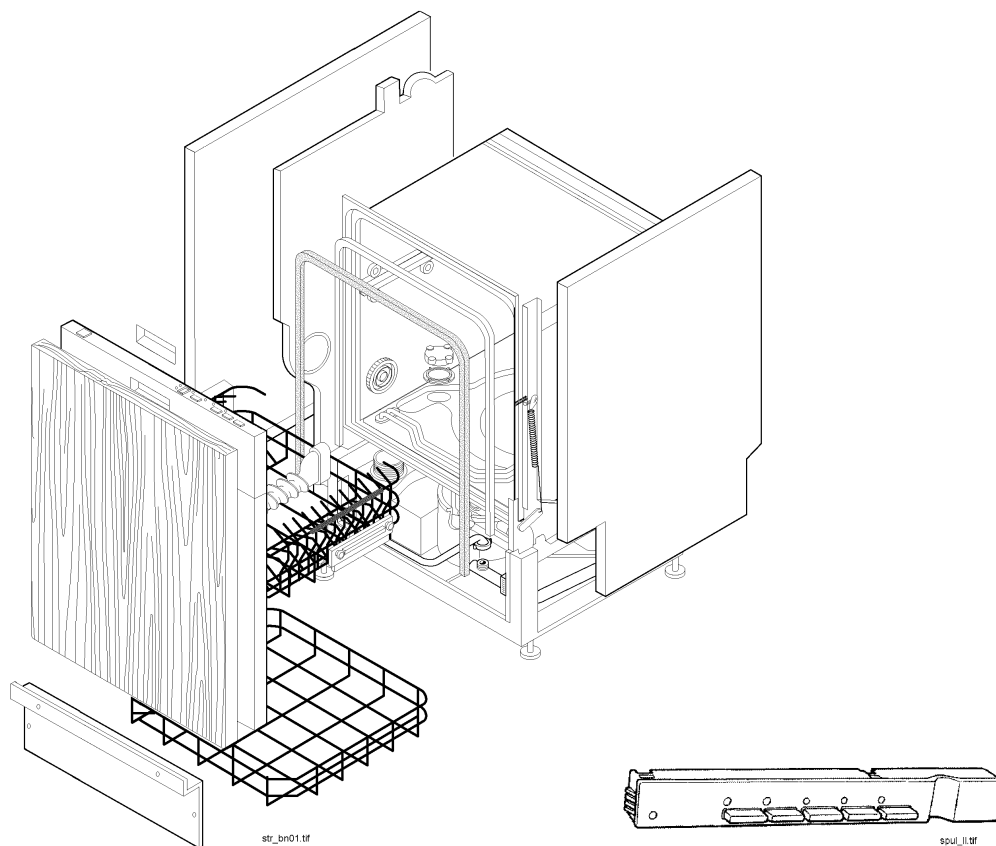




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Publication n°

599 33 62-96/ 0

980828

EN/SERVICE/LF

"NEW STRUCTURE"

DISHWASHER

ITRONIC « LL » 60cm

***(FUNCTIONAL
DESCRIPTION)***

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PURPOSE OF THIS SERVICE MANUAL

The purpose of this Manual is to provide service technicians who are already trained in the repair of "NEW STRUCTURE" dishwashers with specific technical information relative to the new **"ITRONIC LL"** range.

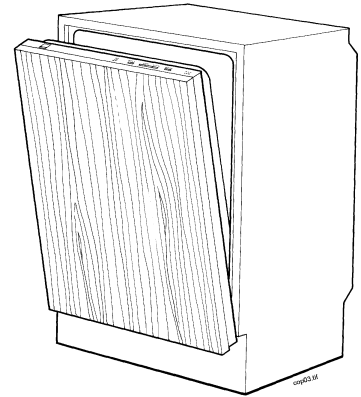
The structural and hydraulic characteristics, as well as the basic circuitry, are similar to those used in the traditional appliances, and are therefore not discussed in this Service Manual.

For information relative to the specific models - technical characteristics, circuit diagrams, exploded drawings and parts lists - refer to the SERVICE NOTES issued separately for each specific model.

PRESENTATION

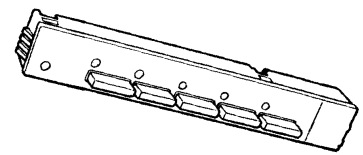
The new "ITRONIC" electronically-controlled dishwasher, with a modular 60 cm BUILT-IN structure, is produced in the FULLY-INTEGRATED version for manufacturers of kitchen furniture.

Its personalized styling features modern lines designed to match perfectly with the surrounding kitchen units; the simplicity of the control panel facilitates operation by the user.



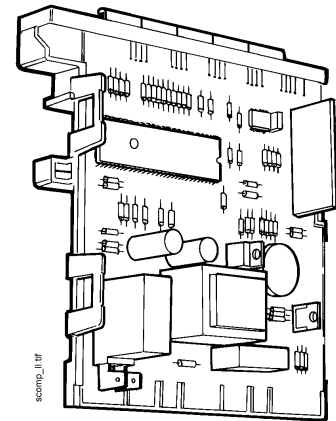
The electronic control unit is the heart of the control system, which governs and monitors the operation of the appliance in order to ensure that the desired performance is achieved.

The control unit consists of a *control board* and a *power & display board*, which are integrated into a single component.



This appliance is designed to facilitate and simplify servicing and repair.

As in the previous series, these dishwashers with electronic control systems can be configured according to requirements. Checks and diagnostics can be effected quickly and easily by following a series of simple procedures (trouble-shooting, alarms etc.).



GENERAL CHARACTERISTICS

POWER SUPPLY:	- 220-240 V / 50HZ (limits: 187 ÷ 254 V)
POWER ABSORPTION:	- 2300 W (heating element: 2100 w)
WATER SUPPLY:	- Min. / Max. pressure: 5 - 80 N/cm²
CAPACITY:	- 12 place settings
CONSUMPTION :	- WATER 19 LITRES - ELECTRICITY 1.4 KWh
DURATION OF CYCLE:	- 85 - 90 min (UNIVERSAL N° 3)
NOISE LEVEL:	- 52 - 53 db(A)

GENERAL INFORMATION

WASHING SYSTEM

SPRAY ARM MOVEMENT	→	<i>SIMULTANEOUS</i>
ACTIONING	→	<i>SINGLE BIDIRECTIONAL MOTOR</i>
WATER FILL LEVEL	→	<i>VOLUMETRIC CONTROL &</i>
	→	<i>PRESSURE SWITCH CONTROL</i>
WATER HEATING	→	<i>VISIBLE HEATING ELEMENT or</i>
	→	<i>HIDDEN HEATING ELEMENT</i>
TEMPERATURE CONTROL	→	<i>TEMPERATURE SENSOR (NTC)</i>
SAFETY FEATURES / ALARMS	→	<i>HYDRAULIC DEVICES &</i>
	→	<i>SOFTWARE PROTECTION</i>

FIELD OF APPLICATION

ELECTRONIC MODULE FOR CONTROL OF:

POWER BOARD	→	<i>MAIN CONTROL SYSTEM (built-in microprocessor)</i>
CONTROL / DISPLAY BOARD	→	<i>USER / MACHINE INTERFACE</i>

LOADS AND SENSORS

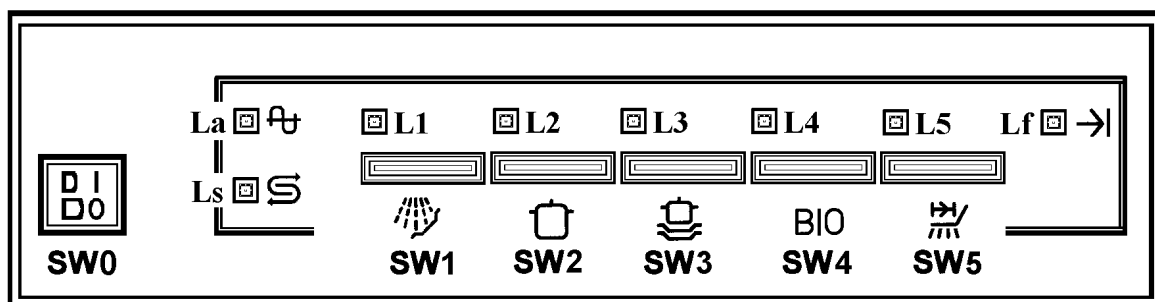
THE POWER BOARD PILOTS THE FOLLOWING LOADS:

COMPONENT		POWER	CONTROL
① WASHING / DRAIN PUMP	→	<i>250 W</i>	<i>TRIAC & RELAY</i>
② HEATING ELEMENT	→	<i>2100 W</i>	<i>RELAY</i>
③ FILL SOLENOID	→	<i>10 W</i>	<i>TRIAC</i>
④ RESET SOLENOID	→	<i>10 W</i>	<i>TRIAC</i>
⑤ REGENERATION SOLENOID	→	<i>20 W</i>	<i>TRIAC</i>
⑥ INTEGRATED DISPENSER	→	<i>10 W</i>	<i>TRIA</i>

AND MONITORS THE MACHINE PARAMETERS USING THE FOLLOWING SENSORS:

SENSOR		TYPE
① TEMPERATURE	→	<i>NTC</i>
② LEVEL	→	<i>PRESSURE SWITCH</i>
③ DOOR CLOSURE	→	<i>SWITCH</i>
④ ANTI-FLOODING DEVICE	→	<i>SWITCH</i>
⑤ SALT	→	<i>REED</i>

CONTROL PANEL



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DESCRIPTION OF THE CONTROLS



→ ON/OFF SWITCH



PROGRAMME SELECTOR SWITCHES



→ "ON/OFF" LED (*GREEN*)

→ "SALT" LED (*RED*)

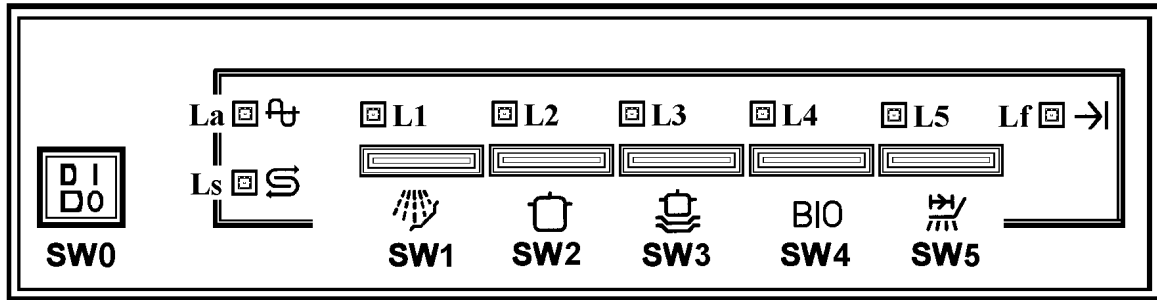


"PROGRAMME" LEDS (*GREEN*)



→ "END OF CYCLE" LED (*GREEN*)

FUNCTIONAL CHARACTERISTICS OF CONTROLS



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USER INTERFACE

*N.B. Keys **SW1 - SW2 - SW3 - SW4 - SW5** are enabled only when the door is **open**.*

SW0)

"ON / OFF" KEY

- - Press this key to switch the appliance on and off.
- LED **La** lights to show that the appliance is switched on.

"PROGRAMME" keys

- SW 1)** SOAK
- SW 2)** VIGOROUS WASH
- SW 3)** UNIVERSAL WASH
- SW 4)** ECO / BIO
- SW 5)** BREVE

- Each key selects a different washing programme.
- Press one of the keys to select the desired cycle.
- When a key is pressed, the corresponding LED lights.

"PROGRAMME" LEDs

L1 - L2 - L3 - L4 - L5)

- As well as lighting normally to indicate whether the appliance is "ON" or "OFF", the various LEDs may also FLASH at different speeds depending on the type of situation and the operating conditions of the appliance:
 - FLASHING_ **F N** = Normal frequency (500 ms ON, 500 ms OFF).
 - FLASHING_ **F V** = Rapid frequency (125 ms ON, 125 ms OFF)
- OFF → function not operational
- LIT → function selected (during execution of the washing cycle)
- FLASHING_ **F N** → function selected (during cycle selection phase)
- FLASHING_ **F V** → non-operational condition (alarm condition, selection of regeneration level etc.)

L s) "SALT" LED

- ON → lights to indicate that the regeneration salt requires topping up.

L f) "END OF CYCLE" LED

- FLASHING_ **F N** → lights to indicate that the washing cycle has ended.

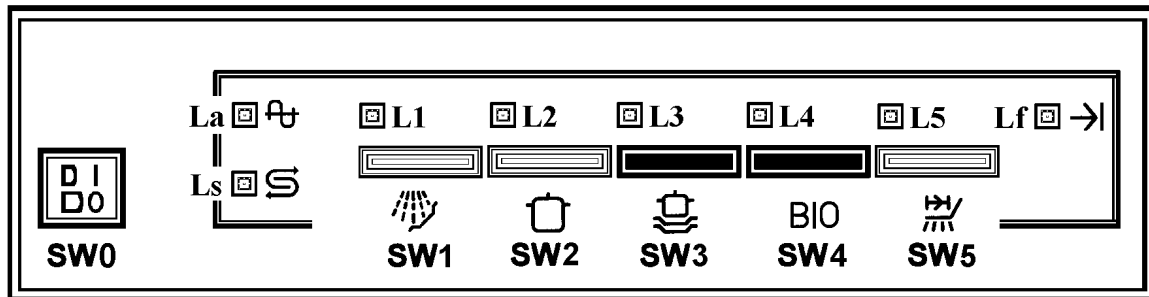
"BUZZER"

- The piezoelectric buzzer is mounted on the control board.
- The buzzer sounds to indicate the beginning and the end of the cycle, and also when one of the keys is pressed (to confirm correct actioning).

operation of the buzzer:

Sequence_A (when a key is pressed): Sounds for 80 ms.
Sequence_B (start of cycle): Sounds for 500 ms.
Sequence_C (end of cycle): Sounds intermittently for 5 seconds (500 ms on, 500 ms off).

If it is preferred to exclude the buzzer, this option can be selected either in the PROGRAMME SELECTION phase or in the CYCLE EXECUTION phase as described below:



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ACTIVATING AND DISACTIVATING THE BUZZER

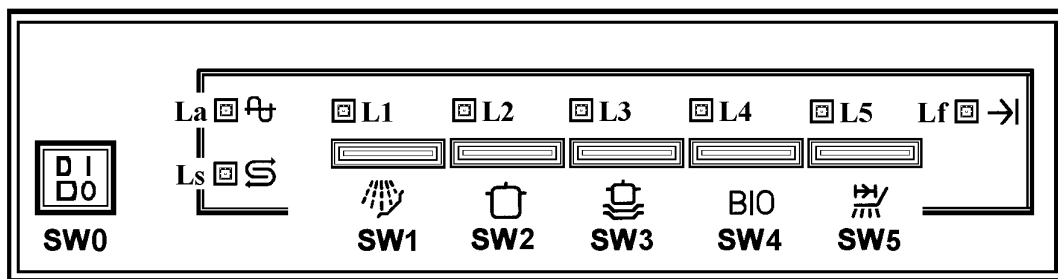
With the door open and the DW switched on:

EXCLUDE BUZZER

- Press **SW3** and **SW4** at the same time, and hold both keys down for **three seconds**; the buzzer will sound (*sequence_C*) for **three seconds**, after which it will be disabled.

RESET BUZZER

- Press **SW3** and **SW4** at the same time, and hold both keys down for **three seconds**; after the **three seconds** have elapsed, the buzzer will sound (*sequence_C*) to indicate that the buzzer is again enabled.



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PROGRAMME SELECTION

-) - Press the *ON/OFF* key (**SW0**) to switch the appliance on.
 - LED **L a** will light (fixed, not flashing).
 - The *SALT* LED (**L s**) may light.
-) - Press the one of the *PROGRAMME* keys (**SW1 - SW5**) to select the desired washing cycle.
-) - The corresponding *PROGRAMME* LED (**L 1 - L 5**) flashes normally (**F_N**) to confirm selection.
-) - Each time a key is pressed, the buzzer emits a short signal (*Sequence_A*) to confirm correct selection.
-) - The appliance will remain in *PROGRAMME SELECTION* mode until the door is closed; the settings selected can be altered.

PROGRAMME EXECUTION

After checking that the programme setting is correct, proceed as follows:

-) - Close the door
-) - A short buzz (*Sequence_B*) sounds to confirm that the washing cycle has started.
-) - The corresponding *PROGRAMME* LED (**L 1 - L 5**) lights *continuously* to confirm that the cycle selected is now in execution.
-) - At this point, the cycle selected can no longer be modified; it may only be annulled or cancelled.

N.B. If the *ON/OFF* key is pressed, the cycle is interrupted but not cancelled.

END OF PROGRAMME

-) - The buzzer sounds intermittently (*Sequence_C*) to signal the end of the washing cycle.
-) - When the door is opened:
 - The *END OF CYCLE* LED (**L f**) lights (*flashing_F N*)
 - The *ON/OFF* LED (**L a**) lights.
 - The *SALT* LED (**L s**) may also light.
 - The *PROGRAMME* LEDs (**L 1 - L 5**) switch off.

N.B. If the *END OF CYCLE* LED (**L f**) is switched off, this means that the cycle is still being performed; in this case, either close the door to complete the cycle or cancel the cycle.

-) - Press the *ON/OFF* key (**SW0**) to switch the appliance off.

CANCELLING A PROGRAMME

The cycle can be cancelled after it has been started as follows:

-) - Open the door.
-) - Press and hold down (*for 1 second*) the *PROGRAMME* key (**SW1 - SW5**) for which the corresponding LED (**L1 - L5**) is lit. The LED will switch off.
-) - The appliance returns to *PROGRAMME SELECTION* mode, and the user can now select a new washing cycle.

WASHING SYSTEM

SIMULTANEOUS WASHING

The conventional washing system is controlled electronically, and uses both spray arms in simultaneous operation.

The spray arms are actioned by the water pumped by an impeller fitted to the motor, which rotates in counter-clockwise direction.

EFFICIENCY OF THE HYDRAULIC CIRCUIT

The efficiency of the washing result is determined mainly by the power of the washing pump and by the new "enclosed" hydraulic circuit, which reduces the pressure drop within the circuit to a minimum and improves the overall performance of the appliance.

MEASUREMENT OF HYDRAULIC EFFICIENCY

CHARACTERISTIC		LOWER SPRAY ARM		UPPER SPRAY ARM
Delivery	(litres/minute)	30 approx.	→	36 approx.
Spray jet pressure	(mbar)	170 approx.	→	68 approx.
Spray arm rotation	(rpm)	30/40 approx.	→	15/25 approx.

WATER FILL CONTROL SYSTEM

The water fill system consists of a dual control system which guarantees maximum operating safety and precision as regards the quantity of water entering the appliance.

VOLUMETRIC CONTROL: - *Determines the level of water entering the appliance with a capacitive system, using the I W M S dosage chamber.*

PRESSURE SWITCH CONTROL: - *Maintains the water level determined by the volumetric control system.*
- *Ensures that the water fill is correct (increased) in case of a malfunction of the volumetric system.*

*N:B: As a safety feature during the water fill phase, a special SOFTWARE protection functions as a TIME-OUT which ensures that the water level is reached within a maximum of **5 minutes**.*

WATER FILL SYSTEM

The electronic control unit is programmed to ensure that all washing cycles begin with a phase of *DRAIN AND RESET*, which has a duration of *60 seconds*. This procedure is designed to ensure that the hydraulic system and the water fill control system function correctly.

The water fill phase consists of four sub-phases:

- STATIC FILL → **40 seconds** *Fill + Motor stopped*
- DYNAMIC FILL → **20 seconds** *Fill + Motor in operation*
- STATIC FILL → **P** (variable duration) *Fill to pressure switch level + Motor stopped*
- RESET * → **RS** (variable duration) *Reset of I W M S dosage chamber*

* *The RESET phase takes place after completion of the water fill, and in any case before the subsequent fill.*

WATER HEATING SYSTEM

The water is heated by an electrical heating element, which may be of two different types: VISIBLE HEATING ELEMENT or HIDDEN HEATING ELEMENT.

- VISIBLE HEATING ELEMENT

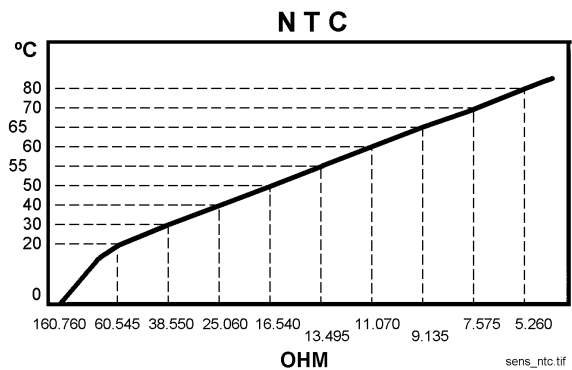
Heating by irradiation: the water is pumped by the washing pump through the spray arms; part of the water falls onto the heating element, and is heated. It then passes into the sump, where it is mixed with the rest of the water and re-enters the circuit.

- HIDDEN HEATING ELEMENT

Heating by conduction: the water is pumped by the washing pump through the spray arms, falls to the bottom of the tub, and enters a duct in which it passes over the heating element and then into the sump. The heated water then re-enters the circuit.

TEMPERATURE CONTROL SYSTEM

The temperature of the washing water is measured by an NTC sensor (positioned in contact with the bottom of the tub), which is connected to the electronic control unit.



FUNCTIONAL DESCRIPTION OF DRAIN SYSTEM

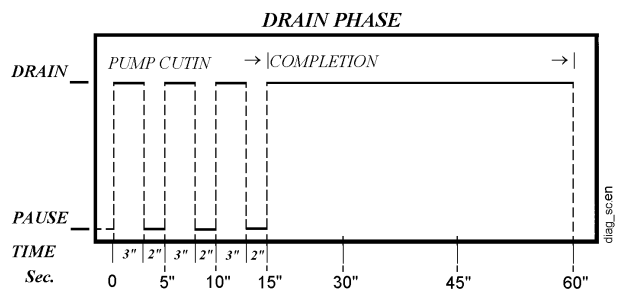
The electronic control unit performs a 60-second drain phase in all washing cycles.

Draining at controlled intervals ensures that the sump is drained correctly (maximum residual water content is 0.7 litres) so that the entire section of the IWMS hydraulic circuit which governs level control is reset. This ensures that the pressure switch passes from the "FULL" position to the "EMPTY" position.

FUNCTIONAL SEQUENCE OF DRAIN PHASES

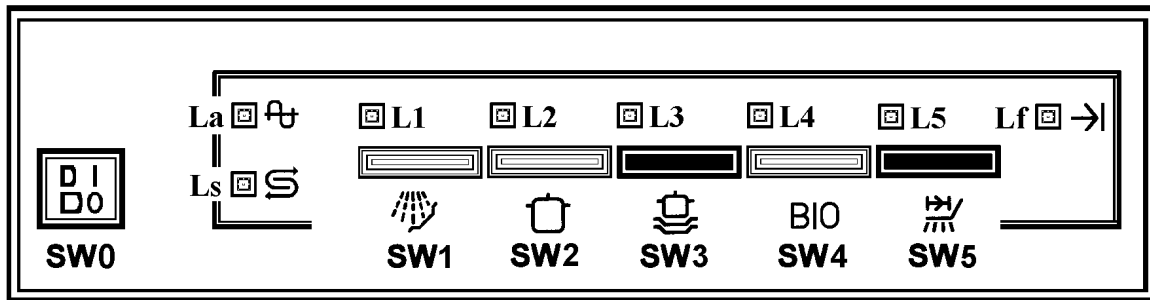
This sequence is sub-divided into two parts:

- The first part ensures that the pump cuts in and that the drain cycle starts.
- The second completes the drain cycle.



N.B. As a safety feature during the drain phase, a special SOFTWARE protection functions as a TIME-OUT which ensures that the water drain is completed within a maximum of 1 minute.

SELECTING THE LEVEL OF REGENERATION



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This dishwasher can soften water with a hardness of up to **120°TH (70°DH)**. The appliance is factory-set to level 2.

PROCEDURE

DW SWITCHED ON (programme selection phase):

- Press keys **SW3** and **SW5** simultaneously and hold them down for **5 seconds** until the LED corresponding to the previously-selected level of regeneration *[2] lights (*flashing_F V*).
- To modify the regeneration level, press one of the PROGRAMME keys (**SW1 - SW5**) *within 5 seconds*.
- The LED corresponding to the selected level (**L1 - L5**) *flashes*; the remaining LEDs are switched off.
- **5 seconds** after releasing the key, the new setting is memorized.

LEVEL N°	° (TH) FRENCH	° dH) GERMAN
0	0 - 8	0 - 4
1	9 - 20	5 - 11
2	21 - 40	12 - 22
3	41 - 60	23 - 33
4	61 - 80	34 - 45
5	81 - 120	46 - 70

FUNCTIONAL DESCRIPTION OF REGENERATION SYSTEM

The regeneration phase is not performed during every washing cycle, but depends on the level selected. This phase takes place at pre-determined intervals, and is sub-divided into **5 levels** which can be regulated by the electronic control system. The minimum duration is **10 minutes**.

- Each regeneration phase utilizes 200 cc of water.
- Salt consumption is 60 g approx.
- Incrementation of the cycle count takes place at the end of the regeneration phase.
- The SOAK cycle (1) is not considered to be a wash cycle, and is therefore not counted.
- At level 0, regeneration does not take place; in this case, the SALT LED (L s) remains off.

LEVEL	REGENERATION	INTERVAL
0	NO regeneration	NO regeneration
1	8th cycle	7 cycles
2	4th cycle	3 cycles
3	3rd cycle	2 cycles
4	2nd cycle	1 cycle
5	every cycle	0 cycles

SAFETY CONTROLS

A series of safety features provide total protection for the appliance while the cycle is in operation.

Two types of safety feature are used: HYDRAULIC and SOFTWARE.

HYDRAULIC SAFETY FEATURES

SAFETY DEVICE	SYSTEM	PROTECTIVE FUNCTION
ANTI-OVERFLOW Fill solenoid	Mechanical & hydraulic	- <i>Mechanically blocks the water intake if the water level in the tub exceeds a certain quantity (11 litres approx.), thus preventing leakage from the door.</i>
ANTI-FLOODING Float + microswitch	Mechanical & electrical	- <i>Cuts off the power supply to the water fill system in case of leakage from the structure of the appliance or from the components.</i>
AQUASTOP Water fill hose (ELTEK)	Mechanical & hydraulic	- <i>Mechanically blocks the water intake in case of breakage of the fill hose.</i>

SOFTWARE SAFETY FEATURES (ELECTRONIC)

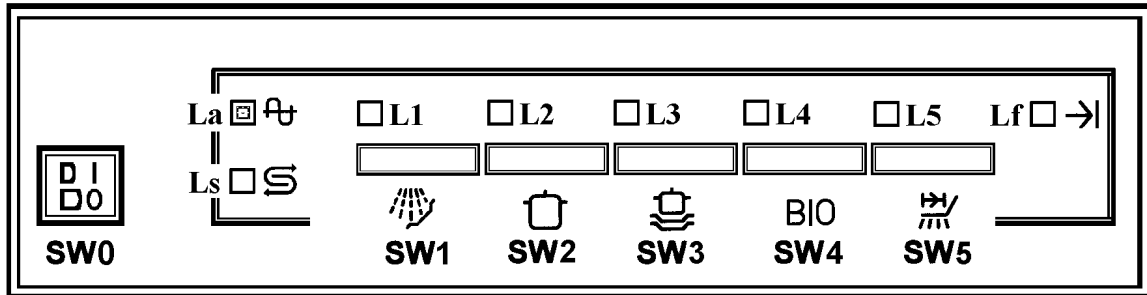
PROGRAMME IN OPERATION	→	- <i>Once the programme has started, it is no longer possible to alter the settings; this prevents accidental or inadvertent use of the controls.</i>
POWER FAILURE	→	- <i>In case of a power failure, the information relative to the cycle in progress is memorized until the power supply is restored and the programme resumes from the point at which it was interrupted.</i>
PRESSURE REGULATOR	→	- <i>This safety system is activated during the wash phases, when the cycle is resumed after an interruption (when the door is opened or after a power failure). This system ensures that the pressure inside the appliance is restored gradually, thus preventing leakage from the door.</i> - <i>The system controls the operation of the motor, which is switched on and off intermittently (for fractions of a second) for a period of 20 seconds, after which it returns to normal operation.</i> - <i>During this phase, all loads are disabled.</i>

SAFETY FEATURES / ALARMS

Intervention of one of the safety features interrupts the washing cycle (i.e. all loads are deactivated). One or two *PROGRAMME* LEDs light (*flashing_F V*) to indicate the type of alarm condition that has occurred.

SITUATION:

- Machine stopped
- All control keys disabled.
- LED *La* only lit.



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SOFTWARE SAFETY SYSTEMS

ALARM



- | | | |
|--|---|-----------------------|
| ① Time-Out for WATER FILL | → | LED [L 1] |
| ② Time-Out for WATER REPLENISHMENT | → | LED [L 2] |
| ③ Time-Out for PRESSURE SWITCH "EMPTY" (wash) | | |
| ④ TEMPERATURE SENSOR OPEN/SHORT-CIRCUITED | → | LED [L 3] |
| ⑤ Time-Out for WATER HEATING | → | LED [L 4] |
| ⑥ Time-Out for PRESSURE SWITCH "EMPTY" (drain) | → | LED [L 5] |
| ⑦ MOTOR BLOCKED OR INTERRUPTED | → | LED [L 1] & [L 2] |

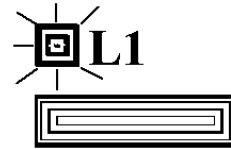
RESETTING AN ALARM CONDITION

- To reset the appliance after an alarm condition, press the *ON/OFF* key (**SW0**).
- When the *ON/OFF* key (**SW0**) is again pressed, the appliance returns to the programme selection phase, and the cycle that has been interrupted can be repeated.
- If the fault persists, the appliance returns to the ALARM condition. In this case, it is necessary to call a service technician to solve the problem and restore the appliance to normal operating conditions, since the electronic control system will accept no settings.

① **Time-Out - WATER FILL**

- *The water fill time-out is set to **5 minutes**.*
- The time-out count begins at the start of each fill phase, and ends when a "FULL" signal is received from the pressure switch (1-3).
- If the "FULL" signal (1-3) is not received within *5 minutes*, the *Time-out* intervenes to generate an ALARM condition.

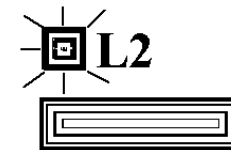
ALARM



② **Time-Out - WATER REPLENISHMENT**

- *The water replenishment time-out subsequent to resetting of the pressure switch to the "EMPTY" state is set to **90 seconds**.*
- This safety system is activated only during *washing phases without heating*, and starts from the moment at which the volumetric level is reached, ending with the subsequent drain cycle.
- The count begins when the pressure switch resets to "EMPTY" (1-2) and ends when the "FULL" signal is received from the pressure switch (1-3).
- If the "FULL" signal (1-3) is not received within *90 seconds*, the *Time-out* intervenes to generate an ALARM condition.
- If the pressure switch is reset more than once, the total times utilized for replenishment are summed; the total must not exceed *90 seconds*.
- During the replenishment phase, only the *fill solenoid* is switched on; all the other loads are disabled.

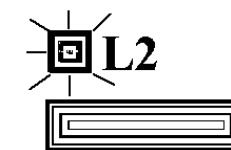
ALARM



③ **Time-Out - PRESSURE SWITCH "EMPTY"**

- *The time for resetting of the pressure switch to "EMPTY" during the washing and heating phase is set to **2 minutes**.*
- The count starts from the moment the pressure switch resets to "EMPTY" (1-2), and ends when the "FULL" signal is received from the pressure switch (1-3).
- If the "FULL" signal (1-3) is not received within the *2 minute* period, a *time-out* intervenes to generate an ALARM condition.
- If the pressure switch is reset more than once to "EMPTY" (for a total time not exceeding the limit), this may take place up to **3 times**; if a further reset occurs, an ALARM condition is generated.
- All the loads are disabled while the pressure switch is set to "EMPTY".

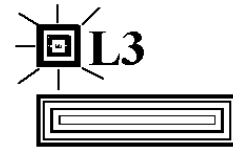
ALARM



④ TEMPERATURE SENSOR OPEN / SHORT-CIRCUITED

- Defined as a resistive value equivalent to **-5°C** and **80°C** with a value of between **209,200 ohms** and **5,300 ohms**.
- If the extremities of the sensor detect a resistance which is not within this range, a *time-out* intervenes to generate an ALARM condition.
- Control of the temperature measurement circuit takes place only during the water heating phase and until the correct temperature has been reached.

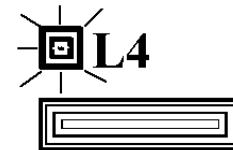
ALARM



⑤ Time-Out - WATER HEATING

- The water heating time-out is set to **45 minutes**, during which the heating element is switched on. This allows the water to reach a temperature of **70°C** (maximum).
- The time count begins at the start of each heating phase, and ends when the correct temperature for the cycle has been reached (except in the final drying phase).
- If the temperature of the water does not reach the correct level within **45 minutes**, a *time-out* intervenes to generate an ALARM condition.

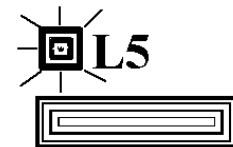
ALARM



⑥ Time-Out - WATER DRAIN

- A control is carried out in each final drain phase to check that the pressure switch is set to **"EMPTY"** (1-2).
- If this check detects that, at the end of the drain phase, the **"FULL"** signal (1-3) is still received, a *time-out* intervenes to generate an ALARM condition.
- The check for a pressure switch **"EMPTY"** condition (1-2) takes place in all drain phases which precede a washing or water heating cycle.

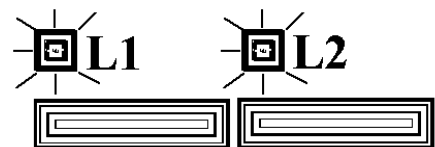
ALARM



⑦ MOTOR BLOCKED / INOPERATIVE

- Predetermined parameters are defined for the current absorption of the motor; if the absorption is outside these limits, a control procedure is carried out.
- *Motor control procedure*: Each time the motor starts up, the electronic control system measures the minimum and maximum thresholds of current absorption. If these are within the pre-determined parameters, operation continues normally. If they exceed the limits, the *motor release* procedure takes place.
- *Motor release procedure*: **Three** attempts are made to release the motor by powering it for fractions of a second in one direction, pause, then in the opposite direction. If the motor remains blocked at the **4th** attempt, a *time-out* intervenes to generate an ALARM condition.

ALARM



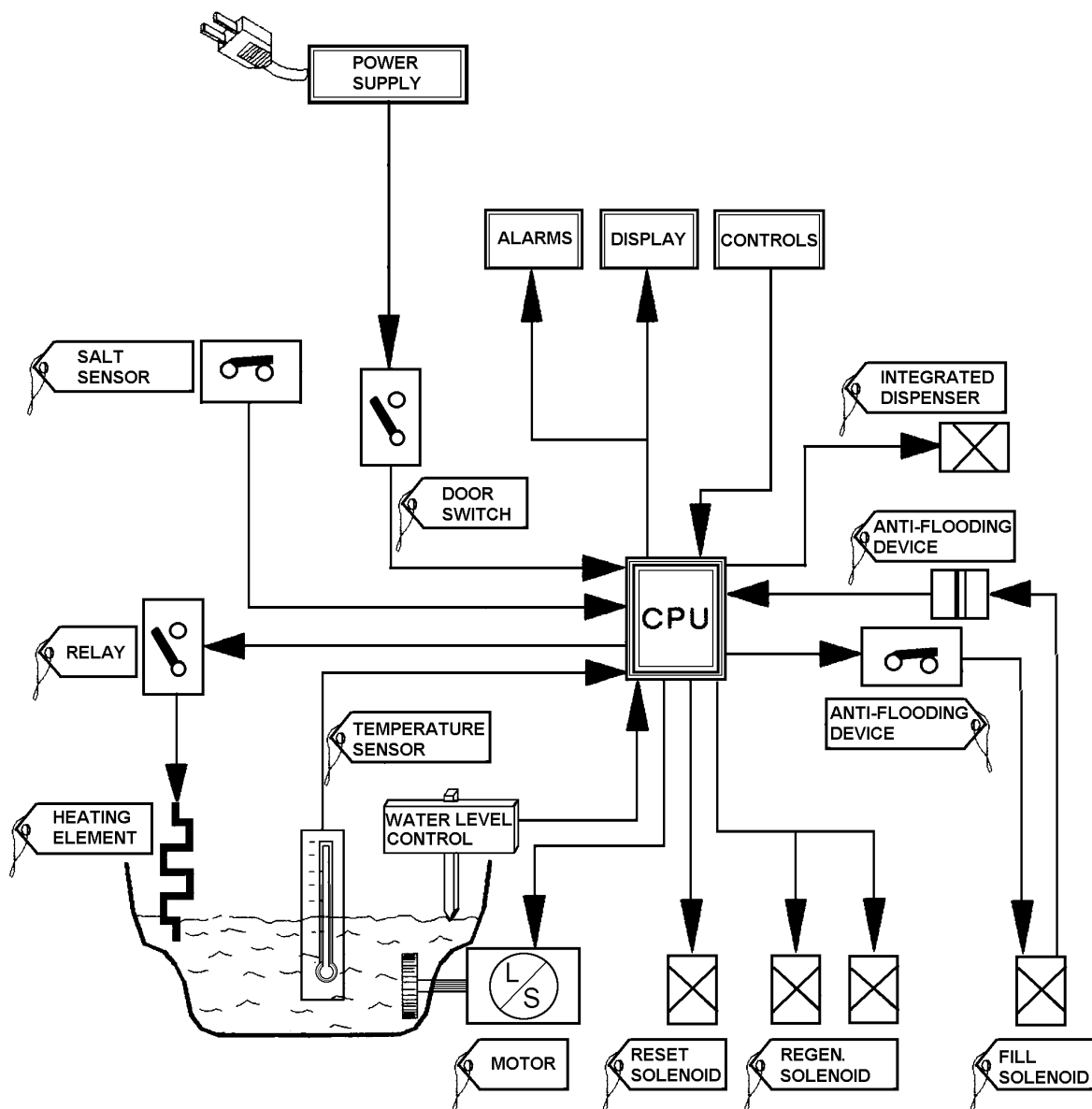
FUNCTIONS OF THE ELECTRONIC CONTROL SYSTEM

The electronic control system governs the operation of the appliance by means of a microprocessor in which all the machine control data is stored.

The microprocessor is programmed via a serial port.

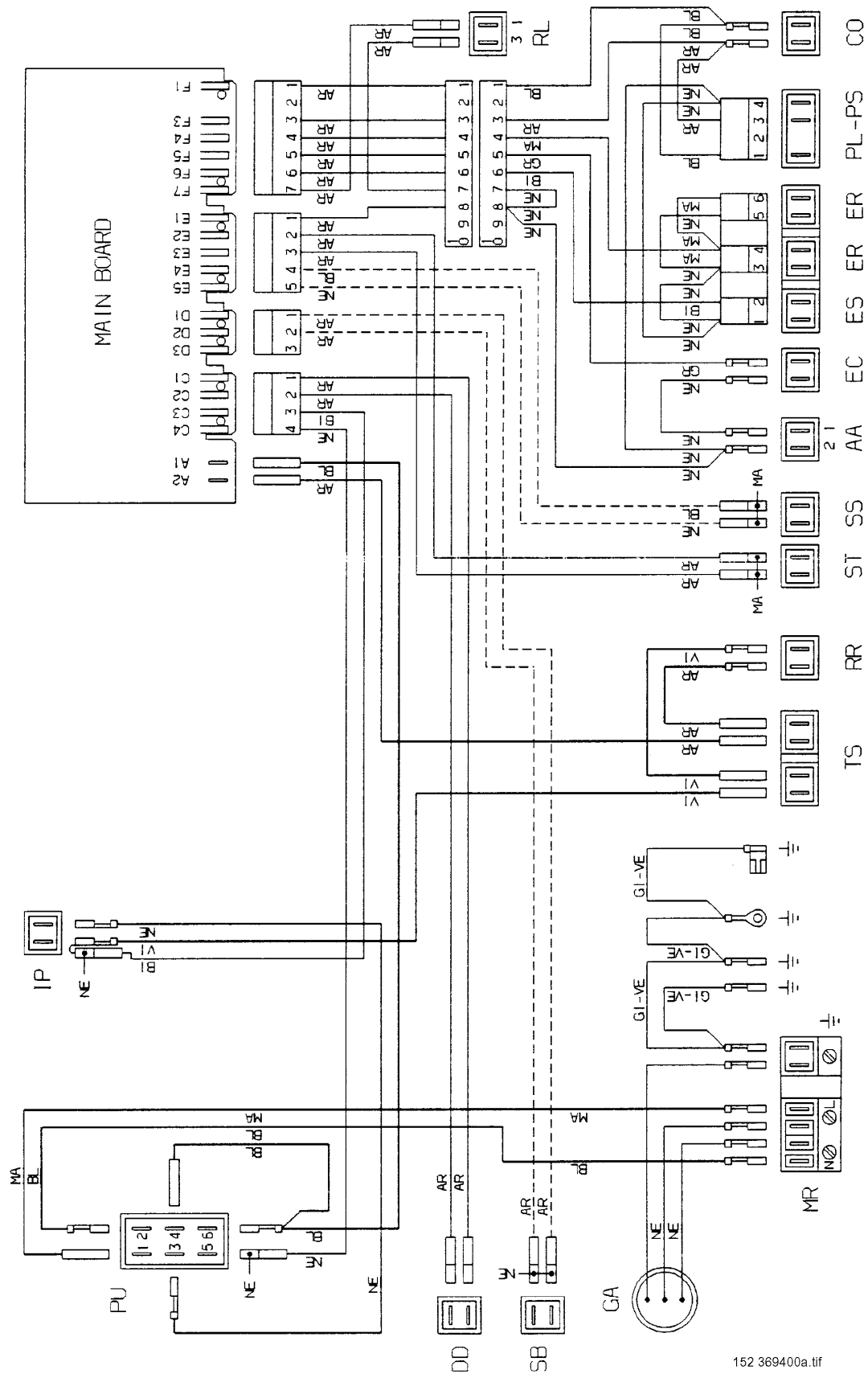
The **microprocessor**:

- receives signals and information from the controls
- acts as an interface, re-transmitting the acquired data
- provides communication with all the user units
- governs the functional control procedures
- controls the safety systems and alarms
- memorizes and transmits the signals received
- ensures that the functions of the appliance are as defined in the project specifications.



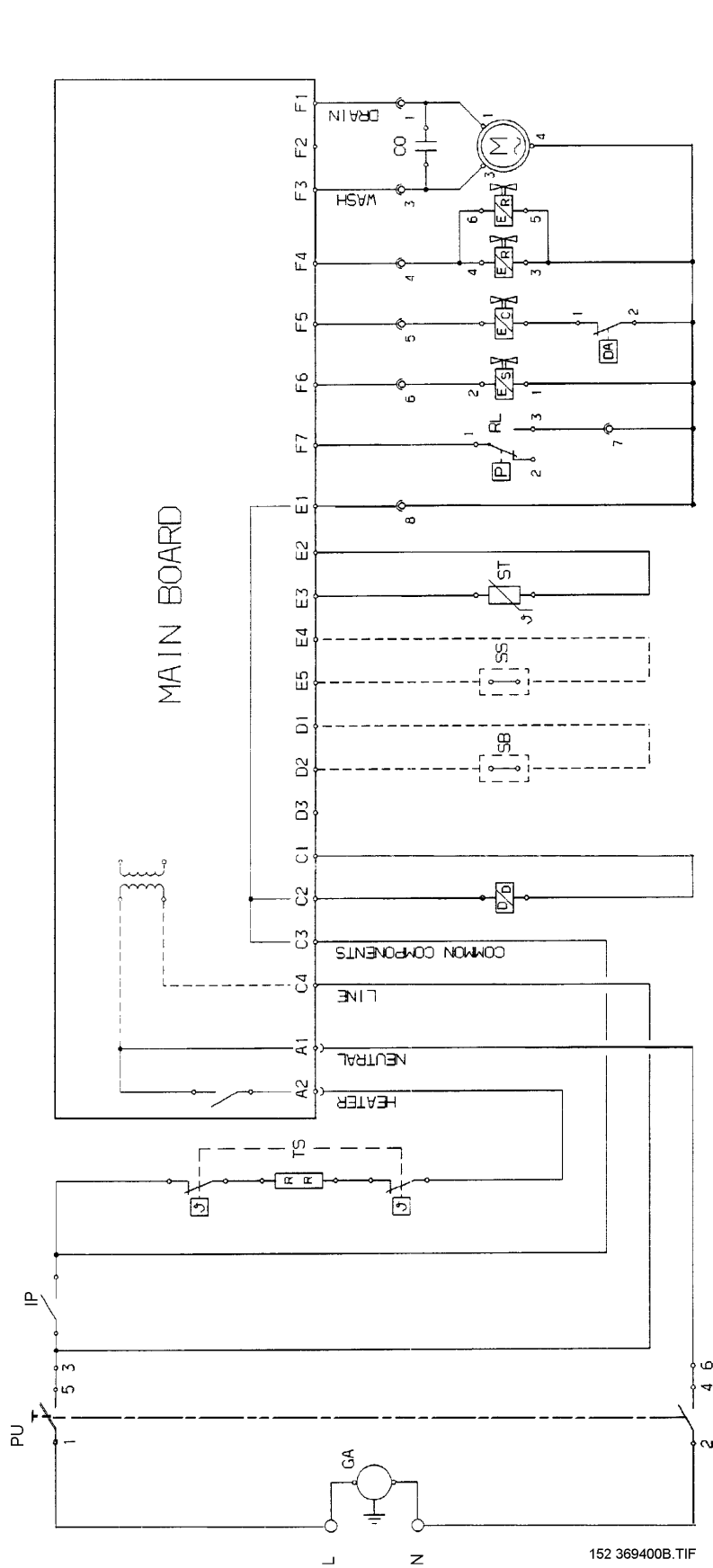
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CIRCUIT DIAGRAM



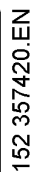
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FUNCTIONAL CIRCUIT DIAGRAM



AR / ar	CONNECTOR	ORANGE	CO	CAPACITOR	KM	ELECTRO-MAGNET	RR	HEATING ELEMENT
BI / bi	=	WHITE	DA	ANTI-FLOODING DEVICE	LS	CONTROL LAMP	SS	SALT SENSOR
BL / bl	=	BLUE	DD	DETERGENT/RINSE-AID DISPENSER	MT	TIMER MOTOR	ST	TEMPERATURE SENSOR
CE / ce	=	LIGHT BLUE	EC	WATER FILL ELECTRIC VALVE	PL	WASH PUMP	TA	THERMOSTAT H.T.
GR / gr	=	GREY	ER	REGENERATION ELECTRIC VALVE	PU	PUSHBUTTON BOARD	TB	THERMOSTAT L.T.
MA / ma	=	BROWN	ES	RESET ELECTRIC VALVE	RE	TIMER RELAY	TM	THERMOSTAT M.T.
NE / ne	=	BLACK	GA	INTERFERENCE SUPPRESSOR	RL	PRESSURE SWITCH	TS	SAFETY THERMOSTAT
RO / ro	=	PINK	IP	DOOR SWITCH	RP	TIME SWITCH		
VI / vi	=	VIOLET						

21



15235740/.	(IV) 15235741/.	(I)+(IV) 15235743/.
	(III)+(IV) 15235742/.	(I)+(III)+(IV) 15235744/.
	(II) 15235745/.	(I)+(II)+(IV) 15235748/.
	(II)+(IV) 15235746/.	(I)+(II)+(III)+(IV) 15235749/.
	(II)+(III)+(IV) 15235747/.	

CONFIGURATION OF BOARD (OPTIONS)

" ITRONIC - L L "

Dishwashers in the "ITRONIC" range are fitted with a specific (basic) electronic board which is designed to perform a series of functions, programmes and options that can be configured to meet the needs and requirements of all markets.

The electronic board can be personalized with **4 variants** (options) to the standard washing programme, according to the requirements of certain clients and/or countries.

These supplementary options are programmed in the factory and identified by a code. The code is printed on a label which is affixed to the casing of the board.

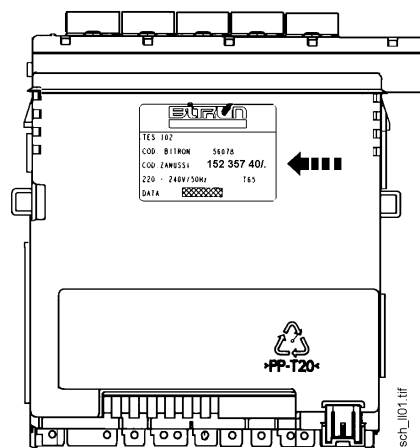
In the field, examination or personalization of the board requires a special procedure. This procedure can be carried out by service technicians only.

If the basic electronic board is personalized, its configuration is as described below:

IDENTIFICATION OF THE BOARD

BASIC board

An adhesive label is affixed by the supplier to the casing of the board, and shows technical data relative to the control board as well as an identification code indicating the type of board (e.g. 152 357 40/. is the basic board).

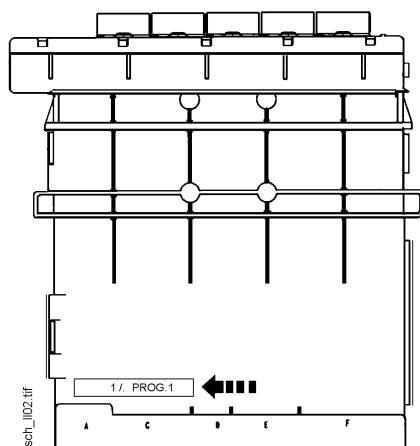


PERSONALIZED BOARD

Two variants are possible:

- Type 1
If the board is personalized directly by the **SUPPLIER**, the label shows a code which corresponds to the type of personalization requested. The 8th digit of the code is altered with respect to the basic board (e.g. 152 357 41/. etc.)
- Type 2
If the control board is personalized in the **FACTORY**, a second adhesive label is affixed to the other side of the casing. This label shows the type of personalization
Example: [1 / **PROG.1**] is equivalent to code 152 357 41/.)

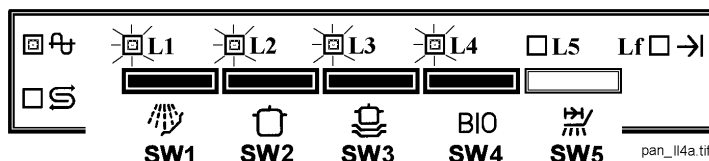
In other words, when the board is personalized before leaving the factory, the first label (supplier) shows the basic board code, while the second shows the personalization code.



PERSONALIZATION OF THE ELECTRONIC BOARD

" ITRONIC - L L "

The configuration of the options can be determined by comparing the personalization code on the label (affixed to the casing of the board) with the lighted LEDs (L1 - L2 - L3 - L4 - *fixed* or *flashing_F N*). The other LEDs remain unlit.



BASIC BOARD	PERSONALIZED BOARD	DIGIT ON DISPLAY				OPTION A	OPTION B	OPTION C	OPTION D
152 357 40 /.	--	L	L	L	L	--	--	--	--
152 357 41 /.	152 357 41 /.	L	L	L	A	--	--	--	⊗
152 357 42 /.	152 357 42 /.	L	L	A	A	--	--	⊗	⊗
152 357 43 /.	152 357 43 /.	A	L	L	A	⊗	--	--	⊗
152 357 44 /.	152 357 44 /.	A	L	A	A	⊗	--	⊗	⊗
152 357 45 /.	152 357 45 /.	L	A	L	L	--	⊗	--	--
152 357 46 /.	152 357 46 /.	L	A	L	A	--	⊗	--	⊗
152 357 47 /.	152 357 47 /.	L	A	A	A	--	⊗	⊗	⊗
152 357 48 /.	152 357 48 /.	A	A	L	A	⊗	⊗	--	⊗
152 357 49 /.	152 357 49 /.	A	A	A	A	⊗	⊗	⊗	⊗

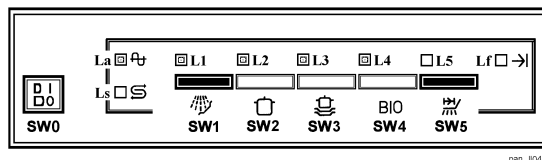
Key: - LEDs → L (- -) *Flashing (function disabled)*
→ A (⊗) *Lit (fixed) (function activated)*

Option **A** → DW with hidden heating element (instead of visible)
Option **B** → 2 cold rinses (instead of 1) in the UNIVERSAL and BIO cycles [3] and [4]
Option **C** → Hot rinse at 65°C (instead of 55°C) in the BIO cycle [4]
Option **D** → Hot rinse at 55°C (instead of cold) in the SHORT cycle [5]

Personalization of the electronic board can be performed only during the programme selection phase

Open the door and switch off the appliance.

- Press and hold down keys **SW1** and **SW5** simultaneously.
- Switch on the appliance by pressing key **SW0**.
- After 5 seconds, LEDs **L1 - L2 - L3 - L4** light (*flashing_FN*). Release keys **SW1** and **SW5**.
- Select the desired option(s) (**A - B - C - D**) by pressing the corresponding keys (**SW1 - SW2 - SW3 - SW4**).
- To exit this routine and memorize the options selected, press key **SW0** to switch off the appliance.



During the PROGRAMME EXECUTION phase, the options can only be displayed (i.e. cannot be modified).

Open the door and switch on the appliance.

- Press and hold down keys **SW1** and **SW5** simultaneously.
- After 2 seconds, LEDs **L1 - L2 - L3 - L4** will light to indicate the selected options.
- When the keys are released, the DISPLAY returns to normal conditions.
- When the door is closed, the cycle resumes from the point at which it was interrupted.

TROUBLESHOOTING

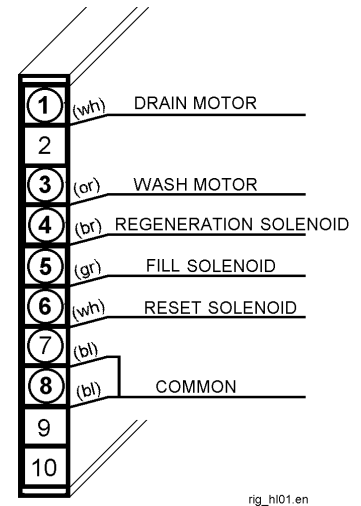
CHECKING THE EFFICIENCY OF THE COMPONENTS

In order to facilitate checking of the efficiency of the component to be tested, a special **CONTROL PROCEDURE** has been created. The contacts to which the tester should be applied and the correct resistance for the component are shown in the table below.

PROCEDURE: Apply the probes of the tester to the points indicated and measure the resistance.

After detaching the modular wiring connector fitted to the base of the appliance, measure the resistance to verify the efficiency of the components fitted to the dishwasher.

COMPONENT	TESTER PROBES		CORRECT VALUE
	CONNECTION	COLOUR	
MOTOR (DRAIN)	1 - 8	Blue / Black	73 Ω $\pm$ 7%
MOTOR (WASHING)	3 - 8	Orange / Black	48 Ω $\pm$ 7%
REGENERATION SOLENOID	4 - 8	Brown / Black	2620 Ω $\pm$ 8%
FILL SOLENOID AND ANTI-FLOODING DEVICE	5 - 8	Grey / Black	3950 Ω $\pm$ 8%
RESET SOLENOID	6 - 8	White / Black	5200 Ω $\pm$ 8%



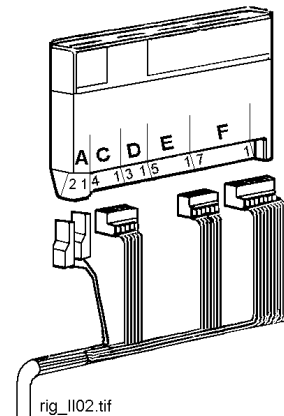
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N.B.: If the resistance measured across contacts 1-8 and 3-8 of the motor is the same (28 ohms approx.), this means that the capacitor is short-circuited.

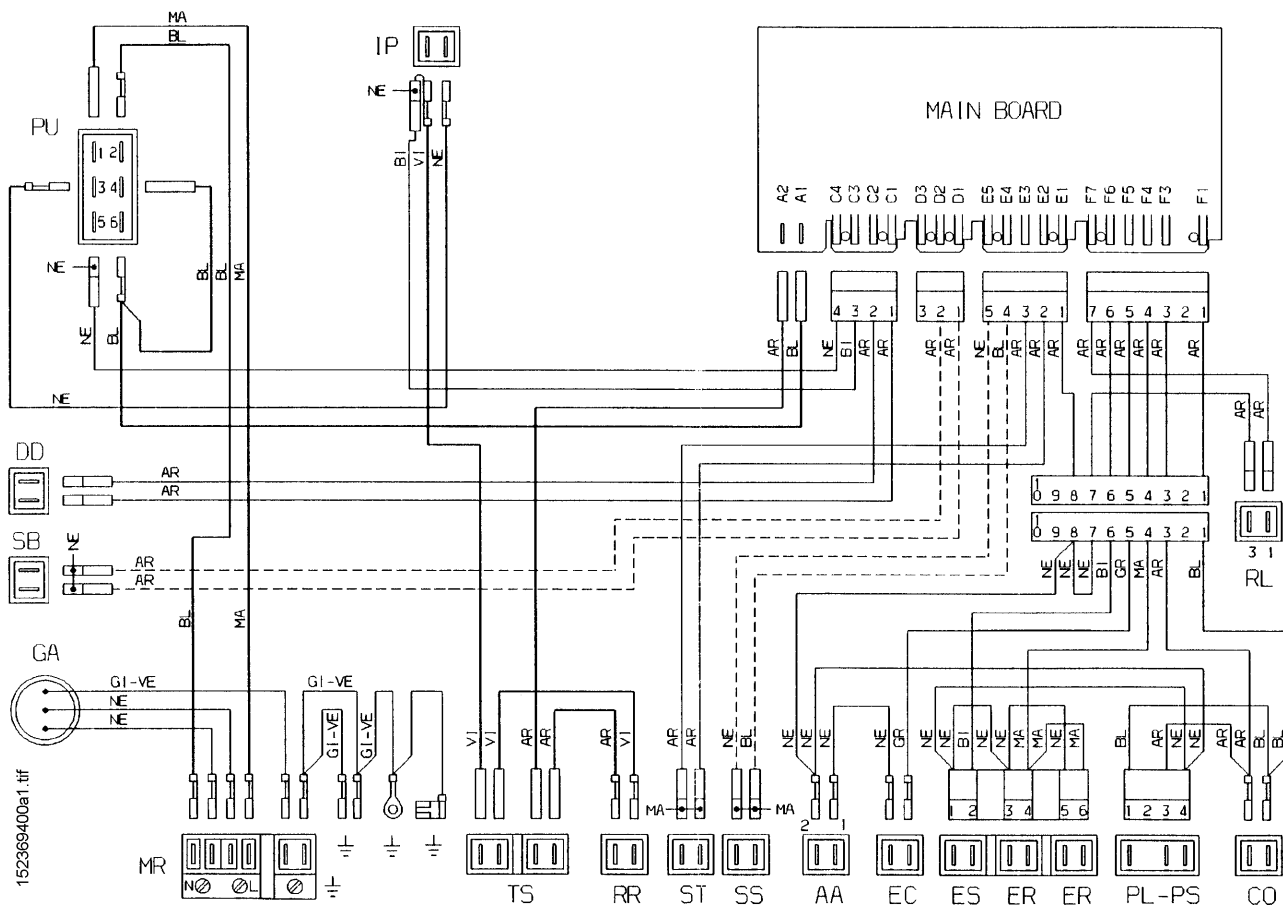
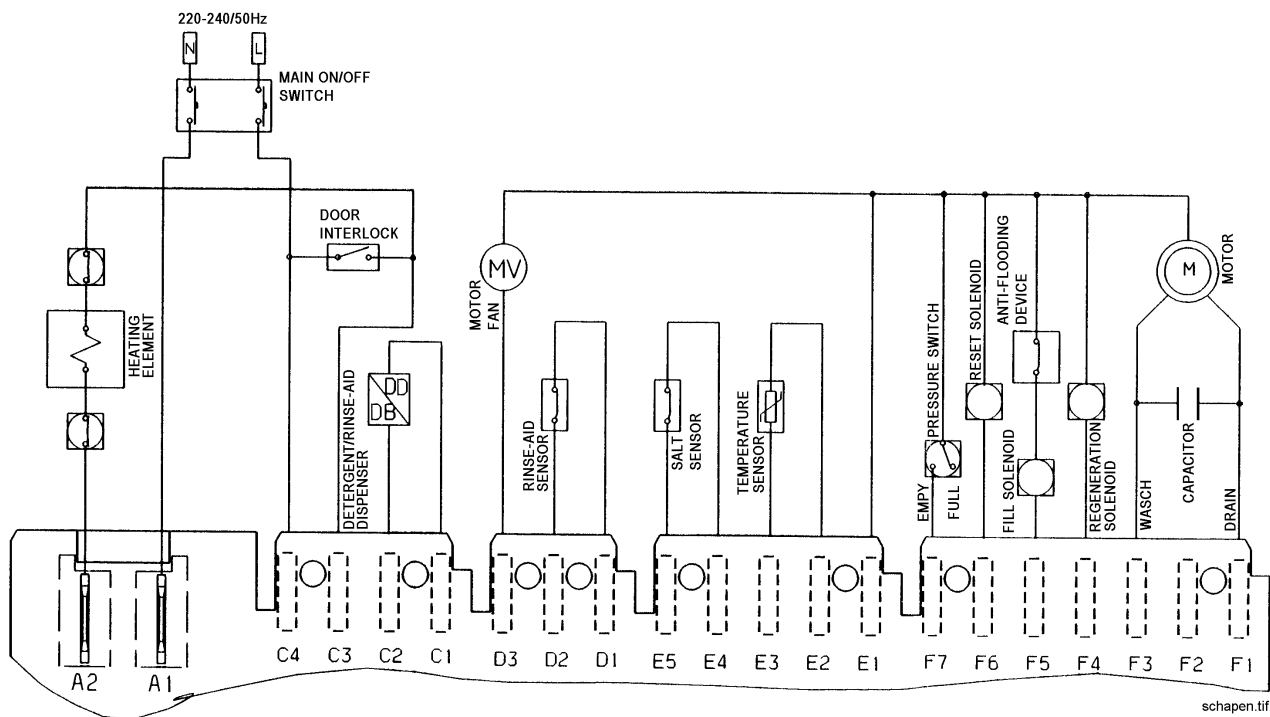
The remaining components can be tested in the same way. The measurements can also be made directly on the component or on the modular connections of the control board.

The test points and correct values are shown in the table below.

COMPONENT	PROBES CONNECTION	CORRECT VALUE	
		Key pressed	0 ohms
POWER CABLE & ON/OFF SWITCH	L - C4 N - A1	Key pressed	0 ohms
DOOR MICROSWITCH	C3 - C4	Door closed	0 ohms
PRESSURE SWITCH	E1 - F7	"EMPTY" (1-2) "FULL" (1-3)	INFINITE 0 ohms
HEATING ELEM. & SAFETY THERMOSTAT	A2 - C3	2300 W	25 ohms $\pm$ 8%
INTEGRATED DISPENSER	C1 - C2		1300 ohms $\pm$ 8%
TEMPERATURE SENSOR	E2 - E3	At 20 °C At 65 °C	60.545 ohms $\pm$ 8% 9.135 ohms $\pm$ 8%
SALT SENSOR	E4 - E5	With salt Without salt	INFINITE 0 ohms



APPLICATION DIAGRAM



VERIFICATION OF ALARM CONDITIONS

In order to facilitate the identification of a fault, the CONDITIONS shown on the display panel, which cause one of the safety systems to intervene, are listed below together with the possible CAUSES which will simplify the identification and elimination of the fault condition.

N.B.: - The control board is unlikely to develop a fault, and should therefore be examined as a last resort.

CONDITION	INTERVENTION	CAUSE
LEDs - Off	POWER FAILURE	1. Restore the power supply 2. ON/OFF switch faulty 3. Wiring between switch and board damaged/disconnected
LED [L 1]  LEDs - Off	WATER FILL <i>Maximum time 5 min</i>	1. Tap closed 2. Mains pressure < 0.3 bar 3. Intervention of Anti-overflow device or Aquastop 4. Intervention of Anti-flooding device 5. Solenoid or connections damaged/disconnected 6. Pressure switch does not go to "FULL" (1-3) 7. Water distribution in IWMS not correct 8. Siphon ducts to drain hose
LED [L 2]  LEDs - Off	WATER REPLENISHMENT <i>Maximum time 90 sec (total time)</i>	1. Pressure switch on "EMPTY" (1-2) 2. Leakage from sump / couplings 3. Pressure drop on pressure switch connection 4. Water distribution in IWMS not correct 5. Dishes upside down 6. Sump filter blocked 7. Intervention of Anti-flooding device
LED [L 2]  LEDs - Off	PRESSURE SWITCH "EMPTY" <i>Washing & heating</i> <i>maximum time 2 min. x 3</i>	1. Pressure switch on "EMPTY" (1-2) 2. Leakage from sump / couplings 3. Pressure drop on pressure switch connection 4. Dishes upside down 5. Sump filter blocked 6. Cavitation of washing pump
LED [L 3]  LEDs - Off	TEMPERATURE SENSOR <i>(Range:- 5300 - 209.200 Ω)</i> <i>Instantaneous intervention</i>	1. Temperature sensor open/short-circuited 2. Temp. sensor out of limits/incorrectly calibrated 3. Water temperature >80°C 4. Sensor connections false/detached 5. Water temperature <-5°C 6. Sensor connections short-circuited
LED [L 4]  LEDs - Off	WATER HEATING <i>Maximum time 45 min</i>	1. Heating element damaged 2. Heating element connection damaged/detached 3. Safety thermostat open/disconnected 4. Poor thermal contact on temperature sensor 5. Conducting paste insufficient / absent 6. Circular filter blocked
LED [L 5]  LEDs - Off	PRESSURE SWITCH "EMPTY" <i>Water drain not carried out or not completed</i> <i>Instantaneous intervention</i>	1. Pressure switch on "FULL" (1-3) 2. Drain system unsuitable (hose, siphon etc.) 3. Cavitation of drain pump impeller 4. Pump not fitted correctly in its seat 5. Drain pump cut-in tube blocked/kinked 6. Float valve in resin tank open 7. Water in IWMS level chamber
LED [L 1]  LED [L 2]  LEDs - Off	MOTOR BLOCKED <i>Washing / Drain</i> <i>Instantaneous intervention</i>	1. Rotor blocked (seized, foreign bodies) 2. Friction on pump impellers; impellers stripped 3. Electrical interruption of motor 4. Start-up capacitor short-circuited/damaged 5. Motor connection damaged/detached

N.B. In all the situations listed above, the DW remains inoperative and no functions can be performed.

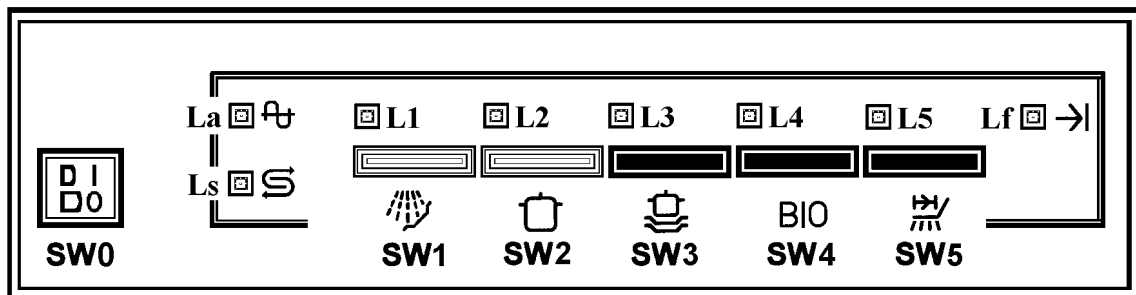
FUNCTIONAL TEST CYCLE

" ITRONIC - L L "

*This procedure - available to SERVICE technicians only - can be used to perform the **regeneration function** at the start of a washing cycle instead of having to wait for this function to take place towards the end of the cycle.*

The test cycle is as follows:

- the regeneration solenoid is actioned in all the heating phases of the cycle being performed and during phases in which regeneration takes place.
- the regeneration solenoid is actioned independent of the level of regeneration selected.
- the test cycle is not taken into account in the regeneration interval count.



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To start the Functional test cycle:

Open the door and switch off the appliance.

- Press and hold down keys **SW3 - SW4 - SW5** simultaneously.
- Press the ON/OFF key (**SW0**) to switch on the appliance; LED **L a** lights (*fixed*).
- After 5 seconds, LED **L A** will begin to flash (*sequence_F N*).
- Release all three keys (**SW3 - SW4 - SW5**).
- Select one of the washing cycles indicated [2] or [3] (the time required to check the *regeneration function* is shorter than in the other cycles) by pressing the corresponding key; the corresponding LED flashes.
- To exit the test cycle, switch off the appliance by pressing **SW0**.
- Close the door: **the cycle now starts**.
- While the cycle is in operation, LED **L a** remains lit (*flashing_F N*) and the LED corresponding to the cycle selected remains lit (*fixed*) to indicate that the test function is in progress.
- At the end of the cycle, the appliance automatically exits the functional test routine.
- To interrupt the functional test cycle, open the door and press the key selected previously.
- If a power failure should occur or if the appliance is switched off by pressing **SW0**, the test cycle is suspended, and will be resumed from the point at which it was interrupted as soon as the power supply is restored.
- *N.B. During the test cycle, all safety systems are activated, including the ALARMS.*