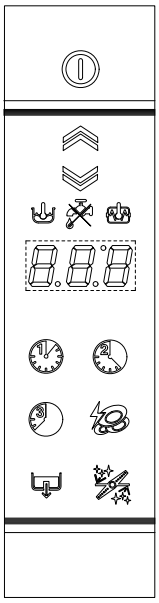
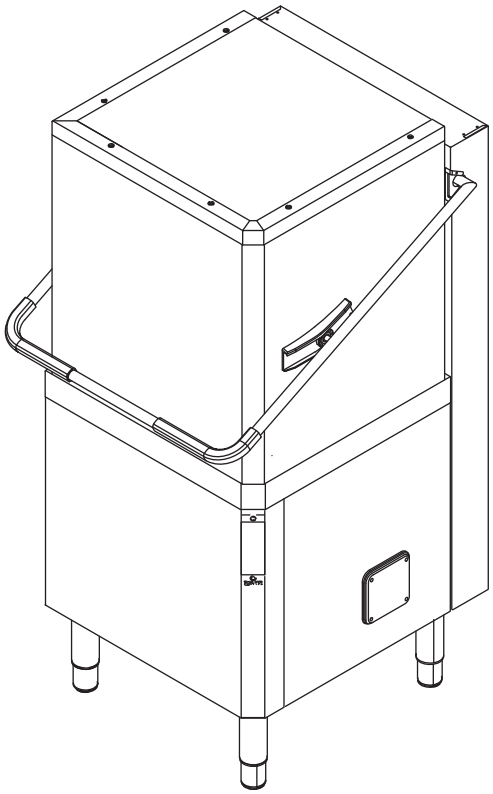
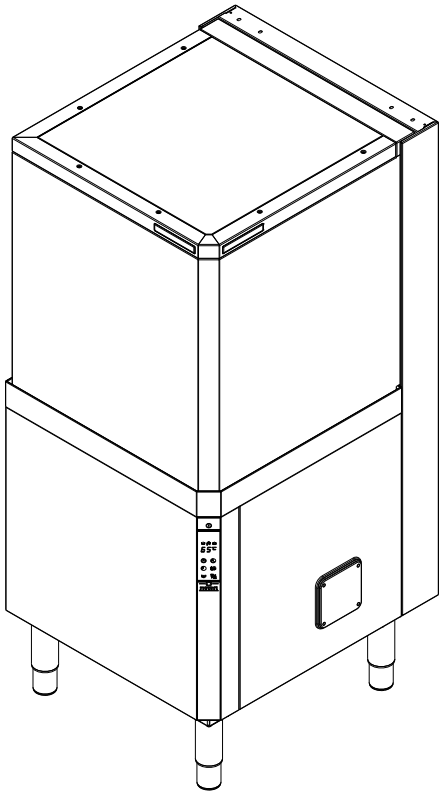
SERVICE MANUAL



CONTENTS: This document contains the instructions to set electronic board parameters via user interface for following dishwashers:





EDITION: 01.2014
Valid for firmware versions: 0.23 and higher.

WARNING:

All the safety regulations and procedures to be followed by the Specialised Technician/Technical Assistance performing electrical, mechanical or electronic maintenance operations are contained in the instruction manual supplied with the machine: refer to this document before operating. This applies for anyone carrying out operations using these documents. The specialised technician must wear personal protection equipment suitable for the work being performed (e.g. gloves, safety glasses and shoes, suitable clothing, etc.) and use appropriate tools, equipment and auxiliary means.

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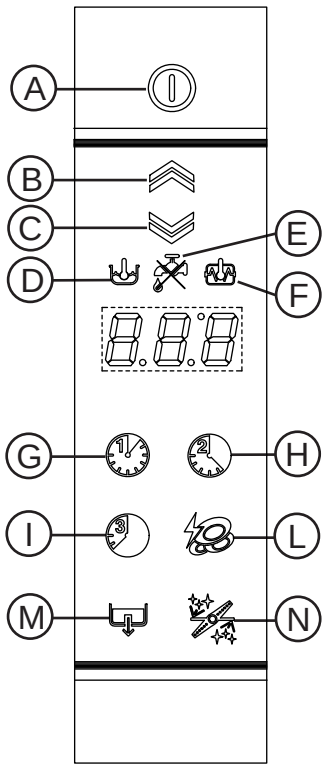
1 KEYBOARDS

1.1 DESCRIPTION OF CONTROL PANEL



Key

A = On / Off
B = Open hood
C = Close hood
D = “Tank temperature” indicator light
E = “Water tap” indicator light
F = “Boiler temperature” indicator light
G = Wash cycle 1
H = Wash cycle 2
I = Wash cycle 3
L = High Productivity or ETL-Sanitization
M = Drain / self-cleaning cycle
N = Delime cycle (this function can only be activated by a specialised technician)

1.2 SERVICE/ MAINTENANCE COMMANDS

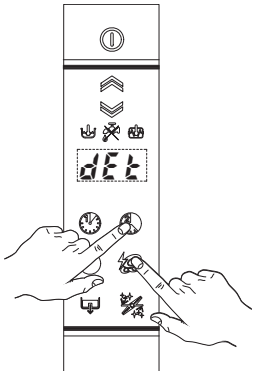


Fig. 1 Detergent dispenser Manual Activation

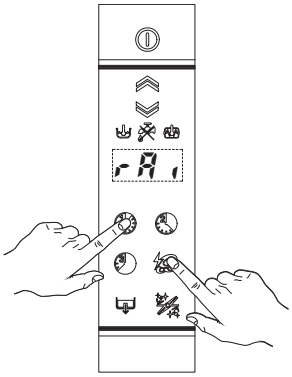


Fig. 2 Rinse Aid Dispenser Manual Activation

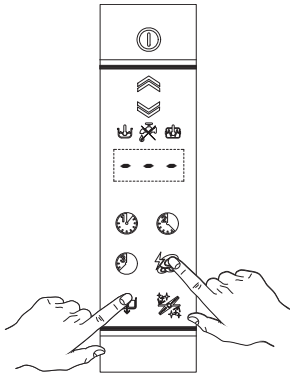


Fig. 3 Rinse Pump Manual Activation (used to EMPTY BOILER)

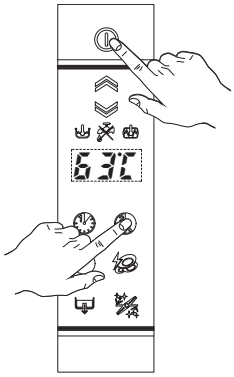
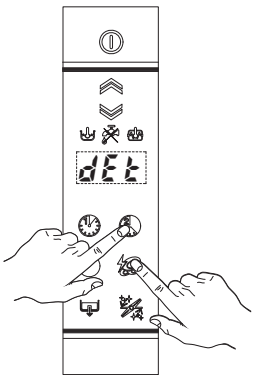


Fig. 4 Accessing the parameters menu

2 MANUAL ACTIVATION OF DETERGENT AND RINSE AID DISPENSERS

When replacing detergents may be necessary activate the dispensers to fill hoses.

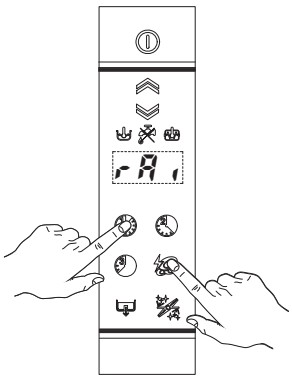
2.1 DETERGENT DISPENSER ACTIVATION



Switch on the dishwasher.

Press and hold down wash cycle 2 (“H” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) and “L” key (Par. 1.1 DESCRIPTION OF CONTROL PANEL), after two 'beep' the detergent dispenser starts work for 20 sec.

2.2 RINSE AID DISPENSER ACTIVATION

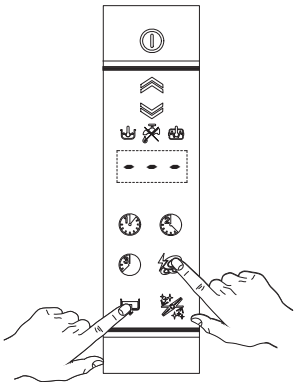


Switch on the dishwasher.

Press and hold down wash cycle 1 (“G” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) and “L” key (Par. 1.1 DESCRIPTION OF CONTROL PANEL), after two 'beep' the rinse aid dispenser starts work for 40 sec.

3 RINSE PUMP MANUAL ACTIVATION

Use this function to empty the boiler (if the dishwasher is not to be used for a long time, for maintenance operation: ex. before replacing main board).



Switch on the dishwasher.

Close the door and press and hold down Drain / self-cleaning cycle (“M” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) and “L” key (Par. 1.1 DESCRIPTION OF CONTROL PANEL). A buzzer signal indicates the rinse pump activation and the display shows three blinking lines. Three beeps indicate the cycle end.

4 ACCESSING THE PARAMETERS MENU

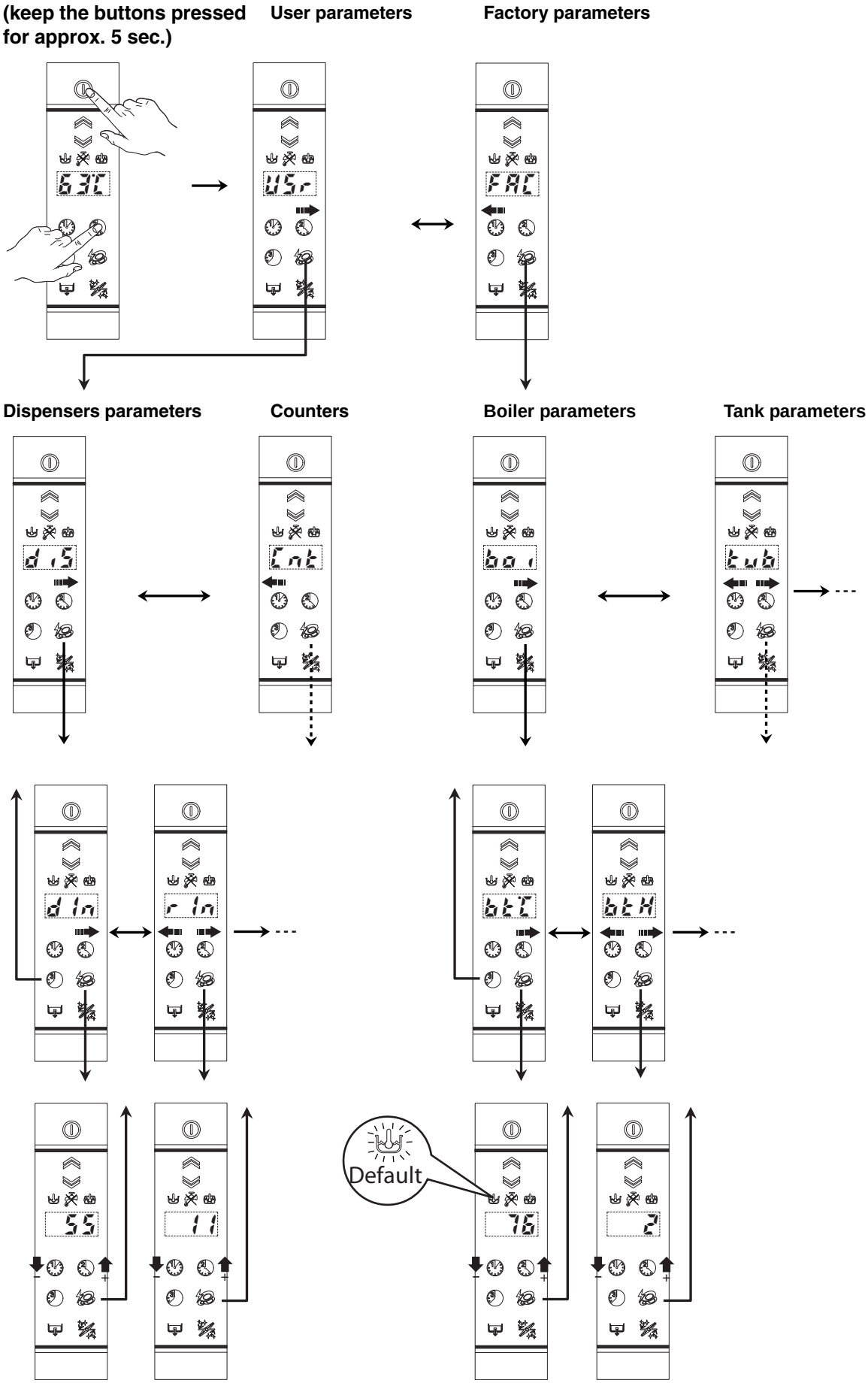
The parameters are divided into two families: USr user parameters and FAC factory parameters.
In the USr family there are parameters for adjusting the detergent and rinse aid dispensers and the counters (wash cycles, drain/cleaning cycles, etc.).
In the FAC family there are all parameters that determine dishwasher operation: boiler and tank working temperature, duration of the phases of each cycle, etc.
To access the parameters menu, the unit must be in standby mode: switch on the unit and check that no cycles are selected. In the programming phase it is advisable to keep the hood open to avoid starting a cycle if the two buttons are not pressed together (see point 2 in the following example).

Example:
With reference to Table 1 ACCESSING THE PARAMETERS MENU assuming the boiler temperature parameter bEC is to be modified.

1. Switch the dishwasher off and then on again;
2. Enter the parameter mode by pressing and holding down the On/ff buttons (“A” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) and wash cycle 2 (“H” - 1.1 DESCRIPTION OF CONTROL PANEL) for approx. 5 sec. The display shows the message USr;
3. Press the wash cycle 2 (“H” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) button to go to the FAC family;
4. Press the button (“L” - 1.1 DESCRIPTION OF CONTROL PANEL) to access the boiler parameters bo r family;
5. Press the button (“L” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) again to display the boiler temperature parameter bEC;
6. Press the button (“L” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) again to display the boiler temperature parameter value;
7. Use wash cycle 1 (“G” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) and wash cycle 2 (“H” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) to modify the parameter value; use the wash cycle 1 button to decrease the value and the wash cycle 2 button to increase it;
   NOTE: If the tank LED is on, the parameter value corresponds to the factory-set value.
8. Press the button (“L” - Par. 1.1 DESCRIPTION OF CONTROL PANEL) to confirm the value and return to the display of parameters.
   NOTE: To exit the parameter mode and return to the display of the families, press wash cycle 3 (“I” - Par. 1.1 DESCRIPTION OF CONTROL PANEL).

Similarly it is possible to change the other values; afterwards, switch the machine off and then on again.

Table 1 ACCESSING THE PARAMETERS MENU



5 USr USER PARAMETERS

5.1 d.S DISPENSERS PARAMETERS - DETERGENT AND RINSE AID DOSAGE

In this paragraph is explained how to set the dosage for the detergent and rinse aid dispensers. For each dispenser there are two parameters: the initial dosage and the dosage during cycle execution.

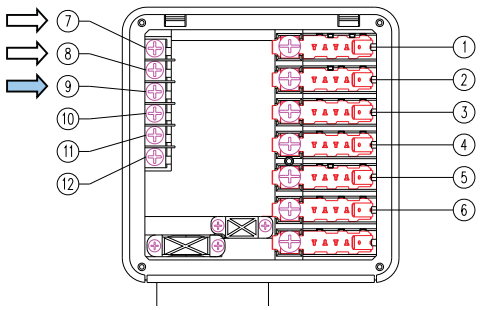
By changing the dun parameter is possible to set the desiered unit of measure (G-L=g/l or SEC=seconds). If dun = G-L need to set he parameters on the concentration in g/l, while if dun = SEC parameters correspond to the activation times in seconds.

Sym.	Parameter Description	Unit	Min	Max	Factory Default
dun	Dispensers unit of measure (G-L=g/l or SEC=seconds)	-	-	-	G-L
d In	Initial Detergent Dosage (during filling tank)	[g/l]	0	4,00	2,00
		[s]	0	240	55
r In	Initial Rinse Aid Dosage (starts when tank filled)	[g/l]	0	1,00	0,12
		[s]	0	180	11
dEt	Detergent Dosage During Cycle Execution (during wash phase)	[g/l]	0	4,00	2,00
		[s]	0	182 (*)	5
rA1	Rinse Aid Dosage During Cycle Execution (when refilling boiler)	[g/l]	0	1,00	0,12
		[s]	0	62 (*)	2

(*) Note for external dispensers (if: dun= SEC):

- if dEt: 181 the **detergent dispenser** works when **WASHING PUMP** is being activated; at the same time voltage is supplied between connectors **$L1_7$–$L1_9$** (main terminal box);
- if dEt: 182 the **detergent dispenser** works when **LOADING EV** is being activated to re-fill boiler level; at the same time voltage is supplied between connectors **$L1_7$–$L1_9$** (main terminal box);
- if rA1: 61 the **rinse aid dispenser** works when **LOADING EV** is being activated to re-fill boiler level; at the same time voltage is supplied between connectors **$L1_8$–$L1_9$** (main terminal box);
- if rA1: 62 the **rinse aid dispenser** works when **WASHING PUMP** is being activated; at the same time voltage is supplied between connectors **$L1_8$–$L1_9$** (main terminal box).

- For electrical connections refer to electric diagram



Example

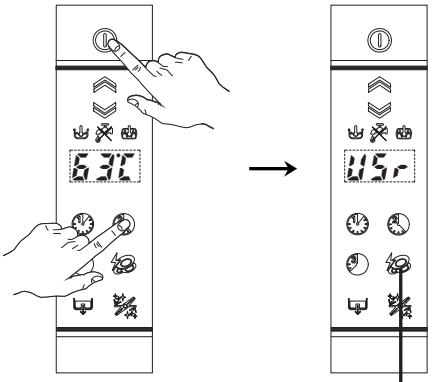
Suppose there is connected an **external detergent dispenser** with a probe into the tank.

A typical setting could be:

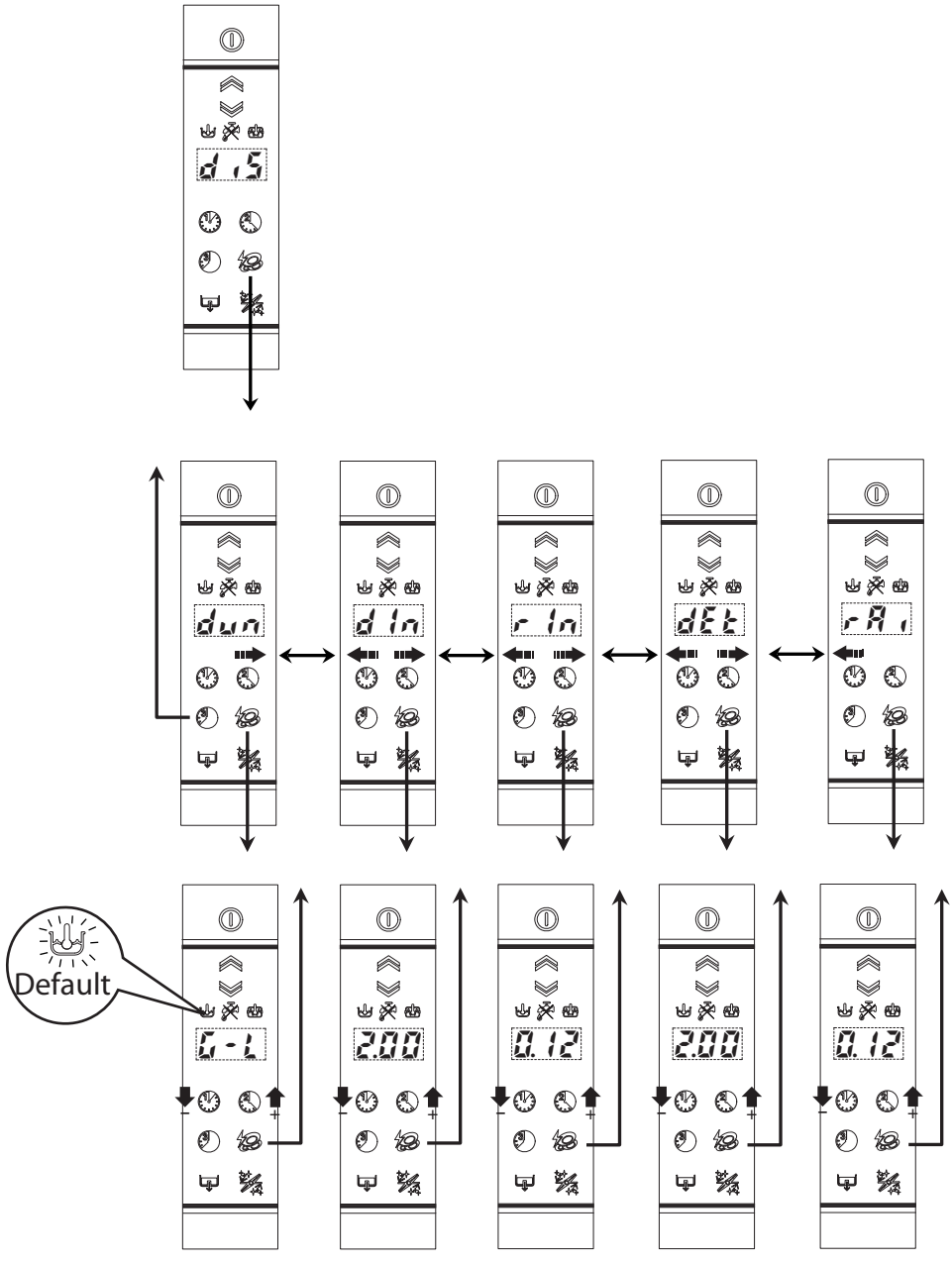
- d In: 0 the dispenser is not activated during filling tank;
- dEt: 181 the dispenser is supplied during washing phase and the probe automatically dose the right detergent amount.

Table 2 ACCESSING THE DISPENSERS PARAMETERS

(keep the buttons pressed for approx. 5 sec.)



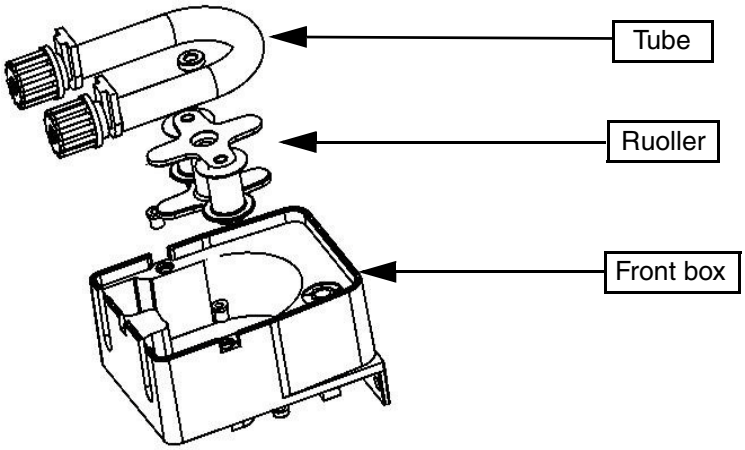
Dispensers parameters



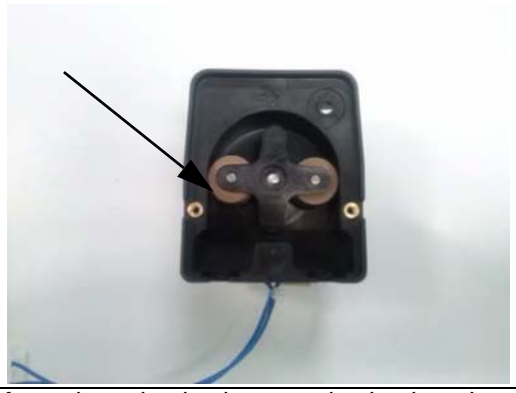
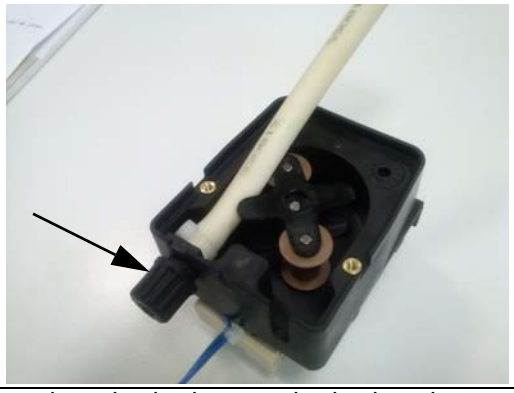
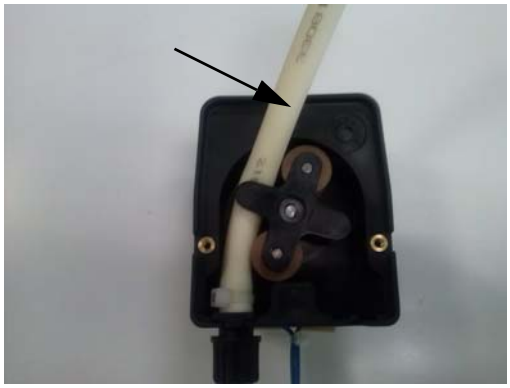
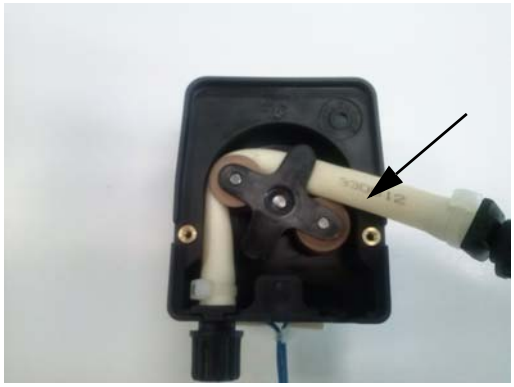
5.1.1 Peristaltic tube fitting and replacement instructions

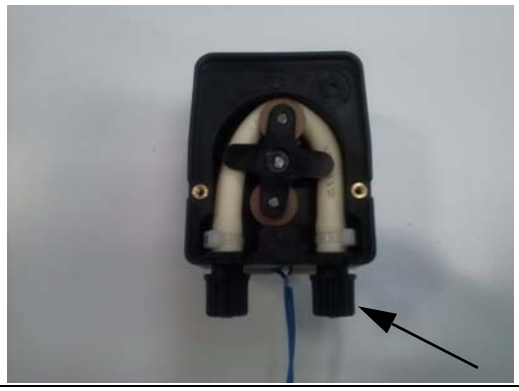
Described below is the procedure for inserting and removing the tubes from the peristaltic pumps, in case of tube replacement.

An exploded view of the parts involved in the tube fitting and removal operations is given below.

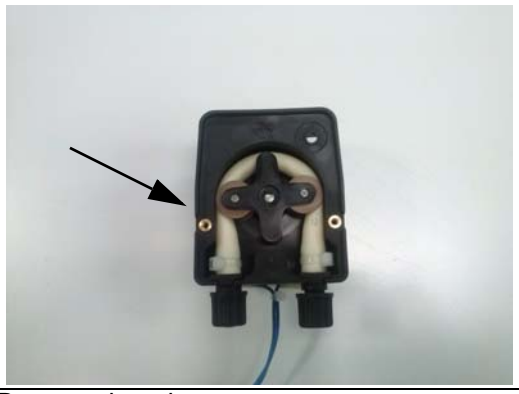
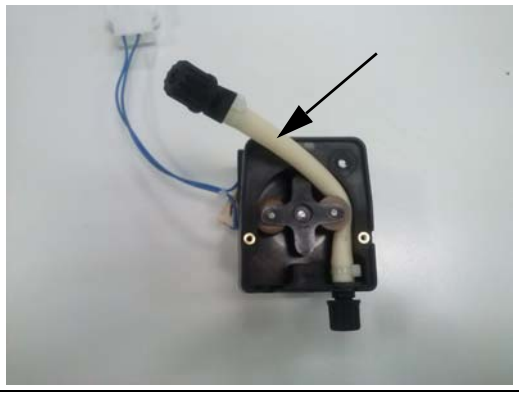


STEP 1 - FITTING THE TUBE

1. Position the roller.	2. Insert the tube of the suction part, turning the roller clockwise.
	
3. Keep the tube in the seat in the housing and continue turning the roller clockwise, being careful not to damage the tube.	4. Keep the tube in the seat in the housing and continue turning the roller clockwise.
	

5. Turn the roller a full 360°.	6. Make sure to fit the union in the special seat (delivery).
	

STEP 2 - REMOVING THE TUBE

1. Position the roller as shown in the figure.	2. Lift the tube at the suction part and turn the roller at the same time. Guide the tube, keeping it raised, and turn the roller.
	
3. Remove the tube.	
	

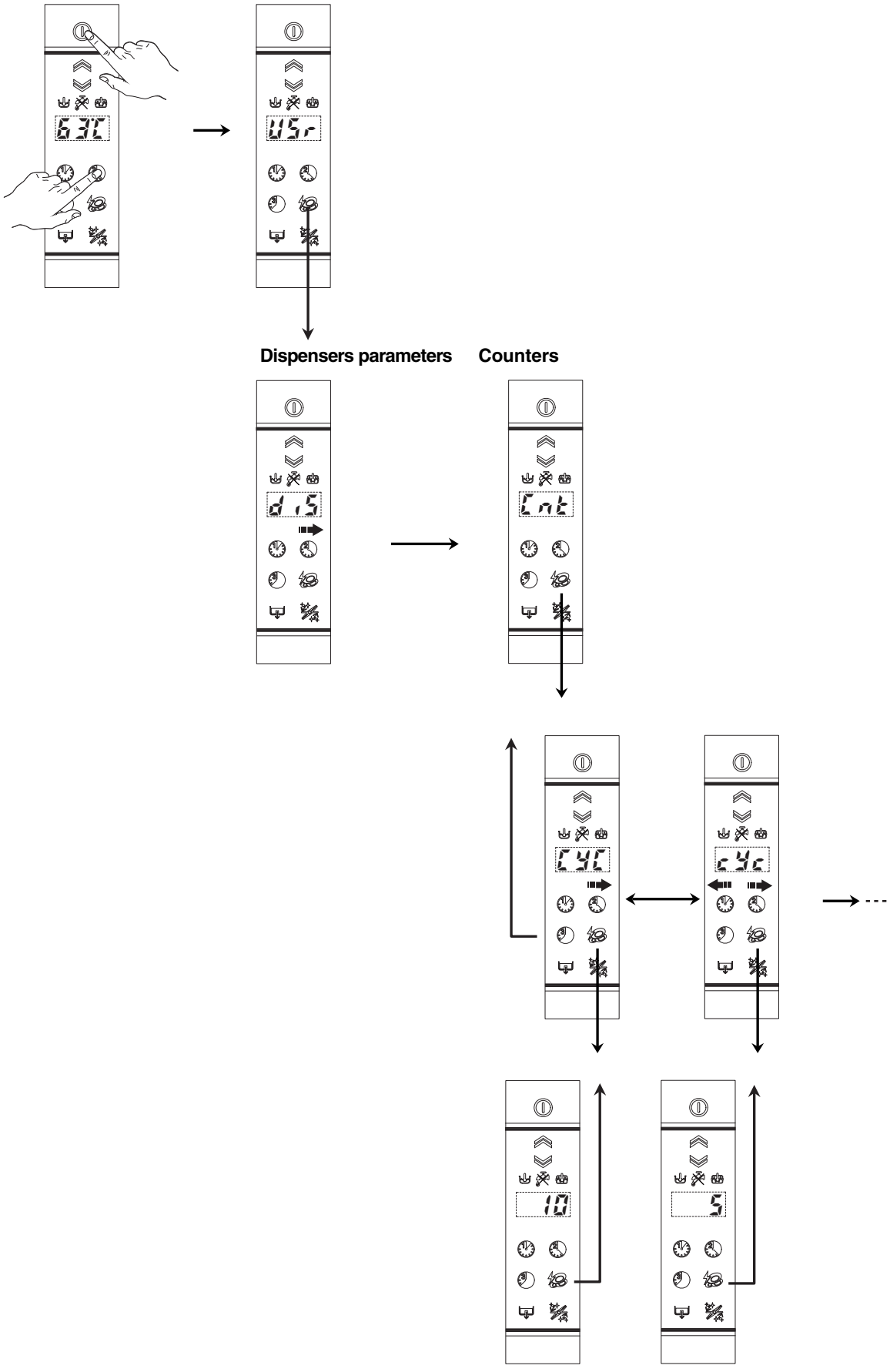
5.2 CnE COUNTERS

This Parameter Family collects cycle counters and water consumption counters.
For water consumption counters a flow meter must be installed. See PPL (calibration parameter) into dPA section (6.4 OTHER PARAMETERS).

Sym.	Parameter Description	Unit	Min	Max	Factory Default
CYC	Performed total cycles (counter is NOT resettable by the user).	-	-	-	-
cYc	Performed cycles (partial counter is resettable by user via the "rSt" parameter).	-	-	-	-
nnc	Counts m^3 of water consumption (counter is NOT resettable by the user). Works only if the flow meter is installed (integrated in the air gap for machines with watersoftener).	-	-	-	-
L	Counts liters of water consumption (counter is NOT resettable by the user). Works only if the flow meter is installed (integrated in the air gap for machines with watersoftener). Together with "nnc" parameter (m^3), This parameter gives the total water consumption of the machine.	[l]	-	-	-
L rt	Litres counters Counts the litres of water and is resettable by user (see rSt parameter below). Works only if the flow meter is installed (integrated in the air gap for machines with water softener).	[l]	-	-	-
rSt	Parameter to reset together counters: cYc and L rt . To reset put 1 this parameter, switch off and then on again: cYc and L rt will show zero.	-	-	-	-
drn	Drain/Cleaning cycles performed. Similar to CYC but counts Cleaning Cycles.	-	-	-	-
dLC	Delime cycles counter.	-	-	-	-
cLd	Number of executed washing cycles after last Delime cycle. This counter is reset after each Delime cycle.	-	-	-	-

Table 3 ACCESSING THE COUNTERS

(keep the buttons pressed for approx. 5 sec.)



6 FAC FACTORY PARAMETERS

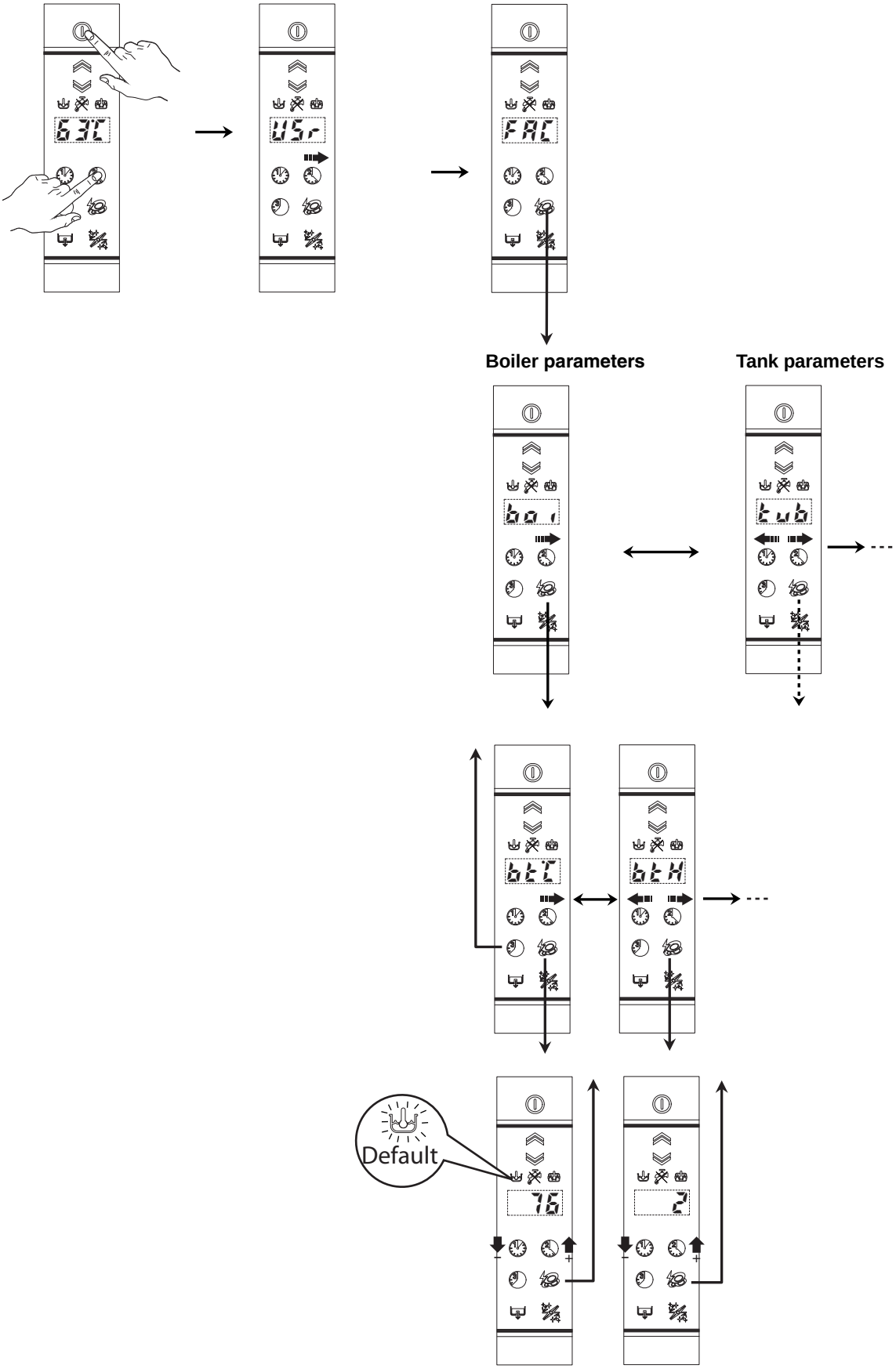
In this paragraph is explained how to change temperature thresholds and all parameters related to boiler and tank.

6.1 bo1 BOILER PARAMETERS

Sym.	Parameter Description	Unit	Min	Max	Factory Default
btC	Boiler Temperature: THRESHOLD. When boiler temperature reaches this value, heaters switch off.	[°C]	45	95	78
btH	Boiler Temperature HISTERESIS, (represent dead band). Heater switch on if boiler temperature is below: btC - btH	[°C]	2	10	2
bH1	Boiler Temperature: HIGH LIMIT. When boiler temperature reaches this value C 2 alarm appears. Put 0 to disable C 2 alarm.	[°C]	0	98	96
bLo	Boiler Temperature: LOW LIMIT. During boiler warm-up, temperature must increase at least bLo °C otherwise E 3 warning appears. Put 0 to disable E 3 warning.	[°C]	0	10	1
bFL	Boiler Filling Timeout. If filling time is longer than bFL, A 1 alarm appears. Put 0 to disable A 1 alarm.	[min]	0	42	5
bAJ	Boiler Temperature Adjust.	[°C]	0	7	4
bP	Boiler Priority (enable boiler wait function) 0= no = disabled 1=YES = enabled	-	no	YES	YES
bSt	Boiler Function Overheat gap over Boiler Temperature Threshold	[°C]	0	15	2
btd	Boiler temperature negative differential: when the dishwasher is in standby, boiler threshold becomes: btC - btd (Used to save energy during machine inactivity by keeping boiler water at a lower temperature).	[°C]	0	20	0
bPo	Boiler heating control. Defines the max. permissible temperature difference during boiler heating in a time interval of 2 minutes and 30 seconds. If in this period of time, the temperature increases over bPo appears the alarm C 1.	[°C]	25	80	50
bPu	Boiler power: 0 = Lo = Low power (only two branches of the three-phase heating element are used for boiler heating) 1 = H1 = Maximum power (all branches of the three-phase heating element are used for boiler heating)	-	Lo	H1	H1
btL	Boiler temperature in mode Thermal Label.	[°C]	45	97	86

Table 4 ACCESSING THE BOILER PARAMETERS

(keep the buttons pressed for approx. 5 sec.)

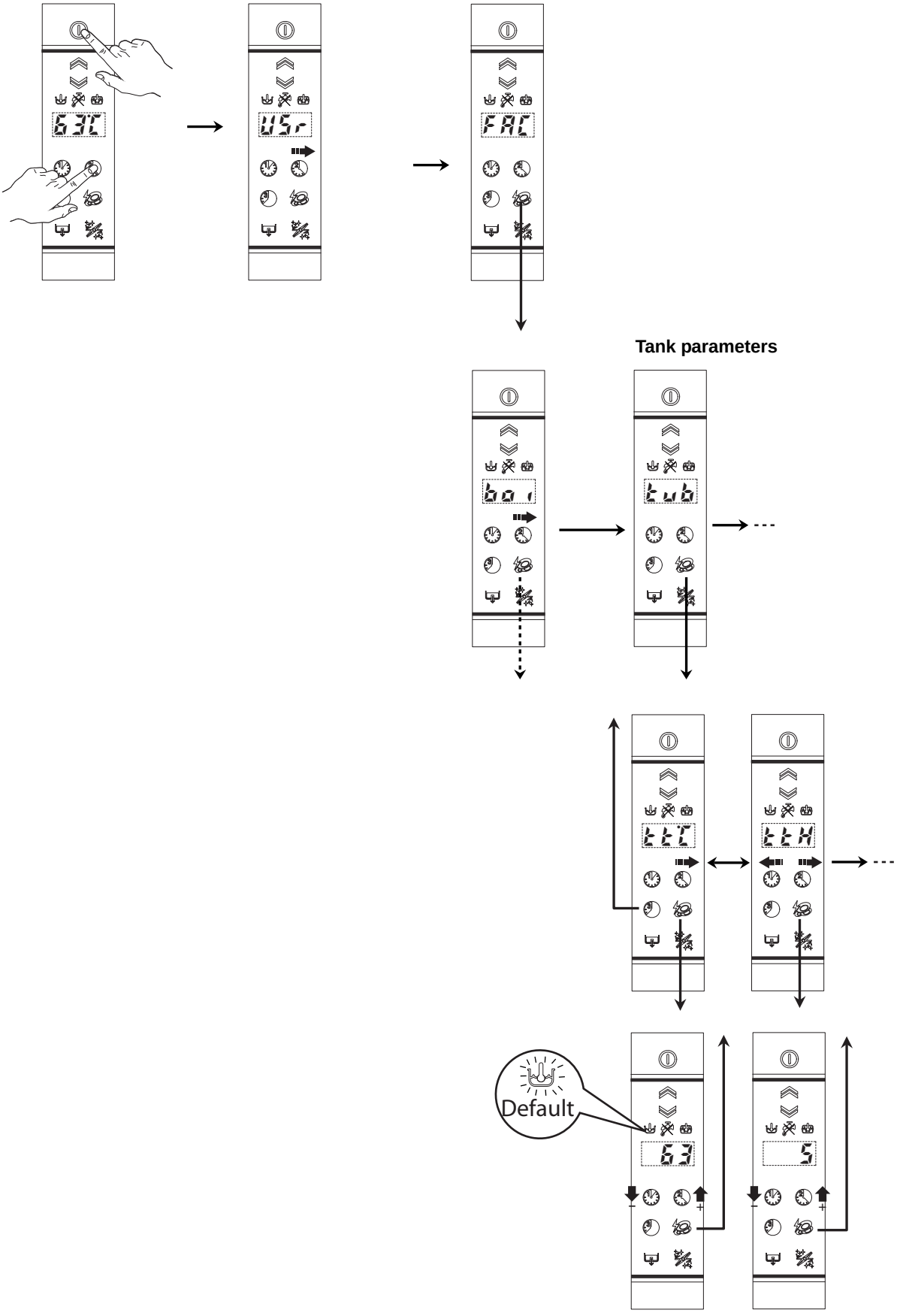


6.2 tub TANK PARAMETERS

Sym.	Parameter Description	Unit	Min	Max	Factory Default
tEC	Tub Temperature: THRESHOLD When tank temperature reaches this value, heater switch off.	[°C]	40	85	63
tEH	Tub Temperature: HISTERESIS, (represent dead band). Heater switch on if tank temperature is below: tEC - tEH	[°C]	2	30	5
tH,	Tank Temperature: HIGH LIMIT. When tank temperature reaches this value E 3 alarm appears. Put 0 to disable E 3 alarm.	[°C]	0	95	85
tLo	Tank Temperature: LOW LIMIT. During tank warm-up, temperature must increase at least tLo °C otherwise E 2 warning appears. Put 0 to disable E 2 warning.	[°C]	0	10	1
tFL	Tank Filling Timeout. If filling time is longer than tFL, A 1 alarm appears. Put 0 to disable A 1 alarm.	[min]	0	42	20
L 1	Tank filling level.	[mmH20]	50	200	100
L 1H	Hysteresis relevant to the filling level.	[mmH20]	10	100	65
L2	Overflow.	[mmH20]	50	200	180
L2H	Hysteresis relevant to the overflow level.	[mmH20]	10	100	60
Ldr	Level (relevant to filling level L 1) used in the drain phase during the cycle, that occurs after the wash phase.	[mmH20]	2	20	8
cyd	Cicles to perform before a tank partial drain. If cyd is 0, the function is disable. If the function is enabled, the partial drain is performed in according with LPd and PPd parameters (described below).	-	0	50	0
LPd	Tank partial drain level	[mmH2O]	0	40	20
PPd	Increase the pause (between wash and rinse) when there is a tank partial drain.	[s]	0	16	6
tEL	Tank temperature in mode Thermal Label.	[°C]	40	90	75
tHL	Tank temperature hysteresis in mode Thermal Label.	[°C]	0	30	2

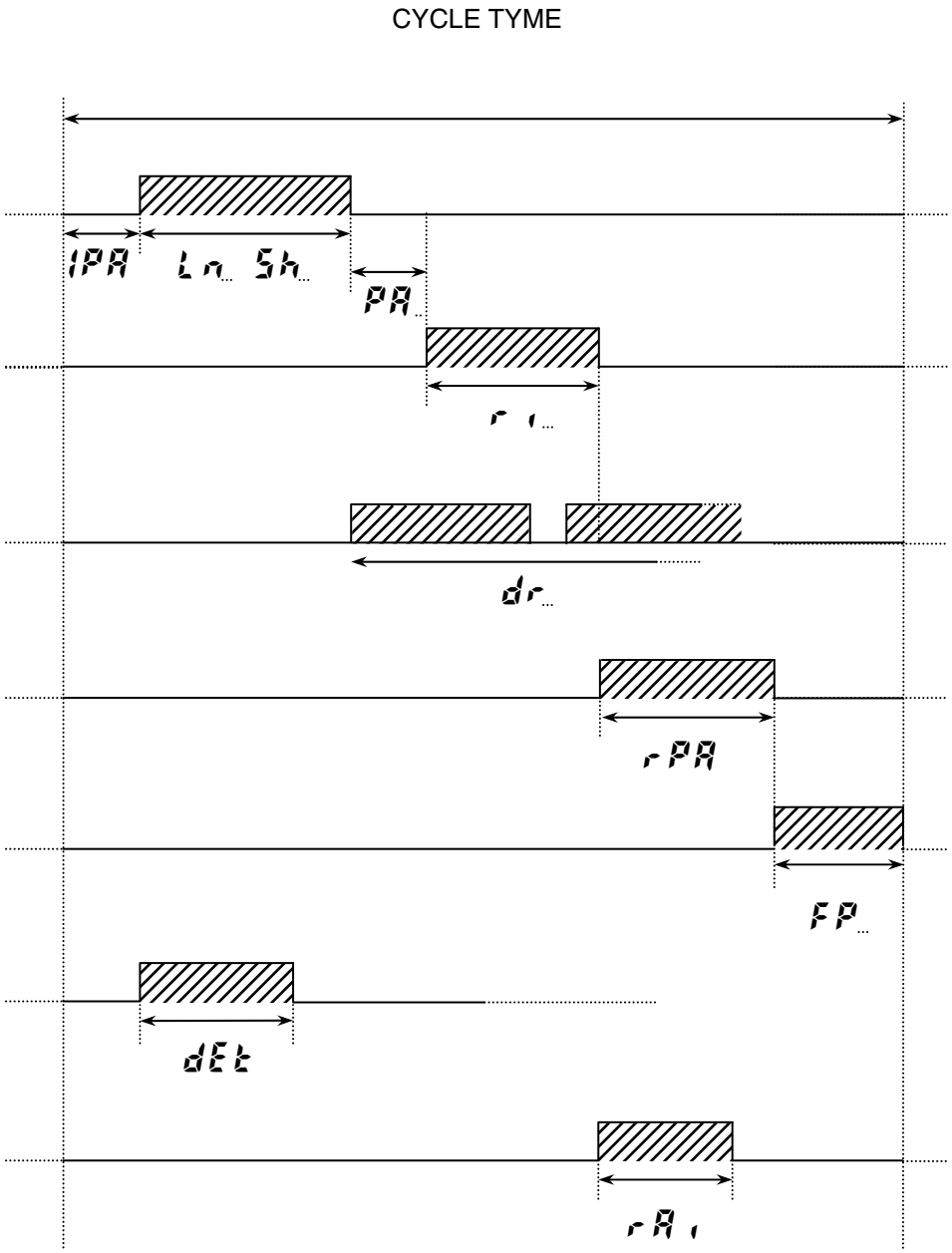
Table 5 ACCESSING THE TANK PARAMETERS

(keep the buttons pressed for approx. 5 sec.)



6.3 CYCLE SETTING

6.3.1 Wash cycle diagram



KEY:

IPA = initial pause

Lo Sh = wash [the duration is given by the sum of the two parameters Lo(min) and Sh(sec)].

FP = final pause

r 1 = rinse

dr = drain

Attention: It does not necessarily correspond to activation of the drain pump; activation of this pump is a function of the tank level.

rPA = rinse pause

dEt = detergent

rA 1 = rinse aid

6.3.2 C y 1 Cycle 1 parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
L n 1	Wash Phase Long	[min]	0	20	**0**
S h 1	Wash Phase Short	[s]	1	60	**33**
P A 1	Pause	[s]	0	20	**4**
r i 1	Rinse Phase Duration	[s]	10	45	**8**
d r 1	Drain	[s]	0	40	**12**
F P 1	Final Pause at End of Cycle	[s]	0	60	**0**
t L 1	Long wash time in mode Thermal Label	[min]	0	60	**0**
t S 1	Short wash time in mode Thermal Label	[s]	0	60	**45**

6.3.3 C y 2 Cycle 2 parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
L n 2	Wash Phase Long	[min]	0	20	**1**
S h 2	Wash Phase Short	[s]	1	60	**12**
P A 2	Pause	[s]	0	20	**4**
r i 2	Rinse Phase Duration	[s]	10	45	**8**
d r 2	Drain	[s]	0	40	**12**
F P 2	Final Pause at End of Cycle	[s]	0	60	**0**
t L 2	Long wash time in mode Thermal Label	[min]	0	60	**1**
t S 2	Short wash time in mode Thermal Label	[s]	0	60	**12**

6.3.4 C y 3 Cycle 3 parameters

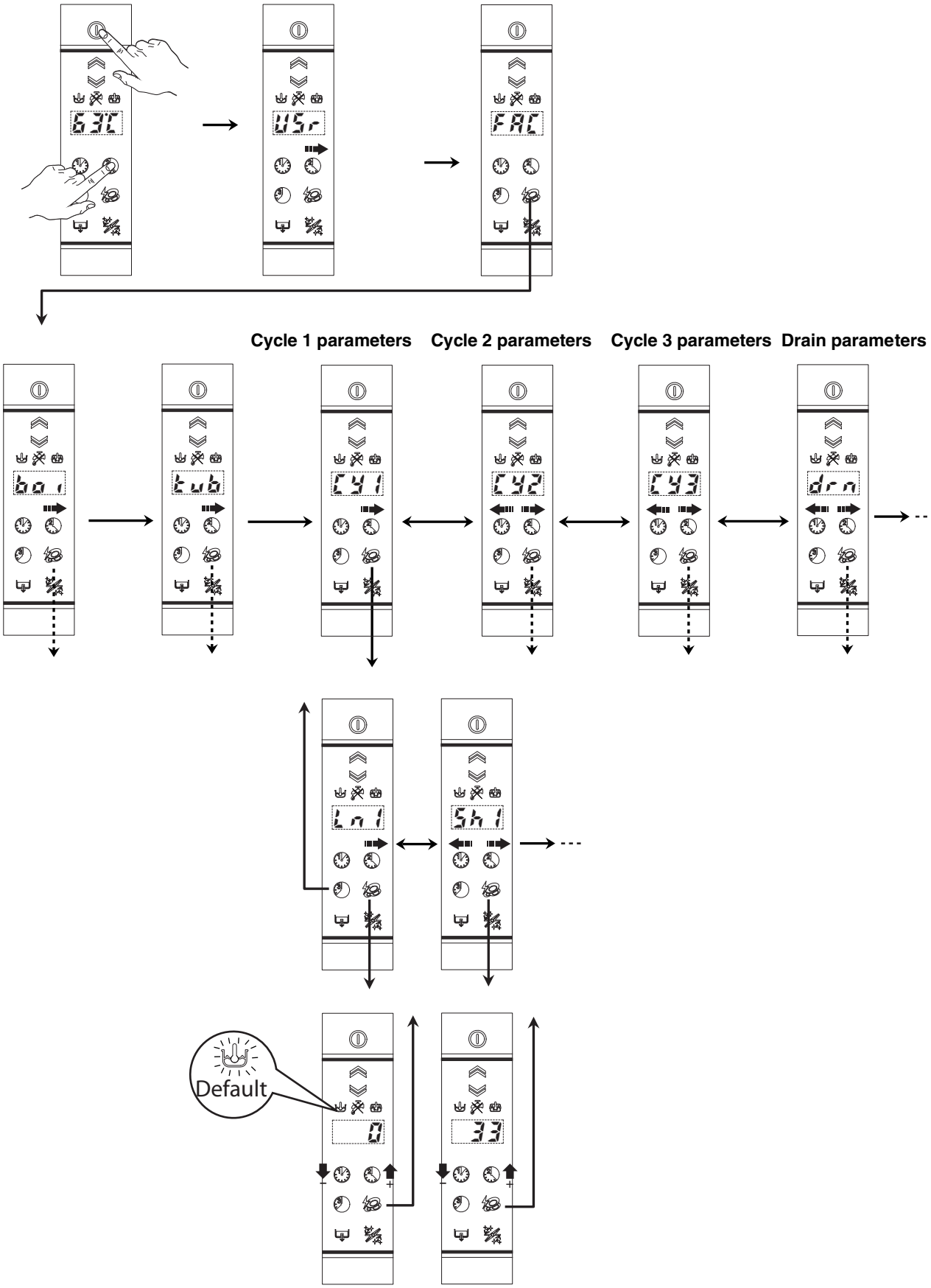
Sym.	Parameter Description	Unit	Min	Max	Factory Default
L n 3	Wash Phase Long	[min]	0	20	**2**
S h 3	Wash Phase Short	[s]	1	60	**18**
P A 3	Pause	[s]	0	20	**4**
r i 3	Rinse Phase Duration	[s]	10	45	**8**
d r 3	Drain	[s]	0	40	**12**
F P 3	Final Pause at End of Cycle	[s]	0	60	**0**
t L 3	Long wash time in mode Thermal Label	[min]	0	60	**2**
t S 3	Short wash time in mode Thermal Label	[s]	0	60	**18**
b t 3	Boiler Temperature Threshold: only for Cycle 3. This parameter allows having a different rinsing temperature for the third cycle. Only values above 45°C are allowed.	[°C]	0	95	**0**

6.3.5 d r n Drain/Cleaning cycle parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
I d r	Initial Drain Phase Duration	[s]	0	240	**40**
F d r	Final Drain Phase Duration	[s]	0	240	**80**
d r t	Drain without cleaning cycle	-	0	1	**0**

Table 6 ACCESSING THE CYCLE PARAMETRS

(keep the buttons pressed for approx. 5 sec.)



6.4 OTHER PARAMETERS

The procedure for accessing the parameters listed below is the same as previously explained in paragraphs 6 FAC FACTORY PARAMETERS and 6.3 CYCLE SETTING.

6.4.1 dPA Dishwashing parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
IPA	Initial Pause before start washing (for ALL cycles)	[s]	0	10	**0**
Pdr	Active a drain phase at the end of washing phase.	[s]	0	40	**0**
rPA	Duration of pause after rinse cycle (valid for dishwashers with door/hood lock device).	[s]	0	60	**0**
C F	Celsius/Fahrenheit selection C = Celsius F = Fahrenheit	-	C	F	C
r tE	Rinse Temperature Display. Enable rinse temperature probe (if installed). 0 = during rinse phase the display shows boiler temperature; 1 = during rinse phase the display shows rinse temperature.	-	no	YES	no

6.4.2 ron Read Only parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
CAI1	When CAI1 message appears, the parameter value becomes 3. After maintenance, to clear CAI1 message, insert 0.	-	-	-	**0**
E 9	This parameter indicates the alarm code of an automatic hood-type dishwasher. See the complete list of alarm codes in par. 9.2 ALARMS THAT STOP THE DISHWASHER.	-	-	-	**0**
ndL	A read-only parameter and displays the modules installed in the machine. 1 = Left LED bar installed 2 = Right LED bar installed 4 = Water softener / automatic hood-type feeder		-	-	**-**

6.4.3 HCP Communication and HACCP parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
SEr	Serial Device 0 = 8N1 1 = PC connection (DAAS 8E1) 7 = HACCP network (ECAP 8E1+LK485) (LK485 board is necessary)	-	0	63	**1**
Adr	Address. This parameter specifies the address of the appliance into the 'HACCP_network'. Works only if 'HACCP network' is selected (see above parameter).	-	0	255	**1**

6.4.4 CFG Configuration parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
typ	Dishwasher Model: 0 = HOOD TYPE	-	0	3	**0**
boi	Boiler type: 0 = ATMOSPHERIC BOILER 1 = PRESSURE BOILER (next versions) 2 = EXTERNAL BOILER (next versions)	-	0	2	**0**
dFL	Default model (see Default tables): 1 = HOOD TYPE	-	0	3	**-**
trc	Solid State Relay (TRIAC). 0 = not enabled; 1 = **SOFT START** enabled; 3 = **SLOW SOFT START** enabled.	-	0	3	**0**
b_t	Boiler/Tank heating swap: 0 = boiler heaters and tank heater can work simultaneously; 1 = swap enabled: tank heating starts only boiler temperature is reached; (Note: disabling this function changes the global electrical power of appliance; before enabling this function check available power, supply cable section, fuses in according to User Manual).	-	0	1	**1**
btF	Tank Filling Mode Enable filling tank by means of rinsing cycles. Ex: btF = 75 means that boiler water is heated at 75°C, then follows a rinse phase and so on until tank is full. If btF = 0 the tank is filled by solenoid valve in the traditional way (On machines with incorporated continuous water softener, even if btF is set to 0, filling occurs through subsequent rinses).	[°C]	0	85	**75**
UI	USER INTERFACE MODEL 9 = hood type	-	0	27	**9**

6.4.5 dLP Delime cycle parameters (Delime)

Sym.	Parameter Description	Unit	Min	Max	Factory Default
dLE	Delime funtion enabled	**-**	no	YES	YES
dLM	Select the desired mode Delime: 0 = CAr = with vinegar 1 = Acd = with acid	**-**	-	-	CAr

How to do a Delime cycle (ordinary maintenance)

Proceed as follows:

Delime cycle with vinegar: insert the Delime tube present in the machine, identified by an appropriate label, in a container with at least 2l of wine vinegar 6% (2l is the minimum amount of vinegar needed for a correct Delime cycle).

It is advisable to run this cycle according to that given in the table:

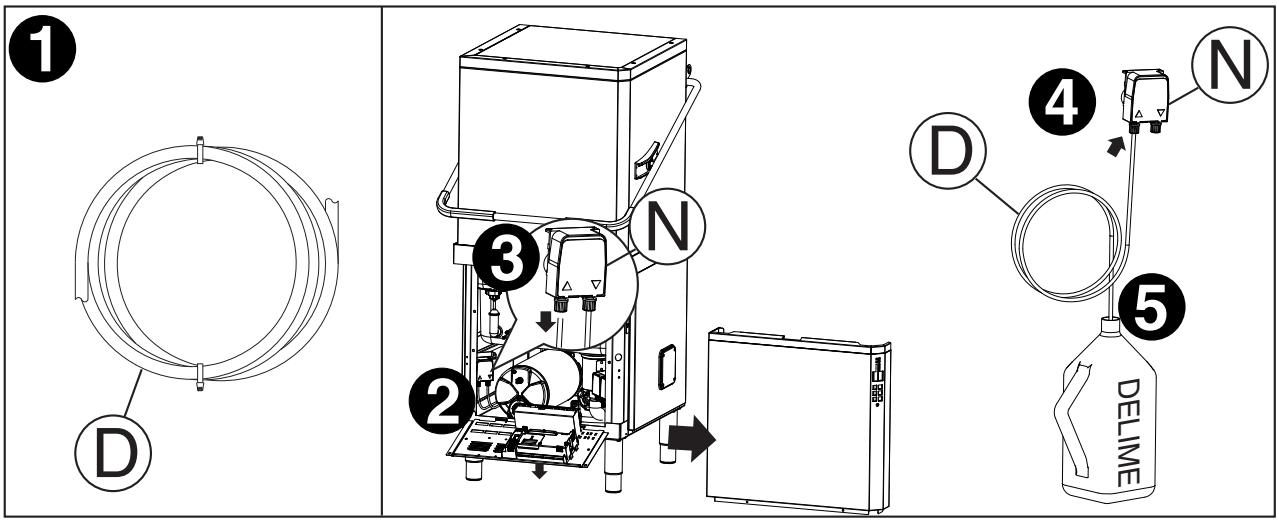
Water hardness			The Delime cycle should be run approximately every (*):	Using cycle 2 for 30 cycles/day, the Delime cycle should be run approximately every (*):
°f	°d	°e	Cycles	Days
5	2,8	3,5	1500	50
10	5,6	7,0	750	25
15	8,4	10,5	510	17
20	11,2	14	380	13
25	14	17,5	300	10
30	16,8	21,1	250	8
(*) Considering a rinse time according to the factory settings.				

WARNING:

Only use wine vinegar and not other descaling substances. Descaling with the use of chemical substances other than vinegar must only be done by a specialized technician.

<u>Delime cycle with acid</u> (can only be activated by a specialised technician)

1. In order to avoid accidental contact with the acid by the end user, get a tube “D” (spare part code: 0L1163) to perform the cycle delime.



2. Access to the pump delime, in the machine, removing the front panel and lowering the control panel.
3. Disconnect the inlet pipe of pump “N”.
4. Connect the pipe “D” at the inlet connection of pump “N”.
5. Introduce the end part of delime pipe “D” in a container with acid (to ensure an adequate descaling, it is recommended to use a solution of phosphoric acid between 30% to 50%).

WARNING:

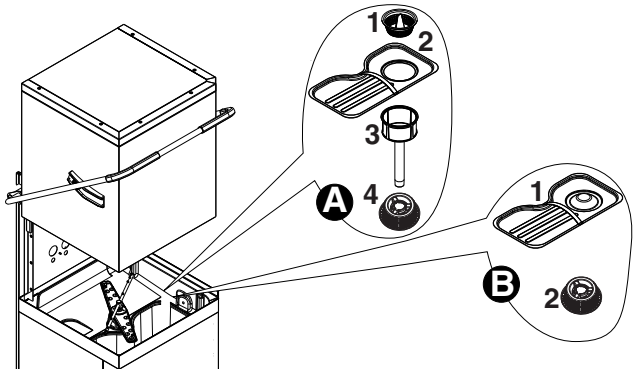
Use appropriate safety measures during descaling operations with acid. Refer to safety data sheets and to labels of the used product.

WARNING:

Make sure that the drain is properly installed according to the hydraulic circuit diagrams and installation diagrams as described in the instruction manual.

- Lift the hood and take out the rack and eventual dishes.
- In versions with supplementary filtering system (FS), remove the basket filter “1”, the flat filter “2”, the tank filter “3” and the pump suction filter “4” (“A” - see below).

- In versions without supplementary filtering system (FS), remove the flat filter “1” and the pump suction filter “2” (“B” - see below).



Close the hood.

Press the button "N" (see Par. 1.1 DESCRIPTION OF CONTROL PANEL),for at least 5 seconds,

to run a machine water circuit delime cycle.

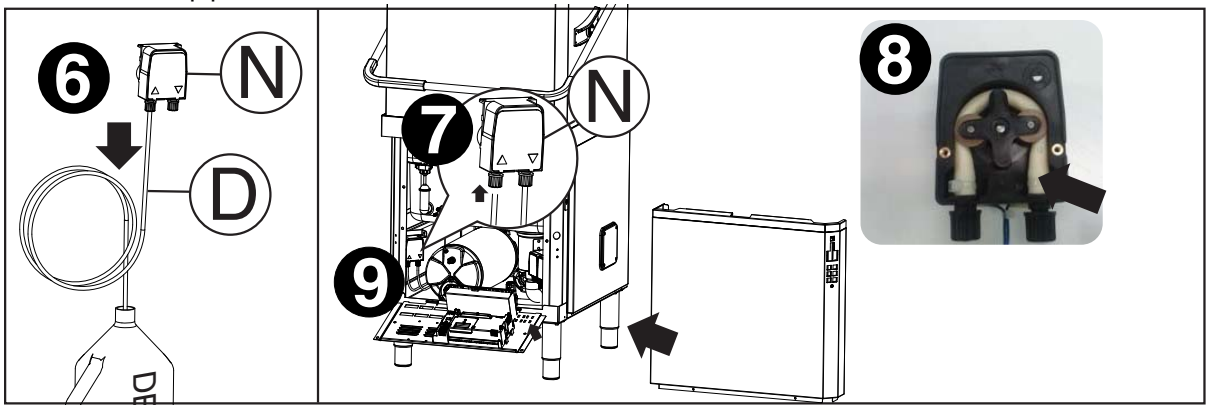
WARNING:

The delime cycle lasts about 1h 30 sec; during this phase the hood must not be opened and no other command can be activated until completion of the cycle in progress. If the machine is turned off during the delime cycle, at the next restart the cycle will resume exactly from where it was interrupted, until its completion.

At the end of Delime cycle, the dishwasher sounds a series of beeps and "END" will flash on the display.
Refit the previously removed overflow.

<u>If you have performed a delime cycle with acid, do the following operations:</u>

6. Remove the pipe “D”.



7. Reconnect the inlet hose to the pump “N”.
8. Replace the delime pump pipe as described in par. 5.1.1 Peristaltic tube fitting and replacement instructions.
9. Reclose the previously removed panels.

WARNING:

Make sure that at the end of descaling, the container with acid is removed.

6.4.6 ESd Energy saving device parameters (ESD)

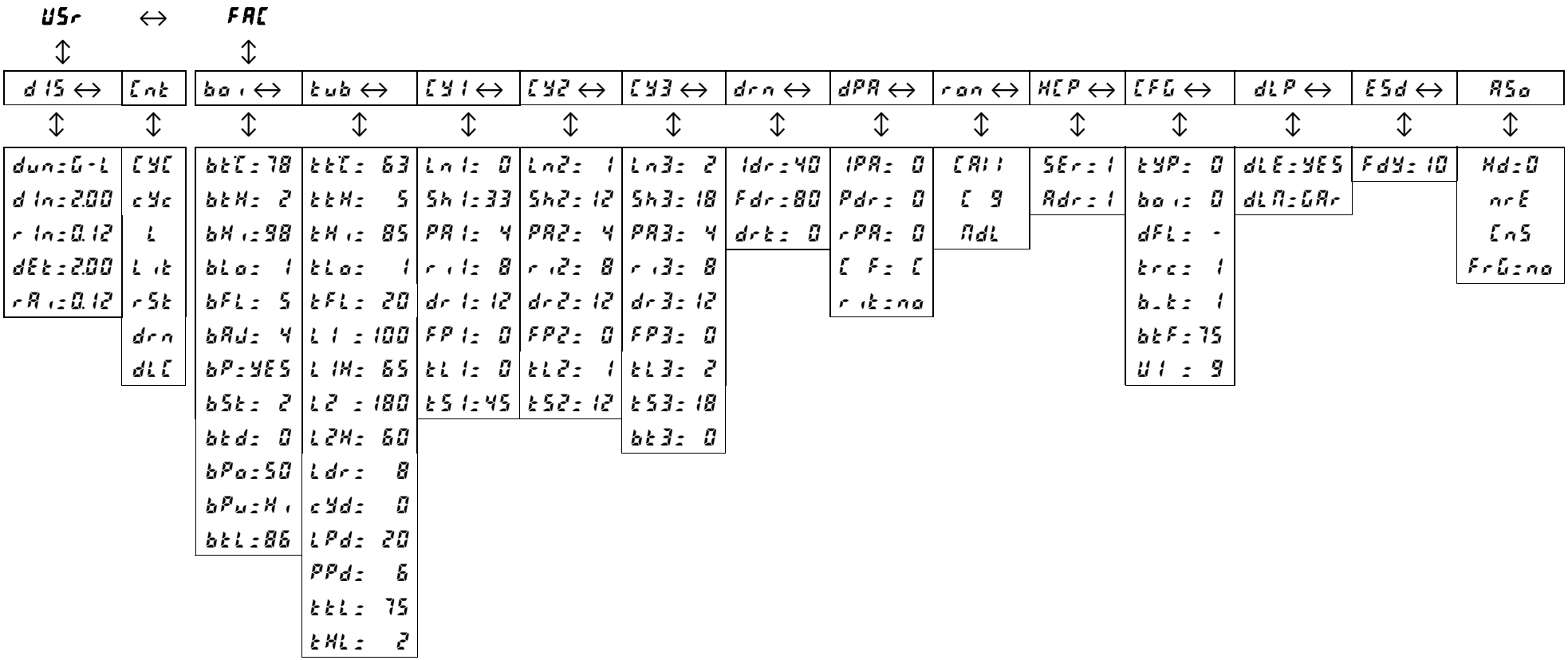
Sym.	Parameter Description	Unit	Min	Max	Factory Default
Fdy	Energy recovery fan operation time at the end of the wash cycle.	s	0	20	10

6.4.7 ASo Water softener parameters

Sym.	Parameter Description	Unit	Min	Max	Factory Default
Hd	Water hardness [1 °f = 1 French degree = 10 mg/l or ppm of CaCo3] [1 °d =1 German degree = 1.78 French degrees (1 °d = 1.78 °f)] If zero it means that the water softener is not installed.	°f	0	60	0
nrE	Regeneration cycles done (counter not resettable).	-	-	-	-
CnS	Wash cycles done with depleted resins (counter not resettable).	-	-	-	-
FrG	Forced start of a resin regeneration cycle.	-	no	YES	no

7 DEFAULT VALUES

Default 1 - HOOD TYPE



8 MAIN BOARD CONFIGURATION

When receiving an electronic board (spare part) may be necessary to configure it in according to the machine where has to be replaced

1. With the machine **CODE** enter into the following table and read the corresponding **Prog.** number
2. Follow the instructions reported into the corresponding **Prog.XXX** sheet (next pages).
3. With the machine **CODE** find the **Layout** number in Par. 8.3.1 Connectors layout.

8.1 CODE -> Prog. TABLE

MODELLO	CODICE	Prog.	Layout
EHT8TIEL	**504250**	202	1
EHT8TIL	**504251**	203	1
EHT8TIELG4	**504252**	210	1
EHT8TIELG8	**504253**	210	1
EHT8IELG	**504254**	202	1
EHT8IEWSG	**504255**	205	1
EHT8ILG	**504256**	207	1
EHT8IWSG	**504257**	204	1
EHT8IG	**504258**	201	1
EHT8I	**504259**	201	1
EHT8IROW	**504260**	212	1
EHT8IROW6	**504261**	212	1
EHT8ILG4	**504262**	209	1
EHT8ILG8	**504263**	209	1
EHT8IUSPH5	**504264**	213	1
EHT8IUSPH6	**504265**	213	1
ET12SD	**504266**	206	1
ZHT8TIEL	**504270**	202	1
ZHT8TIL	**504271**	203	1
ZHT8IELG	**504272**	202	1
ZHT8ILG	**504273**	207	1
ZHT8IWSG	**504274**	204	1
ZHT8IG	**504275**	201	1
ZHT8I	**504276**	201	1
ZHT8IROW	**504277**	212	1
ZHT8IROW6	**504278**	212	1
EHT8IELG4	**504279**	210	1
EHT8IELG8	**504280**	210	1
NHT8ILG	**504283**	207	1
NHT8IWSG	**504284**	204	1
NHT8IG	**504285**	201	1
NHT8IELG	**504286**	202	1
NHT8IEWSG	**504287**	205	1
EHT8IELG6	**504288**	202	1
NHT8ROW	**505066**	212	1
NHT8O	**505067**	201	1
NHT8ROW6	**505068**	212	1
NHT8O6	**505069**	201	1
NHT8G	**505070**	201	1
NHT8	**505071**	201	1
NHT8WSG	**505072**	204	1

MODELLO	CODICE	Prog.	Layout
EHT8ROW	**505073**	212	1
EHT8O	**505074**	201	1
EHT8ROW6	**505075**	212	1
EHT8O6	**505076**	201	1
EHT8J	**505077**	201	1
EHT8J6	**505078**	201	1
EHT8M	**505079**	211	1
EHT8M6	**505080**	211	1
KHT8	**505081**	201	1
NHT8GUK	**505083**	201	1
NHT8DD	**505084**	201	1
NHT8WSGUK	**505085**	204	1
NHT8LGUK	**508086**	207	1
AHT8IWSG	**698066**	204	1
AHT8IG	**698067**	201	1

8.2 PROGRAMMING SHEETS

MANUAL HT				PROG 201
1. Switch OFF and then switch ON the machine.				
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		typ	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	1	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		UI	9	Select user interface hood type model.
3. Switch OFF and then switch ON the machine.				

MANUAL HT + Delime + Energy Saving Device AUTOMATIC HT + Delime + Energy Saving Device				PROG 202
1. Switch OFF and then switch ON the machine.				
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		typ	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	1	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		UI	9	Select user interface hood type model.
3. Switch OFF and then switch ON the machine.				
4. Parameters setting for ESD.				
	CY1	Enter into FAC parameter family, choose CY1 parameter family and set the following parameter:		
		FP1	12	Final pause.
	CY2	Choose CY2 parameter family and set the following parameter:		
		FP2	12	Final pause.
	CY3	Choose CY3 parameter family and set the following parameter:		
		FP3	12	Final pause.
5.	Activation Delime function			
6.	dLP	Choose dLP parameter family and modify the following parameter:		
		dLE	YES	Delime function activated.
7. Switch OFF and then switch ON the machine.				

AUTOMATIC HT + Delime — PROG 203

1. Switch OFF and then switch ON the machine.
2. CFG — Enter into FAC parameter family, choose CFG parameter family and set the following parameters:

typ	0	Hood Type.
bo1	0	Atmospheric boiler.
dFL	0	Default values for Hood type models.
trc	1	SOFT START enabled.
b_t	1	Tank heater works only if boiler temperature reached.
btF	75	Enable filling tank by means of rinsing cycles.
UI	9	Select user interface hood type model.

3. Switch OFF and then switch ON the machine.
4. Parameters setting for ESD.
   - CY1 — Enter into FAC parameter family, choose CY1 parameter family and set the following parameter:
     - FP1 2 — Final pause.
   - CY2 — Choose CY2 parameter family and set the following parameter:
     - FP2 2 — Final pause.
   - CY3 — Choose CY3 parameter family and set the following parameter:
     - FP3 2 — Final pause.
5. Activation Delime function
6. dLP — Choose dLP parameter family and modify the following parameter:
   - dLE YES — Delime function activated.
7. Switch OFF and then switch ON the machine.

MANUAL HT + Water Softner — PROG 204

1. Switch OFF and then switch ON the machine.
2. CFG — Enter into FAC parameter family, choose CFG parameter family and set the following parameters:

typ	0	Hood Type.
bo1	0	Atmospheric boiler.
dFL	0	Default values for Hood type models.
trc	1	SOFT START enabled.
b_t	1	Tank heater works only if boiler temperature reached.
btF	75	Enable filling tank by means of rinsing cycles.
UI	9	Select user interface hood type model.

3. Switch OFF and then switch ON the machine.
4. Water Softner activation device:
   - ASo — Enter into FAC parameter family, choose ASo and modify the following parameter:
     - Hd — Set the value of the water supply hardness French degrees (°f). [Contact your local water authority, to know the water hardness degree.]
5. Switch OFF and then switch ON the machine.

MANUAL HT + Energy Saving Device + Water Softner — PROG 205

1.	Switch OFF and then switch ON the machine.			
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		tYP	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	1	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		U1	9	Select user interface hood type model.
3.	Switch OFF and then switch ON the machine.			
4.	Parameters setting for ESD.			
	CY1	Enter into FAC parameter family, choose CY1 parameter family and set the following parameter:		
		FP1	12	Final pause.
	CY2	Choose CY2 parameter family and set the following parameter:		
		FP2	12	Final pause.
	CY3	Choose CY3 parameter family and set the following parameter:		
		FP3	12	Final pause.
5.	Water Softner activation device:			
	ASo	Enter into FAC parameter family, choose ASo and modify the following parameter:		
		Hd		Set the value of the water supply hardness French degrees (°f). [Contact your local water authority, to know the water hardness degree.]
6.	Switch OFF and then switch ON the machine.			

MANUAL HT + Delime - ECOLAB — PROG 206

1.	Switch OFF and then switch ON the machine.			
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		tYP	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	1	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		U1	9	Select user interface hood type model.
		H1P	2	«High Productivity» function disabled.
3.	Switch OFF and then switch ON the machine.			
4.	Dispenser parameters configuration.			
5.	d1S	Enter in USr parameter family, choose d1S and modify the following parameters.		
		dun	SEC	Measurement units in seconds.
		d In	55	Initial Detergent Dosage in seconds.
		r In	5	Initial Rinse Aid Dosage in seconds.
		dEt	181	The detergent dispenser works when WASHING PUMP is being activated. (See §5).
		rA1	61	The Rinse Aid dispenser works when LOADING EV is being activated (See §5).
6.	Activation Delime function			
7.	dLP	Choose dLP parameter family and modify the following parameter:		
		dLE	YES	Delime function activated.
8.	Switch OFF and then switch ON the machine.			

MANUAL HT + Delime — PROG 207

1. Switch OFF and then switch ON the machine.
2. CFG — Enter into FAC parameter family, choose CFG parameter family and set the following parameters:

tYP	0	Hood Type.
bo1	0	Atmospheric boiler.
dFL	0	Default values for Hood type models.
trc	1	SOFT START enabled.
b_t	1	Tank heater works only if boiler temperature reached.
btF	75	Enable filling tank by means of rinsing cycles.
U1	9	Select user interface hood type model.

3. Switch OFF and then switch ON the machine.
4. Activation Delime function
5. dLP — Choose dLP parameter family and modify the following parameter:

dLE	YES	Delime function activated.

6. Switch OFF and then switch ON the machine.

MANUAL HT + Energy Saving Device
AUTOMATIC HT + Energy Saving Device — PROG 208

1. Switch OFF and then switch ON the machine.
2. CFG — Enter into FAC parameter family, choose CFG parameter family and set the following parameters:

tYP	0	Hood Type.
bo1	0	Atmospheric boiler.
dFL	0	Default values for Hood type models.
trc	1	SOFT START enabled.
b_t	1	Tank heater works only if boiler temperature reached.
btF	75	Enable filling tank by means of rinsing cycles.
U1	9	Select user interface hood type model.

3. Switch OFF and then switch ON the machine.
4. Parameters setting for ESD.

CY1	Enter into FAC parameter family, choose CY1 parameter family and set the following parameter:	
FP1	12	Final pause.
CY2	Choose CY2 parameter family and set the following parameter:	
FP2	12	Final pause.
CY3	Choose CY3 parameter family and set the following parameter:	
FP3	12	Final pause.

5. Switch OFF and then switch ON the machine.

MANUAL HT + Delime - USA — PROG 209

1. Switch OFF and then switch ON the machine.
2. CFG — Enter into FAC parameter family, choose CFG parameter family and set the following parameters:

tYP	0	Hood Type.
bo1	0	Atmospheric boiler.
dFL	0	Default values for Hood type models.
trc	1	SOFT START enabled.
b_t	1	Tank heater works only if boiler temperature reached.

		btF	75	Enable filling tank by means of rinsing cycles.
		U1	9	Select user interface hood type model.
3.	Switch OFF and then switch ON the machine.			
4.	Set the measurement units.			
5.	dPA	Enter in FAC parameter family, choose dPA and modify the following parameters.		
		C F	F	Setting temperature in Fahrenheit.
6.	Activation Delime function			
7.	dLP	Choose dLP parameter family and modify the following parameter:		
		dLE	YES	Delime function activated.
8.	Switch OFF and then switch ON the machine.			

MANUAL HT+ Delime + Energy Saving Device - USA
AUTOMATIC HT+ Delime + Energy Saving Device - USA

PROG 210

1.	Switch OFF and then switch ON the machine.			
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		tYP	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	1	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		U1	9	Select user interface hood type model.
3.	Switch OFF and then switch ON the machine.			
4.	Parameters setting for ESD.			
	CY1	Enter into FAC parameter family, choose CY1 parameter family and set the following parameter:		
		FP1	12	Final pause.
	CY2	Choose CY2 parameter family and set the following parameter:		
		FP2	12	Final pause.
	CY3	Choose CY3 parameter family and set the following parameter:		
		FP3	12	Final pause.
5.	Set the measurement units.			
6.	dPA	Enter in FAC parameter family, choose dPA and modify the following parameters.		
		C F	F	Setting temperature in Fahrenheit.
7.	Activation Delime function			
8.	dLP	Choose dLP parameter family and modify the following parameter:		
		dLE	YES	Delime function activated.
9.	Switch OFF and then switch ON the machine.			

MANUAL HT - MARINE

PROG 211

1.	Switch OFF and then switch ON the machine.			
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		tYP	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	0	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		U1	9	Select user interface hood type model.
3.	Switch OFF and then switch ON the machine.			

HT MANUALI - ASIA — PROG 212

1.	Switch OFF and then switch ON the machine.			
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		tYP	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	1	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		UI	9	Select user interface hood type model.
		H1P	0	«High Productivity» function disabled.
3.	Switch OFF and then switch ON the machine.			

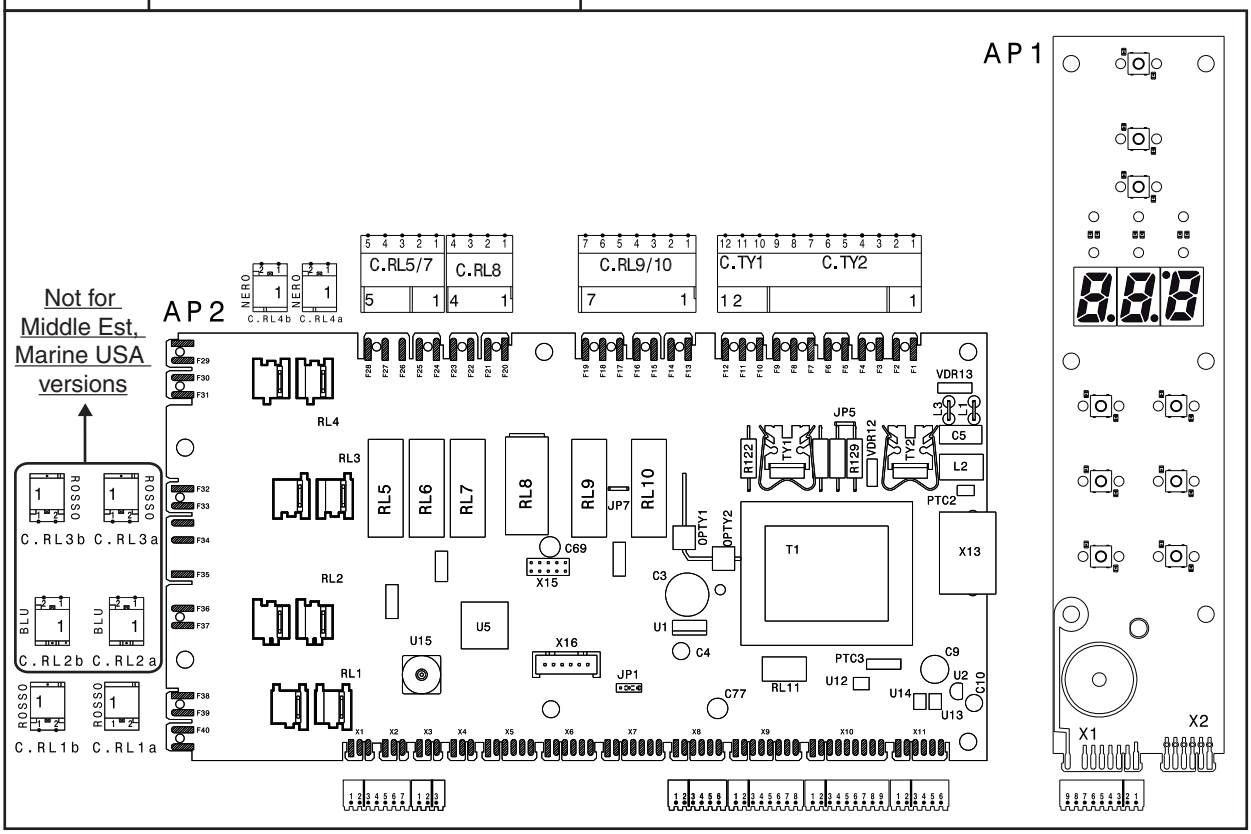
HT MANUALI - USPH — PROG 213

1.	Switch OFF and then switch ON the machine.			
2.	CFG	Enter into FAC parameter family, choose CFG parameter family and set the following parameters:		
		tYP	0	Hood Type.
		bo1	0	Atmospheric boiler.
		dFL	0	Default values for Hood type models.
		trc	0	SOFT START enabled.
		b_t	1	Tank heater works only if boiler temperature reached.
		btF	75	Enable filling tank by means of rinsing cycles.
		UI	9	Select user interface hood type model.
3.	Switch OFF and then switch ON the machine.			
4.	Set the measurement units.			
5.	dPA	Enter in FAC parameter family, choose dPA and modify the following parameters.		
		C F	F	Setting temperature in Fahrenheit.
6.	Switch OFF and then switch ON the machine.			

8.3 USER INTERFACE AND MAIN BOARD CONNECTORS

8.3.1 Connectors layout

LAYOUT 1



KEY

C.TY1/C.TY2Board power supply input
Wash pump/rinse pump outputs
C.RL1a/bBoiler heating element and boiler heating element contactor input/output
C.RL2a/bBoiler heating element input/output
C.RL3a/bBoiler heating element input/output
C.RL4a/bTank heating element and tank heating element relay input/output
C.RL5/7ESD fans and drain pump/solenoid valve outputs
C.RL8Door microswitch
C.RL9/10Detergent/rinse aid dispenser outputs
C.X1/X2Temperature sensor inputs
C.X3Pick control input
C.X8/X9Pressure sensor inputs
C.X10User interface inputs/outputs
C.X11Main and user interface communication
C.API.X1Hood sensor input and user interface inputs/outputs

9 ALARM MESSAGES AND TROUBLESHOOTING

9.1 MAIN MALFUNCTIONS NOT DUE TO THE MAIN BOARD

DESCRIPTION	POSSIBLE CAUSE
The display shows CLOSE with door/hood closed	Check door/hood micro/sensor
No cycle starts	Check the user interface buttons (have they remained pressed? etc.)

A cycle fails to start	Is a user interface button extension missing?
Cycle time longer than that foreseen	Do boiler heating elements work properly? Is the feed water at 50°C?

9.2 ALARMS THAT STOP THE DISHWASHER

A 1	Want of water
	Is the water cock open? Does the water load solenoid valve work? Is the water feed flow a min. of 5 l/min? Is the water inlet filter clean? Is the load solenoid valve filter clean? Is the overflow inserted? Do the tank/boiler pressure switches work properly?

C 9	Automatic hood out of order
	Alarm codes for automatic hood type dishwasher (see paragraph 9.2.1 Alarm codes for automatic hood type dishwashers).
C 12	Tank level sensor out of order
	Are the connectors correctly connected? Are connector contacts cleaned? Does the air trap of the tank work correctly? Is the level sensor broken (replace it with a new one)?

9.2.1 Alarm codes for automatic hood type dishwashers

When the alarm C9 appears, to facilitate fault-finding a parameter providing a more detailed indication has been introduced.

The parameter is C9 and is found in the rON family.

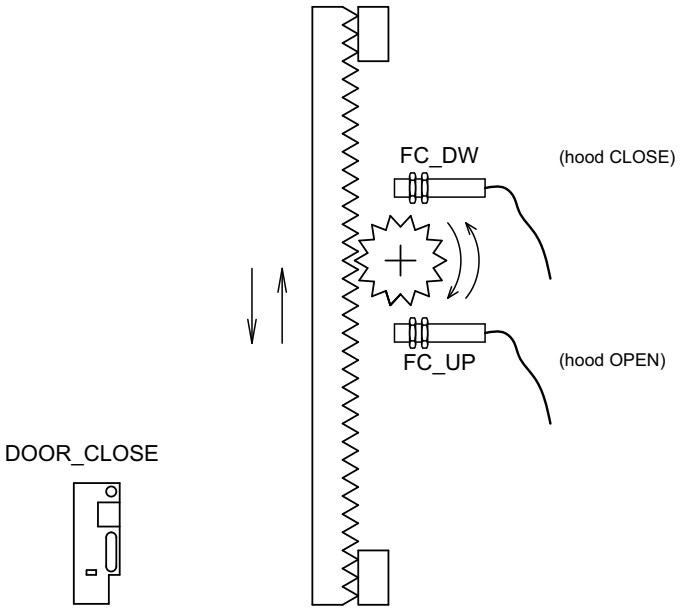
The possible cause of the anomaly can be found (see next table) according to the value of the parameter C9.

E.g.: With an automatic hood type the alarm C 9 appears.

Access the parameter C9 in the rON family.

Assuming the value displayed is:

20 ⇒ During lifting, the current absorbed by the lifting motor has exceeded the threshold. This can happen if a rack or other heavy material was placed on the hood.

C 9	Automatic Hood
	
1	Hood is closed but the upper end limit switch (FC_UP) is active.
2	Hood is opening (starting from completely close position), but the lower end limit switch has not been released.
4	During hood opening the lower end limit switch (FC_DW) has been activated.
5	Hood opening timeout: hood opening duration must be less than 18s (fixed value). Check if the motor works properly.
6	Hood is open but the lower end limit switch is active (FC_DW).
8	Hood is closing (starting from completely open position) but the upper end limit switch has not been released.
10	During hood closing the upper end limit switch (FC_UP) has been activated.
11	Hood closing timeout: hood closing duration must be less than 18s (fixed value). Check if the motor works properly.
14	Combination not allowed: upper end limit switch (FC_UP) and lower end limit switch(FC_DW) are both activated.
20	Overcurrent during hood opening phase.
22	Overcurrent during hood closing phase.
30	On board motor driver overtemperature.

9.3 ALARMS THAT DON'T STOP THE DISHWASHER

(SHOWN ON THE USER INTERFACE AT REGULAR INTERVALS)

b 1	Drain not efficient
	Has the overflow been removed? Is the water drain blocked? Is the drain pump blocked? Are the air trap and tank pressure switch clean? Is there a constriction in the drain tube? Is the pump breather pipe returning to the tank clogged or constricted? Does the tank pressure switch work properly? Is there a hole in the drain tube (only for versions with drain pump)?
b 2	Overflow alarm
	Is the water drain blocked? Are the air trap and tank pressure switch clean? Does the tank pressure switch work properly? Is the load solenoid valve blocked? (see electrical wiring diagram - YV1 Filling solenoid valve) Is the load solenoid valve relay stuck? (see electrical wiring diagram - RL5 relay of AP2 board)

E 1	Boiler temperature rise too fast
	Does the boiler level sensor work properly? The boiler could be empty. Are no-original power resistances installed?
E 2	Boiler temperature too high
	Has the boiler temperature been changed (btE - increased above 90°C)? Has the software alarm value been modified (bH 1)? Does the boiler level sensor work properly? Boiler relay/relays sticked (see electrical wiring diagram - RL1/ RL2/ RL3 relays of AP2 board)?
E 3	Tank temperature too high
	Is the feed water above 60°C? Has the software alarm value been modified (tH 1)? Is the rinse water temperature too high? Is the tank relay stuck (see electrical wiring diagram - RL4 relay of AP2 board)?
E 4	Tank temperature sensor out of order
	Is the temperature sensor broken or disconnected (see electrical wiring diagram - ST1 Tank probe)? Is the temperature sensor connector correctly inserted?
E 5	Tank temperature sensor out of order
	Is the temperature sensor short-circuited (see electrical wiring diagram - ST1 Tank probe)?
E 6	Boiler temperature sensor out of order
	Is the temperature sensor broken or disconnected (see electrical wiring diagram - ST2 Boiler probe)? Is the temperature sensor connector correctly inserted?
E 7	Boiler temperature sensor out of order
	Is the temperature sensor short-circuited (see electrical wiring diagram - ST2 boiler probe)?

C 10	Rinse temperature sensor out of order (only on machines with temperature sensor on the rinse circuit)
	Is the temperature sensor broken or disconnected? Is the temperature sensor connector correctly inserted?
C 11	Rinse temperature sensor out of order (only on machines with temperature sensor on the rinse circuit)
	Is the temperature sensor short-circuited?
C 13	Rinse pump out of order (the water level of the boiler does not decrease)
	Does the rinse pump work correctly? Is there any bottleneck in the hose, that connect the air trap and the board sensor?

WARNING:

Alarms C 2, C 6 and C 7 lock the boiler temperature control.

Alarms C 3, C 4 and C 5 lock the tank temperature control.

In the case of alarms C 6 and C 7, the boiler waiting phase is not executed (the rinse may be performed with cold water) and, during the initial warm-up and subsequent rinses (btF > 0), the boiler heating phase is not executed.

In the case of an open probe error (C 4, C 6 e C 10), the displayed temperature is 10°C

In the case of a shorted probe error **(C 5, C 7 e C 11) ,** the displayed temperature is 99°C**.**

E 1	Communication error
	Is the connection between main board and control panel correct? Are the connectors correctly connected? Are connector contacts clean?
E 2	Tank temperature low
	Does the tank heating element work properly? Are the connectors correctly connected? Are the dishwasher feed voltage and current correct? Is the relay RL4 (see electrical wiring diagram - RL4 relay of AP2 board) on the board disconnected or faulty?
E 3	Boiler temperature low
	Does/do the boiler heating element/s work properly? Are the connectors correctly connected? Does the possible remote control switch connected to the heating element work correctly? Is there power at the remote control switch input terminals? Do boiler relays (see electrical wiring diagram - RL1/ RL2/ RL3 relays of AP2 board) work properly? CAUTION: IF THERE IS A MALFUNCTION ON RELAY RL1 AND THE BOILER HEATING ELEMENTS ARE FED BY MEANS OF A REMOTE CONTROL SWITCH, THE BOARD DOES NOT HAVE TO BE REPLACED; JUST MOVE THE BOILER HEATING ELEMENT CONNECTOR TO ONE OF THE TWO FREE POSITIONS ON THE BOARD. CAUTION: WHEN ONE BRANCH OF THE HEATING ELEMENT DOES NOT WORK AND THE OTHER TWO CONTINUE TO FUNCTION, ON REACHING THE SET TEMPERATURE VALUE, ALARM 3 DISAPPEARS AND REAPPEARS IN THE SUBSEQUENT RINSE PHASE. THIS ALSO OCCURS WHEN A PHASE IS MISSING.