GLASSWARE WASHER
AWD655-8-LAB
AWD655-8L-LAB

SERVICE MANUAL

Before starting to operate with the glassware washer, read this service manual.

Code 214252802 Rev00
Edit. 02-2024
Language: English
Firmware version: 00B04

TRANSCRIBE THE MACHINE DATA

MODEL: ____

SERIAL NUMBER: ______________________________________

YEAR OF MANUFACTURE: _________________________________

This data must always be quoted when requesting assistance and/or spare parts to the Manufacturer.

MANUFACTURER:
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MODELS COVERED BY THE MANUAL:

AWD655-8-LAB FAMILY | AWD655-8L-LAB FAMILY

WARNING

IT IS STRICTLY FORBIDDEN TO USE THE MACHINE BEFORE HAVING READ AND UNDERSTOOD THIS MANUAL.

THE MANUFACTURER DECLINES ALL AND ANY LIABILITY FOR DAMAGE DUE TO NEGLIGENCE AND FAILURE TO COMPLY WITH THIS MANUAL AND IS ALSO NOT LIABLE FOR ANY DAMAGE CAUSED BY INCORRECT INTERPRETATIONS OF THE INSTRUCTIONS CONTAINED

Index

1. SYMBOLS USED IN THE MANUAL

Actions of particular importance or of potential risk and danger are highlighted in the manual with a symbol whose meaning is set out below.

CAUTION! *The documentation must be consulted in all cases where this symbol is marked*

CAUTION, HOT SURFACE! *This sign indicates hot surfaces. Danger of burns*

CAUTION, POSSIBILITY OF ELECTRIC SHOCK! *This sign indicates a potential risk of electric shock that can cause serious injury, death or long-term health risks.*

IMPORTANT NOTE! *Carefully read and memorise the information*

2. WARRANTY AND GENERAL WARNINGS

For warranty, manufacturer responsibility and general warnings refer to user manual (IFU). For any question please contact the manufacturer. If the manual is damaged or lost, a copy must be immediately requested from the manufacturer

IMPORTANT NOTE! *Before proceeding with the various operations, the service personnel must be qualified personnel authorized and have carefully read and become familiar with the user manual (IFU).*

2.1 MAINTENANCE AND SERVICE PERSONNEL OBLIGATIONS

- Periodically check the integrity of the machine as a whole and the protection devices.
- Respect the laws in force in the country of use of the machine, in relation to the use and disposal of the products used for cleaning and maintenance. Dispose of any special waste through appropriate companies authorised for this purpose, with issue of a receipt of the successful disposal.
- The assembly of parts of other brands or any changes (in addition to voiding the warranty), can vary the machine characteristics and, therefore, compromise its operational safety.
- If the protective casings are removed, make sure that they are correctly restored before reusing the machine.
- At the end of the maintenance and repair operations, before restarting the machine, make sure that the work is completed, the safety devices reactivated, and the guards reassembled.
- It is strictly forbidden to remove or tamper with the safety devices.
- The machine maintenance must only be performed with the power supply off, by qualified personnel and following the instructions in this manual.

IMPORTANT NOTE! *The service personnel must be qualified and authorized.*

CAUTION! *Failure to comply with the instructions in manual, operational negligence, incorrect use of the glassware washer and execution of unauthorised changes, both on the machine and on the programs, are the cause of cancellation by the manufacturer of the warranty granted.*

3. FIELD OF APPLICATION

3.1 INTENDED USE

This machine is intended for washing and rinsing glassware and laboratory utensils. With this machine, also called glasswasher, it is possible to treat laboratory utensils, whose manufacturers expressly state that they can be treated in the machine (according to EN ISO 17664). Glassware and laboratory utensils means instruments such as, for example:

- containers: test tubes, beakers, bottles and ampoules;
- graduated containers: flasks, graduated cylinders;
- small glassware: lids, spatulas, magnetic laboratory stirrers, stoppers;
- other glassware such as petri dishes, funnels, pieces of tubing/cable, etc...

Follow the instructions of the glassware manufacturers. The personnel in charge using the machine daily must be aware of its main features, and must also receive adequate and continuous training.

⚠ ***CAUTION!*** *If the machine is used for purposes other than those intended by the manufacturer, its safety systems may be impaired.*

3.2 MAINTENANCE

Maintenance is a set of periodic and predefined operations aimed at maintaining the machine functionality in all its aspects as a result of intrinsic wear and use.

It should be remembered that the lower operating cost and a long life of the machine depend on the continuous observance of what is reported in this manual.

⚠ ***CAUTION!*** *The glassware washer maintenance operations must be carried out with the machine completely switched off.*

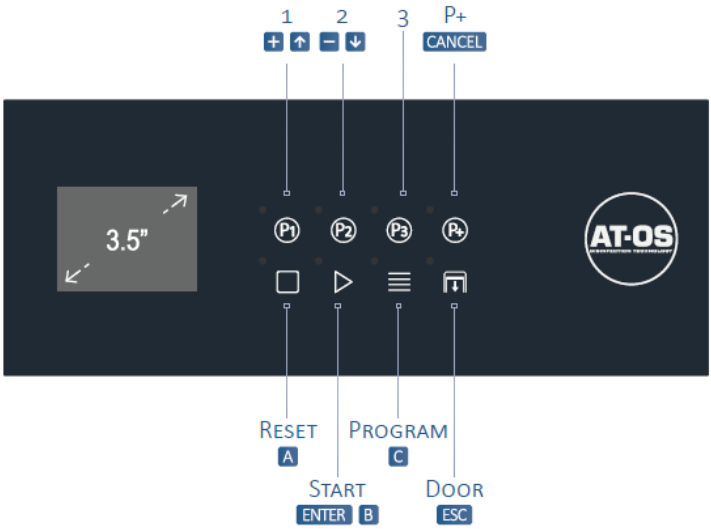
⚠ ***CAUTION!*** *If the machine is not used for more than 24 hours it is necessary to run a "Standard" washing cycle, without any instrument inside, to avoid device contamination and chemicals crystallisation.*

⚠ ***CAUTION!*** *It is the maintenance personnel's obligation to fill in and keep updated the Maintenance Logbook. The incorrect or incomplete compilation of the Maintenance Logbook will void the warranty.*

4. PROGRAMMING

4.1 "PROGRAMMING" MENU STRUCTURE

Here below are the various options in the menus available though the PRG key on the keyboard.

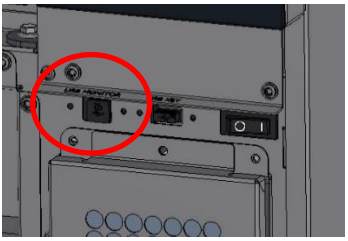


4.2 INSTRUMENT WASHER PARAMETERS

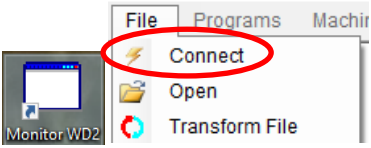
4.2.1 SERVICE TECHNICIAN MENU PASSWORD

It is necessary to connect with an external computer the first time you have to do service to set the password.
Follow the steps below:

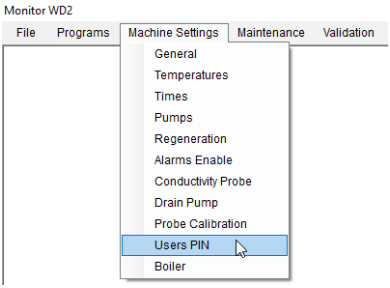
- Connect the machine to the PC via USB-B port



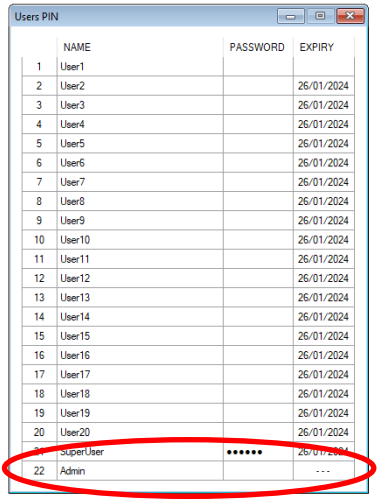
- Open "WD2 Monitor"
- Connect to the device via `File → Connect`



– Machine Settings → Users PIN



– Set the password 'Admin': this is a 6-digit password that does not expire. You can do the combination of the letters A-B-C and the numbers 1-2-3 (see Ch. 4.1)



4.3 PARAMETERS THAT CAN BE SET

This table shows the machine parameters, which are password-protected and can only be accessed by technicians. There are two ways to access the parameters:

1) With the machine's keyboard, hold down the PRG button for 5 seconds, to scroll through the menu use the "1" and "2" buttons, to confirm press "Start";
2) From an external computer connected to the machine and configured with the "WD2 Monitor" program.

Definitions	
TBD	To be define
RO	Read only
NA	Not applicable, depends on the program
TEC	Service technician
SusH	Superuser High Level
SusL	Superuser Low Level
(*)	Only with PIN application installed by factory

Menu Type
General
Temperatures
Times
Pumps
Regeneration
Conductivity Probe
Drain Pump
Probes Calibration
Clock
Chemical calibration
Cycles Counter
Users PIN
Maintenance
Validation
Default
Print last cycle
Boiler

GENERAL MENU			
Parameter Name	**Min**	**Max**	**Default**
End cycle buzzer enable	0= Off	1= On	On
Warning alarm buzzer enable	0= Off	1= On	On
Keyboard button pressure noise enable	0= Off	1= On	On
External device 1	0= Off 1= Printer	2= LAN	Off
External device 2	0= Off	1= USB 2= BLUETOOTH	USB
Device 2 mode	0= Non- blocking	1= Blocking	Non-Blocking
Number of water valves installed	1	3	2
Demineralized water enable	0= Off	1= On	On
Hot water enable	0= Off	1= On	Off
User PIN enable at the start of cycle (*)	0= Off	1= On	Off
User PIN enable at the end of cycle (*)	0= Off	1= On	Off
Door unlock at the end of cycle	0= Off	1= On	Off
PIN expiry months	1	99	6
Loop mode: Repetitions	0	99	0
Set program number in loop mode	1	40	1
Font Display	0= LCD (EUR-JAP)	1= LCD CY (EUR-CYR)	LCD EUR-JAP
Display language	1	8	2 = English

GENERAL MENU			
Printer language	1	8	2 = English
Chinese language	0= Off	1= On	Off
Data	0= DD/MM/YY 1= MM/DD/YY	2= YY/MM/DD	0= DD/MM/YY
Program keyboard button 1	1	40	1
Program keyboard button 2	1	40	2
Program keyboard button 3	1	40	3
Resuming after an alarm	0= Phase Restart 1= Cycle Restart	2= Standby	Standby
White LED light always ON	0= Off	1= On	Off
SuperUser technical level, Off=PIN only	0= Off	1= On	On
MicroBoard No.2 enable	0= Off	1= On	Off
Drying enable	0= Off	1= On	On
Lower Spray Arm	0= Off	1= On	Off
Upper Spray Arm	0= Off	1= On	Off
Fahrenheit temperature enable	0= Off	1= On	Off

TEMPERATURES MENU						
Parameter Name	**Min °C**	**Min °F**	**Max °C**	**Max °F**	**Def. °C**	**Def. °F**
Hysteresis	0	0	99	178.2	2	3.6
Maximum prewashing temperature	0	32	99	210.2	35	95
Maximum chamber temperature	0	32	250	482	97	206.6
Maximum air temperature	0	32	250	482	150	302
Maximum temperature variance between chamber probes	0	0	99	178.2	3	5.4
Exceeding value over the temperature set on each phase	0	0	99	178.2	15	27
Minimum temperature to compare chamber probes	0	32	99	210.2	80	176
Minimum drying temperature to reach	0	32	250	482	90	194
Cooling fan activation temperature	0	32	100	212	50	122

TIMES MENU				
Parameter Name	**Min**	**Max**	**Default**	
Timeout door locking	0	99	5	Sec
Timeout door unlocking	0	99	5	Sec
Timeout water flowmeters detection	0	99	5	Sec

TIMES MENU				
Timeout chemical flowmeters detection	0	99	15	Sec
Water filling timeout	0	999	600	Sec
Draining timeout	0	999	180	Sec
Timeout temperature increasing of 1°C	0	999	120	Sec
LED lights on time	0	999	5	Min
Cooling fan activation time	0	99	5	Min
Alarm 42 time delay	0	99	5	Sec
Alarm 47 time delay	0	999	30	Sec
Alarm 70 time delay	0	99	20	Sec
Alarm 71 time delay	0	99	5	Sec
LAN network lifetime	0	255	5	Sec
Chemical products timeout	0	999	60	Sec
Waiting time for loading chemical products	0	99	60	Sec
Spray Arms management time delay	0	99	15	Sec
Spray Arms minimum lap time	0	25.5	2.5	Sec
Spray Arms maximum lap time	0	25.5	4.0	Sec
Display brightness reduction time	0	255	2	Min
Display standby time	0	255	15	Min
Condenser valve activation time delay	0	99	5	Sec

PUMPS MENU				
Parameter Name	**Min**	**Max**	**Default**	
Cold water flowmeter enable	0= Off	1= On	On	
Pulses flowmeter for 1 liter of cold water	0	9999	204	Imp
Cold water filling time	0	1000	105	Sec
Hot water flowmeter enable	0= Off	1= On	Off	
Pulses flowmeter for 1 liter of hot water	0	9999	204	Imp
Hot water filling time	0	1000	105	Sec
Demineralized water flowmeter enable	0= Off	1= On	On	
Pulses flowmeter for 1 liter of demineraliz. water	0	9999	204	Imp
Demineralized water filling time	0	1000	105	Sec
Number of peristaltic pumps installed	1	4	2	n
Product 1	0= Off	1= On	On	
Flowmeter enable	0= Off	1= On	On	
Pulses flowmeter for 1 ml	0	9.999	1.440	ml
Loading time for 100 ml	0	999	21	Sec
Maximum number of cycles with tank reserve	0	99	2	n
Product 2	0= Off	1= On	On	
Flowmeter enable	0= Off	1= On	On	
Pulses flowmeter for 1 ml	0	9.999	1.440	ml
Loading time for 100 ml	0	999	21	Sec
Maximum number of cycles with tank reserve	0	99	2	n

PUMPS MENU				
Product 3	0= Off	1= On	Off	
Flowmeter enable	0= Off	1= On	Off	
Pulses flowmeter for 1 ml	0	9.999	1.440	ml
Loading time for 100 ml	0	999	21	Sec
Maximum number of cycles with tank reserve	0	99	2	n
Product 4	0= Off	1= On	Off	
Flowmeter enable	0= Off	1= On	On	
Pulses flowmeter for 1 ml	0	9.999	1.440	ml
Loading time for 100 ml	0	999	21	Sec
Maximum number of cycles with tank reserve	0	99	2	n
Extra chemical product time during the calibration	0	255	2	Sec

REGENERATION MENU				
Parameter Name	**Min**	**Max**	**Default**	
Delay time between regeneration and rinsing	0	999	600	Sec
Water loading time for resin regeneration	0	999	100	Sec
Water loading time for resin rinsing	0	999	95	Sec
Water hardness	0	60	25	°fH

REGENERATION TABLE						
Index	**From**		**To**		**Cycles**	
1	0	°fH	10	°fH	0	°fH
2	11	°fH	15	°fH	30	°fH
3	16	°fH	20	°fH	25	°fH
4	21	°fH	25	°fH	21	°fH
5	26	°fH	30	°fH	18	°fH
6	31	°fH	35	°fH	15	°fH
7	36	°fH	40	°fH	12	°fH
8	41	°fH	45	°fH	9	°fH
9	46	°fH	50	°fH	6	°fH
10	51	°fH	55	°fH	3	°fH
11	56	°fH	60	°fH	1	°fH
12						
13						
14						
15						

CONDUCTIVITY PROBE MENU				
Parameter Name	**Min**	**Max**	**Default**	
Clean water filling attempt for rinsing	0	99	1	n
Maximum conductivity value	0	100	40	µS
Offset	-99	99	0	µS

CONDUCTIVITY PROBE MENU				
Probe activation	0= Off	1= On	Off	

DRAIN PUMP MENU				
Parameter Name	Min	Max	Default	
Regeneration and Alarm: Time ON	1	999	10	Sec
Regeneration and Alarm: Time OFF	1	999	4	Sec
Alarm: Total drain time	0	999	94	Sec
Drying: Time ON	1	999	20	Sec
Drying: Time OFF	1	999	10	Sec

PROBES CALIBRATION MENU						
Parameter Name	**Min °C**	**Min °F**	**Max °C**	**Max °F**	**Def. °C**	**Def. °F**
Chamber probe PT1000-1 offset	-9.9	-17.8	9.9	17.8	0	0
Chamber probe PT1000-2 offset	-9.9	-17.8	9.9	17.8	0	0
Air probe PT1000-3 offset	-9.9	-17.8	9.9	17.8	0	0

CLOCK MENU			
Parameter Name	**Min**	**Max**	**Default**
Day (name)	Mo	Su	-
Date (day)	01	31	-
Date (month)	01	12	-
Date (year)	00	99	-
Hour	00	23	-
Minutes	00	59	-
Seconds	00	59	-

CHEMICALS CALIBRATION MENU– see chapter 7

CYCLES COUNTER MENU				
Parameter Name	**Min**	**Max**	**Default**	
Cycles of program 01	0	4294967295	RO	n
Cycles of program 02	0	4294967295	RO	n
Cycles of program 03	0	4294967295	RO	n
Cycles of program 04	0	4294967295	RO	n
Cycles of program 05	0	4294967295	RO	n
Cycles of program 06	0	4294967295	RO	n
Cycles of program 07	0	4294967295	RO	n
Cycles of program 08	0	4294967295	RO	n
Cycles of program 09	0	4294967295	RO	n

CYCLES COUNTER MENU				
Cycles of program 10	0	4294967295	RO	n
Cycles of program 11	0	4294967295	RO	n
Cycles of program 12	0	4294967295	RO	n
Cycles of program 13	0	4294967295	RO	n
Cycles of program 14	0	4294967295	RO	n
Cycles of program 15	0	4294967295	RO	n
Cycles of program 16	0	4294967295	RO	n
Cycles of program 17	0	4294967295	RO	n
Cycles of program 18	0	4294967295	RO	n
Cycles of program 19	0	4294967295	RO	n
Cycles of program 20	0	4294967295	RO	n
Cycles of program 21	0	4294967295	RO	n
Cycles of program 22	0	4294967295	RO	n
Cycles of program 23	0	4294967295	RO	n
Cycles of program 24	0	4294967295	RO	n
Cycles of program 25	0	4294967295	RO	n
Cycles of program 26	0	4294967295	RO	n
Cycles of program 27	0	4294967295	RO	n
Cycles of program 28	0	4294967295	RO	n
Cycles of program 29	0	4294967295	RO	n
Cycles of program 30	0	4294967295	RO	n
Cycles of program 31	0	4294967295	RO	n
Cycles of program 32	0	4294967295	RO	n
Cycles of program 33	0	4294967295	RO	n
Cycles of program 34	0	4294967295	RO	n
Cycles of program 35	0	4294967295	RO	n
Cycles of program 36	0	4294967295	RO	n
Cycles of program 37	0	4294967295	RO	n
Cycles of program 38	0	4294967295	RO	n
Cycles of program 39	0	4294967295	RO	n
Cycles of program 40	0	4294967295	RO	n
Total cycles	0	4294967295	RO	n

USERS PIN MENU		
Index	NAME (max 16)	PWD (max 6)-ALLOWED CHAR. 1,2,3,A,B,C Default
1	User 1	(*)
2	User 2	(*)
3	User 3	(*)
4	User 4	(*)
5	User 5	(*)
6	User 6	(*)
7	User 7	(*)

USERS PIN MENU		
8	User 8	(*)
9	User 9	(*)
10	User 10	(*)
11	User 11	(*)
12	User 12	(*)
13	User 13	(*)
14	User 14	(*)
15	User 15	(*)
16	User 16	(*)
17	User 17	(*)
18	User 18	(*)
19	User 19	(*)
20	User 20	(*)
21	SuperUser	111111
22	Admin	

MAINTENANCE MENU				
Parameter Name	**Min**	**Max**	**Default**	
Maintenance enable	0= Off 1= Cycles	2= Date	Off	
Cycles for maintenance Date for maintenance (DD/MM/YYYY)	0	65535	0	n
Cycles from the last maintenance	0	4294967295	RO	n
Cycles of maintenance warning notification	0	4294967295	RO	n
Date of maintenance warning notification	/	/	RO	

VALIDATION MENU				
Parameter Name	**Min**	**Max**	**Default**	
Validation enable	0= Off 1= Cycles	2= Date	Off	
Cycles for validation Date for validation (DD/MM/YYYY)	0	65535	0	n
Cycles from the last validation	0	4294967295	RO	n
Cycles of validation warning notification	0	4294967295	RO	n
Date of validation warning notification	/	/	RO	

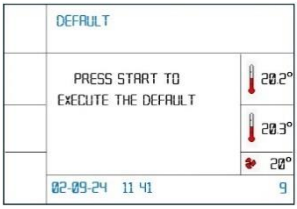
BOILER MENU						
Parameter Name	**Min**		**Max**		**Default**	
Demi water boiler enable	0= Off		1= On		Off	
Parameter Name	**Min °C**	**Min °F**	**Max °C**	**Max °F**	**Def. °C**	**Def. °F**
Maximum temperature	0	32	99	210.2	90	194

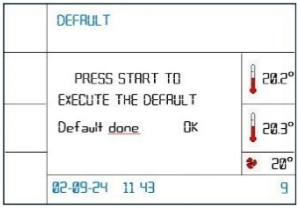
BOILER MENU						
Heating OFF temperature in standby	0	32	99	210.2	60	140
Hysteresis	0	0	99	178.2	1	1.8

Parameter Name	Min	Max	Default	
Filling timeout	0	999	450	Sec
Drain timeout	0	999	60	Sec
Full filling additional time	0	99	2	Sec
Full drain additional time	0	99	35	Sec
Boiler filling delay time during drying	0	999	3	Sec
Timeout temperature increasing of 1°C	0	999	180	Sec
Level probe control delay time: E83	0	99	5	Sec
Standby time	0	99	3	Hour

MENU DEFAULT

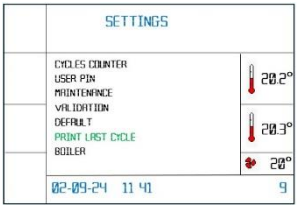
Reload factory settings (Default column of previous tables)





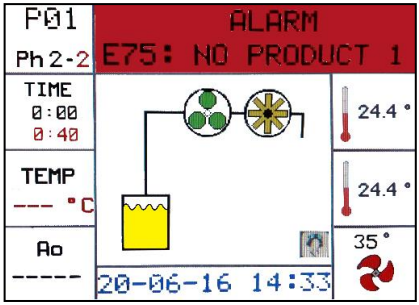
MENU PRINT LAST CYCLE

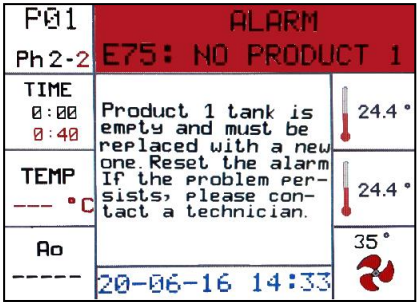
Allows the receipt of the last cycle executed to be printed. If the machine is equipped with a printer.



5. ALARM MESSAGES

The machine displays any alarm messages. Below there is an example of a typical alarm wich could appear on the screen.

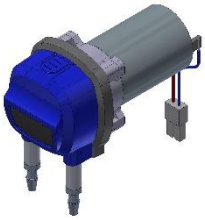


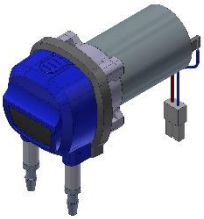
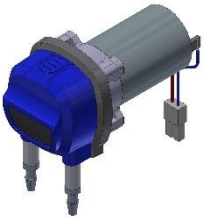


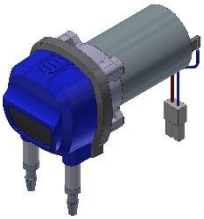
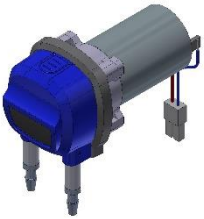
At first the image concerning the alarm is displayed (for 5 seconds); then the alarm description is displayed (for 10 seconds). The image and text alternate until the alarm is reset.

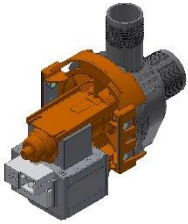
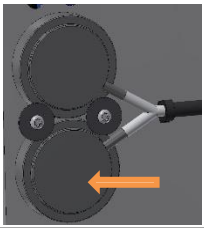
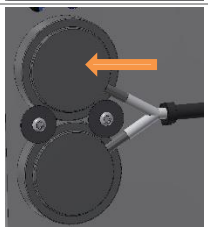
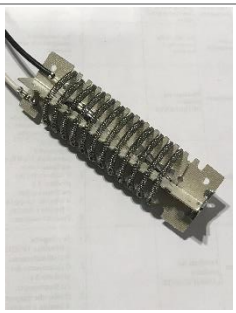
E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
01	BLACKOUT	A blackout occurred during program execution and the program was stopped.		See FTA – Fault Tree Analysis E01
02	DOOR OPEN	The door is open and/or unlocked.		See FTA – Fault Tree Analysis E02
07	NO LOCKED DOOR	The door is not locked within the preset time.		See FTA – Fault Tree Analysis E07
09	NO UNLOCKED DOOR	The door is not unlocked within the preset time		See FTA – Fault Tree Analysis E09

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
11	DIRTY WATER	Program interrupted due to impure water (control on only during rinsing phases and with demi water)		See FTA – Fault Tree Analysis E11
20	NO COLD WATER	Cold water issues during a cycle	 	See FTA – Fault Tree Analysis E20
21	NO HOT WATER	Hot water issues during a cycle	 	See FTA – Fault Tree Analysis E21
22	NO DEMI WATER	Demineralised water issues during a cycle	 	See FTA – Fault Tree Analysis E22

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
24	DRYING FAN	The fan is not on during the drying phase		See FTA – Fault Tree Analysis E24
26	PRINTER ERROR	The printer ran out of paper.		See FTA – Fault Tree Analysis E26
30	FLOWMETER 1	Product 1 issues	  	See FTA – Fault Tree Analysis E30

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
31	FLOWMETER 2	Product 2 issues	 	See FTA – Fault Tree Analysis E31
32	FLOWMETER 3	Product 3 issues	 	See FTA – Fault Tree Analysis E32

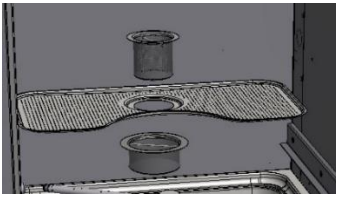
E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
33	FLOWMETER 4	Product 4 issues	  	See FTA – Fault Tree Analysis E33
34	PRODUCT TIMEOUT	The peristaltic pump is on for a time longer than the set parameter (P3.15)	 	See FTA – Fault Tree Analysis E34

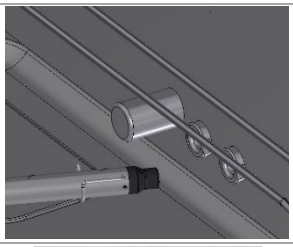
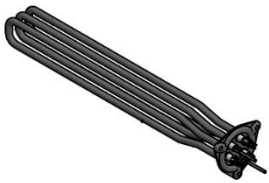
E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
41	DRAIN TIMEOUT	The draining time is too long.	 	See FTA – Fault Tree Analysis E41
42	MAX CHAMB. LEVEL	Livello massimo che attiva la pompa di scarico		See FTA – Fault Tree Analysis E42
43	DRY TEMPERATURE	Temperature not reached (P2.08) during drying phase.	 	See FTA – Fault Tree Analysis E43

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
44	PREWASH TEMPERAT	A temperature higher than the maximum one set has been detected during the pre-washing phase (P2.02)	 	See FTA – Fault Tree Analysis E44
45	CHAMBER T. LIMIT	During the washing phase, a temperature in the tank higher than the one set has been detected.	 	See FTA – Fault Tree Analysis E45
46	AIR T. LIMIT	During the washing phase, a temperature higher than the maximum one set has been detected.	 	See FTA – Fault Tree Analysis E46

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
47	PHASE T. LIMIT	During the washing phase, a temperature in the tank higher than the one set has been detected.	 	See FTA – Fault Tree Analysis E47
50	PROBE 1 BROKEN	Value of temperature probe 36R1 incorrect or non-existent		See FTA – Fault Tree Analysis E50
51	PROBE 2 BROKEN	Value of temperature probe 37R1 incorrect or non-existent		See FTA – Fault Tree Analysis E51
52	AIR PROBE BROKEN	Value of temperature probe 35R1 incorrect or non-existent		See FTA – Fault Tree Analysis E52
53	CHAMBER T. DIFF	The difference between the two tank temperature probes is higher than the maximum one set (P2.05)		See FTA – Fault Tree Analysis E53
66	BUS CABLE	Communication between the micro cards (only if there are two circuit boards installed) Present only in devices with boiler		See FTA – Fault Tree Analysis E66

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
66	NO HEATING	Tank heating too slow or not working	  	See FTA – Fault Tree Analysis E66
67	CONDENSER LEVEL	The water inside the steam condenser has reached the maximum level	 	See FTA – Fault Tree Analysis E67

E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
70	PUMP PRESSURE	Pressure drop during washing	 	See FTA – Fault Tree Analysis E70
71	HEPA FILTER	HEPA filter clogged		See FTA – Fault Tree Analysis E71
75	PRODUCT 1 EMPTY	No more liquid product 1.		See FTA – Fault Tree Analysis E75
76	PRODUCT 2 EMPTY	No more liquid product 2.		See FTA – Fault Tree Analysis E76

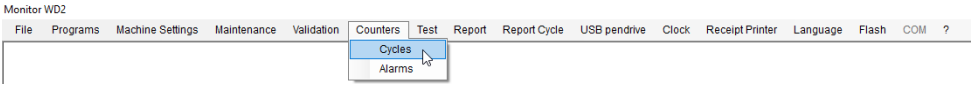
E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
77	PRODUCT 3 EMPTY	No more liquid product 3.		See FTA – Fault Tree Analysis E77
78	PRODUCT 4 EMPTY	No more liquid product 4.		See FTA – Fault Tree Analysis E78
80	SPRAY ARM LOCKED	During the washing phase, the washing spray arm rotates slowly or is blocked.		See FTA – Fault Tree Analysis E80
81	BOILER FILLING	The filling timeout has expired and the maximum level probe has not been reached	 	See FTA – Fault Tree Analysis E81
82	NO BOILER HEAT	Water heating fault in the boiler		See FTA – Fault Tree Analysis E82

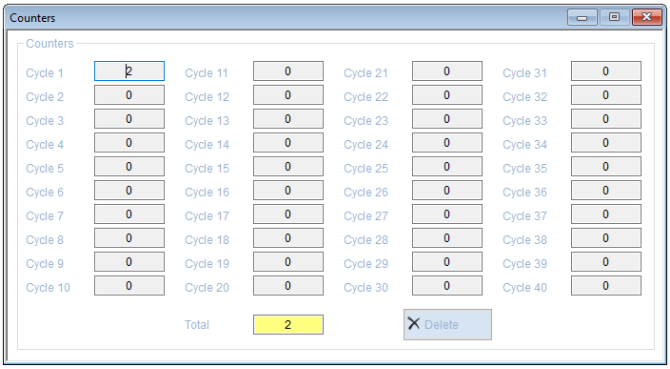
E	TITLE	DESCRIPTION	PHOTO	POSSIBLE CAUSES & SOLUTIONS
83	BOILER LEVELS	The maximum level probe is present and not the minimum: level inconsistency	 	See FTA – Fault Tree Analysis E83
84	BOILER DRAIN	The emptying timeout has expired and the minimum level probe still indicates the presence of water	 	See FTA – Fault Tree Analysis E84
85	BOILER T. LIMIT	Boiler temperature has reached the maximum set limit (too hot)		See FTA – Fault Tree Analysis E85
89	NO DISINFECTION	The instruments are not disinfected because the minimum disinfection value was not reached.	 	See FTA – Fault Tree Analysis E89

WARNING	TITOLO	DESCRIZIONE	AZIONE
1	Refill salt	• Remove the basket • Unscrew the plastic cap of the salt container • Pour salt • Close the plastic cap	Press RESET for 5 seconds.
2	MAINTENANCE Request	Perform extraordinary maintenance.	Press RESET
3	VALIDATION request	Perform extraordinary maintenance.	Press RESET

6. CYCLE COUNTER

Connecting the computer to the machine, it is possible to see how many and which programs the machine executed since its installation. The "No. of cycles at control" indicates how many cycles the machine can perform before being subjected to scheduled maintenance.



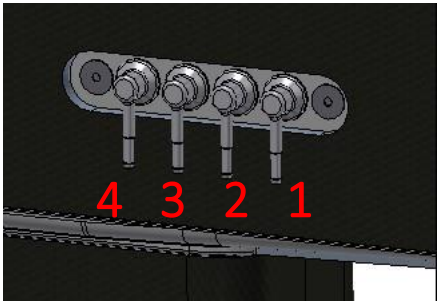


7. CHEMICALS CALIBRATION

CAUTION! The number of hydraulic circuits for loading the chemicals varied based on the configuration for the machines requested by the customer.

The calibration of the chemical flowmeter should only be performed if using liquid chemical disinfectants other than those recommended by the manufacturer.

7.1 PREPARATION FOR CALIBRATION OF CHEMICAL PRODUCTS



- Remove the lateral panel;
- Locate the flowmeter to be calibrated, disconnect the silicone hose from stainless steel connector. The calibration of the chemical flowmeter should only be performed if using liquid chemical disinfectants other than those recommended by the manufacturer.
- Take a 100ml beaker, place it above the peristaltic pump door and insert the silicone hose that comes from the flow meter into the beaker;
- Insert the nozzle of the chemical product to be calibrated in the liquid tank;
- Access the programming menu (prg key): to search for a program → press key 1 or 2; to select a program → start key; to return to the menu → prg key.
- Search for the "chemical products calibration" program (key 1 or 2); select the "chemical products calibration" program (start key); select the "hydraulic circuit refill" program (start key);
- Select the pump to be calibrated;
- Press start to activate the pump;
- Stop the pump when the liquid comes out of the hose and goes into the beaker (reset key);
- Drain the liquid from the beaker and proceed with calibration.

IMPORTANT! It is possible to use a graduated cylinder specially made for this application. The operation is very simple and allows for quick calibration without having to dismantle the panels.

HOW TO DO: Insert the appropriate connection inside the chamber, into the connection dedicated to the product to be calibrated, and carry out the operations described above from step 4 onwards and wait for the product to reach 100 ml.

This product can be found in the Accessories catalogue.

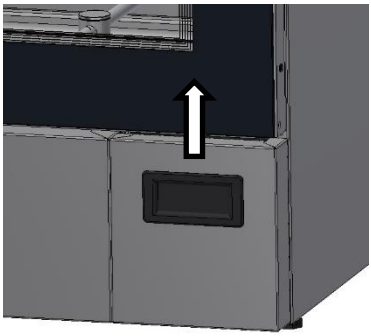
7.2 CHEMICAL PRODUCTS CALIBRATION

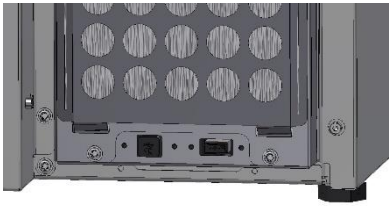
⚠ ***CAUTION!*** *The following procedure must be carried out after completing the operations listed in the previously paragraph.*

- Press PRG to go back in the menu;
- Select the item "chemical product calibration" and press START;
- Select the chemical that you want to calibrate, making sure that the silicone tube is inside the beaker;
- Press START to start loading the liquid inside the beaker;
- Press RESET when the liquid reaches 100 ml inside the beaker to stop the liquid loading;
- Press PRG to return to the previous menu. In this way, the calibration just carried out will be saved in memory;
- At this point the calibration of the product concerned is completed.

8. FIRMWARE UPGRADE / UPLOAD-DOWNLOAD MESSAGES / UPLOAD-DOWNLOAD SETTINGS

Below the machine panel are two USB sockets for programming the machine. The left USB socket is for connecting a PC and using the "Win The manufacturer Instrument Wash" program, while the right USB slot is for transferring precompiled programs to/from a USB flash drive.



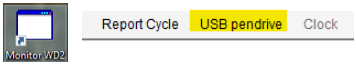


UBS Atos Monitor	USB Key

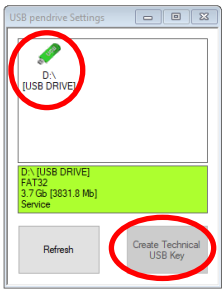
8.1 USB KEY PREPARATION

To create the USB stick for file transfer, follow the steps below:

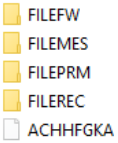
- Open “Monitor WD2”
- Select `USB pendrive`



- Select the USB
- Select `Create technical USB Key`



- In the USB key, the following folders are now present:
  - FILEFW – Upload a firmware file. Only download. The file must have a .mh0 extension.
  - FILEMES – Upload/download the file messages. Both upload and download. The file must have a .MSG extension.
  - FILEPRM – Upload/download the program files. Both upload and download. The file must have a .TRT extension.
  - FILEREC – Download the log of machine cycles performed. Only upload. The file must have a .REC extension.



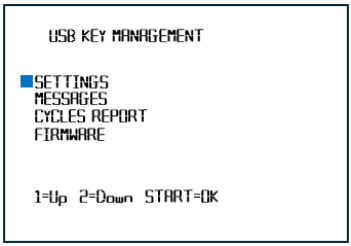
- The USB key can be both used to upload files from PC to the device and to download files from the device to PC.
- To upload: populate folders with the files desired to be uploaded.
- To download: leave folders empty.

8.2 USB KEY FILES UPLOAD / DOWNLOAD

Once the flash drive is prepared with the desired files, insert it into the device.

ATTENTION: it is essential that NO USB-B is connected to the machine

After inserting the USB flash drive into the lower port, the display will show the following screen:

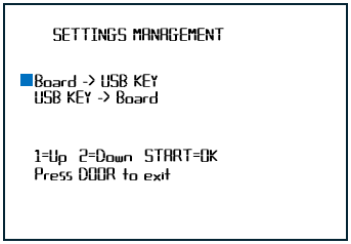


- **SETTINGS**: section to upload/download the program files (folder FILEPRM)
- **MESSAGES**: section to upload/download the file messages (folder FILEMES)
- **CYCLES REPORT**: section to download the log of machine cycles performed (folder FILEREC)
- **FIRMWARE**: section to upload a firmware file (folder FILEFW)

SETTINGS

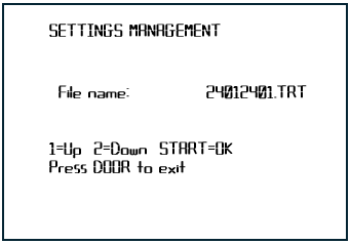
After going to the "Settings" menu, the user must choose between:

- Board -> USB KEY: to download the program file from the device to the USB flash drive;
- USB KEY -> Board: to upload the program file from the USB flash drive to the device



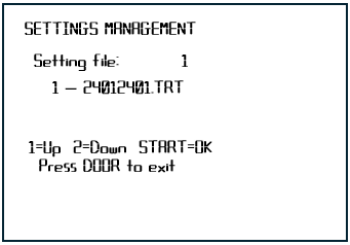
SETTINGS / Board -> USB KEY

After selecting "Board -> USB KEY", the display will show the file name to be saved on the USB key.



SETTINGS / USB KEY -> Board

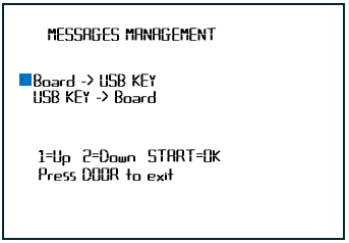
After selecting "USB KEY -> Board", the display will show the file name to be uploaded on the device.



MESSAGES MANAGEMENT

After going to the "Messages" menu, the user must choose between:

- Board -> USB KEY: to download the program file from the device to the USB flash drive;
- USB KEY -> Board: to upload the program file from the USB flash drive to the device

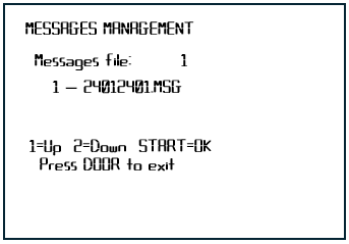


MESSAGES MANAGEMENT / Board -> USB KEY

After selecting “Board -> USB KEY”, the display will show the file name to be saved on the USB key.

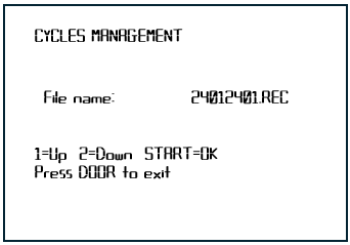
MESSAGES MANAGEMENT / USB KEY -> Board

After selecting “USB KEY -> Board”, the display will show the file name to be uploaded on the device.



CYCLES MANAGEMENT / USB KEY -> Board

The display will show the file name to be uploaded on the device.



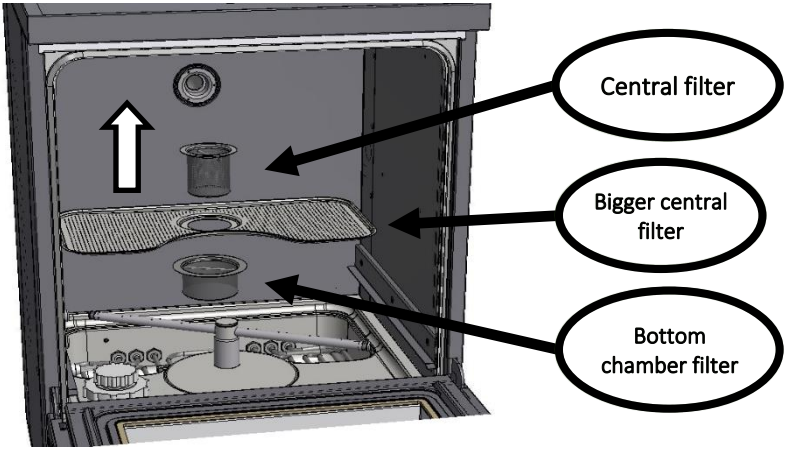
9. MAINTENANCE

Clean the surface of the device with **PRODUCTS SUITABLE FOR STAINLESS STEEL.** Products other than these can irreparably destroy not replaceable parts of the device, making the machine completely unusable. If a suitable cleaning liquid product is not available, use a mixture of water (75%) and alcohol (25%). Cleaning should be done with a lint free cloth (that does not scratch), moistened with a suitable liquid. **DO NOT SOAK THE CLOTH** to prevent the exceeding liquid from penetrating into electrical areas dangerous for the operator. Clean the keyboard and the display with a mixture of water and alcohol or mild detergents. The washing tank is automatically cleaned. In case of need, for an extra cleaning of the washing chamber, run a rinse cycle without introducing instruments.

9.1 CLEANING OF THE FILTERS INSIDE THE MACHINE

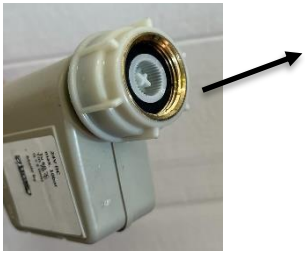
Clean **AT LEAST ONCE A WEEK** the filters positioned at the bottom of the tank to avoid drain obstructions ensurng machine full efficiency. Take the two filters by the handle and open them to remove dirt. Periodically check the level of liquid present in the tanks, in the lower compartment of the machine. When the liquid is nearly finishing a notice appears on the display. When the liquid is finished a message alarm is displayed. The machine is equipped with flow meters that detect the correct passage of the liquid. In case of abnormal flow interruption the alarm appears on the display.

⚠ ***CAUTION!*** *Use personal protective devices for hands (PPE - gloves).*



9.2 CLEANING OF THE FILTERS FOR WATER LOADING :

Remove the electrical voltage from the appliance by operating the main switch on the side of the appliance. Remove hydraulic power from the building network. The filters are located in the lower part, on the back of the machine. Disconnect the ferrules from the hydraulic network,

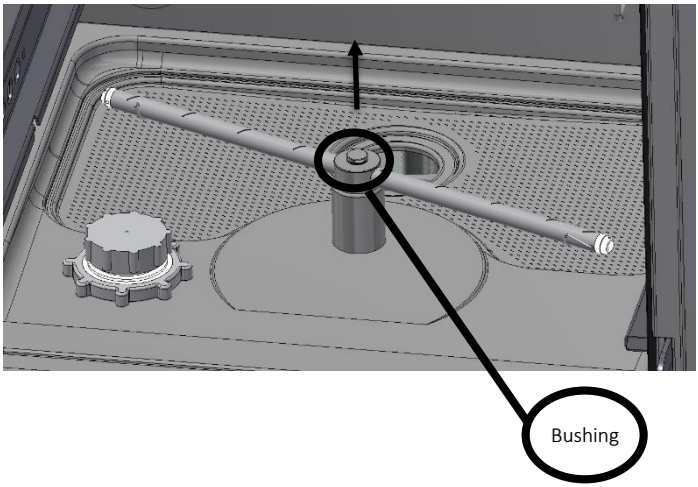


Pull out the cylindrical filter inside the ferrule, cleaning it thoroughly with compressed air if necessary. Place the cylindrical filter in its housing, taking care to insert as photo. Screw the ferrules to the water supply. Open the taps supplying water to the machine and restore the supply.

9.3 CLEANING OF THE SPRAY ARMS

Periodically check that the impeller holes are not obstructed so as not to compromise the washing. Verification is visual. Also check if the spray arm remains locked and does not rotate. If the machine is equipped with the "spray arm monitoring" application (optional), an alarm appears in the event of a blocked spray arm. To clean the spray arm, proceed as follows:

– Grasp the bush above the spray arm and hold it in place while unscrewing the spray arm clockwise;



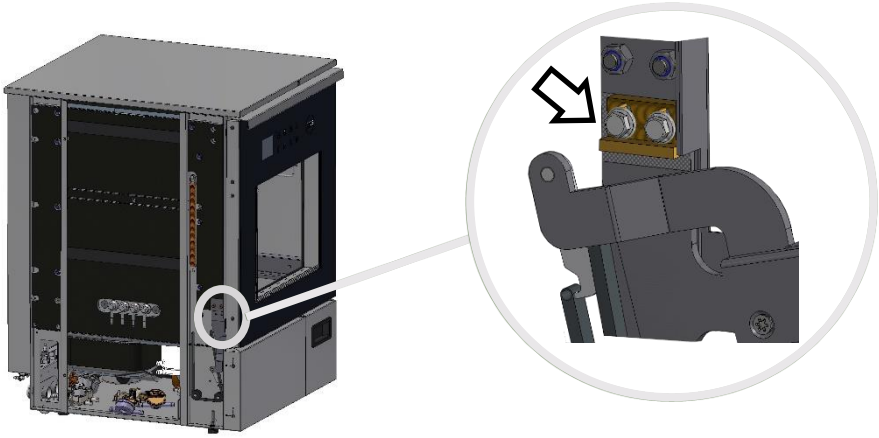
– Release the spring at the end of the spray arm;

– Check to see if there is any dirt inside the spray arm which prevents the correct flow of water;
– Clean the blocked holes with a jet of water;
– After cleaning is completed, insert the two plugs on the ends and their springs, screw the impeller back onto the carriage.

9.4 DOOR LIMIT SWITCH ADJUSTMENT

The door is in the correct position when it is flat (measured with a spirit level) while completely open with the wash trolley resting on it. To adjust the opening angle of the door:

– loosen the flange screws that hold the brass block;
– place the brass block to the desired position and tighten the flange screws again.



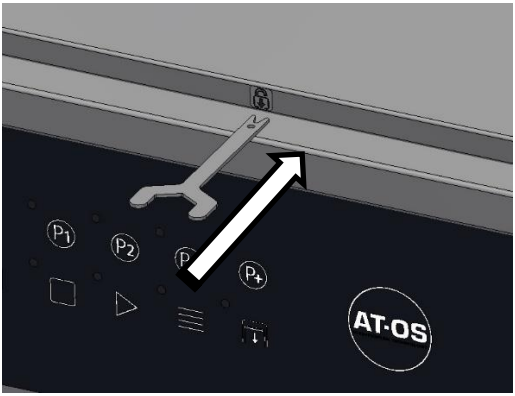
9.5 MANUAL DOOR UNLOCKING

If it is necessary to open the machine door to pick up the material contained inside the washing chamber:

- during the first installation needed to open the door before the power was even connected.
- during a power failure and the machine was still in its operating cycle.
- If at the end of the washing program despite the cycle being finished, the door does not open normally by pressing the opening display button.

To open, proceed as follows:

– take the special tool supplied with the machine;
– insert the bit into the slot located between the handle and the working cover indicated with the padlock symbol;
– push gently until the release and minimal shift of door opening is felt;
– release the key.



9.6 PERIODIC MAINTENANCE

⚠ ***CAUTION!*** *In order to avoid malfunctions or blocks, the machine REQUIRES REGULAR PERIODIC MAINTENANCE.*

For periodical maintenance operations refer to the Maintenance Logbook provided in the machine's pack.

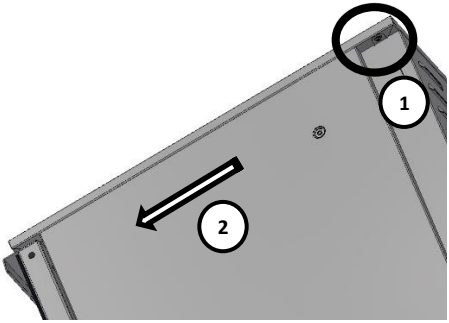
⚠ ***CAUTION!*** *Special maintenance is carried out by the technician under guarantee only if the utilizer has correctly and regularly carried out all ordinary maintenance operations and if the utilizer has filled out and kept up-to-date the Maintenance Logbook.*

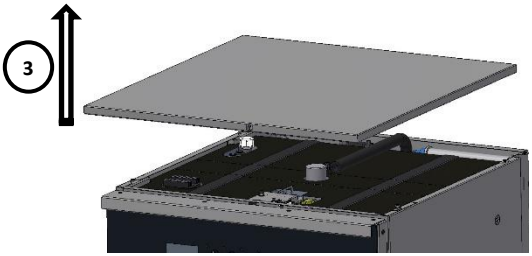
⚠ ***CAUTION!*** *Only use suitable products to remove limescale. Do not use corrosive products that are incompatible with the materials constituting the machine.*

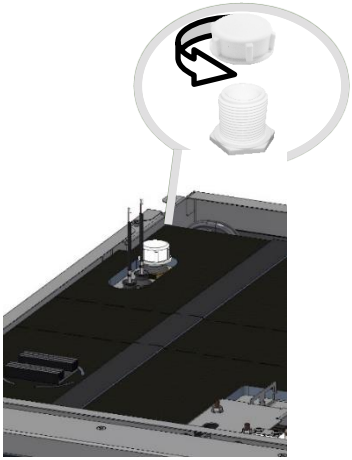
10. TEMPERATURE TEST

The following steps are required to perform the temperature test:

- Disconnect the power supply;
- Remove the upper panel of the machine by removing the 2 rear screws (1), sliding the panel forward (2), and lifting it up (3);
- Switch the machine on;
- Unscrew the white plug from the inspection hole inside the chamber;
- Insert the thermocouple for the temperature test and start one of the programmes;
- Check the temperature trend over time, paying particular attention to the disinfection phase;
- At the end of the test, switch the unit off again. Remove the thermocouple from the inspection hole and screw the tap back on.
- Then re-assemble the upper part of the machine;
- Switch the power supply back on; then the test is finished.

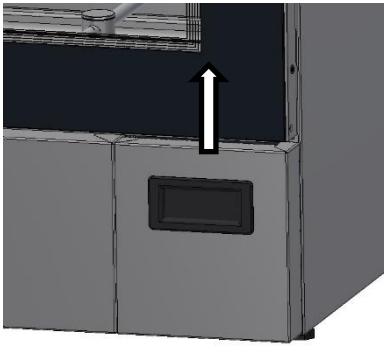


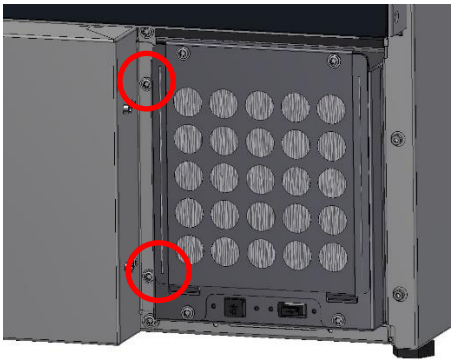


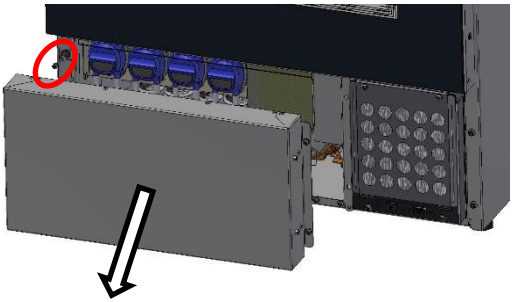


11. REMOVE THE CONTROL PANEL:

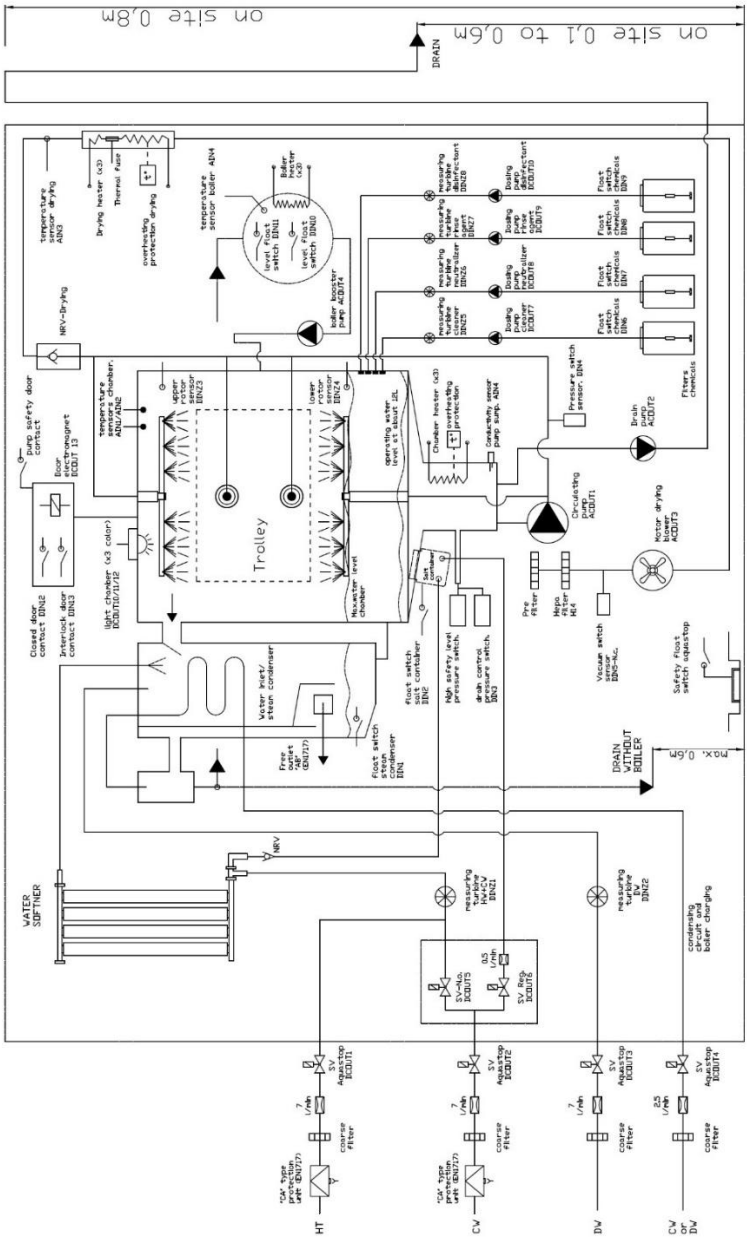
- Disconnect the power supply;
- Remove the right panel upward.
- Using a 6mm hex wrench and inserting it vertically on the "C" (closed) symbol turn 90° to the left to the "O" (open) symbol. Perform the reverse operation in case of closing.
- Remove the 2 front screws on the right side of the panel.
- Pull the panel out of its guides from the front.







12. HYDRAULIC SCHEME



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