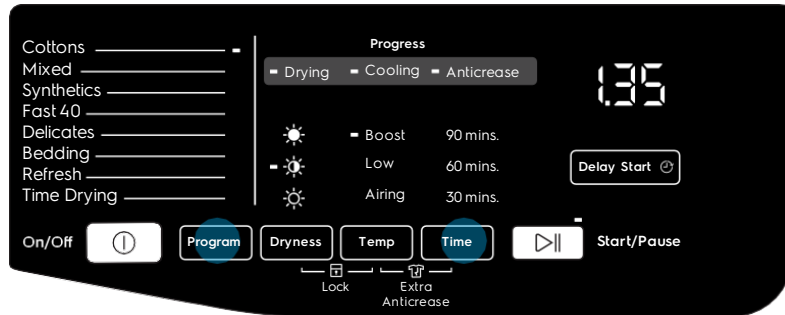
User press and hold Program & Time buttons
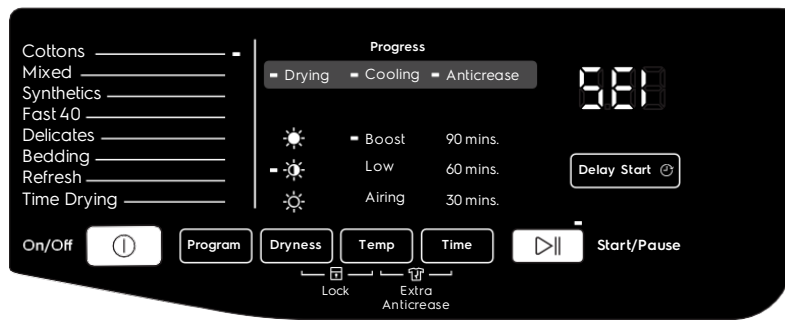
Goes into Inverted Mounting Mode

- Display shows TTE inverted.
- "." is dismissed.

6.3.14 Wrong Selection Indication

The wrong selections done by customer, such as trying to select an option not compatible with the selected program or pressing keys after cycle start without pausing machine first, are noticed by three quick flashings of "---" text displayed on time digits as shown in the picture.

6.3.15 Machine faults indication

The machine faults are noticed to customer by means of digits display used to show the cycle time.
A specific warning code appears on digits while the buzzer sounds (also if deactivated by customer via buttons combination) with a specific sequence of three short beeps about every 20 seconds for maximum 5 minutes.

Warnings codes are showed in the format "Exx" like for example "E91", "EH0"…

After the problem has been solved, pressing Start/Pause button the warning code is not showed anymore, cycle time is displayed again, buzzer stops sequence and cycle restarts.

6.3.16 Buzzer

A multi-tone buzzer is provided to sound in following cases:

- switching machine on and off, with 2 different short jingles;
- pressing a button, with a very short "click" sound;
- when the cycle is finished, for about 2 minutes with a specific sequence of three long beeps (1sec on - 1 sec off - 1sec on - 1 sec off - 1sec on) repeated every 15 seconds; the sequence is stopped when the door porthole is opened;
- when alarms/warnings occur, for about 5 minutes with a specific sequence of three short beeps repeated 3 times every 15.

The buzzer can be active or not by configuration; anyway the default factory setting has to be active to meet the norms regarding eyesight handicap people. To deactivate it the specific push button has to be pressed.

When deactivated the buzzer doesn't play the on/off jingles and cycle end melody, while sounds anyway in case of button "click" and alarm/warnings occurrence.

Volume level is pre-fixed and can't be changed by user.

The buzzer is activated from factory default

Deactivated the buzzer
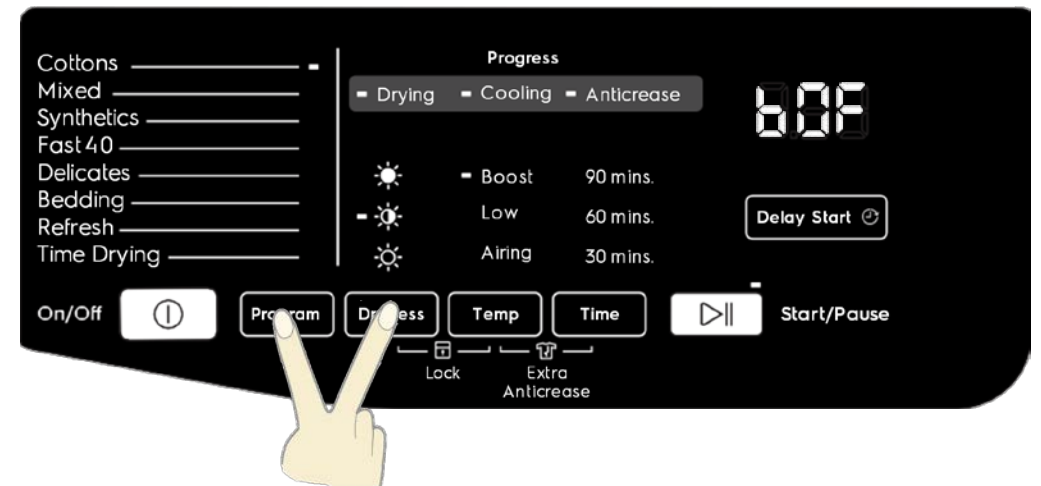
Activated the buzzer
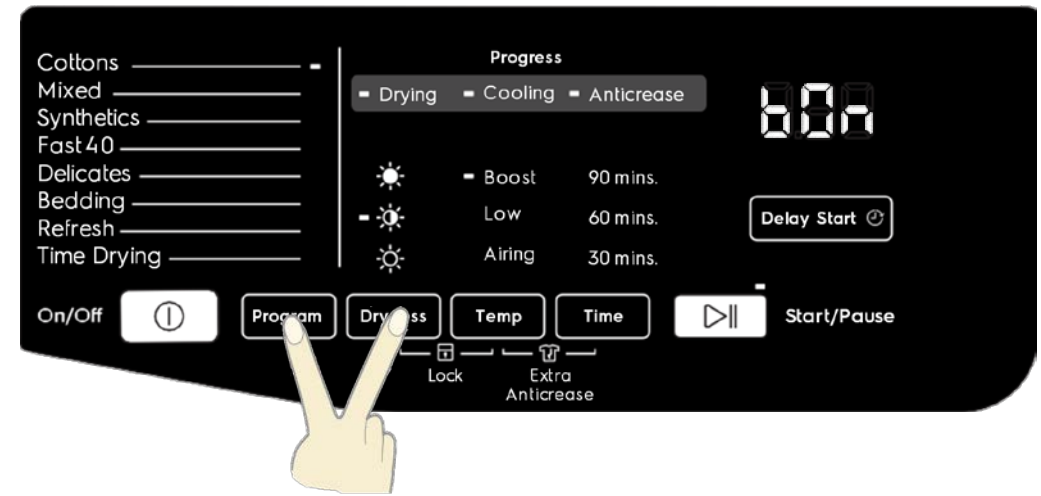
7. Enter different modes

If the key combination is recognized within 10 seconds since the machine was switched on (via On/Off button), a specific mode is entered according to the program selected.

❶ : Diagnostic mode

❷ : Demonstration mode

❸ : Working Hours counter
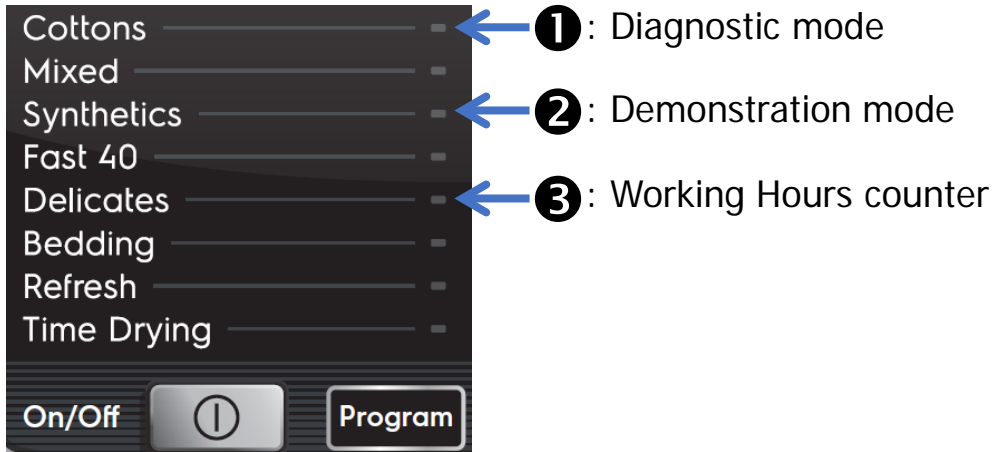
7.1 Access Diagnostic Mode

This mode is used service people to check for faults and repair the machine.
- Power on the machine by press On/Off button and do not press any other button.
- Turn the program in the 1st position (Cotton).
- Within 7 seconds after turn On, press and hold for some seconds the defined key combination, in this case is key Time and key Start/Pause.

• Within about 3 seconds the UI shall enter the diagnostic mode, the acknowledge of the operation is given by all LEDs and groups of display icons switching on sequentially, otherwise, switch machine off and repeat sequence from the beginning.
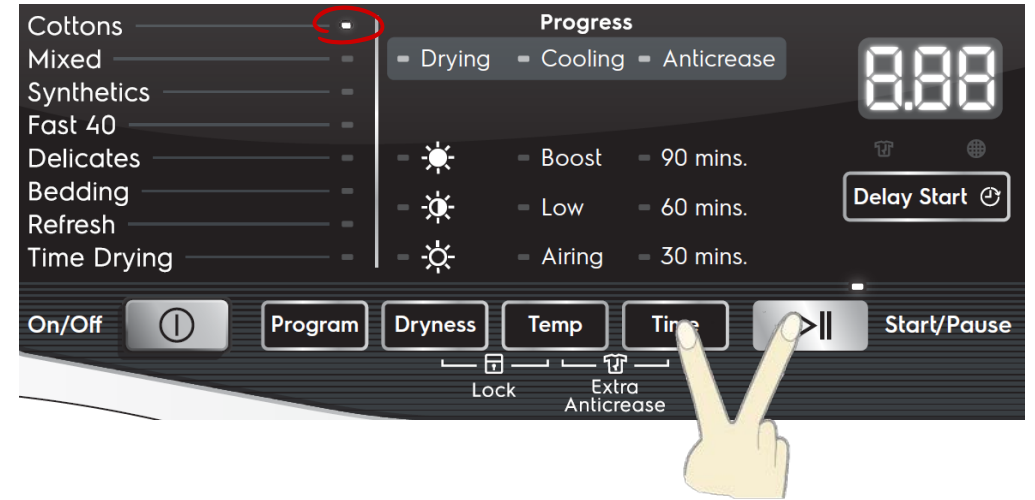
In the User Interface test (lamp test) is performed; all LEDs are lighted on sequentially to allow checking the outputs. Pressing any button the associated LEDs are lighted on and the related position number is shown on cycle time digits, till button is released; besides, the buzzer plays a single "click" sound.

When press and hold the key Program will change from lamp test to diagnostic test position, the display show the "C" letter followed by the number code for about 2 seconds.

Press the key Program will go to next position, for any position Then Press "Start/Pause"/. there is a different test as shown in below.

7. Enter different modes
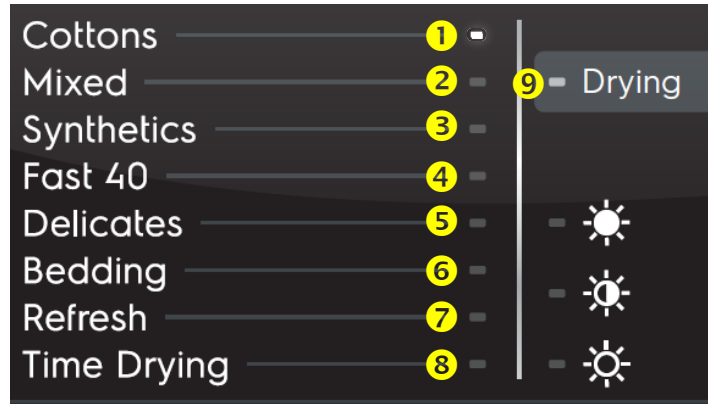
Position 1: Half test.
Position 2: Full test.
Position 3: Mist valve test.
Position 4: Motor turn in CW direction test.
Position 5: Motor turn in CCW direction test.
Position 6: Motor turn in CW direction, Heater and NTC test.
Position 7: N/A.
Position 8: Accelerate life test. (For Reliability Lab purpose only)
Position 9: Last alarm display and possible reset.

7.1.1 User interface test

Selector position:	No position
Purpose of test:	To test the functionality of all lights, switches and buzzer.
Activated components:	All LEDs, and buzzer
UI behaviour	See below
Working conditions:	There isn't any control to run the test (always active).

Test of outputs
  All visible LEDs are switched on singularly and sequentially for about 300 milliseconds.
   In the same way also the 7 segments of the three digits for UI displays are lighted on sequentially.
   The buzzer plays a "beep" sound each time a button is pressed.

7. Enter different modes

7.1.2 Half test

Selector position:	Position 1
Purpose of test:	To test the motor for CW and CCW direction
Activated components:	Motor on both of CW and CCW direction
UI behaviour	The Display report the **"HLF"**
Working conditions:	Sequence turn on motor CW 10 sec, stop 2 sec, CCW 10 sec, stop 2 sec

7.1.3 Full test

Selector position:	Position 2
Purpose of test:	To test the motor for CW and CCW direction and heater.
Activated components:	Motor on both of CW and CCW direction, heater on
UI behaviour	The Display report the **"FUL"**
Working conditions:	Sequence turn on motor CW 10 sec, stop 2 sec, CCW 10 sec, stop 2 sec and always on heater

7.1.4 Mist valve test (Only for mist model)

Selector position:	Position 3
Purpose of test:	To test the water loading from mist valve
Activated components:	Mist valve
UI behaviour	The Display report the **"ΠSU"**
Working conditions:	Turn on mist valve 3 minutes

7.1.5 Motor turn in CW direction test

Selector position:	Position 4
Purpose of test:	To test the motor on in CW direction.
Activated components:	Motor CW direction
UI behaviour	The Display report the **"CU"**
Working conditions:	Turn on motor in CW direction 3 minutes

7.1.6 Motor turn in CCW direction test

Selector position:	Position 5
Purpose of test:	To test the motor on in CCW direction.
Activated components:	Motor CCW direction
UI behaviour	The Display report the **"CCU"**
Working conditions:	Turn on motor in CCW direction 3 minutes

7.1.7 Motor turn in CW direction, Heater and NTC test

Selector position:	Position 6
Purpose of test:	To test the motor on in CW direction, heater and NTC
Activated components:	Motor CW direction, heater and NTC
UI behaviour	The Display report NTC temperature value
Working conditions:	Turn on motor in CW direction and on heater 3 minutes

7.1.8 Accelerate life test

Selector position:	Position 8
Purpose of test:	To test the machine for reliability
Activated components:	Motor in CW and CCW direction, heater and NTC (mist valve if available)
UI behaviour	The Display report the word **"ACL"**
Working conditions:	Depend on the cycle defined by R&D Engineer

7.1.9 Last alarm and reset alarm.

Selector position:	Position 9
Purpose of test:	Display last alarm and Possible reset
UI behaviour	Alarm complete code is showed in the format Exx (E 4 2) on display
Working conditions:	● To press "Start/Pause" for display $2^{nd} \rightarrow 3^{rd} \rightarrow 1^{st}$ Alarm ● To press "Time" and "Start/Pause" together for reset/delete alarm record.

7.2 Exist Diagnostic Mode

• Power off the machine by press On/Off button for exist Diagnostic Mode

7.2 Demonstration mode

Demonstration mode is used to show to customers in the sales shop how to interact with user interface panel and how the machine works by simulating the drying cycle.

The appliance works and can be operated in the same way as in normal user mode, allowing to select any program with options in order to see cycle time and how options can affect it.

The difference in Demo Mode is that the cycle cannot be started, unless the machine is equipped with transparent door porthole and specific software provided on request.

7.2.1 Access Demonstration mode

• Power on the machine by press On/Off button and do not press any other button.

• Turn the program in the 3rd position (synthetics).

• Within 7 seconds after turn On, press and hold for some seconds the defined key combination, in this case is key Time and key Start/Pause.

7. Enter different modes
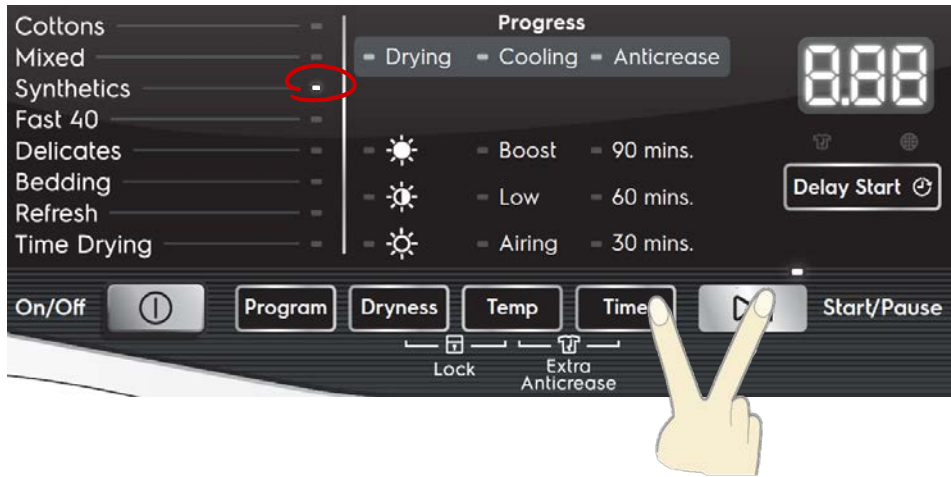
7.2.2 Exist Demonstration mode

Turn off electrical power support for exist Demonstration mode.

7.3 Working Hours counter mode

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

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

• Only the operating time of normal programmes (and not diagnostic cycles) is counted

• The actual operating time for the cycle is counted (which does not include pauses, delayed start time)

• The precision of the counter is 30 seconds per programme.

7.3.1 Access Working Hours counter mode

• Power on the machine by press On/Off button and do not press any other button.

• Turn the program in the 5th position (Delicates).

• Within 7 seconds after turn On, press and hold for some seconds the defined key combination, in this case is key Time and key Start/Pause.
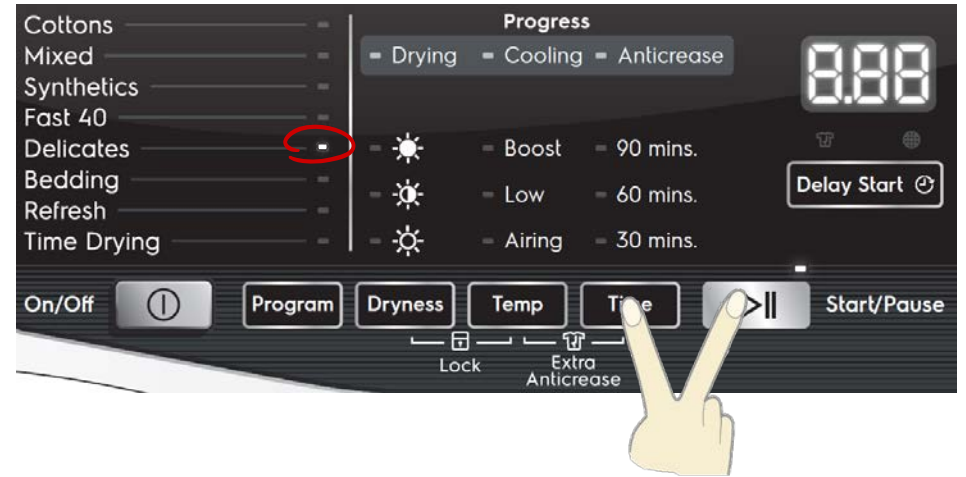
7. Enter different modes

⚠️ <u>Working hours</u> Display

The thousands digit is showed only when value is over 999, the rule is valid for all platforms.

Examples: 15   = Hr 0 15
150   = Hr 1 50
1550   = Hr 15 50

Phase 1	Phase 2	Phase 3
For 2 sec it displays Hr	For 2 sec the following digits are displayed: • Thousands - 6 • Hundreds - 5	For the next 2 sec the following digits are displayed: • Tens - 5 • Units - 0

7.3.2 Exist Working Hours counter mode

Turn off electrical power support for Working Hours counter mode

8. Alarms

One of the main requirements of the diagnostic system is to be transparent to the final user except for some most common warning related to the door handling and power abnormal.
To increase the flexibility of the system it was introduced the possibility to enable/disable the alarms display by the machine configuration in order to cover requirement as field test context, particular countries requirement ...

Some alarms require a cool cycle activation in order to put the machine in a safe condition.

All alarms display is enabled during diagnostic test/cycles. Alarm codes are displayed on the TTE digits of the display.

Please note that writing an alarm code on the Display, all occurrences of "b" are replaced by "H" in order to avoid mistaking the "6" symbol, so for instance "EB3" is shown like "EH3".

8.1 Rapid reading of alarms

It is possible to display the last alarm even if the selector is not in the eleventh diagnostics position or the machine is in normal operation (e.g. while a Drying programme is in progress):
● Touch the "START/PAUSE" sensor and the "TIME" sensor simultaneously (as if you were entering DIAGNOSTIC mode) and hold for at least 2 seconds: the LCD display shows the last alarm.

8. Alarms

● The alarm will continue to be displayed until a sensor is touched.

● While the alarm is being displayed, the appliance continues to perform the cycle or, if in the programme selection phase, it maintains the previously selected options in memory.
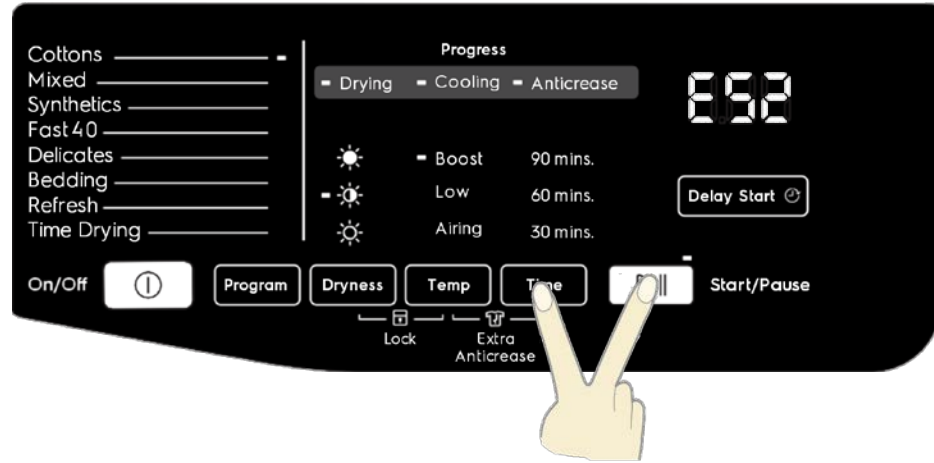
8.2 Alarms software management description

E41 – Door opened
This alarm happens if the door is open while the machine is execute the cycle. Display will be show "E40" and the cycle paused. This alarm is clear by closed the door

E45 – Door closed sensing circuit failure
The door closed sensing circuit is not working properly.
When this condition is detected the cycle will be stop.
To clear this alarm is necessary switch off the machine or reset the current cycle.

E51 – Drum Motor Short Circuit Alarm
This alarm is set because of the motor is running without command by the cycle execute.
The possible cause can be due to motor relay is short circuit or a high level of electromagnetic noise or motor fault.
When this condition is detected the cycle will be stop.
To clear this alarm is necessary switch off the machine or reset the current cycle.

8. Alarms

E52 - Drum Motor Alarm
This alarm is set because of the motor is running without command by the cycle execute.
The possible cause can be due to motor relay is short circuit or a high level of electromagnetic noise or motor fault.
When this condition is detected the cycle will be stop.
To clear this alarm is necessary switch off the machine or reset the current cycle.

E62 – Heater Short Circuit Alarm
This alarm is set because of the heater is ON without command by the cycle execute.
The possible cause can be due to heater relay is short circuit or a high level of electromagnetic noise or motor fault.
When this condition is detected the cycle will be stop.
To clear this alarm is necessary switch off the machine or reset the current cycle.

E63 – Heater Alarm
While heater is ON by cycle execute, this alarm is set because of line safe relay closed, heater sensing detects voltage on heater, due to heater short circuit to ground (heater or wiring), electrical noise, line safe relay problem (main board failure), heater relay open or short, or heater connection loose.

When this condition is detected the cycle will operate the cool cycle action.
To clear this alarm is necessary switch off the machine or reset the current cycle..

E64 – Heater Sensing Alarm
This alarm is set because of the waveform of the sensing signal is abnormal. The sensing of the relay gives to the microprocessor a signal out of the limits. The limits are different depending on the half wave of the power supply and the value refers to the conversion steps of the A/D converter. In the positive half wave the limit value is 250, while in the negative half wave the limit is 5. The alarm appears if the read value exceeds these intervals for a time longer than 1 second.
The possible cause can be due to heater fault or a high level of electromagnetic noise or power supply noise.
When this condition is detected the cycle will be stop.
To clear this alarm is necessary switch off the machine or reset the current cycle.

E71 – Drying NTC Alarm
This alarm is set because of the NTC reading is out of range.
The possible cause can be due to NTC wiring failure, NTC fault or NTC reading circuit failure, NTC sensor is in open circuit or in short circuit.
When this condition is detected the cycle will be stop.
To clear this alarm is necessary switch off the machine or reset the current cycle.

8. Alarms

E83 – Wrong selector position reading
The code read on the selector is not supported by the configuration data.
When this condition is detected the cycle will be continue.

E91 – Communication error between UI and Motherboard
There are communication problems in between User Interface and Motherboard.
Problems could be due to Hardware (problems on connectors for example disconnection of user interface or of the motherboard) or due to noise (burst on wiring).
In this case the cycle doesn't start if the problem is detected at the power-ON.
The alarm is displayed on the display.
To clear the alarm is necessary reset the current cycle by selector or pressing start/pause button at the end of cycle or simply switching off the machine.

E92 – User interface mother board protocol incongruence
The communication protocol in between user interface and motherboard is not aligned. This could be due to incompatible configuration between user interface and motherboard. This alarm is checked at the power-ON and the machine is stopped.
The alarm is displayed on the display.
To clear the alarm is necessary to switch off the machine.

E93 – Machine configuration error
There is an incongruent situation between the read checksum and the calculated one at the power-on of the machine.
The configuration saved on the FLASH is divided into 3 parts, each one with a separated checksum. One of them is the machine configuration; the others are related to the cycle.
At the power-on, during the reading of the configuration, the machine calculates the checksum and compares it with the written one.
When an error condition is detected the machine is blocked.
The alarm is displayed on the display.

E94 – Cycle configuration error
There is an incongruent situation between the read checksum and the calculated one at the power-on of the machine.
Differently from the E93 the checksum of the cycle configuration is divided into two parts and so the machine has to check both.
When an error condition is detected the machine is blocked.
The alarm is displayed on the display.

E97 – Incongruence between selector and cycle tables configuration
The program id value read from the selector table, contained in the machine configuration data area, is not available in the cycle table contained in the cycle configuration data area.

8. Alarms

This situation can be caused by a read error from FLASH or by a wrong configuration file selected for the appliance configuration. When an error condition is detected the machine is blocked.
To clear the alarm is necessary reset the current cycle by selector.

E9C – User Interface wrong Configuration
Configuration wrongly or not received correctly by UI.
To clear the alarm is necessary reset the current cycle by selector or pressing start/pause button at the end of cycle or simply switching off the machine.

E9E – User Interface Touch failure
User Interface touch sensor not working.
To clear the alarm is necessary reset the current cycle by selector or pressing start/pause button at the end of cycle or simply switching off the machine.

EB1 (EH1) – Power supply frequency out of limits
Power supply period lower or higher than configured values (45 and 55 Hz).
The machine measures continuously the power supply period and if its value exceeds a configurable interval the machine starts the power failure management.

At the restart the machine waits a stable frequency value and measures the reaching time needed, if it exceeds the set timeout (5 s) the machine is blocked in alarm situation.
This alarm can be auto reset if the power supply period returns at normal values.

EB2 (EH2) – Power supply voltage too high
The power supply voltage value is higher than the maximum accepted value (~270 Volt).
The machine measures continuously the power supply voltage and if its value exceeds the limit for a time longer than 5 seconds, the machine is blocked in alarm situation.
The limit is referred to the conversion steps of the A/D converter and the value is calculated in order to recognise the wrong reading of the voltage sensing.
This alarm can be auto reset if the power supply voltage return at normal values

EB3 (EH3) – Power supply voltage too low
The power supply voltage value is lower than the configured value (~175 Volt).
The machine measures continuously the power supply voltage and if its value exceeds the configurable limit the machine starts the power failure management.

8. Alarms

At the restart the machine waits a stable voltage value and measures the reaching time needed, if it exceeds the 5 seconds timeout, the machine is blocked in alarm situation.
The limit is referred to the conversion steps of the A/D converter and the value is calculated in order to recognise the wrong reading of the voltage sensing or a voltage value lower than the configured one.
To avoid intermittence problem (due to a voltage level very close to the threshold) a hysteresis of 5VRMS is managed. It means that to restart, the supply voltage must go over the voltage threshold level by 5VRMS.
This alarm can be auto reset if the power supply voltage return at normal values.

EBD (EHD) – Safety relay short circuit
There is an incongruent situation between the sensing of the relay that drives the line safe relay and the output given by the microprocessor, this fault can be detected only with door opened and line safety relay switched off.
The alarm appears if these situations persist for 2 seconds.
To clear this alarm is necessary reset the machine.

EBE (EHE) – Safety relay fault
There is an incongruent situation between the sensing of the relay that drives the line safe relay and the output given by the microprocessor, this fault can be detected only with door closed and line safety relay switched on.
The alarm appears if these situations persist for 2 seconds.
To clear this alarm is necessary reset the machine, reset the current cycle.

EBF (EHF) – Safety relay sensing fault
The sensing of the safety relay gives to the microprocessor a signal out of the limits.
The alarm appears if the read value exceeds these intervals for a time longer than 2 second.
This alarm can be set only when the line safe relay is switched off.
To clear this alarm is necessary reset the machine.

EF6 – Safety reset
This warning is set when the machine fails a certification protection check.
When it recognizes a possible safety risk the machine "reset" itself and restarts again.
Can be set also if the machine is driven externally by a PC and the "Remote control mode" isn't activated. In this case reset itself to avoid wrong load activations.

8. Alarms

EC7 – Mist valve triac alarm
This alarm is set because of the mist valve is ON without command by the cycle execute.
The possible cause can be due to triac is short circuit or a high level of electromagnetic noise or valve fault.
Or while mist valve is ON by cycle execute, this alarm is set because of line safe relay closed, triac sensing detects voltage on valve, due to triac short circuit to ground (valve or wiring), electrical noise, line safe relay problem (main board failure), triac open or short, or valve connection loose.
When this condition is detected the cycle will be continue.
To clear this alarm is necessary switch off the machine or reset the current cycle.

EC9 – Mist valve triac sensing alarm
This alarm is set because of the waveform of the sensing signal is abnormal. The sensing of the relay gives to the microprocessor a signal out of the limits. The limits are different depending on the half wave of the power supply and the value refers to the conversion steps of the A/D converter. In the positive half wave the limit value is 250, while in the negative half wave the limit is 5. The alarm appears if the read value exceeds these intervals for a time longer than 1 second.
The possible cause can be due to the valve fault or a high level of electromagnetic noise or power supply noise.

When this condition is detected the cycle will be continue.
To clear this alarm is necessary switch off the machine or reset the current cycle.

9. Alarms summary table

| Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Reset Key
E41	Door opened	Door opened while the machine executing the cycle	Door opened while running the cycle Door switch defective	Cycle paused	Close the door
E45	Door close sensing fault	The door closed sensing circuit damaged.	Main broad defective	Cycle blocked	OFF/ON
E51	Drum Motor Short Circuit Alarm	the motor is running without command by the cycle execute	Motor relay is short circuit or a high level of electromagnetic noise or motor fault	Cycle blocked	OFF/ON
E52	Drum Motor Alarm	While motor is running by cycle execute, this alarm is set because of line safe relay closed, motor sensing detects voltage on motor	Motor short circuit to ground (motor or wiring), electrical noise, line safe relay problem (main board failure), motor relay open or short, or motor connection loose	Cycle blocked	OFF/ON
E62	Heater Short Circuit Alarm	The heater is ON without command by the cycle execute	Heater relay is short circuit or a high level of electromagnetic noise or motor fault	Cycle blocked	OFF/ON
E63	Heater Alarm	Line safe relay closed, heater sensing detects voltage on heater	Heater short circuit to ground (heater or wiring), electrical noise, line safe relay problem (main board failure), heater relay open or short, or heater connection loose	Cool cycle	OFF/ON
E64	Heater Sensing Alarm	The waveform of the sensing signal is abnormal	Heater fault or a high level of electromagnetic noise or power supply noise	Cycle blocked	OFF/ON
E71	Drying NTC Alarm	The NTC reading is out of range	NTC wiring failure, NTC fault or NTC reading circuit failure, NTC sensor is in open circuit or in short circuit	Cycle blocked	OFF/ON

9. Alarms summary table

Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Reset Key
E83	Wrong selector reading	Selector position code value not supported by the configuration data	Wrong configuration data on microprocessor Main board defective	Reset cycle	OFF/ON
E91	UI-MB Communication error	Communication problem between UI and MB	Wiring defective UI defective MB defective	---	OFF/ON
E92	UI-MB protocol Incongruence error	Protocol communication between UI and MB not compatible	Main board incompatible with user interface board	Cycle blocked	OFF/ON
E93	Machine configuration error	Incorrect configuration of appliance	Incorrect configuration data Main board defective	Cycle blocked	OFF/ON
E94	Cycle Configuration error	Incorrect configuration of washing cycles	Incorrect configuration data Main board defective	Cycle blocked	OFF/ON
E97	Incongruence between selector and cycles configuration	Incongruence between program selector and cycle configuration	Incorrect configuration data Main board defective	Cycle blocked	OFF/ON
E9C	User Interface Configuration fault	Configuration wrongly or not received	Display Board	No actions	OFF/ON
E9E	User Interface Touch failure	Touch display not working	Display Board	No actions	OFF/ON
EB1 (EH1)	Power supply frequency out of limits	Power supply period lower/higher than configured values	Wrong or disturbed Power Supply line. Main board defective	Wait for nominal power supply conditions	OFF/ON
EB2 (EH2)	Power supply voltage too high	MAIN_V sensing input voltage value greater than configured value	Wrong or disturbed Power Supply line. Main board defective	Wait for nominal power supply conditions	OFF/ON

9. Alarms summary table

Code	Alarm Description	Fault Condition	Possible Fault	Machine Action/Status	Reset Key
EB3 (EH3)	Power supply voltage too low	MAIN_V sensing input voltage value lower than configured value	Wrong or disturbed Power Supply line. Main board defective	Wait for nominal power supply conditions	OFF/ON
EBD (EHD)	Safety relay short circuit	Safety relay damage.	Main broad defective	Cycle blocked	OFF/ON
EBE (EHE)	Safety relay fault	Safety relay damage.	Main broad defective	Cycle blocked	OFF/ON
EBF (FHF)	Safety relay sensing fault	LINE_SAFE sensing input voltage value out of range	Main broad defective	Cycle blocked	OFF/ON
EF6	Safety reset	MB microcontroller damaged	Main Board defective	No actions to be performed. If still present replace the Main Board	OFF/ON
EC7	Mist valve triac alarm	The mist valve is ON without command by the cycle execute or line safe relay closed, triac sensing detects voltage on valve	Triac short circuit to ground (valve or wiring), electrical noise, line safe relay problem (main board failure), triac open or short, or valve connection loose or valve fault	No actions	OFF/ON
EC9	Mist valve triac sensing alarm	The waveform of the sensing signal is abnormal	The valve fault or a high level of electromagnetic noise or power supply noise	No actions	OFF/ON
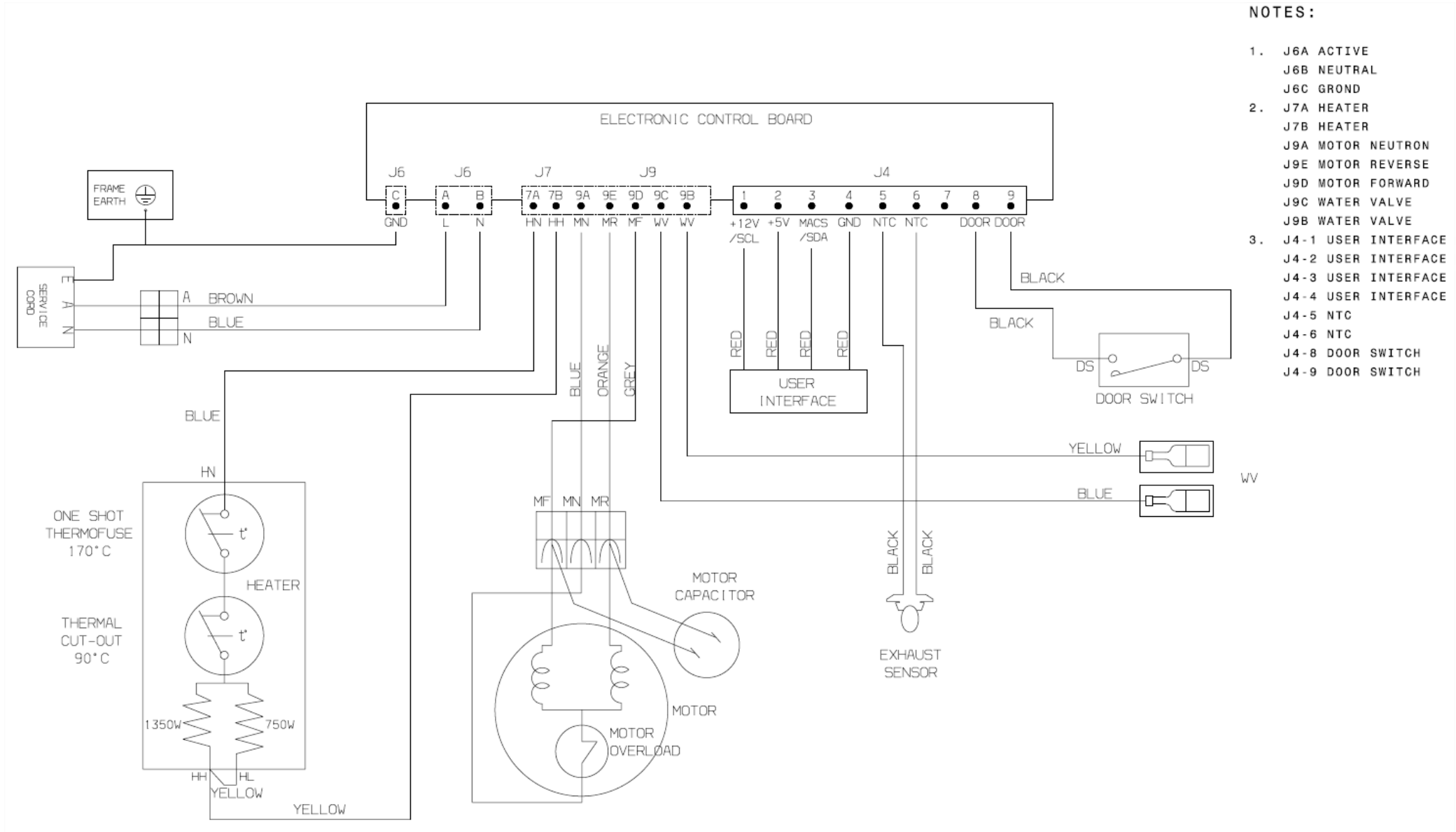
NOTES:

1. J6A ACTIVE
   J6B NEUTRAL
   J6C GROND
2. J7A HEATER
   J7B HEATER
   J9A MOTOR NEUTRON
   J9E MOTOR REVERSE
   J9D MOTOR FORWARD
   J9C WATER VALVE
   J9B WATER VALVE
3. J4-1 USER INTERFACE
   J4-2 USER INTERFACE
   J4-3 USER INTERFACE
   J4-4 USER INTERFACE
   J4-5 NTC
   J4-6 NTC
   J4-8 DOOR SWITCH
   J4-9 DOOR SWITCH