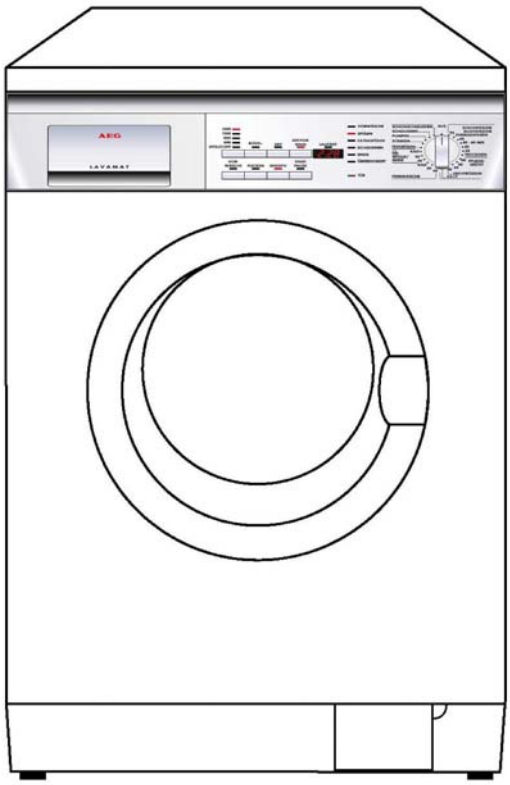
SERVICE MANUAL

WASHING



WASHING MACHINES
&
WASHER-DRYERS

with
EWM2000EVO
Electronic control
With sensors

and
“AEG NEXXXT”
display board

Production ZP (Porcia-Italy)

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EN

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 EWM 2000EVO electronic control system and produced in Porcia (Italy).
The electronic control system EWM 2000EVO consists of a main electronic board and one control/display board, “AEG NEXXXT” version.
The following are described:

- General characteristics
- Control panel and washing programmes
- Technical characteristics
- Guide to the diagnostics

For detailed information concerning hydraulic circuit, structural characteristics of the appliances and accessibility, please refer to Service Manual of washing machines and washer-dryers Series P6000/Nexus (publication no. 599 35 23-17).

2 PRECAUTIONS

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

3 GENERAL SPECIFICATIONS WM

Programme selector	▪ 24 positions with incorporated main switch
Serial port	▪ DAAS-EAP communications protocol up to 38400 baud
Power supply	▪ 220/240V ▪ 50/60 Hz
Type of washing	▪ Jet-system
Rinsing system	▪ Jet-system
Motor	▪ Collector, with tachometric generator
Spin speed	▪ 850 ÷ 1600 g/'
Anti-unbalancing system	▪ FUCS
Water fill	▪ 1 solenoid valve with 1 inlet – 2 or 3 outlets
Detergent drawer	▪ 3 compartments: prewash/stains, wash, conditioners ▪ 4 compartments: prewash/stains, wash, conditioners, bleach
Control of water level in the tub	▪ possibility of three-level pressure switch: 2 anti-boiling and anti-flooding safety levels ▪ electronic/analogic pressure switch
Door safety device	▪ Traditional (with PTC) ▪ Instantaneous
Power of heating element	▪ Up to 1950W
Temperature control	▪ NTC sensor
Audible signalling system	▪ Traditional, included on display board
Sensors	▪ Water level sensor ▪ Turbidity sensor

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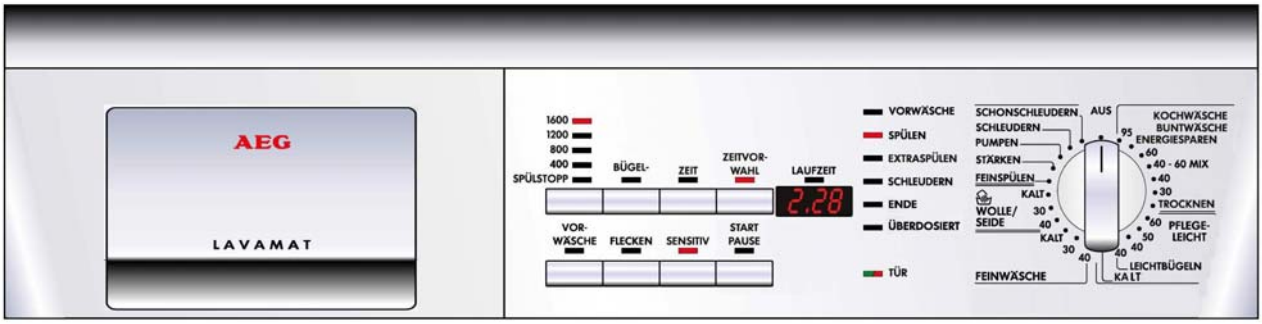
Control of water level in the tub	▪ possibility of three-level pressure switch: 2 anti-boiling and anti-flooding safety levels ▪ electronic/analogic pressure switch
Door safety device	▪ Traditional (with PTC) ▪ Instantaneous
Power of heating element	▪ Up to 1950W
Power of drying heating element	▪ Up to 1840W (920 + 920)
Temperature control	▪ NTC sensor
Audible signalling system	▪ Traditional, included on display board
Sensors	▪ Water level sensor ▪ Turbidity sensor

5 CONTROL PANEL

The control panel may vary depending on:

- type of control / display board
- programme selector
- design of front panel (the number of buttons and LEDs may vary)
- configuration of buttons

Example of WM control panel

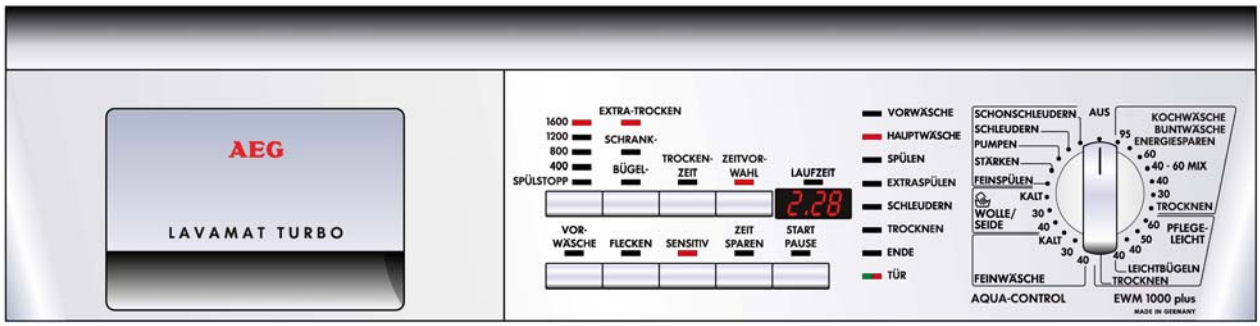


Buttons:
- *maximum 8, positioned horizontally*

LEDs
- *maximum 27*

Display:
- *3 digits formed by 24 red LEDs*

Example of WD control panel



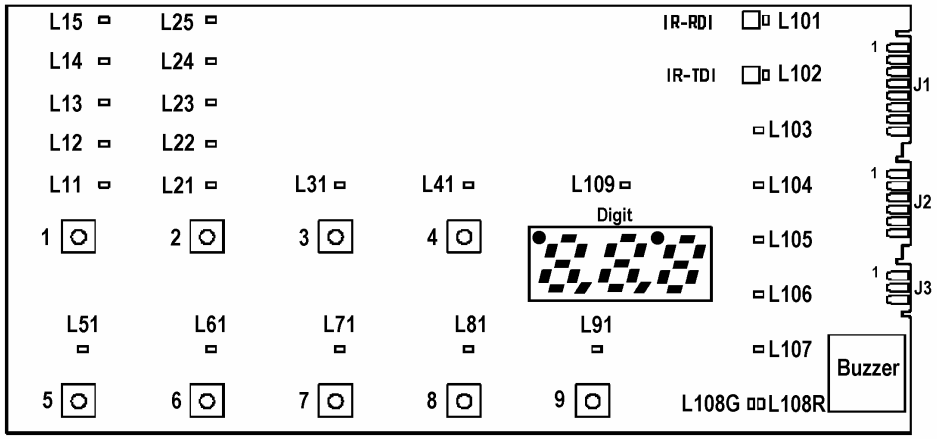
Buttons:
- *maximum 9, positioned horizontally*

LEDs
- *maximum 27*

Display:
- *3 digits formed by 24 red LEDs*

5.1 CONTROL/DISPLAY BOARD

5.1.1 Version with display

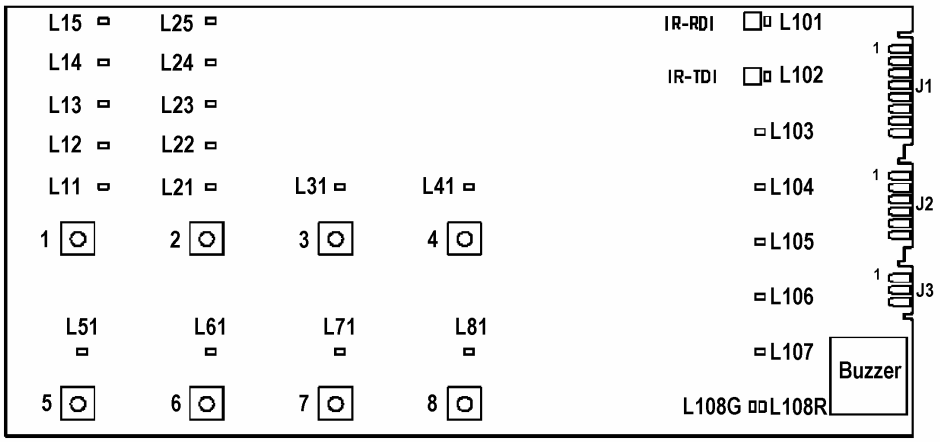


⇨ 3 digits

⇨ 26 LEDs: 24 red, one bicolour (red and green)

⇨ 9 buttons

Version without display:



⇨ 26 LEDs: 24 red, one bicolour (red and green)

⇨ 8 buttons

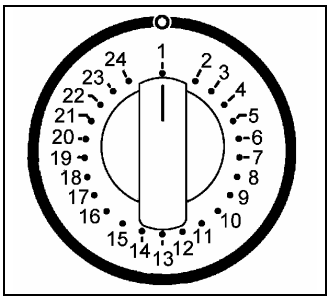
6 Washing programmes

6.1.1 Configuration of programmes

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

Type of fabric	Cotton/linen, Synthetic fibres, Delicates, Wool, Hand wash, Mini
Special programmes	Soak, Rinses, Spin, Drain, Conditioner
Temperature	Normal, Maximum: initial and maximum temperatures that can be selected for a specific washing programme
Spin	Normal, Minimum, Maximum
Options (Normal / Possible)	Bleaches, Economy (Energy Label), Stains, Short, Very short, Reduced spin, Night cycle, Half-load, Easy-Iron, Rinse Hold, Extra Rinse, Pre-wash, Soak, Sensitive, Vigorous, No spin
Programme phases	Pre-wash, Wash, Rinses, Spin, End of cycle

6.2 Programme selector



The programme selector determines the type of washing cycle (e.g. water level, drum movement, number of rinses) and the washing temperature to be selected for each type of fabric.
The programme selector may be rotated in either direction (clockwise or counter-clockwise).

The first position is used to cancel the current programme (and, if the main ON/OFF switch is built into the programme selector, to switch the appliance off).

6.3 Start/Pause

Start: After selecting the programme and the desired options, press this button to start the cycle. If the delayed-start option has been selected, the count-down will begin, and will be shown on the display. The LED stops flashing and remains lit for the entire duration of the programme.

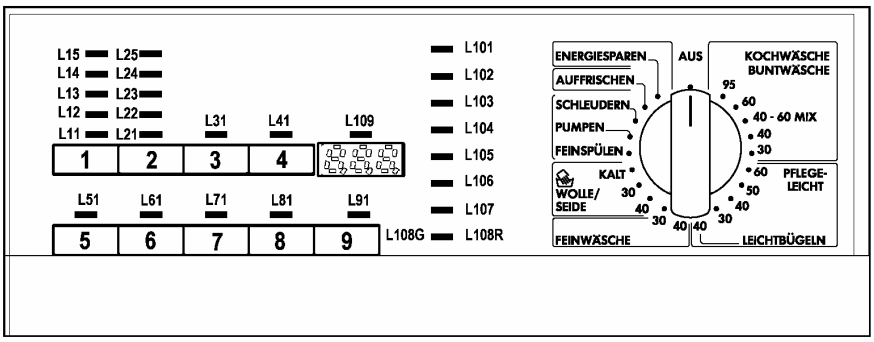
Pause: If the button is pressed again, the current programme is interrupted and the display (or the corresponding LED) begins to flash. When in pause mode, the door can be opened, but only if the machine is not performing the heating phase, the water level is not high, and the drum is stationary.

During the pause, the following modifications can be made to the programme:

- the OPTIONS for the cycle can be modified before the start of the phase in which they are activated
- the SPIN selection can be modified before the beginning of the final spin.

To re-start the programme, press START/PAUSE again.

6.4 Button functions



The washing programmes and the functions for each button vary according to the model, since these are determined by the procedure for the configuration of the appliance.

7 WASH PROGRAMMES AND OPTIONS

7.1 Possible programmes

The wash programmes can be configured to suit personal needs. The table below lists the standard programmes:

Programme		Temperature (°C)	No. of rinses	Final spin (RPM)
Cotton	**90**	85	3	450/650/850/1000/1200/ 1300/1400/1600
	90E	67	2	
	60	60	3	
	60E	57 (*)(**)	2	
	50	50	3	
	50/40E	44 (*)	2	
	40	42	3	
	30	30		
	cold	20		
Synthetics	**60**	60	3	Max. 900
	60/50E	42 (*)		
	50	50		
	40	40		
	30	30		
	cold	20		
Delicate fabrics	**40**	40	3	450/700
	30	30		
	cold	20		
Wool	**40**	40	3	Max. 1000
	30	35		
	cold	20		
Hand wash	**40**	40	3	Max. 1000
	30	35		
	cold	20		
Soak		30/20	----	----
Rinses		----	3	Max. 1600
Rinse for delicate fabrics		----	3	Max. 700
Fabric softener		----	1	Max. 1600
Drain		----	----	----
Spin		----	----	Max. 1600
Delicate spin		----	----	Max. 700
Short cycle		30	2	Max. 1000
Automatic		40	3	Max. 1200

(*) “energy label” programmes

(**)

Programme	Group	Temperature (°C)
COTTON 60 E	G20	45÷53
	G22	47÷53

7.2 Options of the washing cycle

The selection of the options is to be carried out after switching on the appliance and setting the desired programme with the selector and before pressing the start/pause button.
When the button is pressed, the corresponding LED lights; by pressing it again the LED switches off.

Possible options according the selected programme

			OPZIONI															
			Rinse-hold	**Night cycle**	**Pre-wash**	**Soak**	**Stains**	**Daily**	**Short**	**Economy**	**Sensitive**	**Extra rinse**	**Bleach**	**Half-load**	**Easy iron**	**Reduced spin speed**	**No spin**	**Rinse-hold**	**Drying**
Compatibility with PROGRAMMES	COTTON	**90°C**	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
		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
		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
	SYNTHETIC FABRICS	**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
		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
	MINI PROGRAMME	**30°C**	X	X													X	X	
	DELICATES	**40°C**	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	
	SILK	**30°C**	X	X									X				X	X	
	WOOL – HAND-WASH	**40°C**	X	X													X	X	
		30°C	X	X													X	X	
		Cold	X	X													X	X	
	SOAK																		
	RINSES			X								X	X	X		X	X	X	X
	CONDITIONER			X												X	X	X	X
	DRAIN																		
	SPIN																X		
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
	SOAK			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
	INTENSIVE			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
	SHORT			X	X	X	X			■		X	X	X	X	X	X	X	X
	ECONOMY			X	X	X	X				■	X	X	X	X	X	X	X	X
	SENSITIVE			X	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
	BLEACH			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	X	X
	EASY IRON			X	X	X	X	X	X	X	X		X	X	X	■	X	X	X
	REDUCED SPIN SPEED				X	X	X	X	X	X	X	X	X	X	X	X	■		
	NO SPIN				X	X	X	X	X	X	X	X	X	X	X	X		■	
Phases in which selection is possible	PRE-SELECTION			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PRE-WASH			X			X	X	X	X	X	X	X	X	X	X	X	X	X
	WASH			X			X	X	X	X	X	X	X	X	X	X	X	X	X
	RINSES																X	X	X
	SPIN																X	X	X

7.3 Description of options

7.3.1 Night cycle

- All the spin phases are eliminated. **Three** rinses are added to COTTON cycles and **one** rinse is added to SYNTHETICS cycles.
- The appliance is shut down with water in the drum before the final spin.
- No buzzer (if appliance is configured with a buzzer).
- To drain the water, select a drain or spin cycle.

7.3.2 Rinse Hold

- The appliance is shut down with water in the drum before the final spin.
- To drain the water, select a drain or spin cycle.

7.3.3 Prewash

- A prewash phase is added at the beginning of the cycle. The water is heated to 30°C (or may be cold, if selected).
- In COTTON and SYNTHETICS cycles, a short spin (pulse spin) is performed before the wash phase.
- This option is not available in WOOL and HAND WASH cycles.

7.3.4 Soak

- A prewash phase is added (lasting 30', with the same agitation as in the wool cycle) at the beginning of the programme. The water is heated to 30°C (or may be cold, if selected).
- In COTTON and SYNTHETICS cycles, a short spin (pulse spin) is performed before the wash phase.
- When combined with the delayed start option, a soak time from 30 minutes to 10 hours can be selected.
- This option is not available in WOOL and HAND WASH cycles.

7.3.5 Stains

- The motor operates for an extra 5 minutes after the water is heated to 40°C.
- Water is run through the prewash/stain remover compartment to withdraw the special stain removing product.
- This option is not available in DELICATE FABRICS, WOOL and HAND WASH cycles.
- Agitation during washing changes from vigorous to normal.

7.3.6 Short (daily)

- The structure of the wash phase in the COTTON - SYNTHETICS programmes is modified to obtain good performance in a short time (optimized for small loads).

7.3.7 Very Short

- The structure of the COTTON – SYNTHETICS – DELICATE FABRICS programmes is modified to obtain very short time wash times (optimized for small, lightly soiled loads).
- The number of rinses is reduced (one less rinse).
- The water level in the other two rinses is increased.

7.3.8 Intensive

- 10 minutes of normal movement are added to the wash phase in the cotton programme.

7.3.9 Economy / Energy label

- The COTTON 40°/50°/60°/90° - SYNTHETICS 50°/60° programmes are modified to reduce energy consumption
- The wash temperature in the 90°/60°/50° programmes is reduced; the temperature in the 40° programme is increased by 4°.
- The duration of the wash phase is increased

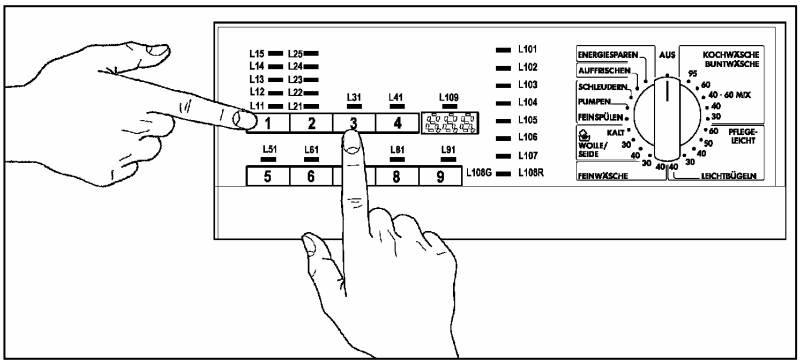
7.3.10 Sensitive

- One rinse is added to the COTTON – SYNTHETICS cycles
- During cotton cycles, agitation is reduced from vigorous to normal
- Intermediate spin phases are eliminated except for the final two, whose speed is reduced

7.3.11 Extra rinse

- Two rinses are added to COTTON cycles, and one rinse is added to SYNTHETICS – DELICATE FABRICS cycles
- Intermediate spin phases are eliminated except for the final two, which are reduced to 450 RPM

For appliances featuring a button, the corresponding LED lights when the button is pressed.
For appliances without a button, proceed as follows:



First select a COTTON, SYNTHETICS or DELICATE FABRICS cycle. Now, press buttons **1** and **3** at the same time for at least 2 seconds until the extra rinse LED lights up.
This option will remain selected during later cycles. To cancel the option, repeat the procedure: press buttons **1** and **3** at the same time for at least 2 seconds until the extra rinse LED switches off.

7.3.12 Bleach

- Water is run through the bleach compartment at the beginning of the first rinse in COTTON cycles
- Prewash is possible only if the appliance is equipped with three solenoid valves
- On models with two solenoid valves, the bleach option is not compatible with the prewash option

7.3.13 Half-load button

- Eliminates one rinse in COTTON programmes

7.3.14 Easy iron

- **In COTTON programmes:**
- Three rinses are added
- Intermediate spin phases are eliminated
- The final spin phase is pulsed
- An “unrolling” phase is included after the spin phase
- **In SYNTHETICS programmes:**
- The temperature in 50/60° cycles is reduced to 40°C
- Wash time is increased
- The cooling phase at the end of the wash phase is lengthened
- A rinse without spin is added
- An “unrolling” phase is included after the pulsed spin phase in the final rinse

7.3.15 Reduced spin speeds

- The speed during all spin phases is lowered, as shown on the table:

Maximum spin speed (RPM)	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
Reduced speed for COTTON (RPM)	450	450	450	450	500	550	600	650	700	750	800
Reduced speed for OTHER CYCLES (RPM)	450	450	450	450	450	450	450	450	450	450	450

7.3.16 No spin

- All spin phases are eliminated
- Three rinses are added to the COTTON cycle and one rinse is added to the SYNTHETICS cycle

7.3.17 Spin speed adjustment

- The speed of all spin phases in the cycle is reduced
- The last selected position can be used for NO SPIN and RINSE HOLD (stop with water in the drum)
- NO SPIN adds three rinses to the COTTON cycle and one rinse to the SYNTHETICS cycle

7.3.18 Reduced times (Quick)

- The COTTON – SYNTHETICS – DELICATE FABRICS programmes are modified to obtain very short time wash times (optimized for small, lightly soiled loads)
- The number of rinses is reduced (one less rinse)
- The water level in the other two rinses is increased
- When this option is selected, machine configuration is the same as in the SHORT – VERY SHORT programmes

7.3.19 Temperature adjustment

- Allows the wash temperature to be adjusted up to the max. temperature allowed for the cycle.
- Available during cycle selection; temperature can be adjusted (with machine in the pause mode) only if the heating phase has not yet begun.

7.3.20 Delayed start time

- **Models with digital display**

- When the programme is chosen, a delayed start ranging from 30 minutes to 23 hrs can be selected (☞ 30'☞ 60'☞ 90'☞ 2hrs☞ 3hrs...☞ 23hrs☞ 0hrs).
- During the delay period, the time decreases an hour at a time until 2hrs remain, then the decrease is 30 minutes at a time.
- To start the cycle immediately, after the delay time has been started, press the Start/Pause button, cancel the delay time by pressing the relative button, and press Start/Pause once again.

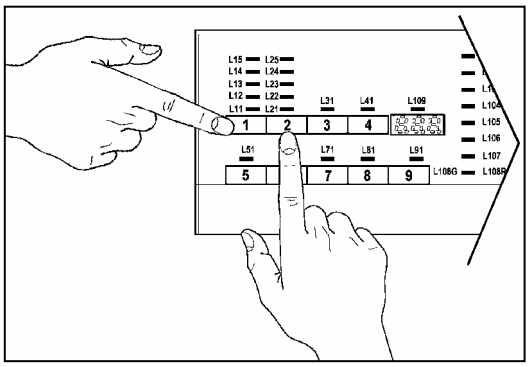
- **Models with LEDs**

- A pause is included before the programme begins. The delay time is indicated by the corresponding LEDs.
- To start the cycle after the delay time has been started, press the Start/Pause button, cancel the delay time by pressing the relative button, and press Start/Pause once again.

7.3.21 Disabling the buzzer

For models featuring a buzzer, this device can be disabled, in which case it will not sound during cycle selection or at the end of the cycle, though it remains enabled in the event of an alarm.

- To disable the buzzer, press buttons **1** and **2** at the same time for two seconds. The buzzer will remain disabled until the same procedure is repeated.



7.3.22 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.

7.3.23 “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.

7.4 Variation of rinses when options are selected

			Number of rinses for the options				
			Normal	Sensitive	Super rinse	Night cycle Easy-iron No spin	Night cycle Easy-iron No spin Super rinse
PROGRAMMES	COTTON	Very short	2	3	4	5	6
		Short	3	4	5	6	7
		Eco	3	4	5	6	7
		Eco	2	3	4	5	6
		Normal	3	4	5	6	7
	SYNTHETICS	Very short	2	3	3	3	5
		Short	3	4	4	4	5
		Eco	3	4	4	4	5
		Normal	3	4	4	4	5
	DELICATE	Very short	2	-	3	-	-
		Normal	3	-	4	-	-
		Normal	3	-	-	-	-
	WOOL	Normal	3	-	-	-	-
	HAND WASH	Normal	2	3	3	3	5

N.B.: The HALF-LOAD option subtracts one rinse from all COTTON programmes, except for the VERY SHORT programme.
- The turbidity sensor adds one rinse if there is too much foam or the water is very dirty in all programmes, except COTTON ECO and SYNTHETICS.

7.5 Display (certain models only)

The following information appears on the display:

- **Three flashing dashes** appear when the appliance is switched on
- **The duration of the wash programme** appears when the programme is selected. This value is the amount of time necessary for washing the maximum load of laundry for the type of programme selected. When the programme is started, the time counts down minute by minute.
- **The end of the programme** is indicated by a **"0"** (when the door can be opened)
- **Delayed start** is selected using the relative button. When the START/PAUSE button is pressed, the time begins counting down and decreases an hour at a time until 2 hrs remain, then the decrease is 30 minutes at a time.
- **An alarm code** indicates a malfunction has occurred.

7.6 LEDs

These LEDs display different information depending on machine configuration; the end-of-cycle LED is present on all models.

Type of LED	Function
Prewash	This LED lights up if the selected programme includes a prewash, and lights up during the prewash phase when the programme is executed.
Wash	This LED lights up if the selected programme includes a wash phase, and lights up during the wash phase when the programme is executed.
Prewash/ Wash	This LED lights up if the selected programme includes a prewash or wash phase, and lights up during the prewash or wash phase when the programme is executed.
Rinse	This LED lights up if the selected programme includes rinses, and lights up during the rinses when the programme is executed.
Spin	This LED lights up if the selected programme includes a spin phase, and lights up during the spin phase when the programme is executed.
Drain	This LED lights up if the selected programme includes a drain phase, and lights up during the drain phase when the programme is executed.
Extra rinse	This LED lights up when the programme is chosen if an extra rinse has been selected/stored (if an extra rinse is included in the programme), and lights up during the extra rinse when the programme is executed.
Rinse Hold	This LED lights up when the programme is chosen if this option has been selected, and at the end of the cycle when the machine stops with water in the drum.
Cycle in progress	This LED lights up while the programme is being executed.
End of cycle	This LED lights up at the end of the cycle; it is also used to signal alarms.
Filter clogged	This LED lights up at the end of the cycle if the drain filter is clogged.
Detergent overload	This LED lights up at the end of the cycle if too much detergent has been used.
ON/OFF	This LED lights up when the machine is switched on.
Door	- This LED lights up when the door is locked by the safety system. - The LED switches off when the door is no longer locked. - The LED flashes while the door is being unlocked (which occurs masterly on models with a safety system equipped with a PTC)
Time until end of cycle	This LED lights up when the display is showing the time remaining until the end of the cycle.
Drying	Lights during selection if the programme includes a drying cycle and during the cycle when it is in progress.

8 WASHING PROGRAMMES

8.1 Base programmes for Cotton / Linen: cold-30-40-60-90° (without options)

N.°	Phase	Description		Drain pump	Recirc. pump	Deterg Dispens.	Motor Movement			CYCLE				
							Rpm	Movem.	Pause	90°	60°/60°	40°	30°	*
1	Prewash	Calibration	Level	ON	OFF		No mov.			DRAIN				
2		Flow Calibration	Level	OFF	OFF	PW	No mov.			WATER FILL				
3		Water softener Maintenance	Time	OFF	OFF	PW	55	4	12	1 min.				
4		Water fill	Level	OFF	OFF	PW	No mov.			COT_FIRST_PW_LEV				
5		Maintenance & Refill	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_FIRST_PW_LEV				
6		Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	HEATING UP TO 30°				20°
7		Maintenance	Time	OFF	ON (35/15)	PW	55	4	12	4 min.				
8		Drain	Time	ON	OFF		No mov.			Empty Elect. + 14 Sec.				
9		Spin	Time	ON	OFF		IMP C0			4,5 min. with AS control				
10	Wash	Calibration	Level	ON	OFF		No mov.			DRAIN				
11		Flow Calibration	Level	OFF	OFF	PW	No mov.			WATER FILL				
12		Water softener Maintenance	Time	OFF	OFF	PW	55	4	12	1 min.				
13		Water fill	Level	OFF	OFF	W	No mov.			COT_FIRST_W_LEV				
14		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_SECOND_NW_LEV				
15		Heating	Temperature	OFF	ON (35/15)	W	55	8	8	40°				
16		Heating	Temperature	OFF	ON (35/15)	W	55	8	8	60°	60°	42°	30°	20°
17		Heating	Temperature	OFF	OFF	W	55	8	8	85°				
18		Maintenance	Time	OFF	ON (35/15)	W	55/10/3 se 90° 55/8/8			2 min.	5 min.	5 min.	T° ref 5 min.	T° ref 5 min.
19		Maintenance	Time	OFF	ON (35/15)	W	55	8	8	3 min.				
20		Heating	Time	OFF	OFF	W	55	10	3		5 min.			
21		Heating	Temperature	OFF	ON (35/15)	W	55	8	8		60°			
22		Maintenance	Time	OFF	ON (35/15)	W	55	10	3			42°	30°	
23		Heating	Time	OFF	ON (35/15)	W	55	10	3	5 min.	10 min.	10 min.	10 min.	10 min.
24		Maintenance	Time	OFF	OFF	W	55	8	8			5 min.	5 min.	5 min.
25		Maintenance	Time	OFF	ON (35/15)	W	55	10	3			10 min.	10 min.	10 min.
26		Heating	Time	OFF	OFF	W	55	8	8		10 min.	15 min.	15 min.	15 min.
27		Heating	Time	OFF	OFF	W	55	10	3	10 min.				
28		Cooling	Time	OFF	OFF	W	55	8	8	4 litres				
29		Maintenance	Time	OFF	OFF	W	55	4	12	2 min.				
30		Calibration of Turbidity Sensor	Time	ON	OFF		No mov.			20 sec.				
31		Drain	Time	ON	OFF		No mov.			Empty Elect. + 14 Sec.				
32		Spin	Time	ON	OFF		C1			5 min. with AS control				
33		Drain	Time	ON	OFF		No mov.			20 sec.				

(The data are indicative)

PW = Prewash W = Wash AS = Anti-foam control

Only if cycle begins with a wash phase and not with a prewash

8.2 Rinses of Cotton programmes

N.°	PHASE	Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor movement			CYCLE				
							Rpm	Movem.	Pause	90	60	40	30	*
34	1st Rinse	Water fill	Level	OFF	OFF	BL	NO mov			COT_FIRST_N_R_LEV				
35		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_REF_N_R_LEV				
36		Turbidity measurement	Time	OFF	OFF		NO mov			6 sec.				
37		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.				
38		Spin	Time	ON	OFF		C1			5 min. with AS control				
39	2nd Rinse	Water fill	Level	OFF	OFF	W	NO mov			COT_INT_N_R_LEV				
40		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_REF_N_R_LEV				
41		Turbidity measurement	Time	OFF	OFF		NO mov			6 sec.				
42		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec				
43		Spin	Time	ON	OFF		C1			5 min. with AS control				
44	Last rinse (softener)	Water fill	Level	OFF	OFF	SF	NO mov			COT_LAST_N_R_LEV				
45		Maintenance	Time	OFF	OFF		55	8	8	30 sec.				
46		Water fill	Level	OFF	OFF	SF	NO mov			Qsf (4 Litres)				
47		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_REF_N_R_LEV				
48		Turbidity measurement	Time	OFF	OFF		NO mov			6 sec.				
49		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec				
50		Spin	Time	ON	OFF		COT_CF			9 min. with AS control				

(The data are indicative)
BL = Bleach SF = Softener W = Wash AS = Anti-foam

8.3 Cotton / Linen programmes: 90 Eco, 40-60 “energy label” (without options)

N.°	PHASE	Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor movement			CYCLE		
							Rpm	Movem.	Pause	90	60	40
1	Prewash	Calibration	Level	ON	OFF		NO mov			DRAIN		
2		Flow calibration	Level	OFF	OFF	PW	NO mov			WATER FILL		
3		Maintenance water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
4		Water fill	Level	OFF	OFF	PW	NO mov			COT_FIRST_PW_LEV		
5		Maintenance & Refill	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV		
6		Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating up to 30°		
7		Maintenance	Time	OFF	ON (35/15)	PW	55	4	12	4 min.		
8		Drain	Time	ON	OFF		NO mov			Empty Elect. + 14 sec.		
9		Spin	Time	ON	OFF		C0			4,5 min. with AS control		
10	Wash	Calibration	Level	ON	OFF		NO mov			DRAIN		
11		Flow calibration	Level	OFF	OFF	PW	NO mov			WATER FILL		
12		Maintenance water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
13		Water fill	Level	OFF	OFF	W	NO mov			COT_FIRST_W_LEV		
14		Maintenance & Refill	Time	OFF	OFF	W	40	10	3	5 min. COT_FIRST_W_LEV		
15		Maintenance without Refill	Time	OFF	ON (35/15)	W	40	10	3	1 min.		
16		Maintenance	Time	OFF	OFF	W	NO mov			22 sec.		
17		Maintenance	Time	OFF	OFF	W	40	10	3	1 min. COT_SEC_EW_LEV		
18		Maintenance	Time	OFF	ON (35/15)	W	40	10	3	1 min.		
19		Maintenance	Time	OFF	OFF	W	NO mov			22 sec.		
20		Heating	Temperature	OFF	OFF	W	55	8	8	67°	54°	44°
21		Heating	Temperature	OFF	OFF	W	55	10	3			T° ref 30 min.
22		Maintenance	Time	OFF	ON (35/15)	W	55	10	3	T° ref 5 min.	15 min.	
23		Maintenance	Time	OFF	OFF	W	NO mov				30 sec.	30 sec.
24		Heating	Time	OFF	OFF	W	55/10/3 40° 55/8/8			67°	54°	44°
25		Heating	Temperature	OFF	ON (35/15)	W	55	8	8			10 min.
26		Maintenance	Time	OFF	ON (35/15)	W	55	10	3	25 min.	20 min.	20 min.
27		Heating	Time	OFF	ON (35/15)	W	55	8	8			5 min.
28		Maintenance	Temperature	OFF	OFF	W	55	8	8	5 min.	5 min.	
29		Maintenance	Time	OFF	OFF	W	55	10	3			
30		Heating	Time	OFF	ON (35/15)	W	55	10	3		15 min.	
31		Drain	Time	ON	OFF		NO mov			Empty Elect. + 14 sec.		
32		Spin	Time	ON	OFF		C1			5 min. with AS control		
33		Drain	Time	ON	OFF		NO mov			20 sec.		

(The data are indicative)
PW= Prewash W = Wash AS = Anti-foam control
Only if cycle begins with a wash phase and not with a prewash

8.4 Rinses of Cotton / Linen programmes: 90 Eco, 40-60 “energy label” (without options)

8.4.1 For programmes with two rinses

N.°	PHASE	Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor Movement			CYCLE		
							Rpm	Movem.	Pause	90	60	40
34	1st Rinse	Water fill	Level	OFF	OFF	BL	NO mov			COT_FIRST_E_R_LEV		
35		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_REF_E_R_LEV		
36		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.		
37		Spin	Time	ON	OFF		C1			5 min. with AS control		
38	Last rinse (softener)	Water fill	Level	OFF	OFF	SF	NO mov			COT_LAST_E_R_LEV		
39		Maintenance	Time	OFF	OFF		55	8	8	30 sec.		
40		Water fill	Level	OFF	OFF	SF	NO mov			Qsf (4 Litres)		
41		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	4 min. COT_REF_E_R_LEV		
42		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	4 min. COT_REF_E_R_LEV		
43		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec		
44		Spin	Time	ON	OFF		C1			5 min. with AS control		

(The data are indicative)
BL = Bleach SF = Softener W = Wash AS = Anti-foam control

8.4.2 For programmes with three rinses

N.°	PHASE	Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor Movement			CYCLE		
							Rpm	Movem.	Pause	90	60	40
34	1st Rinse	Water fill	Level	OFF	OFF	BL	NO mov			COT_FIRST_E_R_LEV		
35		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_REF_E_R_LEV		
36		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.		
37		Spin	Time	ON	OFF		C1			5 min. with AS control		
38	2nd Rinse	Water fill	Level	OFF	OFF	W	NO mov			COT_INT_E_R_LEV		
39		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	5 min. COT_REF_E_R_LEV		
40		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.		
41		Spin	Time	ON	OFF		C1			5 min. with AS control		
42	Last rinse (softener)	Water fill	Level	OFF	OFF	SF	NO mov			COT_LAST_E_R_LEV		
43		Maintenance	Time	OFF	OFF		55	8	8	30 sec.		
44		Water fill	Level	OFF	OFF	SF	NO mov			Qsf (4 Litres)		
45		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	8 min. COT_REF_E_R_LEV		
46		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec		
47		Spin	Time	ON	OFF		C1			5 min. with AS control		

(The data are indicative)
BL = Bleach SF = Softener W = Wash AS = Anti-foam control

8.5 Synthetics programmes: cold – 30 – 40 – 50 – 60° (without options)

N.°	PHASE	Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor Movement			CYCLE				
							Rpm	Movem.	Pause	60	50	40	30	*
1	PREWASH	Calibration	Level	ON	OFF		NO mov			Drain				
2		Flow calibration	Level	OFF	OFF	PW	NO mov			Water fill				
3		Maintenance water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
4		Water fill	Level	OFF	OFF	PW	NO mov			COT_FIRST_PW_LEV				
5		Maintenance & Refill	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_FIRST_PW_LEV				
6		Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating up to 30°				20°
7		Maintenance	Time	OFF	ON (35/15)	PW	55	4	12	4 min.				
8		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.				
9		Spin	Time	ON	OFF		IMP C0			4,5 min. with AS control				
10	WASH	Calibration	Level	ON	OFF		NO mov			Drain				
11		Flow calibration	Level	OFF	OFF	PW	NO mov			Water fill				
12		Maintenance water softener	Time	OFF	OFF	PW	55	4	15	1 min.				
13		Water fill	Level	OFF	OFF	W	NO mov			SYN_FIRST_W_LEV				
14		Maintenance & Refill	Time	OFF	ON (35/15)	W	55	8	8	3 min. SYN_SECOND_NW_LEV				
15		Heating	Temperature	OFF	ON (35/15)	W	55	10	3	40°	40°	40°	30°	20°
16		Heating	Temperature	OFF	ON (35/15)	W	55	8	8	60°	50°			
17		Maintenance	Time	OFF	ON (35/15)	W	55	10	3	10 min.	10 min.	10 min.	10 min.	T° ref 10 min.
18		Heating	Time	OFF	ON (35/15)	W	55	10	3	60°	50°	40°	30°	
19		Maintenance	Time	OFF	OFF	W	55	10	3	15 min.	15 min.	15 min.	15 min.	
20		Maintenance	Time	OFF	ON (35/15)	W	55	10	3					15 min.
21		Cooling	Time	OFF	OFF	W	55	3	10	4 Litres				
22		Maintenance	Time	OFF	ON (35/15)	W	55	3	10	2 min.				
23		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.				

(The data are indicative)
PW= Prewash BL = Bleach SF = Softener W = Wash AS = Anti-foam

8.6 Rinses of synthetics programmes

N.°	PHASE	Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor Movement			CYCLE				
							Rpm	Movem.	Pause	90	60	40	30	*
24	1st Rinse	Water fill	Level	OFF	OFF	BL	NO mov			SYN_FIRST_R_LEV				
25		Wait	Time	OFF	OFF		NO mov			6 sec.				
26		Maintenance & Refill	Time	OFF	ON (60/20)	W	55	10	3	3 min. SYN_REF_R_LEV				
27		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.				
28		Drain	Time	ON	OFF		55	4	12	1 min.				
29	2nd Rinse	Water fill	Level	OFF	OFF	W	NO mov			SYN_INT_R_LEV				
30		Wait	Time	OFF	OFF		NO mov			6 sec.				
31		Maintenance & Refill	Time	OFF	ON (60/20)	W	55	10	3	3 min. SYN_REF_R_LEV				
32		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.				
33		Drain	Time	ON	OFF		55	4	12	1 min.				
34		Spin	Time	ON	OFF		C0			4,5 min. with AS control				
35	Last rinse (softener)	Water fill	Level	OFF	OFF	SF	NO mov			SYN_LAST_R_LEV				
36		Wait	Time	OFF	OFF		NO mov			6 sec.				
37		Maintenance	Time	OFF	OFF		55	10	3	30 sec				
38		Water fill	Level	OFF	OFF	SF	55	10	3	Qsf (4 Litres)				
39		Maintenance & Refill	Time	OFF	ON (60/20)	W	55	10	3	5 min. SYN_REF_R_LEV				
40		Drain	Time	ON	OFF		NO mov			Empty Elect.+ 14 sec.				
41		Spin	Time	ON	OFF		SYN_SF			4 min. with AS control				

(The data are indicative)
PW= Prewash BL = Bleach SF = Softener W = Wash AS = Anti-foam

8.7 Programmes for delicate fabrics: cold – 30° - 40° (without options)

N.°	PHASE		Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor Movement			CYCLE		
								Rpm	Movem.	Pause	40	30	*
1	PREWASH		Calibration	Level	ON	OFF		NO mov			Drain		
2			Flow calibration	Level	OFF	OFF	PW	NO mov			Water fill		
3			Maintenance water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
4			Water fill	Level	OFF	OFF	PW	NO mov			COT_FIRST_PW_LV		
5			Maintenance & Refill	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_FIRST_PW_LV		
6			Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating up to 30°		20°
7			Maintenance	Time	OFF	ON (35/15)	PW	55	4	12	4 min.		
8			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
9	WASH		Calibration	Level	ON	OFF		NO mov			Drain		
10			Water fill	Level	OFF	OFF	W	NO mov			SOFT_LEV		
11			Maintenance & Refill	Time	OFF	OFF	W	55	4	12	1 min.		
12			Water fill	Level	OFF	OFF	W	NO mov			DEL_FIRST_W_LEV		
13			Maintenance & Refill	Time	OFF	ON (35/15)	W	55	4	12	1 min. DEL_SEC_W_LEV		
14			Heating	Temperature	OFF	ON (35/15)	W	55	4	12	40°	30°	20°
15			Maintenance	Time	OFF	ON (35/15)	W	55	4	12	T° ref 10 min	T° ref 10 min	T° ref 10 min
16			Heating	Time	OFF	ON (35/15)	W	55	4	12	40°	30°	20°
17			Maintenance	Time	OFF	ON (35/15)	W	55	4	12	10 min.	10 min.	10 min.
18			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
19	Rinses	1st Rinse	Water fill	Level	OFF	OFF	BL	NO mov			DEL_FIRST_R_LEV		
20			Maintenance & Refill	Time	OFF	ON (60/20)	W	55	4	12	3 min. DEL_REF_R_LEV		
21			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
22			Drain	Time	ON	OFF		55	4	12	1 min.		
23		2nd Rinse	Water fill	Level	OFF	OFF	W	NO mov			DEL_INT_R_LEV		
24			Maintenance & Refill	Time	OFF	ON (60/20)	W	55	4	12	3 min. DEL_REF_R_LEV		
25			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
26			Drain	Time	ON	OFF		55	4	12	1 min.		
27		Last rinse (softener)	Water fill	Level	OFF	OFF	SF	NO mov			DEL_LAST_R_LEV		
28			Maintenance	Time	OFF	OFF		55	4	12	30 sec.		
29			Water fill	Level	OFF	OFF	SF	55	4	12	Qsf (4 Litres)		
30			Maintenance & Refill	Time	OFF	ON (60/20)	W	55	4	12	3 min. DEL_REF_R_LEV		
31			Drain	Time	ON	OFF		NO mov			Empty + 14 S		
32			Drain	Time	ON	OFF		55	4	12	1 min.		
33			Spin	Time	ON	OFF		DF			700Rpm		

(The data are indicative)
PW= Prewash BL = Bleach SF = Softener W = Wash

8.8 Wool programmes: cold – 30° - 40°

N.°	PHASE		Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor Movement			CYCLES		
								Rpm	Movem.	Pause	40	30	*
1	WASH		Calibration	Level	ON	OFF		NO mov			Drain		
2			Water fill	Level	OFF	OFF	W	NO mov			SOFT_LEV		
3			Maintenance & Refill	Time	OFF	OFF	W	35	1	40	1 min.		
4			Water fill	Level	OFF	OFF	W	NO mov			WOOL_FIRST_W_LEV		
5			Maintenance & Refill	Time	OFF	ON (35/15)	W	35	1	40	1 min. WOOL_SEC_W_LEV		
6			Heating	Temperature	OFF	ON (35/15)	W	35	1	40	38°	33°	20°
7			Maintenance	Time	OFF	ON (35/15)	W	35	1	40	T° ref 15 min.	T° ref 15 min.	T° ref 15 min.
8			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
9	Rinses	1st Rinse	Water fill	Level	OFF	OFF	W	NO mov			WOOL_INT_R_LEV		
10			Maintenance & Refill	Time	OFF	ON (60/20)	W	35	1	40	3 min. WOOL_REF_R_LEV		
11			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
12			Drain	Time	ON	OFF		55	4	12	1 min.		
13		2nd Rinse	Water fill	Level	OFF	OFF	W	NO mov			WOOL_INT_R_LEV		
14			Maintenance & Refill	Time	OFF	ON (60/20)	W	35	1	40	3 min. WOOL_REF_R_LEV		
15			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
16			Drain	Time	ON	OFF		55	4	12	1 min.		
17		Last rinse (softener)	Water fill	Level	OFF	OFF	SF	NO mov			WOOL_LAST_R_LEV		
18			Maintenance	Time	OFF	OFF		35	1	40	30 sec.		
19			Water fill	Level	OFF	OFF	SF	35	1	40	Qsf (4 Litres)		
20			Maintenance & Refill	Time	OFF	ON (60/20)	W	35	1	40	5 min. WOOL_REF_R_LEV		
21			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
22			Spin	Time	ON	OFF		WF			1000 rpm		

(The data are indicative)
SF = Softener W = Wash

8.9 Hand wash programmes: cold – 30° - 40°

N.°	PHASE		Description		Drain pump	Recirc. Pump	Deterg. Disp	Motor movement			CICLO		
								Rpm	Movem.	Pause	40	30	*
1	WASH		Calibration	Level	ON	OFF		NO mov			Drain		
2			Water fill	Level	OFF	OFF	W	NO mov			SOFT_LEV		
3			Maintenance & Refill	Time	OFF	OFF	W	35	1	57	1 min.		
4			Water fill	Level	OFF	OFF	W	NO mov			HAND_FIRST_W_LEV		
5			Maintenance & Refill	Time	ON (35/15)	ON (35/15)	W	35	1	57	1 min. HAND _SEC_W_LEV		
6			Heating	Temperature	ON (35/15)	ON (35/15)	W	35	1	57	38°	33°	20°
7			Maintenance	Time	ON (35/15)	ON (35/15)	W	35	1	57	T° ref 15 min.	T° ref 15 min.	T° ref 15 min.
8			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
9	Rinses	1st Rinse	Water fill	Level	OFF	OFF	W	NO mov			HAND _INT_R_LEV		
10			Maintenance & Refill	Time	OFF	ON (60/20)	W	35	1	57	3 min. HAND _REF_R_LEV		
11			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
12			Drain	Time	ON	OFF		55	4	12	1 min.		
13		2nd Rinse	Water fill	Level	OFF	OFF	W	NO mov			HAND _INT_R_LEV		
14			Maintenance & Refill	Time	OFF	ON (60/20)	W	35	1	57	3 min. HAND _REF_R_LEV		
15			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
16			Drain	Time	ON	OFF		55	4	12	1 min.		
17		Last rinse (softener	Water fill	Level	OFF	OFF	SF	NO mov			HAND _LAST_R_LEV		
18			Maintenance	Time	OFF	OFF		35	1	40	30 sec.		
19			Water fill	Level	OFF	OFF	SF	35	1	40	Qsf (4litri)		
20			Maintenance & Refill	Time	OFF	ON (60/20)	W	35	1	57	5 min. HAND _REF_R_LEV		
21			Drain	Time	ON	OFF		NO mov			Empty + 14 sec.		
22			Spin	Time	ON	OFF		WF			1000 rpm		

(The data are indicative)
SF = Softener W = Wash

9 Drying programmes

9.1 Drying programme for cotton

DRYING COTTON (full power)													
N.°	PHASE	Function		Drain pump	Fan	LEV	Compart.	Motor			Temperature	Time	Notes
								Rpm	Movem.	Pause			
1	DRYING	Drain	Level	ON	OFF			NO mov					
2		Water fill control	Level	OFF	OFF	(10.0)	COND	55	8	8			
3		Unrolling	Time	ON	OFF			55	8	8		10 min.	Only when autodrying is enabled
4		Cooling	Temperature	ON	ON		COND	55	8	8	35°	20 min.	Not for time-controlled drying
5		Calculation of drying time	Time	ON	ON		COND	55	8	8	COT_DRY_TEMP		
6		Timer-controlled drying	Time	OFF	ON			55	57	3	COT_DRY_TEMP	10 min.	Only when drying time >20 min.
7		Timer-controlled drying	Time	ON	ON		COND	55	57	3	COT_DRY_TEMP	Max. 130 min	
8		Cooling	Time	ON	ON		COND	55	57	3	35°	10 min.	

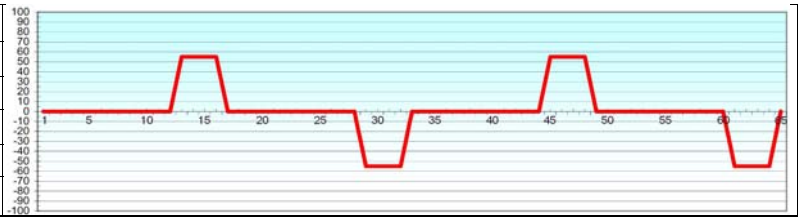
9.2 Drying programme for synthetics

DRYING SYNTHETICS (half power)													
N.°	PHASE	Function		Drain pump	Fan	LEV	Compart.	Motor			Temperature	Time	Notes
								Rpm	Movem.	Pause			
1	DRYING	Drain	Level	ON	OFF			NO mov					
2		Water fill control	Level	OFF	OFF	(10.0)	COND	55	8	8			
3		Unrolling	Time	ON	OFF			55	8	8		10 min.	Only when autodrying is enabled
4		Cooling	Temperature	ON	ON		COND	55	8	8	35°	20 min.	Not for time-controlled drying
5		Calculation of drying time	Time	ON	ON		COND	55	8	8	SYN_DRY_TEMP		
6		Timer-controlled drying	Time	OFF	ON			55	57	3	SYN_DRY_TEMP	10 min.	Only when drying time >20 min.
7		Timer-controlled drying	Time	ON	ON		COND	55	57	3	SYN_DRY_TEMP	Max. 130 min	
8		Cooling	Time	ON	ON		COND	55	57	3	35°	10 min.	

9.3 Drum movements at low speed and during spin

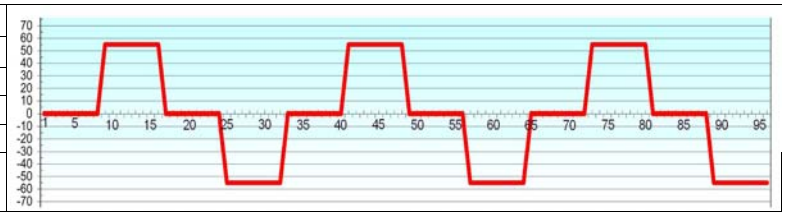
9.3.1 D55 Delicate movement

D55	
sec	**g/'**
12	0
4	55
12	0
4	-55



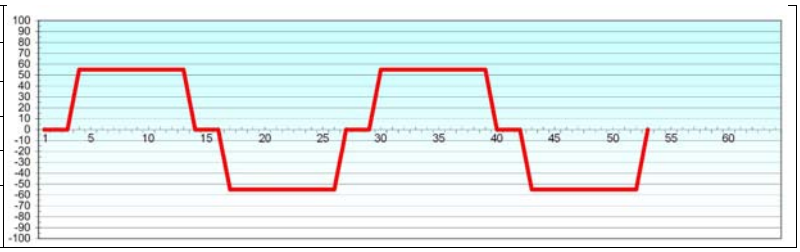
9.3.2 N55 Normal movement

N 55	
sec	**g/'**
8	0
8	55
8	0
8	-55



9.3.3 E55 Vigorous movement

E 55	
sec	**g/'**
3	0
10	55
3	0
10	-55



9.3.4 PWL_1 (wool) Delicate movement

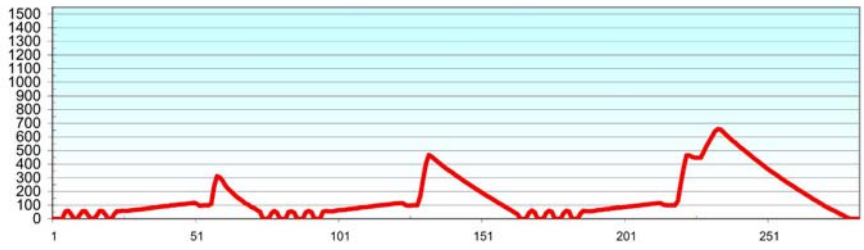
PWL_1	
sec	**g/'**
40	0
1	35
40	0
1	-35

9.3.5 PWL_4 (hand wash) Delicate movement

PWL_4	
sec	**g/'**
57	0
1	35
57	0
1	-35

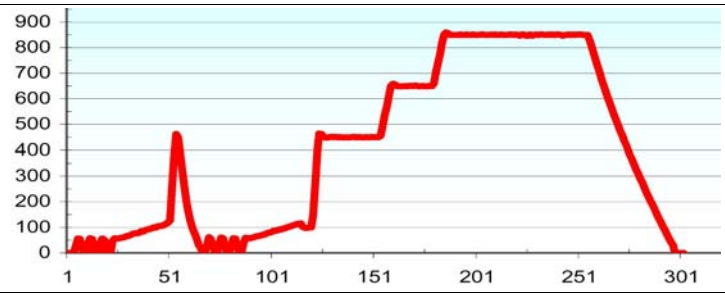
9.3.6 Cotton/Linen, Synthetics – C0 Intermediate Synthetics Prewash Spin

C0 (Prewash)	
g/'	sec.
FUCS	x
300	1
FUCS	x
450	1
FUCS	x
450	5
650	1



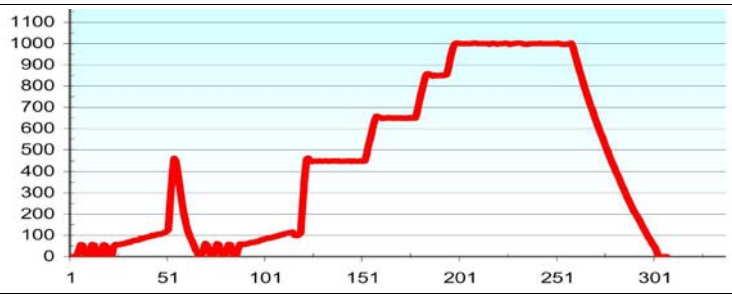
9.3.7 C1 Cotton/Linen Wash Spin

C1 (wash)	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	30
650	20
850	10
1200	60



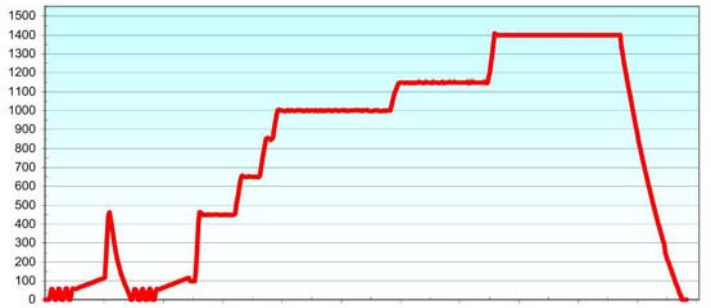
9.3.8 C1 Cotton/Linen Rinses Intermediate Spin

C1 (intermediate)	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	30
650	20
850	10
1200	60



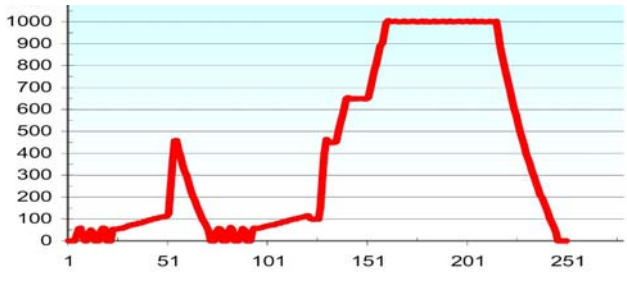
9.3.9 COT_CF Cotton/Linen Final Spin

COT_CF (final cotton)	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	30
650	15
850	5
1000	95
1150	75
1400	45
1600	65



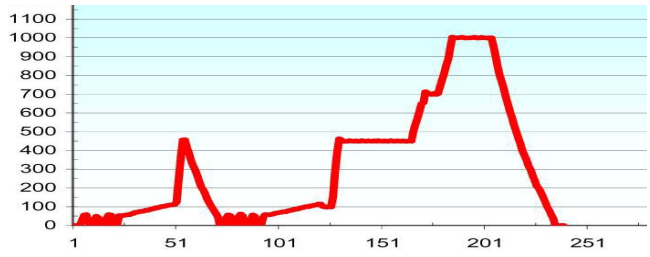
9.3.10 SYN_CF Synthetics Intermediate and Final Spin

SYN_SF (intermediate/final)	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	5
650	10
1000	55



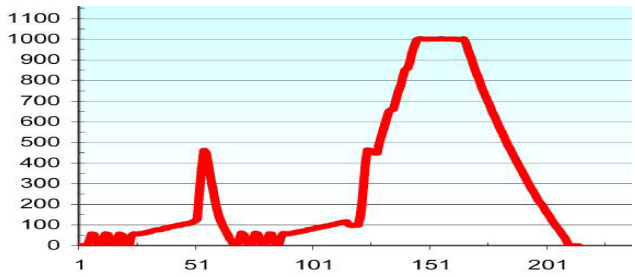
9.3.11 DEL_ CF Delicates Final Spin

DF (final delicates)	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	35
700	5
1000	20



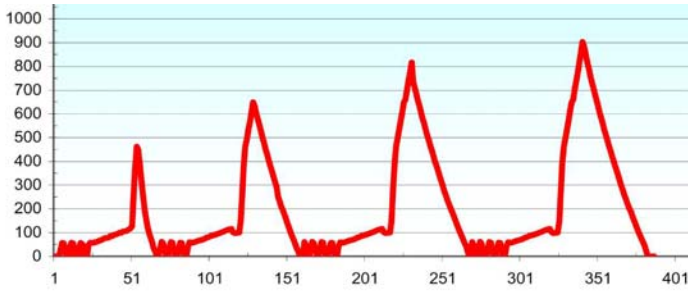
9.3.12 WOOL_CF Hand Wash and Wool Final Spin

WF (final wool)	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	5
650	1
850	1
1000	20



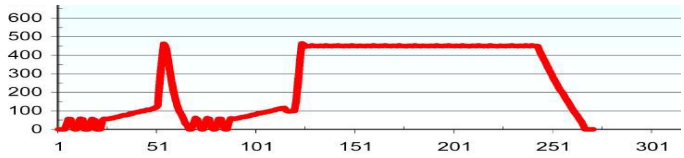
9.3.13 Easy iron Impulse Cycle EI

EASY_IRON_IMP	
g/'	sec
FUCS	x
450	1
FUCS	x
650	1
FUCS	x
800	1
FUCS	x
900	1



9.3.14 Intermediate Spin for Cotton/Linen CSR with Super-rinse option

CSR	
g/'	sec
FUCS	x
IMP 450	1
FUCS	x
450	90



9.3.15 Movement during drying phase

DRY_MOV	
g/'	sec.
3	0
55	57
3	0
-55	57

Notes:
FUCS antiunbalance function before spin phase
x variable duration
- in the diagrams the speed is indicated as rotations per minute and the time in seconds

9.4 Control of water level in tub

The water fill is carried out in three ways:
- **level fill**: is controlled by the electronic pressure switch level
- **time fill**: the duration is calculated by the electronic to fill the set quantity
- **level fill and time fill combined**

The different levels are determined by the model configuration and depend on the type of tub used.

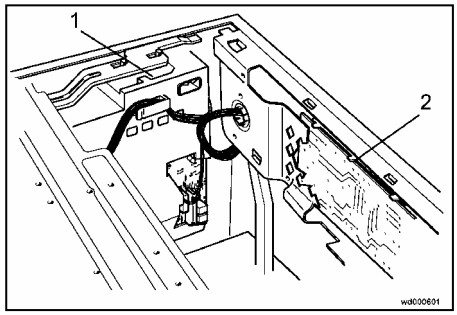
Level water fill

Type	Description of fill type	G 19		G 20		G 22	
	Levels for COTTON/LINEN	**P(*)**	**V(*)**	**P(*)**	**V(*)**	**P(*)**	**V(*)**
COT_FIRST_PW_LEV	Water fill first prewash level	*100*	65	100	65	100	65
COT_SEC_PW_LEV	Water fill refill prewash level	100	65	100	65	100	65
COT_SEC_EW_LEV	Water fill second wash level for ECONOMY cycle	70	50	65	45	60	40
COT_SEC_NW_LEV	Water fill second wash level for NORMAL cycle	80	50	80	50	70	55
COT_FIRST_N_R_LEV	Water fill first rinse for NORMAL cycle	100	20	160	20	160	20
COT_FIRST_W_LEV	Water fill first wash level	90	50	85	40	85	45
COT_INT_E_R_LEV	Water fill intermediate rinses for ECO cycle	140	20	105	20	105	20
COT_INT_N_R_LEV	Water fill intermediate rinses for NORMAL cycle	105	20	105	20	100	20
COT_REF_E_R_LEV	Water fill refill for ECO cycle	60	20	60	20	60	20
COT_REF_N_R_LEV	Water fill refill for NORMAL cycle	60	20	60	20	65	20
COT_LAST_N_R_LEV	Water fill last rinse for NORMAL cycle	120	20	120	20	130	30
COT_LAST_E_R_LEV	Water fill last rinse for ECO cycle	135	20	120	20	120	20
SOFT_LEV	Water fill	40	15	40	15	40	15
	Levels for SYNTHETICS						
SYN_FIRST_W_LEV	Water fill first level SYNTHETICS	80	20	90	20	90	20
SYN_SEC_W_LEV	Water fill second level SYNTHETICS	75	50	85	50	70	45
SYN_FIRST_R_LEV	Water fill first rinse SYNTHETICS	130	20	135	20	145	20
SYN_INT_R_LEV	Water fill intermediate rinses	130	20	135	20	145	20
SYN_LAST_R_LEV	Water fill first level last rinse	90	20	100	20	100	20
SYN_REF_R_LEV	Rinse level refill	60	20	60	20	60	20
	Levels for DELICATES						
DEL_FIRST_W_LEV	Water fill first level DELICATES	155	120	155	120	130	170
DEL_SEC_W_LEV	Water fill second level DELICATES	150	100	150	100	120	70
DEL_FIRST_R_LEV	Water fill first level first rinse	170	120	170	120	160	120
DEL_INT_R_LEV	Water fill first level intermediate rinses	170	120	170	120	160	120
DEL_LAST_R_LEV	Water fill first level last rinse	145	120	145	120	130	120
DEL_REF_R_LEV	Water fill rinse level refill	150	120	150	120	150	100
	Levels for HAND WASH						
HAND_FIRST_W_LEV	Water fill first level HAND WASH	140	100	140	100	125	100
HAND_SEC_W_LEV	Water fill second level HAND WASH	130	100	130	100	120	100
HAND_INT_R_LEV	Water fill first level intermediate rinses	180	100	180	100	160	100
HAND_LAST_R_LEV	Water fill first level last rinse	150	100	150	100	130	100
HAND_REF_R_LEV	Water fill rinse level refill	130	100	130	100	120	100
	Levels for WOOL						
WOOL_FIRST_W_LEV	Water fill first level	140	90	140	90	120	90
WOOL_SEC_W_LEV	Water fill second level	130	90	130	90	115	90
WOOL_INT_R_LEV	Water fill first level intermediate rinses	170	120	180	100	150	100
WOOL_LAST_R_LEV	Water fill first level last rinse	145	120	150	100	115	100
WOOL_REF_R_LEV	Water fill rinse level	150	120	120	90	120	100

*(*)*The measures are expressed in mm.

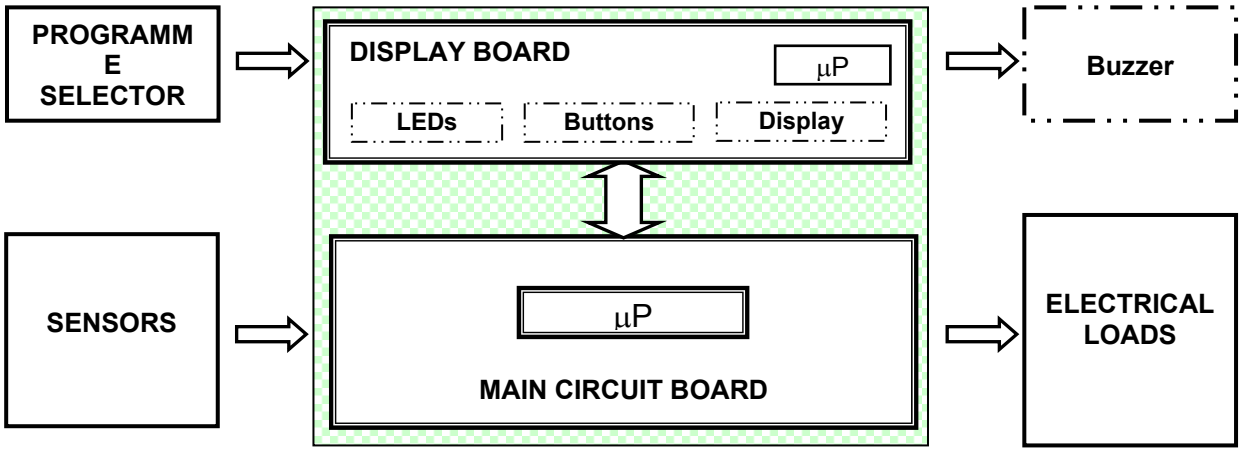
10 TECHNICAL CHARACTERISTICS

10.1 EWM2000EVO Electronic control



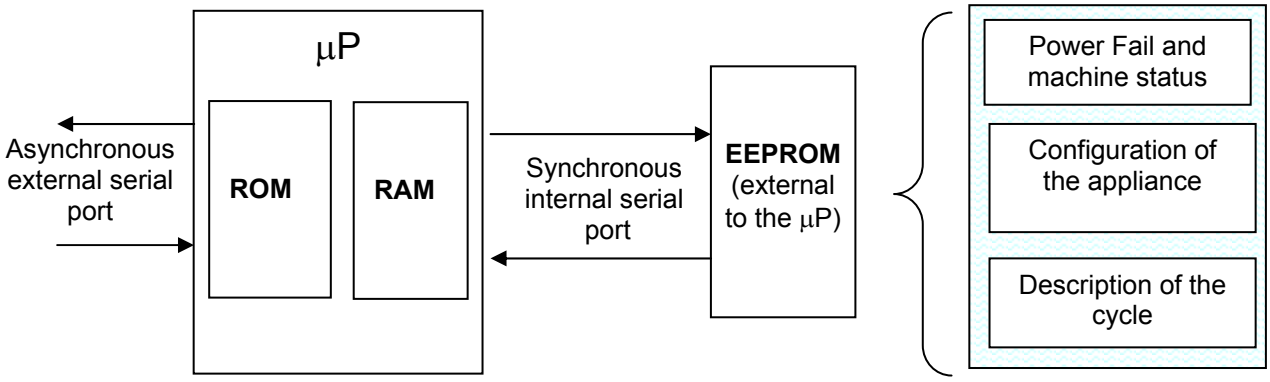
The EWM2000 EVO electronic control consists of a main PCB (1) and a control/display board (2).

10.1.1 Functions of the circuit board



- ⇨ The circuit board receives signals relative to the cycle settings via the control/display board. The buttons, the LEDs and the display are also mounted on this board which is connected to the programme selector.
- ⇨ The board also powers all the electrical components (solenoid valves, washing motor, drain pump, heating element, door interlock).
- ⇨ The board controls the temperature of the washing water via an NTC sensor, as well as the speed of rotation of the washing pump according to the signal received from the tachometric generator.
- ⇨ It checks the water level in tub via the level pressure switch and the safety one.
- ⇨ It controls the water level via the flow meter.
- ⇨ It checks the turbidity of the rinse water via the turbidity sensor.

10.1.2 Memory in the control system



The main circuit board features an EEPROM memory (external to the microprocessor) which stores in memory data relative to the configuration, description of the cycle, cycle status in case of a power failure, and any alarm conditions.
The configuration data (entered in the factory using a computer with a DAAS interface) determine the functionalities of the appliance (number and type of programmes, options, LEDs etc).

The overall structure of the microprocessor memory on the main PCB is subdivided into three sections:

ROM This area of memory contains the software with the general instructions that control the operation of the appliance, such as those of the electrical components and alarms. The ROM is set up by the manufacturer of the microprocessor, and cannot be modified.

RAM This part of memory contains all the variables used during the execution of the wash programme, which are written in dynamic format. The RAM can be read using a DAAS interface.

EEPROM This area of memory contains:

⇒ the data necessary to restart the appliance in case of a power failure.

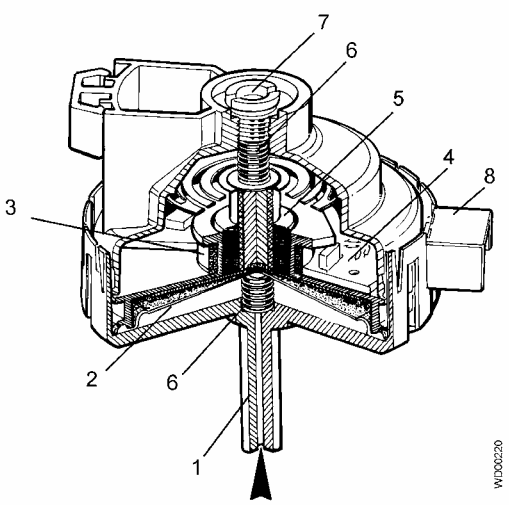
⇒ the parameters for the wash cycle, such as water fill level, speed and type of motor movement, and the temperature during the various phases of the wash cycle. Once written, this data is protected and, normally, can be read only using a DAAS interface.

⇒ data relative to the configuration of the appliance, such as the speed of the final spin phase, the volume of the tub, the type of washing system, etc. This data may be entered either via a DAAS interface or via the control/display board.

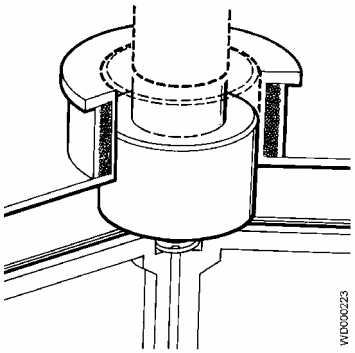
10.2 Analogic pressure switch (electronic)

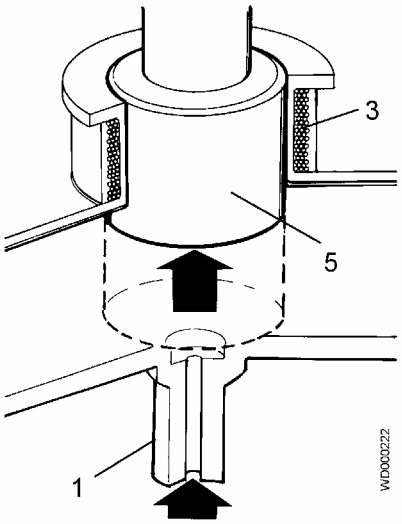
The electronic pressure switch is an analogic device that controls the water level in the tub. It is directly connected to the main electronic PCB.

1. air inlet hose
2. diaphragm
3. coil
4. electronic circuit (oscillator)
5. core
6. spring
7. calibration screw
8. connector

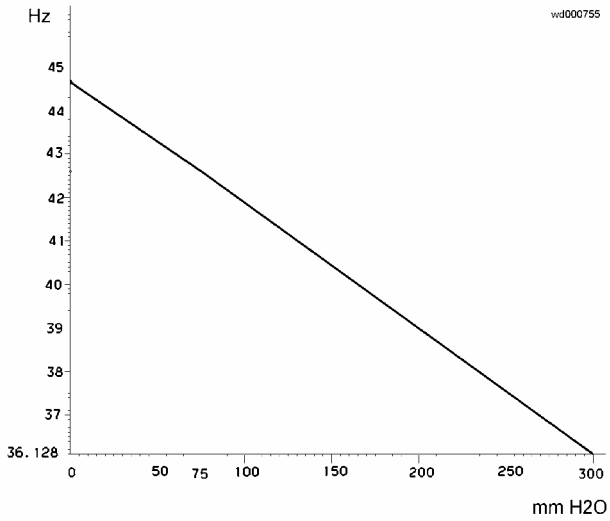


The pressure switch is connected by a hose to the pressure chamber.
When the tub is filled with water, the pressure created inside the hydraulic circuit expands the diaphragm. This in turn modifies the position of the core inside the coil, thus changing the inductance and the frequency of the oscillating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





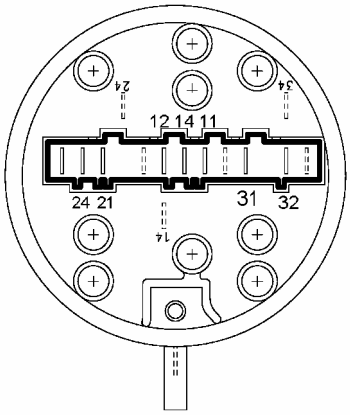
Frequency variation according to pressure

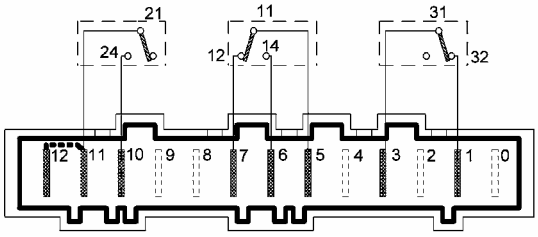


10.3 Pressure switch

Control of the water level is performed by a two or three-level pressure switch which functions as follows:

- contact **11-14**: anti-boiling safety level
- contact **21-24**: anti-boiling safety level
- contact **31-32**: anti-overflow safety level *(not all models)*



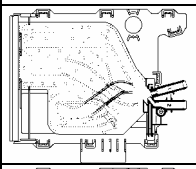
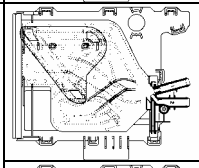
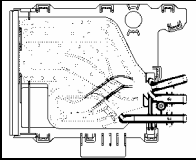


10.3.1 Pressure switch settings

	Full (mm)	Refill (mm)
Anti-boiling level	50± 3	30± 3
Anti-boiling level	50± 3	30± 3
Anti- overflow level	390± 15	240±50

10.4 Detergent dispenser

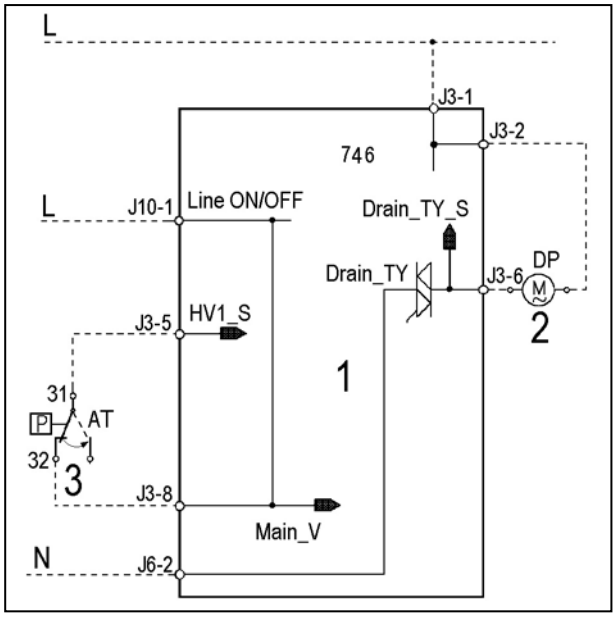
The EWM 2000 plus electronic system and LCD can control different types of dispensers:

Type	Detergent dispenser		No. of solenoid valves
3 compart-ments		Pre-wash/Stains – Wash – Conditioner *(pre-wash and stain are in alternance)*	2
4 compart-ments		Pre-wash/Stains – Wash – Bleach - Conditioner *(the pre-wash/stain and conditioner compartment are linked together with a "intersection")*	2
		Pre-wash/Stains – Wash – Bleach - Conditioner *(pre-wash and stain are in alternance)*	3

10.5 Anti-flooding device

1. PCB
8. Drain pump
9. Anti-overflow pressure switch

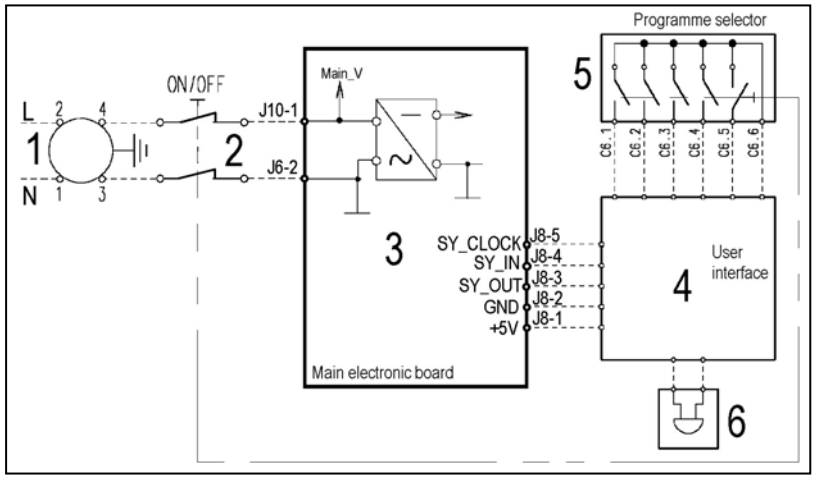
HV1_S Anti-overflow level sensor



The third pressure switch level (if featured) is used as an anti-overflow safety device: if the pressure switch contact should open in the FULL position, the PCB actions the drain pump until the pressure switch returns to the EMPTY position.

10.6 Power supply and programme selection

The main board (3) is powered by the interference suppressor (1) and by the closure of the contacts of the main switch (2). The affected connectors are J6-2 (neutral) and J10-1 (line).
The control/display board (4) is powered at 5V by the main board: through the programme selector (5) it is possible to select the programme. The selection of the options / start is performed through the board buttons (4).
The buzzer (if featured) (6) is powered by the display board.



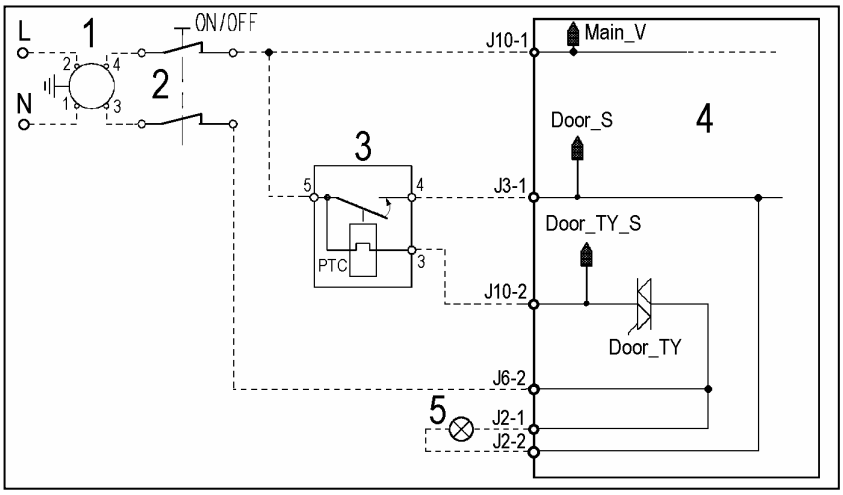
10.7 Door interlock

There are two types of door interlock:

- voltmetric with PTC: it is always necessary to wait from 1 to 3 minutes before opening the door.
- instantaneous: the door can be opened as soon as the cycle ends.

10.7.1 Voltmetric interlock with PTC

1. *Suppressor*
2. *Main switch (button or programme selector)*
3. *Door interlock*
4. *Main PCB*
5. *Door pilot lamp closed*



- **Operating principle**

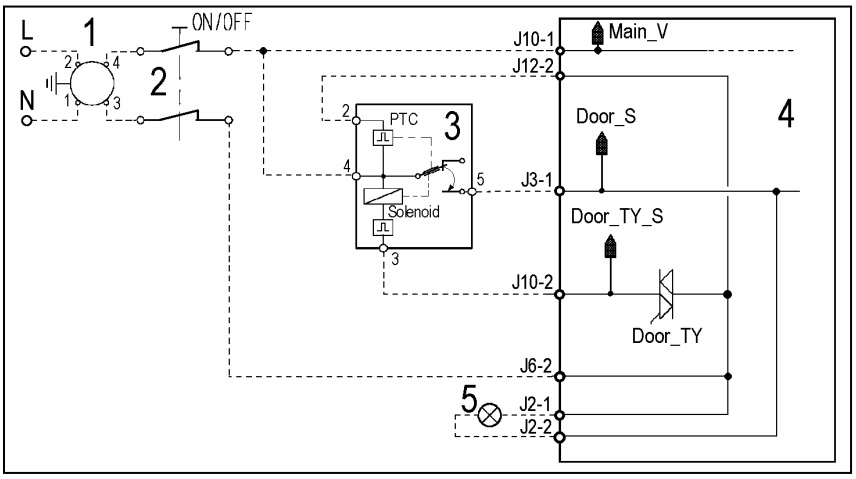
- When the washing programme is started by pressing the START/PAUSE button, the bi-metal PTC (contacts 3-5) is powered by the triac on the PCB (J10-2 connector): after 2 – 4 seconds, this closes the switch (5-4) which powers the electrical components of the appliance (only if the door is closed).
- The 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 2 minutes (PTC cooling time).

Door locked" pilot lamp

- Certain models feature a pilot lamp which lights to indicate that the door is locked. This pilot lamp switches off when the door can be opened.

10.7.2 Instantaneous door interlock

1. *Suppressor*
2. *Main switch (button or programme selector)*
3. *Door interlock*
4. *Main PCB*
5. *Door pilot lamp off*



- **Operating principle**

- When the appliance is switched on, the ON/OFF switch closes and the bi-metal PTC (contact 4-2) is powered; the door, however, is not locked.
- When the programme starts (START/PAUSE button), the PCB transmits a 20 msec voltage signal to contacts 4-3 of the solenoid valve (J10-2 connector of the board) (at least 6 seconds must elapse after switching on); this signal locks the door and, at the same time, closes the main switch (contacts 4-5) which powers all the components in the appliance.

- At the end of the programme, the PCB transmits two 20 msec signals (at an interval of 200 msec).
  - the first signal does not release the door.
  - the second signal (which is transmitted only if the system functions correctly) releases the door interlock and at the same time the contacts of the main switch are opened.

- **Conditions necessary for door release**

- Before transmitting the door release signals, the main PCB checks for the following conditions:
- the drum must be stationary (no signal from the tachometric generator)
- the water level must not be higher than the lower edge of the door
- the temperature of the water must not exceed 50°C.

- **Automatic release device**

- In the event of a power failure, if the appliance is switched off, or if the solenoid should malfunction, the bi-metal PTC cools over a period of 1 to 4 minutes, and then releases the door.

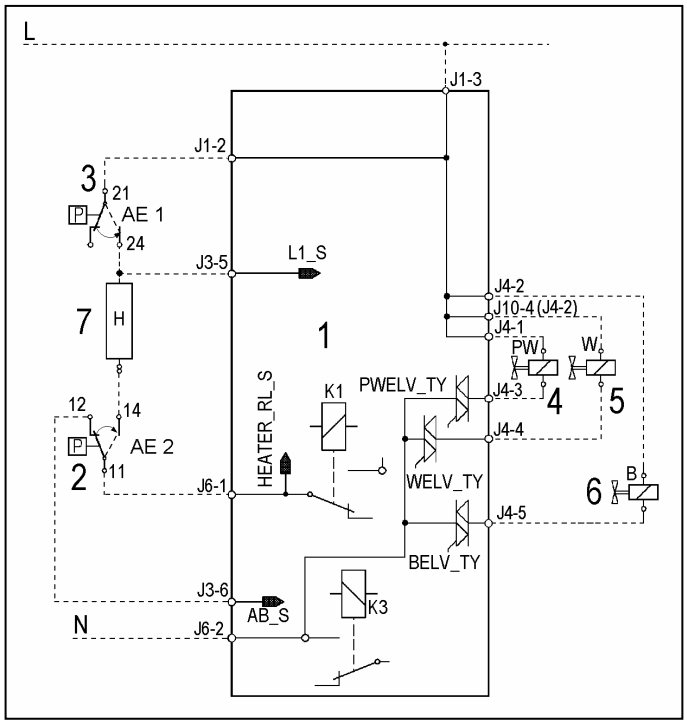
- **“Door locked” pilot lamp**

- Certain models feature a pilot lamp which lights to indicate that the door is locked. This pilot lamp switches off when the door can be opened.

10.8 Water fill system

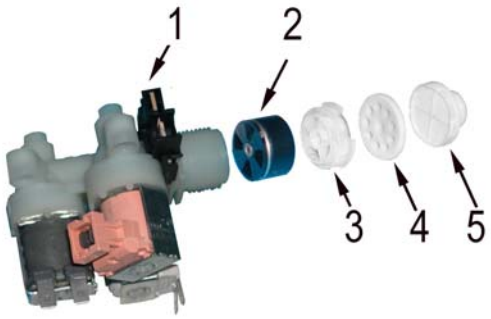
The solenoid valves are powered by the main board through two or three triacs. The state of the pressure switch (full-empty) is detected over two sensing lines.

1. *Main board*
2. *Anti-boiling level switch AE2*
3. *Anti-boiling level switch AE1*
4. *Solenoid valve for prewash*
5. *Solenoid valve for wash*
6. *Solenoid valve for bleach (on some models)*
7. *Heating element*



10.8.1 Flow meter

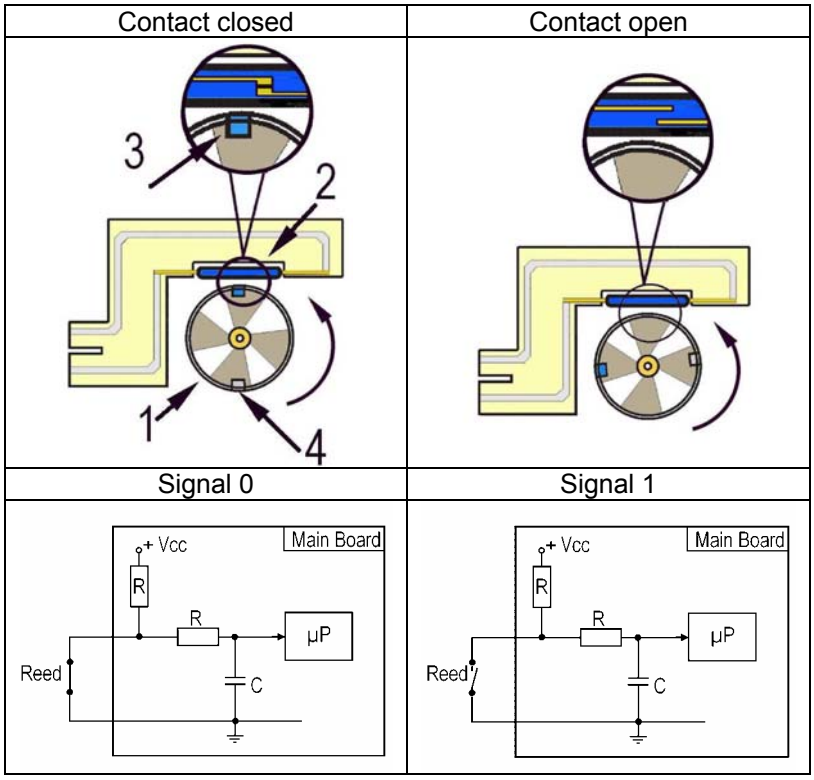
Some models of solenoid valves have a built-in flow sensor which measures the quantity of water in litres that is loaded into the appliance.
If the sensor malfunctions, the water level is controlled by the analogue pressure switch.

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

10.8.2 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.

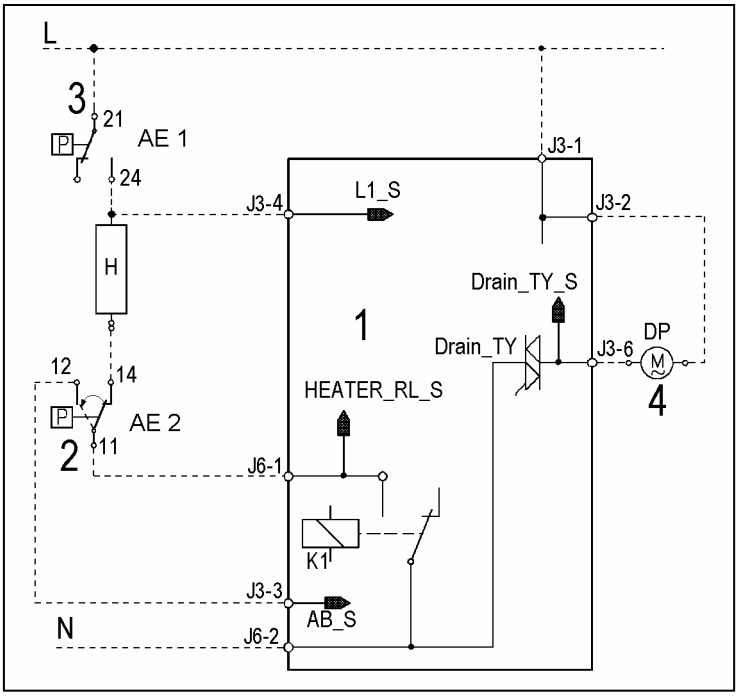
Low water pressure

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.

10.9 Drain pump

1. *PCB*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Drain pump*



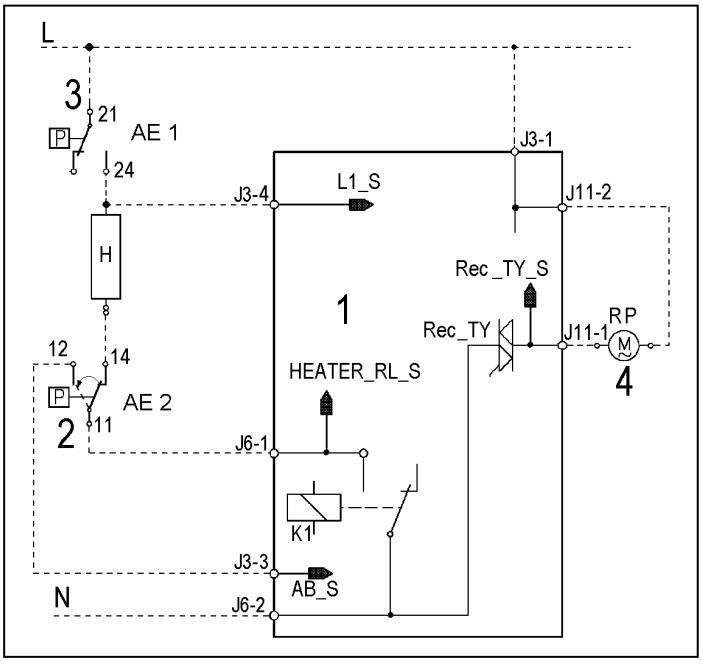
The PCB powers the drain pump via a triac as follows:

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

10.10 Recirculation pump

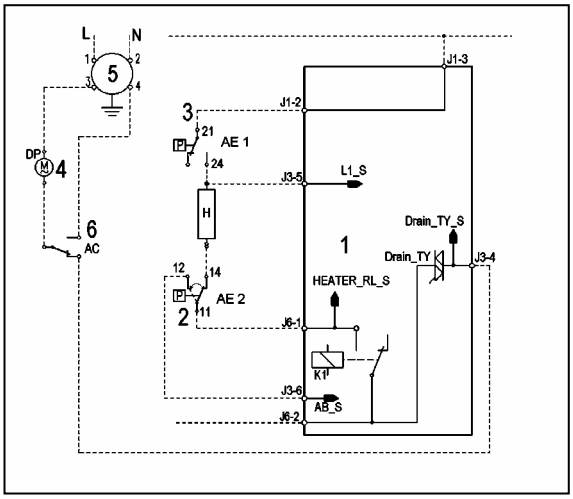
In the Jetsystem models the recirculation pump is powered directly by the main PCB via a triac.

1. *PCB*
2. *Anti-boiling pressure switch AE 2*
3. *Anti-boiling pressure switch AE 1*
4. *Recirculation pump*



10.11 Aqua Control

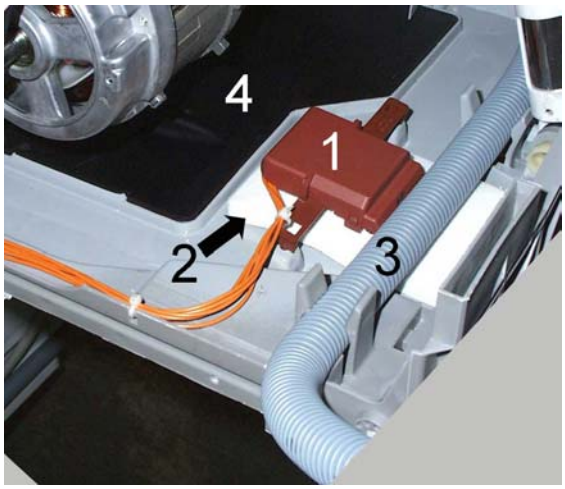
The Aqua Control system is a sensor located in contact with the base frame. The sensor detects water leaks inside the machine (not only during normal operation, but also when the unit is off and plugged in) and starts the drain pump if a leak occurs.



1. *Main board*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Drain pump*
5. *Interference filter*
6. *Aqua Control*

Besides supporting the various components on the appliance (drain pump, recirculation pump, shock absorbers, etc.), the base frame is designed to be a container that collects any water leaks that may occur (from the drum, from a tube or pipe, etc.). These leaks are directed into an area where a float is installed. When this float is raised by water, it actuates a microswitch that starts the drain pump. When the switch is tripped, an alarm is also signalled (if the machine is switched on).

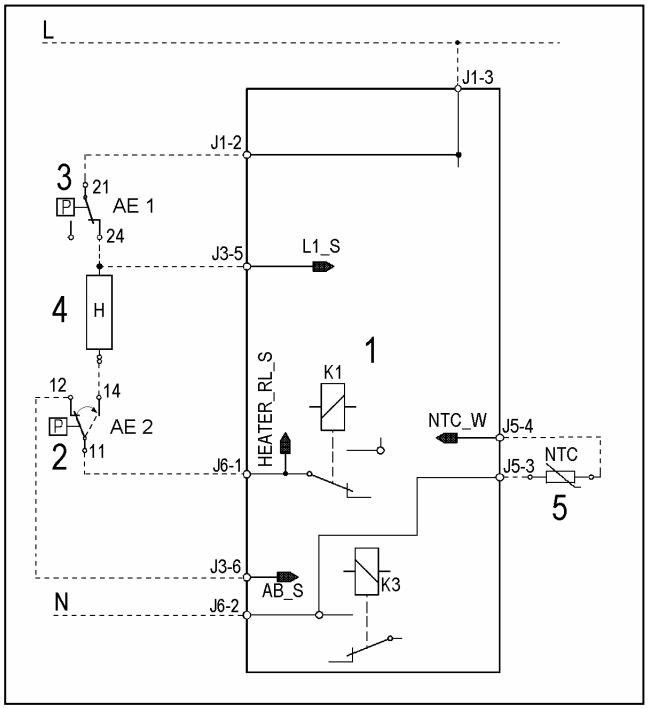
Important: When replacing the drain pump or tube, arrange the tube so that it doesn't interfere with the float.



1. *microswitch actuated by float*
2. *float*
3. *drain tube*
4. *cover*

10.12 Heating system

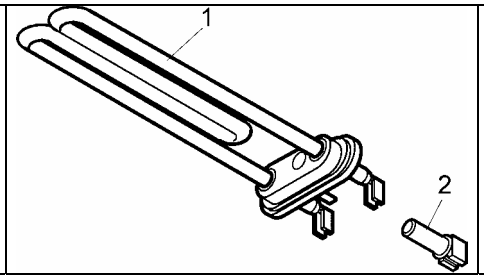
1. *Main board*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Heating element*
5. *NTC temperature sensor*

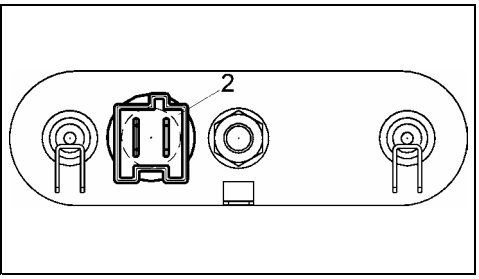


The heating element is powered by a relay on the main board through the contacts on the pressure switches, which must be closed on “full”.

10.12.1 Heating element

1. *Heating element (1950W)*
2. *NTC sensor*





10.12.2 Temperature sensor

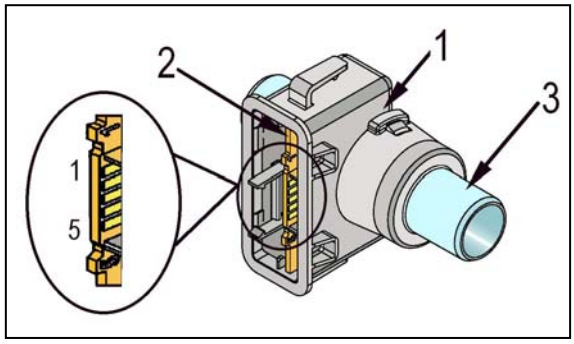
The temperature is controlled by the main board using an NTC temperature sensor.

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

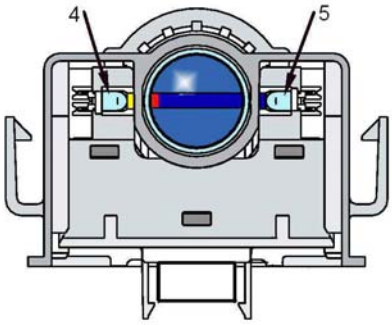
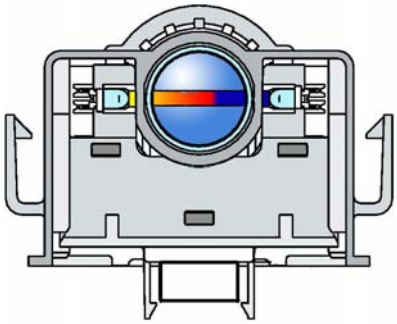
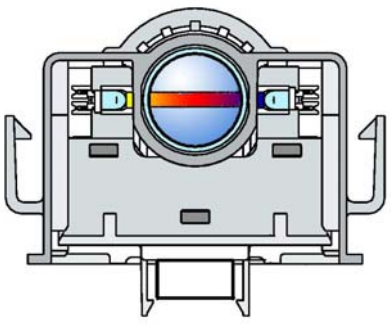
10.13 Turbidity sensor

This sensor is installed only on machines equipped with a recirculation pump.

1. *Housing*
2. *Electronic circuit*
3. *Transparent tube*



The sensor consists of a transparent tube installed in the water circulation circuit. A diode (4) on the side of the tube emits infrared rays (at a frequency of 2.3 KHz, as generated by the electronic circuit) and a phototransistor (5) on the other side of the tube is hit by the rays. The amount of current conducted by the phototransistor depends on the how clear the water is: the clearer the water, the more current the phototransistor conducts and, as a result, the higher the voltage output from the electronic circuit.

		
Low Conduction	Medium Conduction	Maximum Conduction

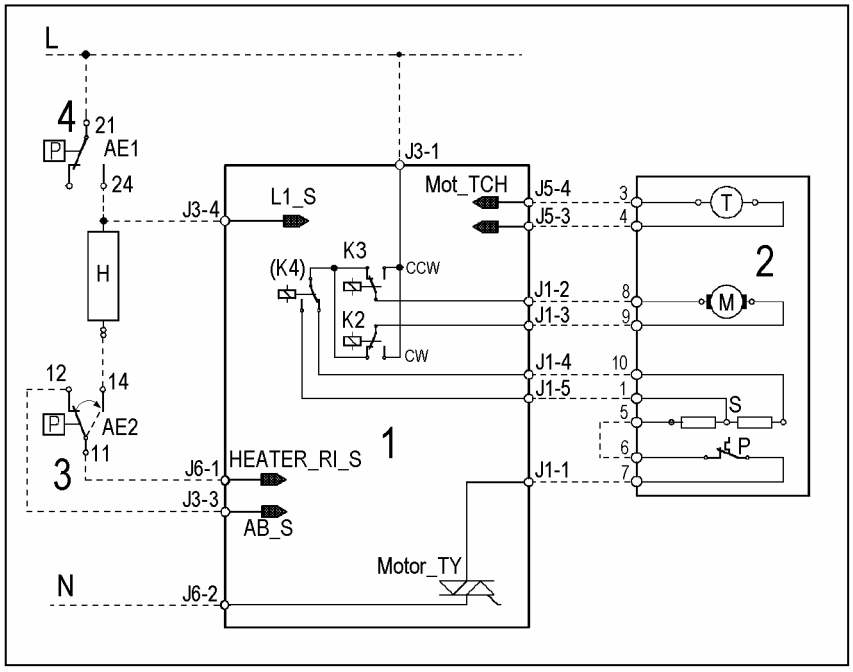
The turbidity sensor operates during the Whites and Colours programmes (COTTON).
It does not operate during the 60°C and 40°C Energy Saving programmes and the Night cycle.

The sensor is calibrated at the end of the wash cycle.
The sensor detects the turbidity of the water at the end of the first rinse and again at the beginning of the second rinse. The relationship between the two measurements is compared with values programmed on the board, and the result of the comparison determines whether another rinse is carried out.

10.14 Motor

1. *PCB*
2. *Motor*
3. *Anti-boiling pressure switch AE1*
4. *Anti-boiling pressure switch AE2*

M = rotor
P = motor safety cut-out
S = stator
T = tachometric generator



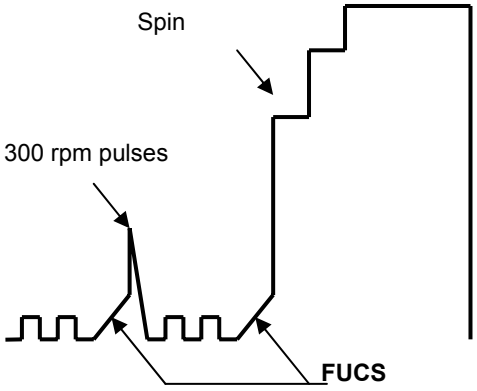
10.15 Power supply to motor

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 (1200-1600rpm), 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, depending on the software configuration, may perform the anti-foam control procedure (if featured) and the anti-unbalancing control procedure.

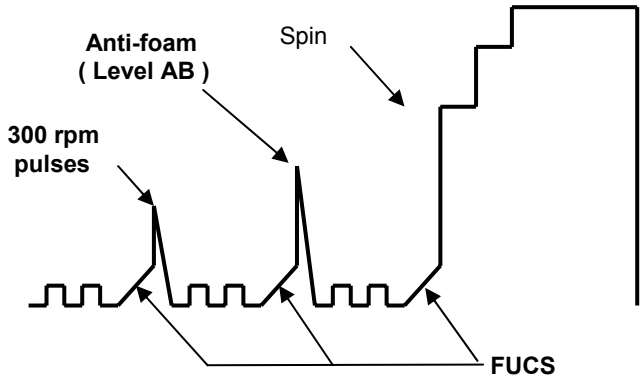
10.16 Anti-foam control system

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

Spin phase without foam



Spin phase with little foam

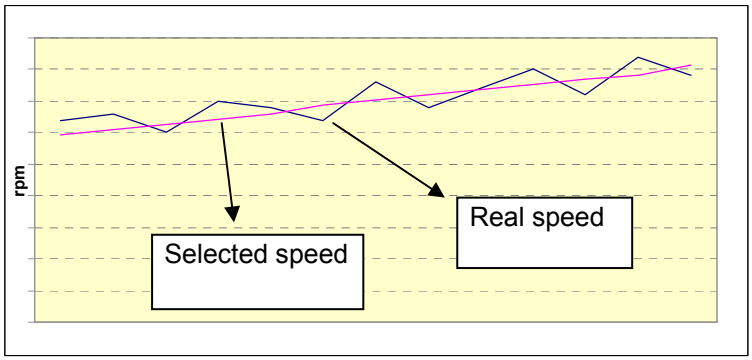


- **Spin with little foam:** if the contact of pressure switch AB closes on FULL, the spin phase is interrupted; the drain pump continues to operate and, when the contact returns to EMPTY, the spin phase is resumed.
- **Spin with excessive foam in the tub (critical situation):** The control system detects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

10.17 “FUCS” (Fast Unbalance Control System)

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:

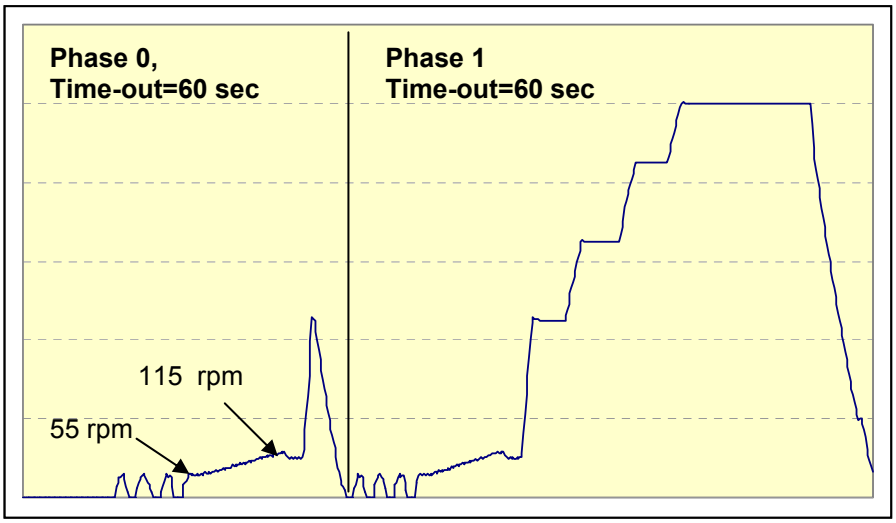
- *an unbalancing index (0-1-2-3)*
- *an unbalancing threshold value (ex: 350, 650, 850, 1200rpm)*
- *a time out (max. time)*

- **Ending of the FUCS balancing phase**

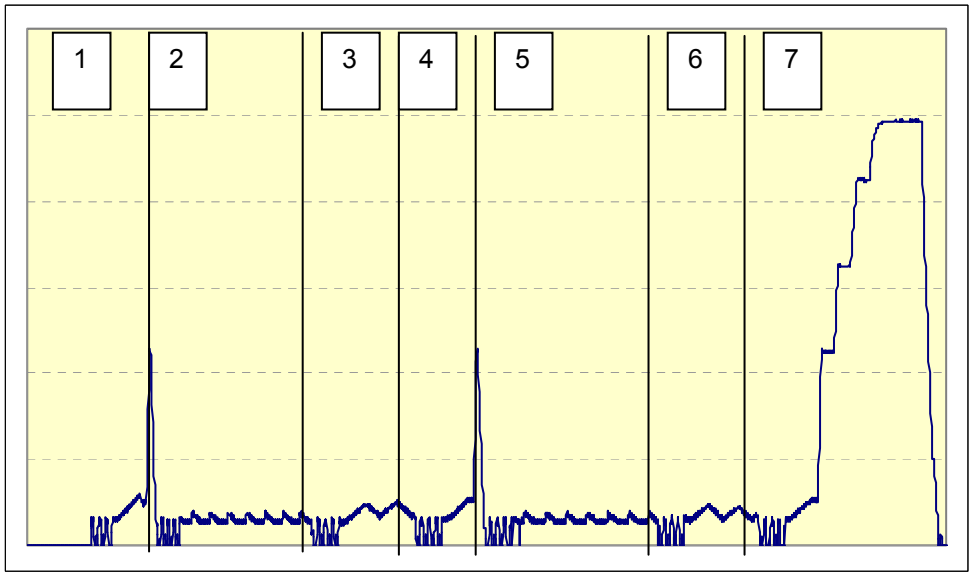
The phase is ended when:

- 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**



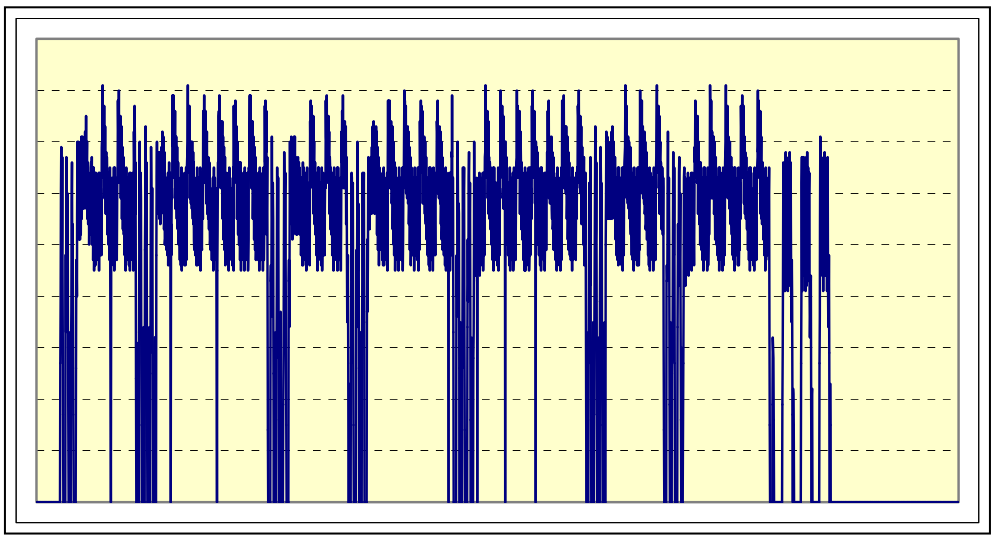
- **Balancing in the available longer interval**



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

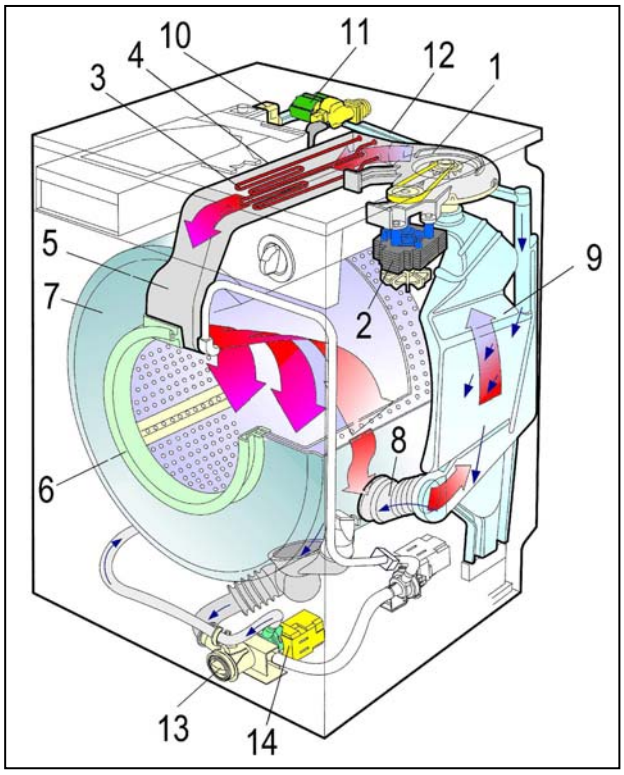
- **Unbalancing after all phases**

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



11 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.

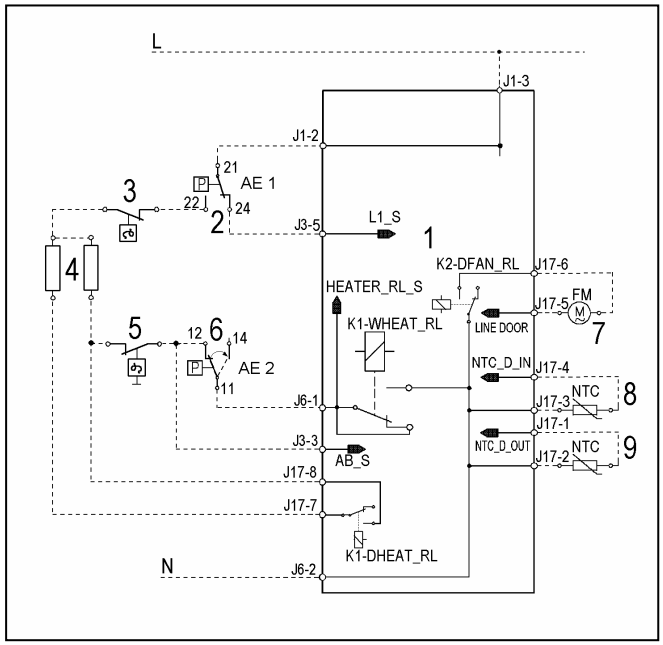
The drying heaters are powered directly by the main board via two relays and the contacts of the safety pressure switch.
In cycles for synthetic fabrics, drying is performed with only one heater switched on (half power); in cotton/linen cycles, both the heaters are switched on (full power).

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

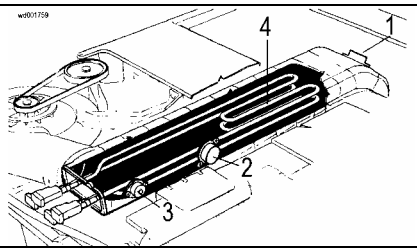
11.1 Temperature control

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*

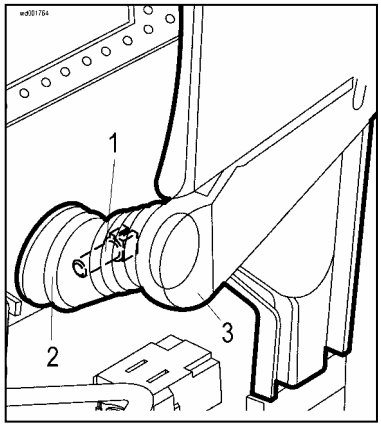


NTC sensor: resistance at 25°C		5000Ω	
Manual-reset safety thermostat		Normally closed Opens at 150°±5°C	
Auto-reset safety thermostat		Normally closed Opens at 110°±3°C Closes at 94°±5°	
Heater group	**Power**	920+920 W	
	Voltage	230V	240V
	Resistance	56,5Ω+56,5Ω	61,5Ω+61,5Ω
Fan capacity		80 m^3 – hour	

Calculating the drying time:

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

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

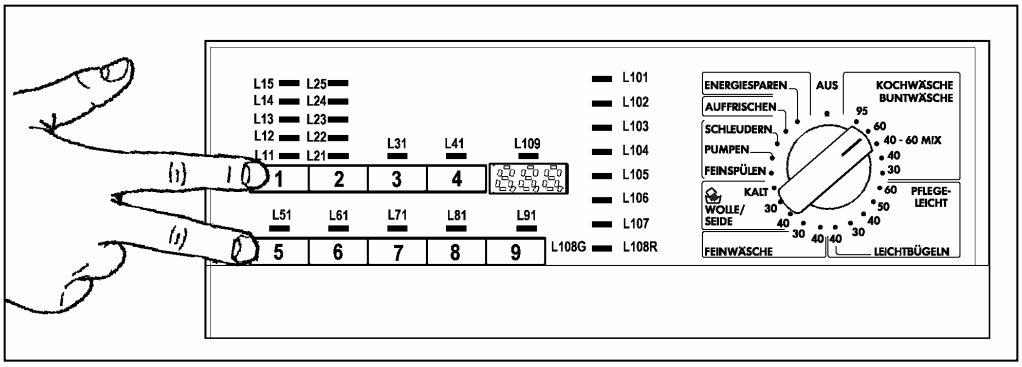


12 DEMO MODE

A special demo cycle enables these appliances to be demonstrated in stores without the need for connection to the plumbing system. Any programme on the machine can be selected and, after the start button is pressed, the appliance performs certain phases in that programme (and not those that cannot be executed, such as water fill, draining and heating).
The cycle is carried out in the following way:

- the door lock unit operates normally (the door is locked during operation and can be opened at the end of the cycle or during a pause)
- motor: all low speed movements are performed; pulse and spin operation is disabled
- the water fill solenoid valves and drain pump are disabled
- display: since the phases in the demo cycle are very quick (one second corresponds to one minute of a real cycle), the time until the end of the cycle decreases by one unit every second. It must be remembered that the “time until end of the cycle” does not always correspond to the real time of a cycle.
- alarms: for safety reasons, the following alarm families are enabled: E40 (door closure), E50 (motor) and E90 (communication between circuit boards/configuration).

12.1 Selecting demo mode



- Switch off the appliance
- Press buttons **1** and **5** (or **2** and **6**) at the same time; holding these two buttons down, turn the programme selector **two positions to the right (i.e. clockwise)**.
- Hold down buttons **1** and **5** until the LEDs begin to flash (5 seconds approx.).

The time required for running a cycle in Demo mode depends on the programme chosen.

12.2 Exiting demo mode

- Switch off the appliance to exit Demo mode.

13 DIAGNOSTICS MODE

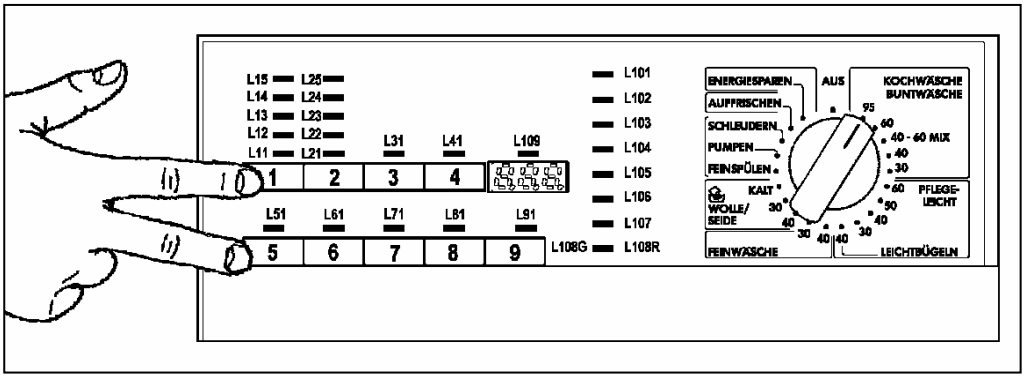
13.1 Accessing diagnostics mode

Diagnostics mode, which can be accessed with a single procedure, allows the operator:

- To check the operation of components in the appliance
- To read / cancel alarms

The diagnostic test cycles are available only if the main board can communicate properly with the display board and only if the appliance is configured correctly.

To access diagnostics mode:



1. If a programme has been selected, cancel it by switching off the appliance.

2. Press buttons **1** and **5** (or buttons **2** and **6**) at the same time; holding these two buttons down, switch on the appliance by turning the programme selector **one position to the right (i.e. clockwise)**.

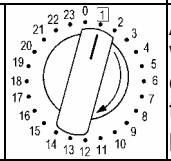
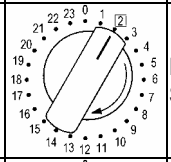
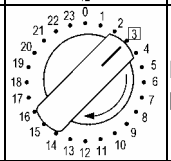
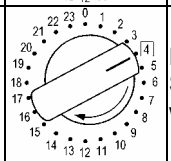
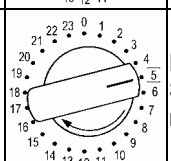
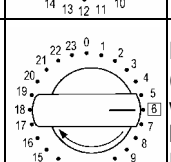
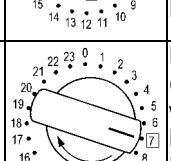
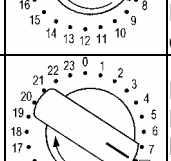
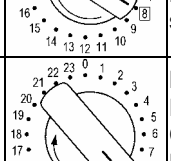
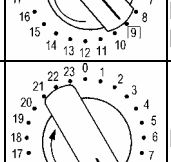
In the first position, the system tests the operation of the buttons and the corresponding LEDs. Turn the programme selector **clockwise** to perform the diagnostics tests for the various components and to read the alarms.

13.2 Exiting diagnostics mode

↳ To exit diagnostics mode, switch the appliance **off**, then **on**, then **off** again.

13.3 Phases of the diagnostics cycle

Irrespective of the type of programme selector, after activating the diagnostics system, the selector can be turned **clockwise** to affect diagnostics on the operation of the various components and to read the alarms. In models with digital displays, the code corresponding to the position of the selector is displayed for one second.
All alarms are enabled during the diagnostics cycle. If an alarm should occur during the diagnostics cycle, operation of the machine is interrupted and the LEDs (and the display) flash to indicate the corresponding code.

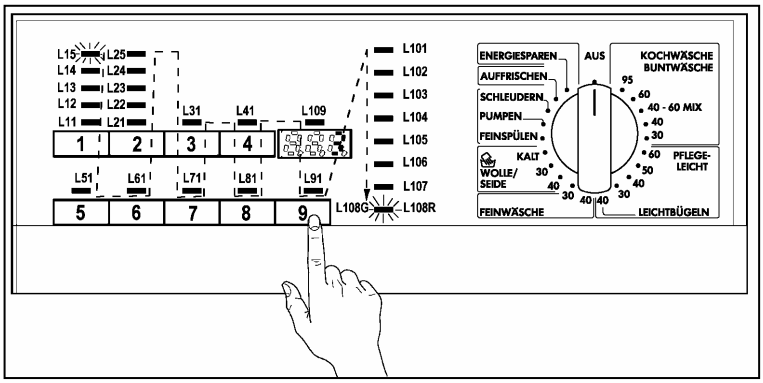
Phases in the diagnostic test					
Selector position		**Components activated**	**Operating conditions**	**Function checked**	**Parameters displayed (1)**
1		All the LEDs light up in sequence. When a button is pressed, the corresponding LED lights up (and the buzzer sounds, if programmed)	Always active	Operation of user interface	Button coding
2		Door lock unit. Solenoid valve for wash cycle	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through detergent dispenser	(**) selector position code
3		Door lock unit. Solenoid valve for prewash cycle.	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through prewash dispenser (bleach)	(**) selector position code
4		Door lock unit. Solenoid valves for prewash and wash cycles.	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through fabric softener dispenser	(**) selector position code
5		Door lock unit. Solenoid valves for bleach/ stain remover.	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through bleach/ stain remover compartment	(**) selector position code
6		Door lock unit. (Solenoid valve for wash cycle if water in drum is lower than 1st level). Heating element.	Door closed. Water at 1st level. Max. heating time of 10 min. or until temp. reaches 90ºC. **(*)**	Heating	(**) selector position code
7		Door lock unit. (Solenoid valve for wash cycle if water in drum is not at 1st level). Motor (55 RPM clockwise, 55 RPM counter-clockwise, pulse operation to 250 RPM)	Door closed. Water at 1st level.	Check for water leaks from drum	(**) selector position code
8		Door lock unit. Drain pump. Motor to 650 RPM, then max. spin speed.	Door closed. Water level below anti-boiling level for spin cycle	Drain and spin, check for proper closure of all level-sensing pressure switches	(**) selector position code
9		Drying heater Fan Condensation solenoid Drain pump Motor	Door closed	Drying	(**) selector position code
10		Readout/cancellation of last alarm	---	---	Alarm code
11, 12 ...24		All the LEDs light up in sequence. When a button is pressed, the corresponding LED lights up (and the buzzer sounds, if installed/activated)			

(*) This time is usually long enough for checking the heating system. The time can be increased by repeating the phase without draining the water; to accomplish this, momentarily select another diagnostic phase and then reselect the heating test (if the temperature exceeds 80°C, the heating test will not be performed).
(**) See table, page 53
(1) (1) Models with display.

13.3.1 Diagnostic test of display board and LEDs

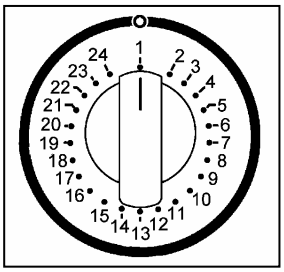
After accessing the diagnostics system, the display board is checked. All the LEDs and the display (if featured) light in sequence.

When the buttons are pressed, the corresponding or nearby LED lights; the display shows the hexadecimal code corresponding to the code for the button pressed.



13.3.2 Programme selector

The table below lists the closure of contact C6 (common) with the rest of the contacts (C1 – C5) on the programme selector in the various positions and the corresponding code. The code is displayed only on aappliances featuring a display panel.



Position of selector	Closure of selector contact (C6 is the common contact)					Code displayed (1)
24-position type	**C1**	**C2**	**C3**	**C4**	**C5**	
1 - cancel	0	1	1	1	1	**1 E**
2	0	1	0	0	1	**0 6**
3	0	1	1	0	0	**1 4**
4	0	1	0	1	0	**0 C**
5	0	1	1	1	0	**1 C**
6	0	0	0	1	1	**0 A**
7	1	0	0	0	0	**0 1**
8	1	0	0	0	1	**0 3**
9	1	0	0	1	0	**0 9**
10	0	1	0	1	1	**0 E**
11	0	0	1	0	1	**1 2**
12	1	0	0	1	1	**0 b**
13	1	0	1	0	0	**1 1**
14	0	0	1	1	0	**1 8**
15	1	0	1	0	1	**1 3**
16	0	0	1	1	1	**1 A**
17	1	0	1	1	0	**1 9**
18	1	0	1	1	1	**1 b**
19	1	1	0	0	0	**0 5**
20	0	1	1	0	1	**1 6**
21	0	0	0	0	1	**0 2**
22	0	1	0	0	0	**0 4**
23	0	0	0	1	0	**0 8**
24	0	0	1	0	0	**1 0**

1= This code is shown on the display

14 ALARMS

14.1 Display of alarms to the user

The alarm system is configured; that is, some or all of the alarms can be partially or totally displayed to the user, depending on the model involved.

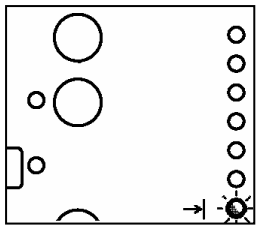
The following alarm families are displayed to the user:
E10 – Problem with water filling
E20 – Problem with draining
E40 – Problem with closing the door
E 90 – Problem with configuring the appliance

Alarms are active during execution of the wash programme only (except for alarms on appliance configuration and power supply voltage/frequency, which are also shown during programme selection).
Generally, unless otherwise specified, the door can be opened during an alarm if:
- The water level in the drum is lower than a level that depends on the configuration of the appliance
- Water temperature is lower than 55°C

Some alarms require the following cycle before the door can be opened:
- Cold water fill if temperature exceeds 65°C
- Drain until analogue pressure switch signals “empty” within a timeout of 5 minutes.

14.1.1 How alarms are displayed during normal operation

The user is shown the alarm family on the display (if installed) and the end-of-cycle LED flashes repeatedly (0.4 seconds lit ⇨ 0.4 seconds off ⇨ pause of 2.5 seconds between flashes).
This LED is always installed on models without a display, although the LED may be located in different positions.



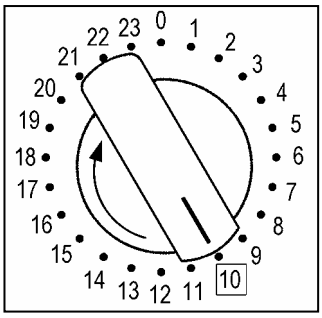
For example, if the user forgets to close the door, the system signals alarm E41 approx. 15 seconds after the cycle is started, the cycle is paused, and the display (if installed) shows E40.

At the same time, the end-of-cycle LED flashes in the sequence illustrated on the table.
The four flashes indicate the first digit of the two digits making up alarm E**4**1 (alarms regarding the same function are grouped together in families).

In this case, the programme can be restarted by pressing the start button.

End-of-cycle LED →|		
Lit / Off	**Time (Sec.)**	**Value**
☀	0.4	1
○	0.4	
☀	0.4	2
○	0.4	
☀	0.4	3
○	0.4	
☀	0.4	**4**
○	0.4	
○	2.5	Pauses between sequences

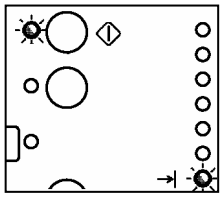
14.2 Reading alarms



To read the last alarm stored in EEPROM on the main board:

- Access diagnostics mode
- Irrespective of the configuration of the circuit board and the type of selector, turn the programme selector **clockwise** to the **tenth** position.

14.2.1 Displaying an alarm



Alarms are shown on the display (if installed) and by repeating sequences of flashes on two LEDs (0.4 seconds lit ⇨ 0.4 seconds off ⇨ pause of 2.5 seconds between sequences).
The buzzer, if installed, produces beeps that are synchronized with the flashing LEDs.

- **END OF CYCLE LED** → shows the first digit (family identifier) of the alarm code
- **START/PAUSE LED**→ shows the second digit (identifier within the family) of the alarm code

These two LEDs are installed on all models without a display, even though **they may be located in different positions** and they flash at the same time.
Note:

- The first letter of the alarm code "**E"** (Error) is not displayed because it is common to all alarms.
- The families of alarm codes are expressed in hexadecimal form, so the letter:
  → **A** is represented by **10 flashes**
  → **B** is represented by **11 flashes**
  → ...
  → **F** is represented by **15 flashes**
- Configuration errors are shown by a series of flashing LEDs (indicating that the user interface is not configured).

14.2.2 Sample alarm display

Alarm E43 would be displayed in the following way:

- **E43** is shown on the display **(if installed)**
- a sequence of **four** flashes of the **End-of-cycle LED** shows the first digit: E**4**3;
- a sequence of **three** flashes of the **Start/Pause LED** shows the second digit: E4**3**;

End-of-cycle LED		→|	**Start/Pause LED**		⏀
On / Off	**Tempo (Sec.)**	**Value**	**On / Off**	**Tempo (Sec.)**	**Value**
☼	0.4	1	☼	0.4	1
○	0.4		○	0.4	
☼	0.4	2	☼	0.4	2
○	0.4		○	0.4	
☼	0.4	3	☼	0.4	**3**
○	0.4		○	0.4	
☼	0.4	**4**	○	3.3	Pause
○	0.4				
○	2.5	Pause			

14.2.3 Behaviour of alarms during the diagnostic test

All alarms are operational during the diagnostic test on components. When the selector is turned to pass from one test phase to another, it exits any associated alarm condition and performs the next selected test (if the alarm does not recur).

14.3 Notes on the behaviour of certain alarms

- **Configuration alarms**

- **E91**: this error is indicated by the flashing of all the LEDs, and E90 is shown on the display if installed
- **E92**: this error is indicated by the flashing of the LEDs located above the buttons, and E90 is shown on the display if installed
- **E93**: this error is indicated by the flashing of the LEDs indicating phases/warnings, and E90 is shown on the display if installed
- **E95**: this error is indicated by the flashing of all the LEDs, and E90 is shown on the display if installed

- **Alarms EB1-EB2-EB3:** if the feed from the power supply is faulty, the machine will remain in the alarm mode until the masters frequency or voltage returns to normal values or the appliance is switched off. If this occurs, the "**EB0**" alarm family is displayed (on some appliances, the display of alarms is disabled), the diagnostic mode cannot be accessed, and the "quick readout of alarms" mode cannot be used. The alarm can be read only after the abnormal situation is corrected.

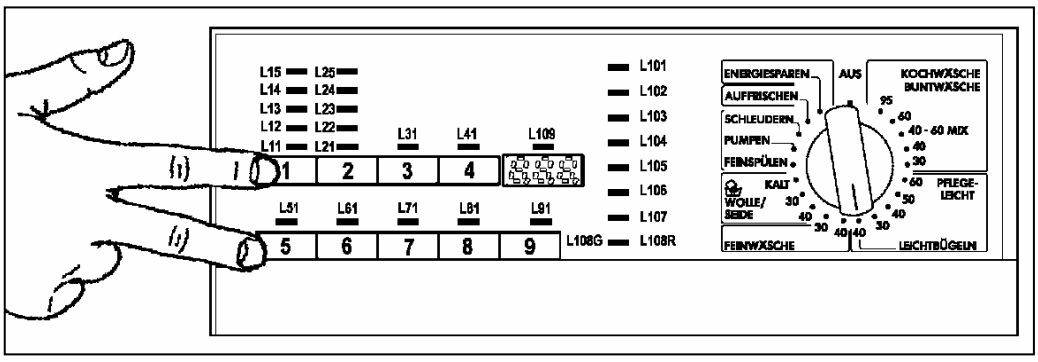
14.4 Quick display of alarms

The last alarm that has occurred can be displayed even if it is not in the tenth diagnostic position or the machine is in the normal operating mode (for example, while the wash programme is in progress):

- Press and hold down buttons **1** and **2** simultaneously for at least 2 seconds: the LEDs will first switch off and will then show the sequence of flashes which indicates the alarm, or the code will be shown on the display.
- The alarm sequence will continue for as long as the buttons are held down
- The method for interpreting this alarm is the same as the one described in paragraph 10.2.
- While the alarm is displayed, the appliance will continue to operate. If the appliance is in the programme selection mode, the options previously chosen will remain selected.

14.5 Cancelling the last alarm

After reading an alarm, it is good practice to delete it from memory in order to check whether it recurs during the diagnostic test performed after the appliance is repaired.



1. Enter diagnostics mode and turn the selector to the **tenth** position (readout of alarms)
2. Press buttons **1** and **5** at the same time.
3. Hold buttons **1** and **5** pressed down for about 5 seconds.

14.6 Table of alarm codes

Alarm	Description	Possible fault	Action/machine status	Reset
E11	**Poor water fill before wash cycle**	Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve is defective; Leaks from water circuit on pressure switch; Pressure switch defective; Wiring defective; Main board defective.	Cycle is paused with door locked	Start
E12	**Difficulty in water fill during drying (maximum time 3 min. water fill in drying during the wash load unrolling phase)**	Tap closed or water pressure too low; solenoid valve; pressure switch water circuit; pressure switches; wiring; main board.	Cycle is paused	Start
E13	**Water leaks**	Drain tube improperly positioned; Water pressure too low; Water fill solenoid valve is defective; Water circuit on pressure switch is leaking/clogged; Pressure switch defective.	Cycle is paused with door locked	Start
E21	**Poor draining**	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump defective; Pressure switch defective; Wiring defective; Main board defective; Electrical current leak between heating element and ground.	Cycle is paused	Start
E22	**Difficulty in water fill during drying or drying condenser clogged (anti-boiling pressure switch closed on "FULL")**	Drain hose kinked; filter clogged: drying condenser clogged; drain pump faulty; pressure switches faulty; wiring; main circuit board defective; current leakage between heater and ground.	Cycle is paused	Start
E23	**Defective triac for drain pump**	Drain pump defective; Wiring defective; Main board defective.	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E24	**Malfunction in sensing circuit on triac for drain pump**	Main board defective.	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E31	**Malfunction in pressure switch circuit (frequency of signal from pressure switch out of limits)**	Pressure switch; Wiring; Main board;	Cycle stops with door locked	OFF/reset
E32	**Electronic pressure switch improperly calibrated (level on electronic pressure switch differs from 0-66 mm after initial calibration drain and when anti-boiling pressure switch is on "empty").**	Tap is closed or water pressure is too low; Solenoid valve; Water circuit on pressure switches; pressure switches; Wiring; main board;	Cycle is paused	Start
E33	**Inconsistency between level on electronic pressure switch and level on anti-boiling pressure switch 1-2 (fault persists for at least 60 sec.).**	Pressure switch defective; Electrical current leak between heating element and ground; Heating element; Wiring defective; Main board defective. Water circuit;	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E34	**Inconsistency between level on electronic pressure switch and level on anti-boiling pressure switch 2 (fault persists for at least 60 sec.).**	Pressure switch defective; Electrical current leak between heating element and ground; Heating element; Wiring defective; Main board defective. Water circuit;	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset

Alarm	Description	Possible fault	Action/machine status	Reset
E35	**Overflow**	Water fill solenoid valve is defective; Leaks from water circuit on pressure switch; Pressure switch defective; Wiring defective; Main board defective.	Cycle stops. Emergency drain procedure. Drain pump continues to operate (5 min. on, then 5 min. off, etc.).	OFF/reset
E36	**Sensing circuit on anti-boiling pressure switch 1 defective**	Main board defective.	Cycle stops with door locked	OFF/reset
E37	**Sensing circuit on anti-boiling pressure switch 2 defective**	Main board defective.	Cycle stops with door locked	OFF/reset
E38	**Internal pressure takeoff is clogged (water level does not change for at least 30 sec. of drum rotation).**	Water circuit on pressure switches; Pressure switches; Motor belt broken;	Heating phase is skipped	---
E39	**Defective HV sensing on anti-overflow system**	Main board defective.	Cycle stops with door locked	OFF/reset
E3A	**Faulty sensing by heating resistance relay**	Main board defective.	Cycle stops with door locked	OFF/reset
E41	**Door unlocked**	Door lock unit defective; Wiring defective; Main board defective.	Cycle is paused	Start
E42	**Problems closing the door**	Door lock unit defective; Wiring defective; Main board defective	Cycle is paused	Start
E43	**Defective triac supplying power to door delay system**	Door lock unit defective; Wiring defective; Main board defective.	(Emergency drain procedure) Cycle stops	OFF/reset
E44	**Defective sensing by door delay system**	Main board defective.	(Emergency drain procedure) Cycle stops	OFF/reset
E45	**Defective sensing by triac on door delay system**	Main board defective.	(Emergency drain procedure) Cycle stops	OFF/reset
E51	**Motor power supply triac short-circuited**	PCB faulty; current leakage from motor or from wiring.	Cycle blocked, door locked (after 5 attempts)	OFF/reset
E52	**No signal from motor tachometric generator**	Motor faulty; wiring faulty; PCB faulty	Cycle blocked, door locked (after 5 attempts)	OFF/reset
E53	**Motor triac sensing circuit faulty**	PCB faulty.	Cycle blocked, door locked	OFF/reset
E54	**Motor relay contacts sticking**	PCB faulty; current leakage from motor or from wiring	Cycle blocked, door locked (after 5 attempts)	OFF/reset
E61	**Insufficient heating during washing**	NTC sensor faulty; heating element faulty; wiring faulty; PCB faulty.	The heating phase is skipped	---
E62	**Overheating during washing**	NTC sensor faulty; heating element faulty; wiring faulty; PCB faulty.	Safety drain cycle – Cycle stopped with door open	OFF/reset
E66	**Heating element power relay faulty**	PCB faulty; current leakage from heating element to ground.	Safety drain cycle – Cycle stopped with door open	OFF/reset
E71	**NTC sensor for wash cycle defective**	Defective NTC sensor; Wiring defective; Main board defective.	Heating is skipped	Start
E72	**Fault in NTC sensor on drying condenser (voltage out of range = short-circuit, open circuit)**	Drying NTC sensor (condenser) defective; wiring defective; main circuit board defective.	Heating is skipped	Start

Alarm	Description	Possible fault	Action/machine status	Reset
E73	**Fault in NTC sensor on drying duct (voltage out of range = short-circuit, open circuit)**	Drying NTC sensor (duct) defective; wiring defective; main circuit board defective.	Heating is skipped	Start
E74	**NTC sensor for wash cycle improperly positioned**	NTC sensor improperly positioned; Defective NTC sensor; Wiring defective; Main board defective.	Heating is skipped	Start
E82	**Error in selector reset position**	PCB faulty (Wrong configuration data). Selector, wiring	---	OFF/reset
E83	**Error in reading selector**	PCB faulty (Wrong configuration data). Selector, wiring	Cycle cancelled	---
E84	**"Sensing" circuit on circulation pump triac faulty (input signal to microprocessor always 0V or 5V)**	PCB	Drain, cycle blocked (door open)	OFF/reset
E85	**Circulation pump faulty (incongruency between status of "sensing" circuit on circulation pump and status of TRIAC)**	Circulation pump; wiring; main PCB	Drain, cycle blocked (door open)	OFF/reset
E91	**Communication incongruence between main PCB- display board (versions not compatible)**	Wiring faulty; Faulty control/display board Main PCB faulty.	Cycle interrupted	---
E92	**Communication incongruence between main PCB- display board (versions not compatible)**	Wrong control/display board; Wrong PCB (do not correspond to the model).	Cycle interrupted	---
E93	**Incorrect configuration of appliance**	Incorrect configuration data; PCB faulty.	Cycle interrupted	OFF/reset
E94	**Incorrect configuration of washing cycle**	Incorrect configuration data; PCB faulty.	Cycle interrupted	OFF/reset
E95	**Communication error between microprocessor and EEPROM**	PCB faulty.	Cycle interrupted	OFF/reset
E97	**Incongruence between programme selector and cycle configuration**	Faulty PCB (Wrong configuration data).	Cycle interrupted	OFF/reset
EB1	**Frequency of appliance incorrect**	Power supply problems (incorrect / disturbance); PCB faulty.	Cycle interrupted	---
EB2	**Voltage too high**	Power supply problems (incorrect / disturbance); PCB faulty.	Cycle interrupted	---
EB3	**Voltage too low**	Power supply problems (incorrect / disturbance); PCB faulty.	Cycle interrupted	---
EC1	**Solenoid valve inoperative but flow meter operating**	Main board defective, Solenoid valve defective	Cycle stops with door locked (after 5 attempts).	OFF/reset
EC2	**Signal from turbidity sensor out of limits**	Turbidity sensor defective, Main board defective, Wiring defective	---	Start/reset
EC3	**Signal from weight sensor out of limits**	Weight sensor defective, Main board defective, Wiring defective	---	Start/reset
EF1	**Drain filter blocked (too long drain phase)**	Drain tube blocked/kinked/too high; Drain filter dirty/blocked.	Warning displayed at the end of cycle (specific LED)	---
EF2	**Overdosing of detergent (too much foam during drain phases)**	Excessive detergent dosing; drain tube kinked/blocked; Drain filter dirty/blocked.	(specific LED)	---
EF3	**Control water intervention**	Water leakage on the base; faulty water control device.	Water drain and cycle blocked	OFF/reset
EF4	**Low pressure of water fill, no signal of flow meter and solenoid open**	Tap closed, low water fill pressure	---	Reset
E00	**No alarm**	---	---	---

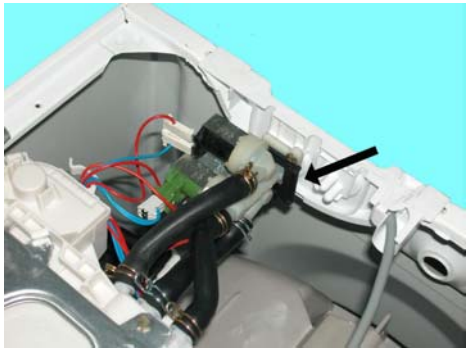
15 ACCESSING COMPONENTS

Procedures for accessing specific components on the appliance are described in this section. For information on other procedures, see the general service manual for P6000 washing machines (599 35 23-17)

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

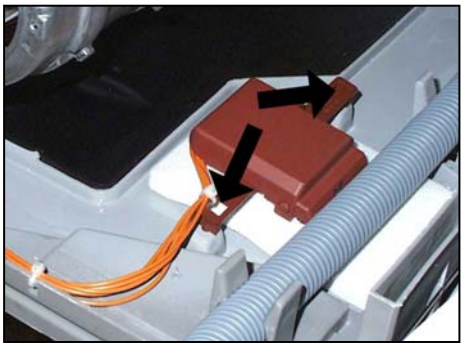
15.1 Flow meter

If the flow meter malfunctions, the entire solenoid valve assembly must be replaced.

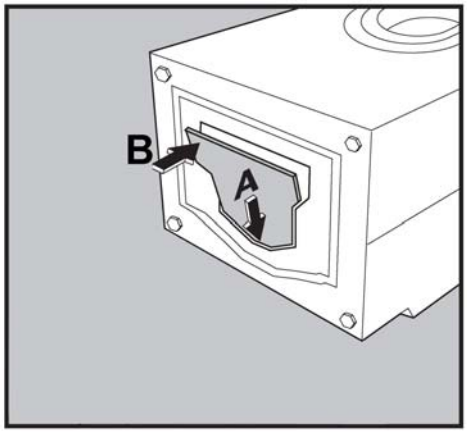


15.2 Aqua Control

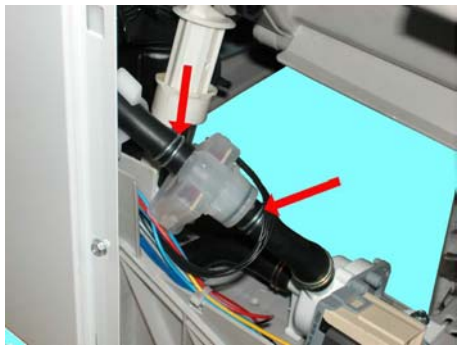
- Disconnect the connector
- Insert a screwdriver into the holes indicated by the arrows and release the fasteners that attach the component to the base frame.



- To attach the cover onto the base frame:
- First, slide in the part indicated by the arrow (A), then push the cover in the direction shown by the arrow (B).

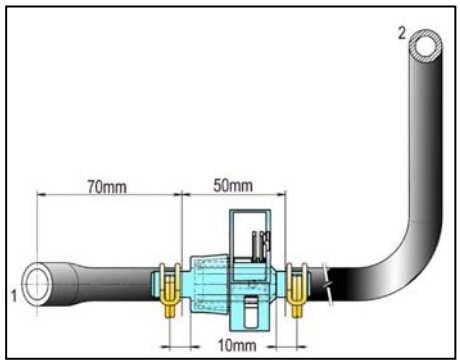


15.3 Turbidity sensor



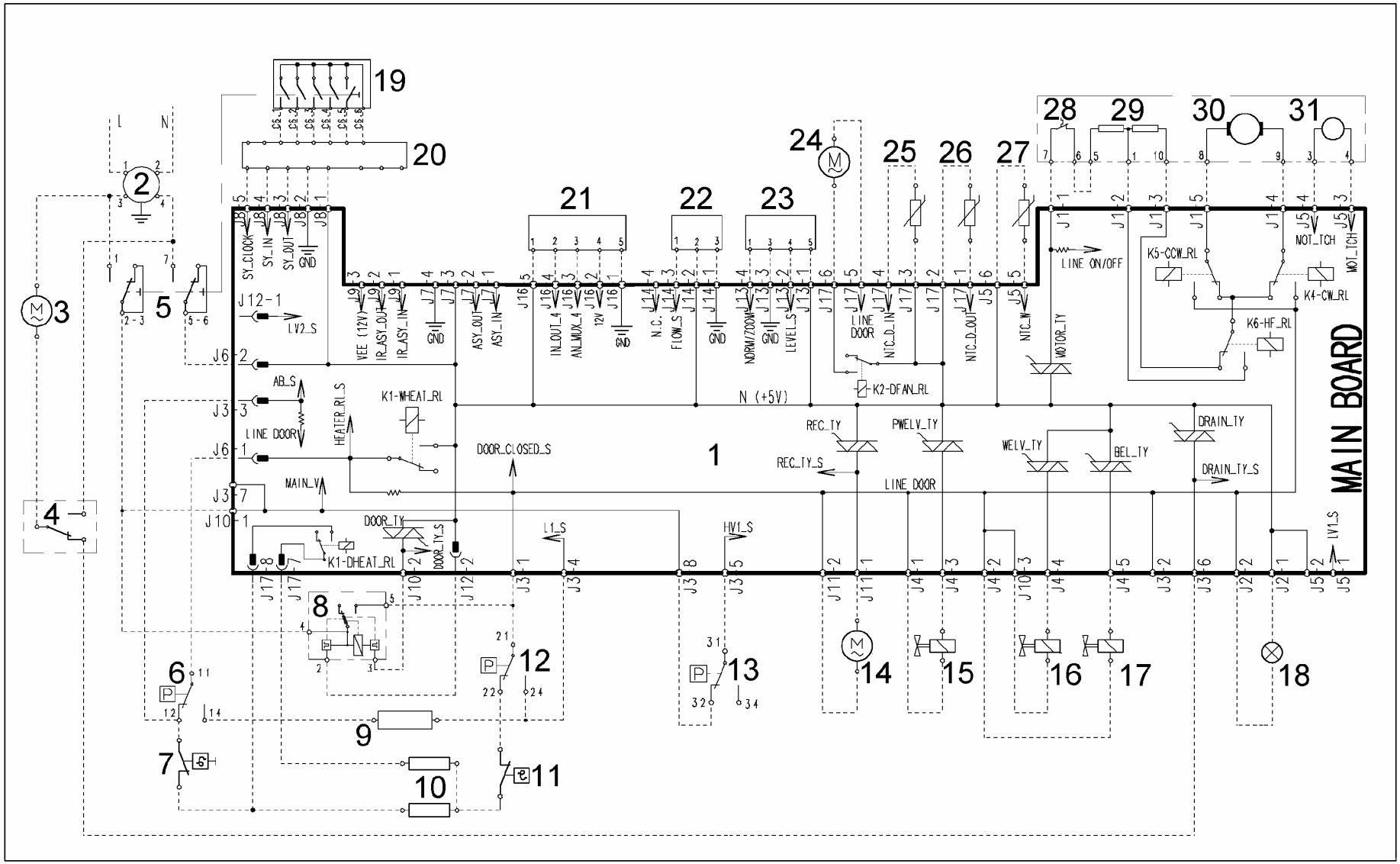
- Disconnect the connector.
- Loosen the clamps (shown by the arrows) and remove the tubes from the sensor unit.

15.3.1 Installing the turbidity sensor



1. *Connection to recirculation pump.*
2. *End that is inserted into the bellows around the door.*

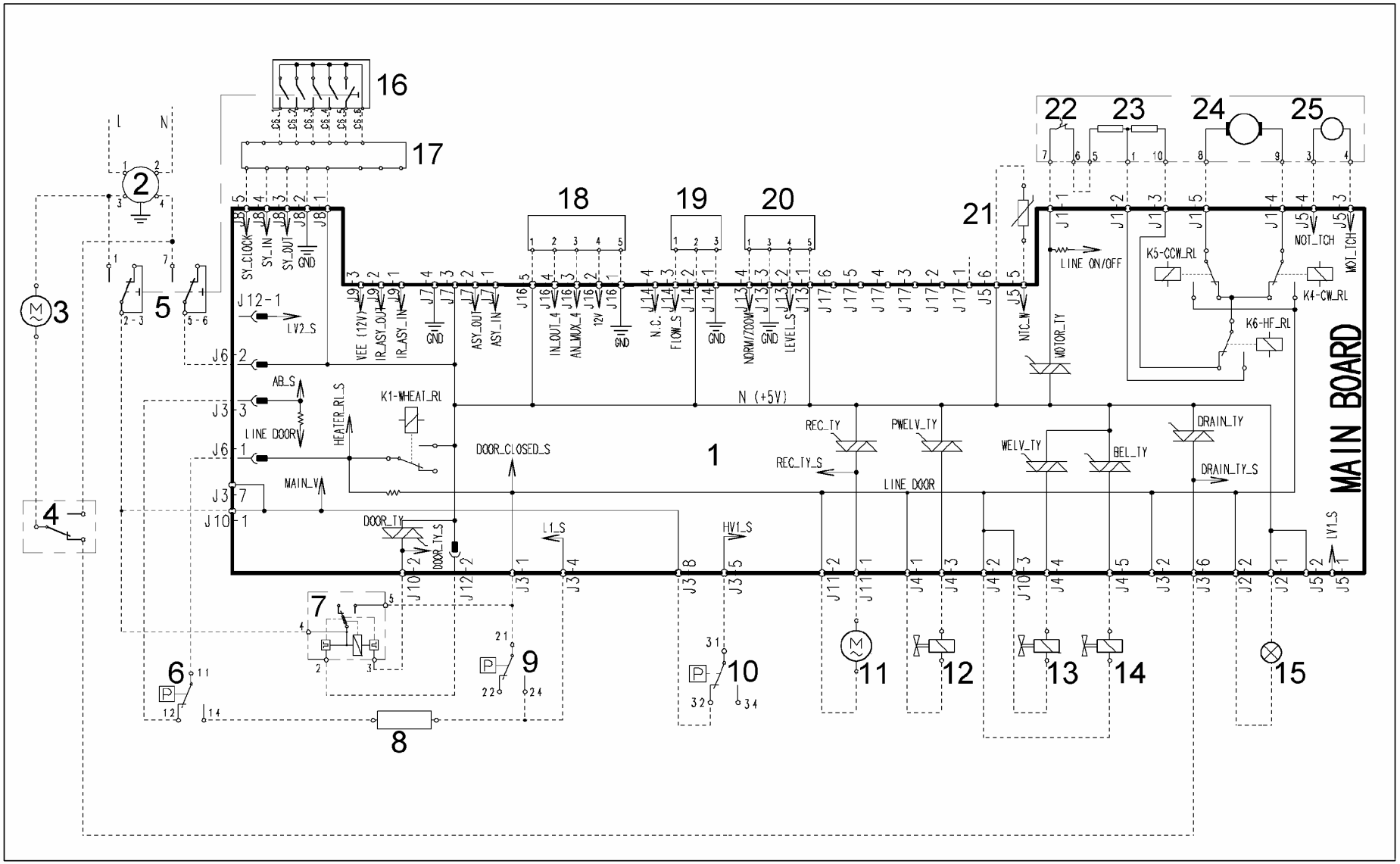
16 BASIC CIRCUIT DIAGRAM WD



16.1 Key for circuit diagram WD

Electrical components on appliance	Components on main board	
1. Main board		
2. Interference filter	BEL_TY	Condensation solenoid Triac
3. Drain pump	DOOR_TY	Door interlock Triac
4. Aqua control	DRAIN_TY	Drain pump Triac
5. ON/OFF switch (built into programme selector*)*	REC_TY	Recirculation pump Triac
6. Anti-boiling pressure switch AE2	K1	Heating element relay
7. Manual-reset safety thermostat	K1	Drying heating element relay
8. Door lock unit	K2	Fan motor relay
9. Washing heater	K4	Motor relay: clockwise rotation
10. Drying heater	K5	Motor relay: anti-clockwise rotation
11. Auto-reset safety thermostat	K6	Motor relay: half field power supply *(models with higher spin than 1200 rpm)*
12. Anti-boiling pressure switch AE1		
13. Anti-overflow pressure switch	MOTOR_TY	Motor Triac
14. Recirculation pump	PWELV_TY	Pre-wash solenoid Triac
15. Solenoid valve for prewash	WELV_TY	Wash solenoid Triac
16. Solenoid valve for wash		
17. Solenoid valve for condensation		
18. Pilot lamp		
19. Selector		
20. Control/display board		
21. Turbidity sensor		
22. Flow meter		
23. Analogue pressure switch		
24. Fan motor		
25. NTC temperature sensor (drying)		
26. NTC temperature sensor (humidity)		
27. NTC temperature sensor (washing)		
28. Thermal cut-out (motor)		
29. Stator (motor)		
30. Rotor (motor)		
31. Tachometric generator (motor)		

17 BASIC CIRCUIT DIAGRAM WM



17.1 Key for circuit diagram WM

Electrical components on appliance	Components on main board	
1. Main board		
2. Interference filter	BEL_TY	Bleach solenoid Triac
3. Drain pump	DOOR_TY	Door interlock Triac
4. Aqua control	DRAIN_TY	Drain pump Triac
5. ON/OFF switch (built into selector*)*	REC_TY	Recirculation pump Triac
6. Anti-boiling pressure switch AE2	K1	Heating element relay
7. Door lock unit	K4	Motor relay: clockwise rotation
8. Heating element	K3	Motor relay: anti-clockwise rotation
9. Anti-boiling pressure switch AE1	K4	Motor relay: half field power supply *(models with higher spin than 1200 rpm)*
10. Anti-overflow pressure switch		
11. Recirculation pump	MOTOR_TY	Motor Triac
12. Pre-wash solenoid valve	PWELW_TY	Pre-wash solenoid Triac
13. Wash solenoid valve	WELV_TY	Wash solenoid Triac
14. Bleach solenoid valve		
15. Pilot lamp		
16. Selector		
17. Control/display board		
18. Turbidity sensor		
19. Flow meter		
20. Analogic pressure switch		
21. NTC temperature sensor		
22. Thermal cut-out (motor)		
23. Stator (motor)		
24. Rotor (motor)		
25. Tachometric generator (motor)		