HOBART

SERVICE TRAINING CENTER

HOBART GmbH
An *ITW*-Company

Service Manual

EFFICIENT – RELIABLE – INNOVATIVE

ECOMAX 402/452/502

Start Serial No.:	**8663 0001 – 8663 3999**	**EEPROM: 897547-6**
Facelift as of Serial No.:	**8663 4000**	**EEPROM: 897547-17**

ECOMAX 602/612/AM-10/AM-11

Start Serial No.:	**8657 1001 – 8667 2999**	**EEPROM: 897547-6**
Facelift as of Serial No.:	**8657 3000**	**EEPROM: 897547-17**

SERVICE®

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1. STANDARD MODELS – OVERVIEW

1.1 ECOMAX 402 GLASSWASHER (G-SERIES)

No.	Device Code	EEPROM[1)]	Program No. (LED)	Programs	Racks/Hr. Glasses/Hr.	Wiring Diagram
1	**Ecomax 402-10**	897547-006	9 (H28)	2 (90 s / 120 s)	40 / 600	01-295680-004
2	**Ecomax 402-12**	897547-006	9 (H28)	2 (90 s / 120 s)	40 / 600	01-295680-004
3	**Ecomax 402S-10**	897547-006	11 (H19)	2 (90 s / 120 s)	40 / 600	01-295681-204
4	**Ecomax 402S-12**	897547-006	11 (H19)	2 (90 s / 120 s)	40 / 600	01-295681-204
5	**Ecomax 402-20**	897547-006	10 (H29)	2 (90 s / 120 s)	40 / 600	01-295682-004
6	**Ecomax 402S-20**	897547-006	11 (H19)	2 (90 s / 120 s)	40 / 600	01-295682-004

Note: The green-marked rows refer to products targeted for the German market.
[1)] As of facelift: EEPROM 897547-17.

1.2 ECOMAX 452 FRONTDOOR-DISHWASHER (F-SERIES)

No.	Device Code	EEPROM	Program No. (LED)	Programs	Racks/Hr. Glasses/Hr.	Wiring Diagram
1	**Ecomax 452-90**	897547-017	6 (H25)	2 (60s / 180s)	60 / 1080	01-296685-002
2	**Ecomax 452-91**	897547-017	7 (H26)	2 (60s / 180s)	60 / 1080	01-295687-004

- **Ecomax 452-90**: pressure booster without waterbreak/without rinse pump,
- **Ecomax 452-91:** pressure-less booster with backflow preventer instead of waterbreak/with rinse pump,
- Both versions have built-in rinse aid, detergent, and drain pump 230/50/1 (15A) with plug and rollerball-caster at the rearside.

1.3 ECOMAX 502 FRONTDOOR-DISHWASHER (F-SERIES)

No.	Device Code	EEPROM[1)]	Program No. (LED)	Programs	Racks/Hr. Teller/Hr.	Wiring Diagram
1	**Ecomax 502-10**	897547-006	6 (H25)	2 (60 s / 180 s)	60 / 1080	01-295685-002
2	**Ecomax 502-12**	897547-006	6 (H25)	2 (60 s / 180 s)	60 / 1080	01-295685-002
3	**Ecomax 502S-10**	897547-006	8 (H27)	2 (60 s / 180 s)	60 / 1080	01-295686-202
4	**Ecomax 502S-12**	897547-006	8 (H27)	2 (60 s / 180 s)	60 / 1080	01-295686-202
5	**Ecomax 502-20**	897547-006	7 (H26)	2 (60 s / 180 s)	60 / 1080	01-295687-004
6	**Ecomax 502S-20**	897547-006	8 (H27)	2 (60 s / 180 s)	60 / 1080	01-295687-004
7	**Ecomax 502-21**	897547-006	7 (H26)	2 (60 s / 180 s)	60 / 1080	01-295687-002
6	**Ecomax 502-30**	897547-006	6 (H25)	2 (60 s / 180 s)	60 / 1080	01-295685-004
6	**Ecomax 502-141**	897547-006	6 (H25)	2 (60 s / 180 s)	60 / 1080	01-295685-002

Note: The green-marked rows refer to products targeted for the German market.
[1)] As of facelift: EEPROM 897547-17.

Remarks for device code Ecomax 402/502:
- **Ecomax -10/-12 (without "S")** have pressure booster without waterbreak/without rinse pump
- **Ecomax -12** generally always have a built-in waterbreak/rinse pump, detergent pump and drain pump
- **Ecomax -20** have pressure-less booster with waterbreak/with rinse pump (UK-version)
- **Ecomax -21** have pressure-less booster with waterbreak/with rinse pump
- **Ecomax -30** have pressure booster without waterbreak/without rinse pump 230/50/1/25A
- **Ecomax -141** have pressure booster without waterbreak/without rinse pump 230/50/3
- **S** means that a softener is integrated.
  Generally, all "**S**" machines have a built-in waterbreak and rinse pump.

1.4 ECOMAX 602/612 HOOD-DISHWASHER

No.	Device Code	EEPROM[1)]	Program No. (LED)	Programs	Racks/Hr.	Wiring Diagram
1	**Ecomax 602 -10 /**	897547-006	1 (H20)	2 (75 s / 150 s)	48	01-294570-002
2	**AM-10 / AM-11**	897547-006	1 (H20)	2 (75 s / 150 s)	48	01-294560-002
3	**Ecomax 602 -11**	897547-006	2 (H21)	2 (75 s / 150 s)	48	01-294575-002
4	**Ecomax 602S -11**	897547-006	3 (H22)	2 (75 s / 150 s)	48	01-294575-002
5	**Ecomax 612 -10**	897547-006	4 (H23)	2 (60 s / 120 s)	60	01-294580-002
6	**Ecomax 612S -10**	897547-006	5 (H24)	2 (60 s / 120 s)	60	01-294580-002
7	**Ecomax 612 -40**	897547-006	4 (H24)	2 (60 s / 120 s)	60	01-294580-826
8	**Ecomax 612 -41**	897547-006	4 (H24)	2 (60 s / 120 s)	60	01-294580-826
9	**Ecomax 612 -141**	897547-006	1 (H24)	2 (60 s / 120 s)	60	01-294570-003

Note: The green-marked rows refer to products targeted for the German market.
[1)] As of facelift: EEPROM 897547-17.

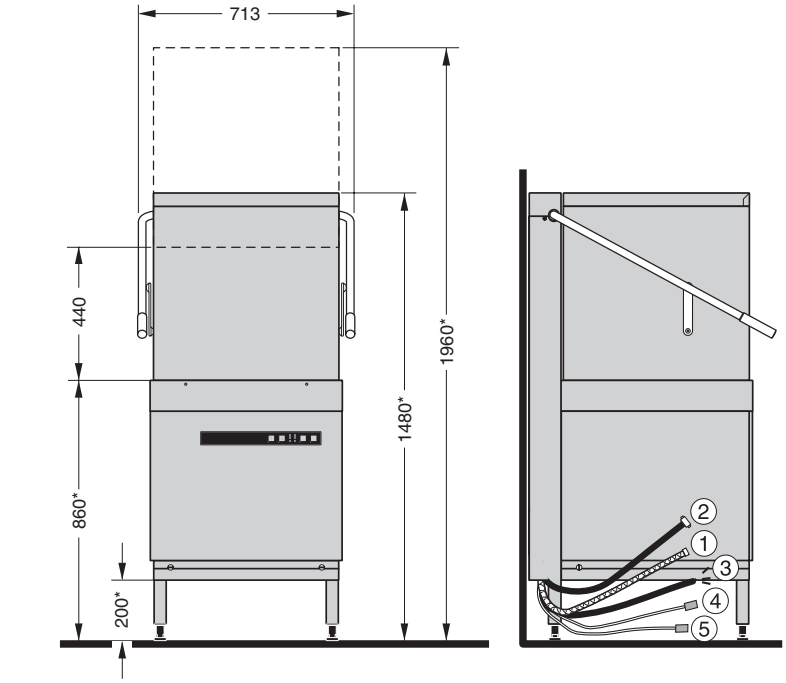
Remarks for device code Ecomax 602/612/AM10/AM-11:
- **Ecomax 602-10/AM-10/AM-11** have pressure booster without waterbreak/without rinse pump,without detergent dosage pump, without drain pump.
- **Ecomax 602-11/all 612** generally always have waterbreak/rinse pump
- **Ecomax 612-40** with rinse pump and 11 kW booster 220V/50/3/PE.
- **S** means that a softener is integrated.
  Generally, all "**S**" machines have a built-in waterbreak and rinse pump.

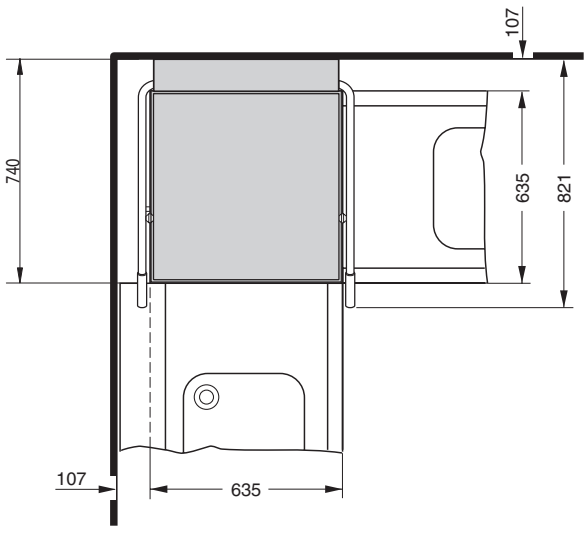
2. MACHINE DIMENSIONS

2.1 ECOMAX 402/452/502

Dimensions (mm)	Ecomax 402	Ecomax 452	Ecomax 502
Height	700	830-852	830
Width	435	550	575
Depth	530	600	600
Loading height	301	356	356
Rack size	385x385 / 396x396	450x450 / 500x500	500x500

2.2 ECOMAX 602/612





3. INSTALLATION

3.1 ELECTRICAL CONNECTION

The electrical supply shall comply with the name-plate data.
Line fuses and cable cross section shall comply with the requirements

The supply cord must be connected via a cut-off device (isolating switch or accessible plug device).

According to EN 60 335 the appliance must be connected to an equipotential conductor.
The connecting screw (⏚) is located beside the cable inlet.

3.2 WATER CONNECTION

The machines must be operated with potable water.
For water with an extremely high mineral content an external demineralization is strongly recommended.
Ideal conductivity value for washware made of stainless steel 80 µS/cm, for glasses 100 µS/cm and for dishes 200 to 400 µS/cm

Machines without softener:

The machine should be connected to soft and if possible warm water (up to 3 °dh = 0.5 mmol/l, **max. 60°C**).

Machines with softener:

The machine should be connected to warm water if possible (**max. 60°C**).
Softener has to be adjusted according to water hardness.

Line Flow Ecomax 402-10 / 402-12 / 502-10 / 502-12 / 602-10 / AM-10 / AM-11 (without rinse pump M2):
Line flow pressure 2 – 6 bar.

If the line flow pressure is **below 2 bar,** provide a rinse pump at site.
If line flow pressure is **above 6 bar,** provide a pressure reducing valve.

All other models (with rinse pump): Line flow pressure 0.8 – 6 bar.

Important: The line flow pressure must not be **less than 0.8 bar**.
If the line flow pressure is **above 6 bar,** provide pressure reducer at source.

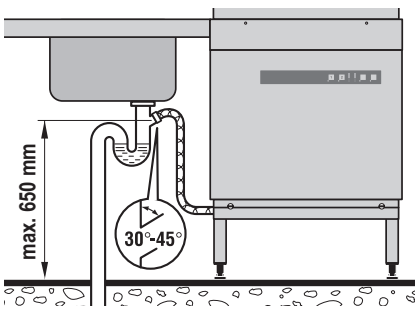
Connect the union nut "**A**" (3/4") of the water supply hose to the site shut off valve.
Do **not kink** or **cut** the supply hose. Eventually needed extension has to be provided with a suitable pressure hose (e.g. 324088-1).

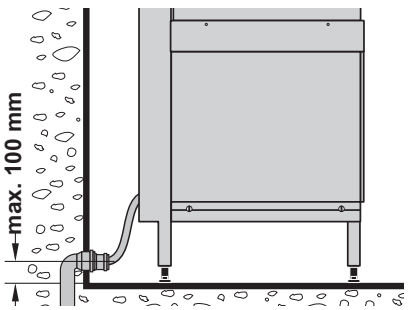
3.3 DRAIN CONNECTION

Machine with drain pump (optional)
Connection between machine and site drain must not exceed max. height of 650 mm.
Do not place the drain hose loosely on the floor (the hose could be rubbed through). Fix it at site!
Do not kink drain hose.

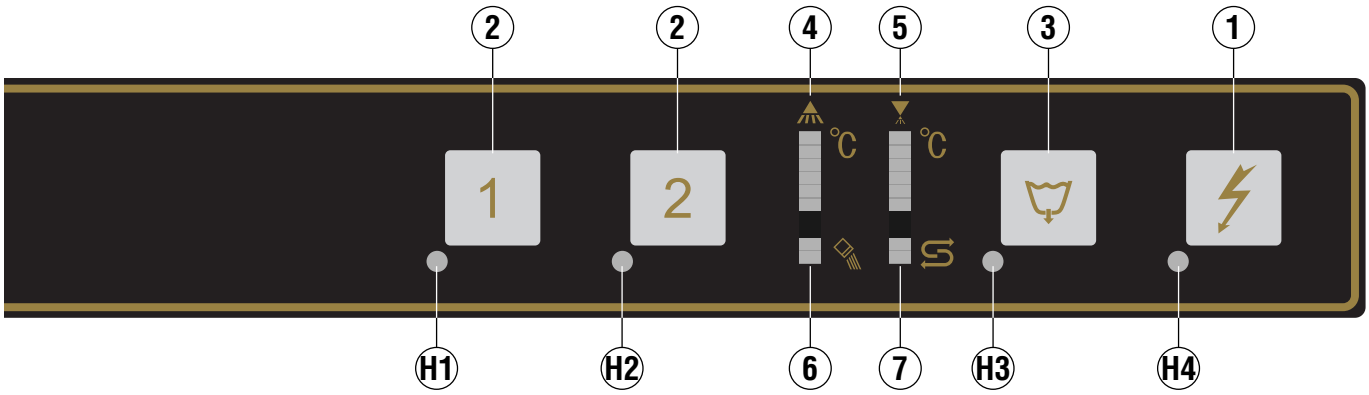
Machine without drain pump

Ensure gravity drain.
Drain hose must not exceed the height of 100 mm between floor and lower edge of the hose.
Otherwise it could be that water remains in tank and hose. Do not kink drain hose.





4. CONTROLS



1 Machine **ON/STOP**

Pushing this button switches the dishwasher on.
The LED H4 lights up.

flashing = Machine is filling and heating.
permanent = Machine is ready for operation.

In case of operating error or faults, by pushing this button, the machine can be immediately switched-off without having to run the drain cycle first.

After switch off, the machine is not voltage free!

2 **Program** buttons

By pushing these buttons, it is possible to select between short cycle (**1**) and standard cycle (**2**).
The appropriate LED lights up.

3 **Drain/OFF** button

By pushing and holding (3 seconds) this button, the self-cleaning cycle starts.
At the end of the cycle, the machine switches off automatically.
Machines with optional drain pump will drain the tank automatically.

After switch off, the machine is not voltage free!

4 **Display**

Temperature indication
Wash
green: > 55°C
(H14 - H19)

5 **Display**

Temperature indication
Rinse
green: > 75°C (>63°C)
(H24 - H29)

Tank Temp. B2				Booster Temp. B1	
all models				all models except -402	model -402 only
>55°C	H19	H29		>75°C	>63°C
>50°C	H18	H28		>70°C	>60°C
>45°C	H17	H27		>65°C	>55°C
>40°C	H16	H26		>55°C	>50°C
>35°C	H15	H25		>45°C	>45°C
>30°C	H14	H24		>35°C	>35°C
- - -	H13	H23		- - -	- - -
- - -	H12	H22		- - -	- - -
- - -	H11	H21		- - -	- - -
- - -	H10	H20		- - -	- - -

6 **Salt** required

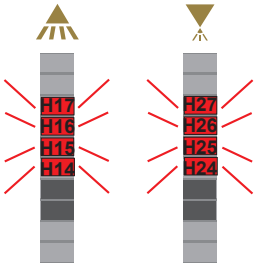
Indicates the need for regeneration salt to be added (only for machines with built-in softener). H10 and H11 flash.

7 **Regeneration** indicator

Softener regeneration active.
The cycle running time may increase. H10 and H11 flash.

Note: For serial numbers starting as of February 2011, the temperature display categories have been changed (see page 32).

5. INITIAL BOOSTER FILL (FACELIFT SEE PAGE 32)



If the machine is switched on **before** the initial booster fill is carried out, the LEDs H14 - H17 and H24 - H27 will flash.

☞ Switch off machine and open the hood/door. **Overflow pipe must be inserted**.

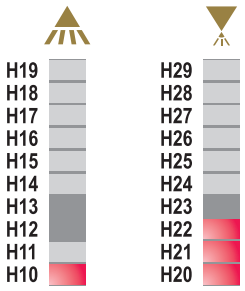
☞ Push program buttons [1] and [2] simultaneously and hold for 3 seconds; button LEDs H1 and H2 light up.

– The LEDs H20-H29 are only shown after the program buttons [1] and [2] are released.
– The LEDs H1 and H2 light up as long as the menu remains open.
In addition, the LEDs H10 and H20-H22 also light up.

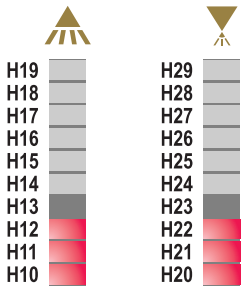
LED allocation:

6. **Initial booster fill**
5. Hose priming – rinse aid
4. Hose priming – detergent
3. Adjustment of water hardness
2. Rinse aid dosage quantity
1. Detergent dosage quantity

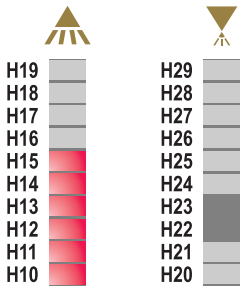
1. Start
LED H10 and
H20 to H22 "on"



2. Push program
button [1] two times.
LED H10 to H12 "on"

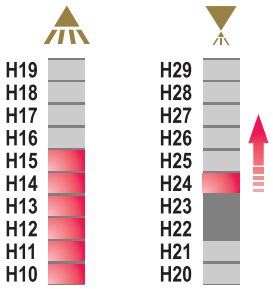


3. CLOSE hood/door.
Push program button [1]
three times.
LED H10 to H15 "on"



4. Push program button [2] briefly to start the initial booster fill.

Fill valve Y1 activation is indicated by a moving light: LEDs H24 - H27.



ATTENTION:
Hood/door must not be opened during initial booster fill!

Only if the fill cycle is completed without interruption, the switching function **S03** is set to "**0**".
If not, all programs are locked.

When the booster is filled, the control switches off.

Remarks:

For machines with EEPROM revision **<L1.0**: Initial booster fill occurs for a predetermined set time.

For machines with EEPROM revision **L1.0**: The initial booster fill is not completed until:
– **For machines with pressure booster:** The ready level in the wash tank (B4) is reached (thereafter, the machine must be completely emptied).
– **For machines with pressure-less booster:** The booster level (B3) is reached.

6. HYDRAULIC SCHEMATICS

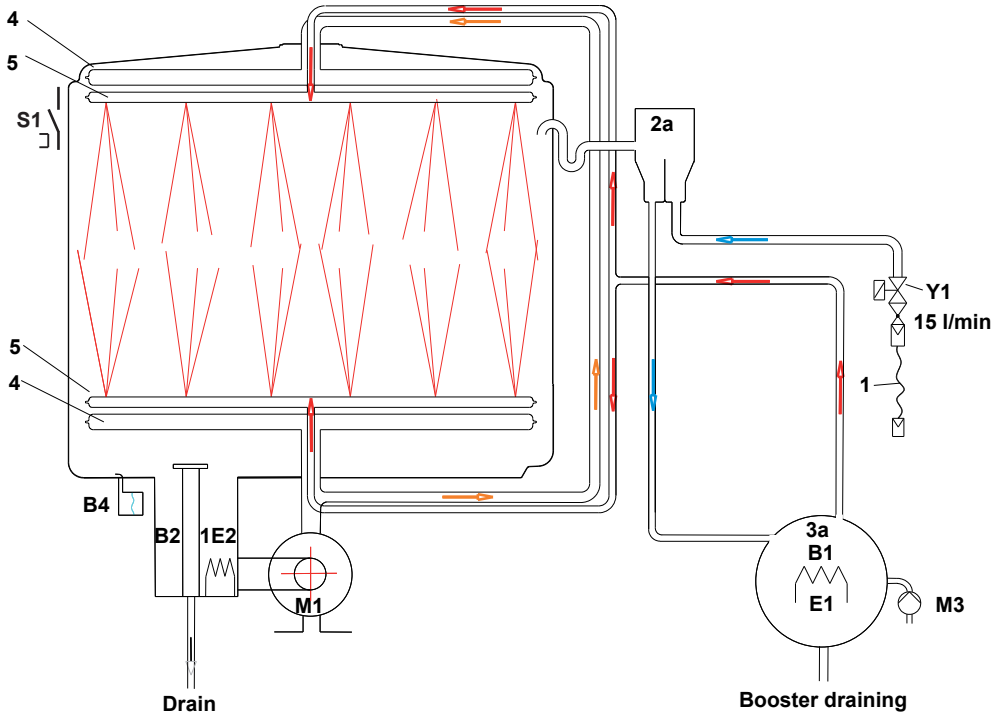
6.1 LEGEND OF COMPONENTS FOR ECOMAX 402/502 (ECOMAX 452: SEE PAGE 3)

Ecomax		402		402S		402	402S	502		502S		502	502S
		-10	-12	-10	-12	-20	-20	-10	-12	-10	-12	-20	-20
B1	Temperature sensor booster	X	X	X	X	X	X	X	X	X	X	X	X
B2	Temperature sensor tank	X	X	X	X	X	X	X	X	X	X	X	X
B3	Pressure transmitter booster	---	---	X	X	X	X	---	---	X	X	X	X
B4	Pressure transmitter tank	X	X	X	X	X	X	X	X	X	X	X	X
E1	Booster heating **5.50 kW** 400/**3**/N/PE 3x13A/3x16A	---	---	---	---	---	---	**A**	**A**	**A**	**A**	---	---
E1	Booster heating **3.70 kW** 230/**1**/N/PE **1x25A**	---	---	---	---	---	---	---	---	---	---	**A**	**A**
E1	Booster heating **3.70 kW** 230/**1**/N/PE **1x20A**	---	---	---	---	X	X	---	---	---	---	---	---
E1	Booster heating **1.80 kW** 230/**1**/N/PE 1x13A/1x16A	**A**	**A**	**A**	**A**	**A**	**A**	---	---	---	---	X	X
E2	Tank heating 1.80 kW	X	X	X	X	X	X	X	X	X	X	X	X
M1 **C1**	Wash pump 0.25 kW 5.0 µF	X	X	X	X	X	X	---	---	---	---	---	---
M1 **C1**	Wash pump 0.37 kW 10.0 µF	---	---	---	---	---	---	X	X	X	X	X	X
M2 **C2**	Rinse pump 0.14 kW, 0.6A 4.0 µF	---	---	X	X	X	X	---	---	X	X	X	X
M3	Rinse aid dispenser	X	X	X	X	X	X	X	X	X	X	X	X
M4	Detergent dispenser	Kit	X	Kit	X	X	X	Kit	X	Kit	X	X	X
M5	Drain pump	Kit	X	Kit	X	X	X	Kit	X	Kit	X	X	X
S1	Reed-switch – hood/door	X	X	X	X	X	X	X	X	X	X	X	X
S2	Impeller	---	---	X	X	---	X	---	---	X	X	---	X
S3	Salt deficiency switch	---	---	X	X	---	X	---	---	X	X	---	X
Y1	Solenoid valve – fill 5 l/min.	---	---	X	X	X	X	---	---	X	X	X	X
Y1	Solenoid valve – fill 15 l/min.	X	X	---	---	---	---	X	X	---	---	---	---
Y3.1	Valve resin	---	---	X	X	---	X	---	---	X	X	---	X
Y4.2	Switching valve softener	---	---	X	X	---	X	---	---	X	X	---	X
1	Water supply hose	X	X	X	X	X	X	X	X	X	X	X	X
2	Waterbreak (previously airgap)	---	---	X	X	X	X	---	---	X	X	X	X
	Backflow preventer	X	X	---	---	---	---	X	X	---	---	---	---
3	Pressure-less booster	---	---	X	X	X	X	---	---	X	X	X	X
	Pressure booster	X	X	---	---	---	---	X	X	---	---	---	---
4	Wash arms	X	X	X	X	X	X	X	X	X	X	X	X
5	Rinse arms	X	X	X	X	X	X	X	X	X	X	X	X
6	Salt chamber	---	---	X	X	---	X	---	---	X	X	---	X
7	Resin	---	---	X	X	---	X	---	---	X	X	---	X

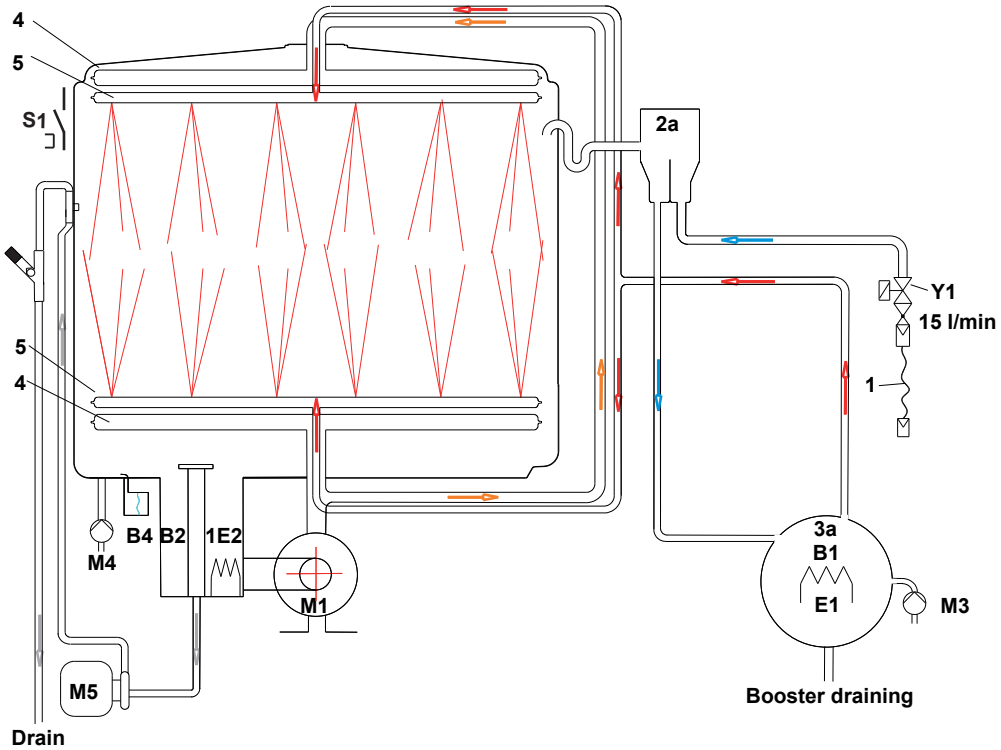
Notes: A = Delivery status connected load (according to wiring diagram)

– part number installation kit for **drain pump** Ecomax **402**: **01-240784-1**
– part number installation kit for **drain pump** Ecomax **402S**: **01-510154-1**
– part number installation kit for **drain pump** Ecomax **502**: **01-240785-1**
– part number installation kit for **drain pump** Ecomax **502S**: **01-510153-1**
– part number installation kit for **detergent dispenser** Ecomax **402/502**: **01-240786-1**
– Ecomax 502-20 and 502-21 are rotating current variants.
– Ecomax 502-30 (230/50/1/25A) and 502-141 (230/50/3) are pressure booster variants.

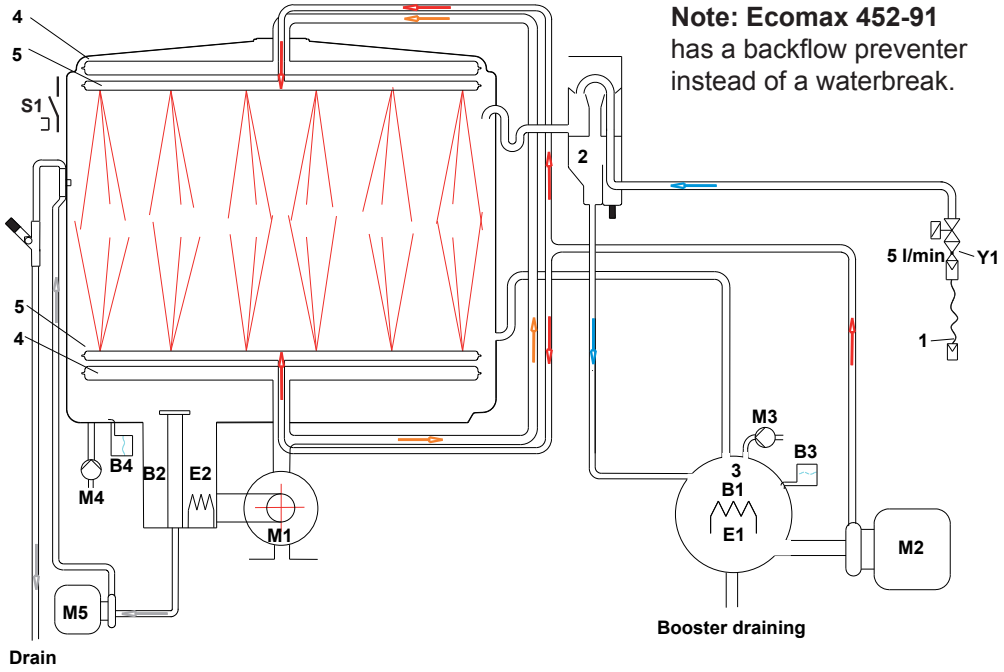
6.1.1 SCHEMATIC FOR ECOMAX 402-10/502-10/502-30/502-141 (WITH PRESSURE BOOSTER)



6.1.2 SCHEMATIC FOR ECOMAX 402-12/452-90/502-12 (WITH PRESSURE BOOSTER)

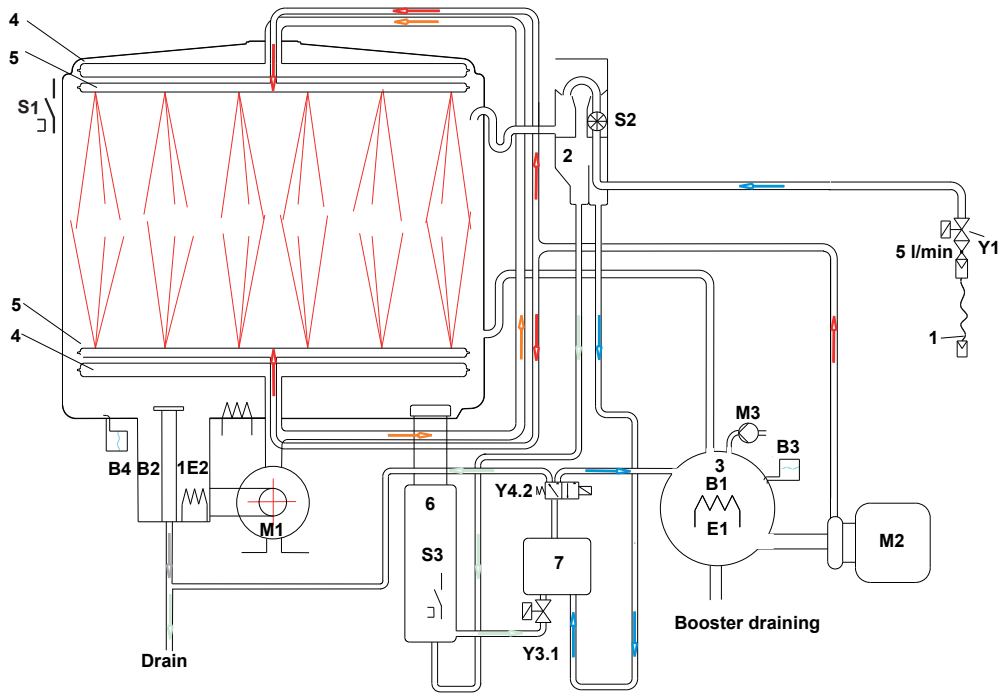


6.1.3 SCHEMATIC FOR ECOMAX 402-20/452-91/502-20/502-21 (WITH PRESSURE-LESS BOOSTER)

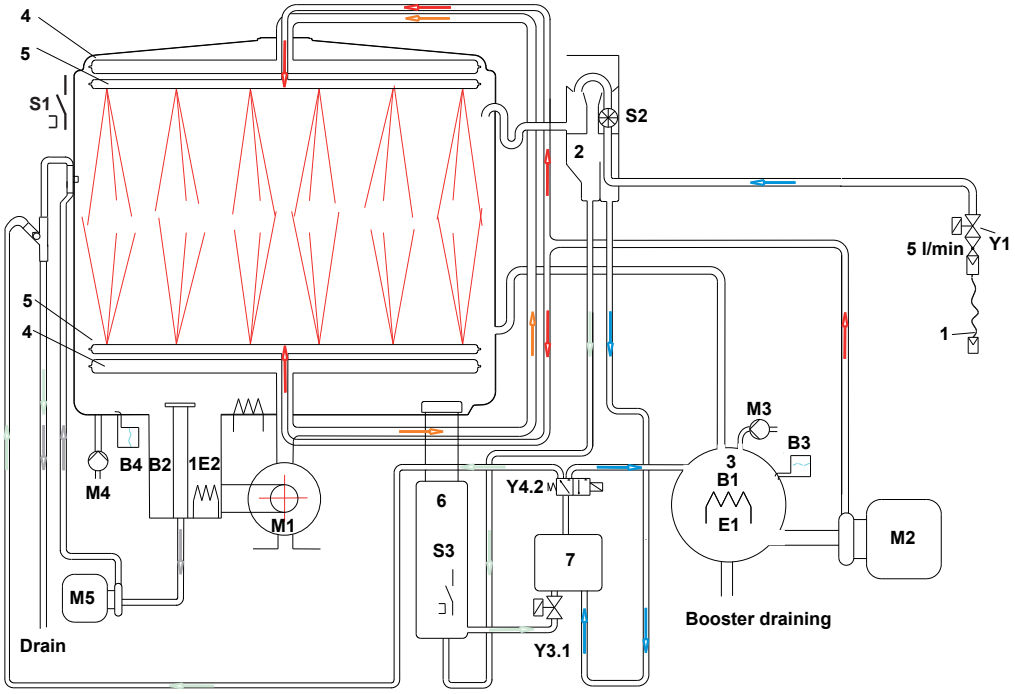


Note: Ecomax 452-91
has a backflow preventer
instead of a waterbreak.

6.1.4 SCHEMATIC FOR ECOMAX 402S-10/502S-10 (WITH PRESSURE-LESS BOOSTER)



6.1.5 SCHEMATIC FOR ECOMAX 402S-12/402S-20/502S-12/502S-20 (WITH PRESSURE-LESS BOOSTER)

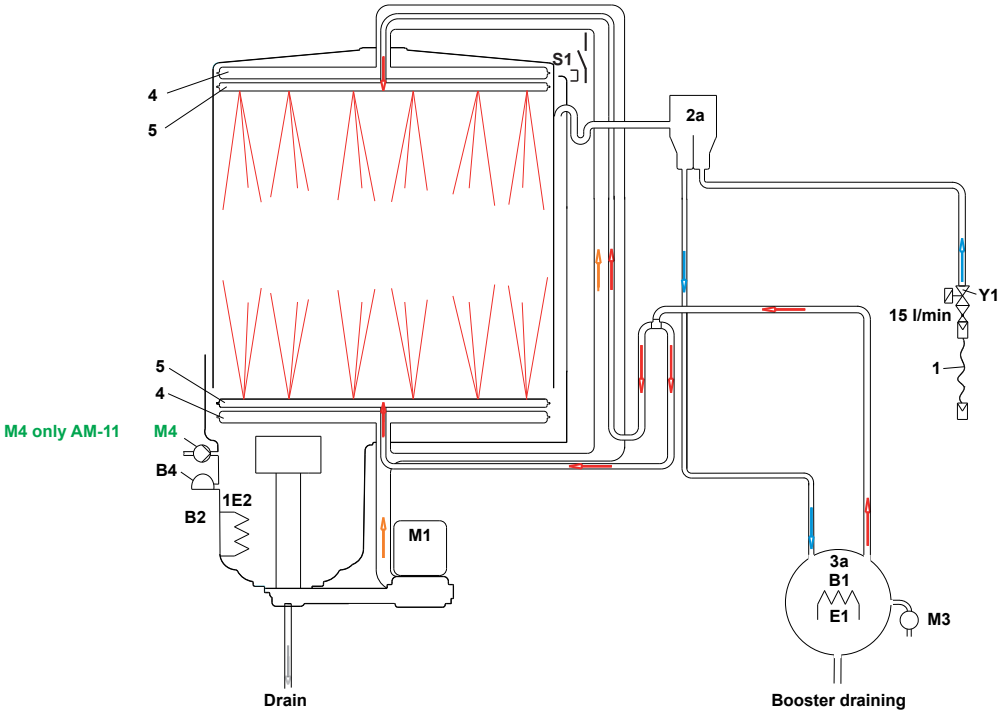


6.2 LEGEND OF COMPONENTS FOR ECOMAX 602/612/AM-10/AM-11

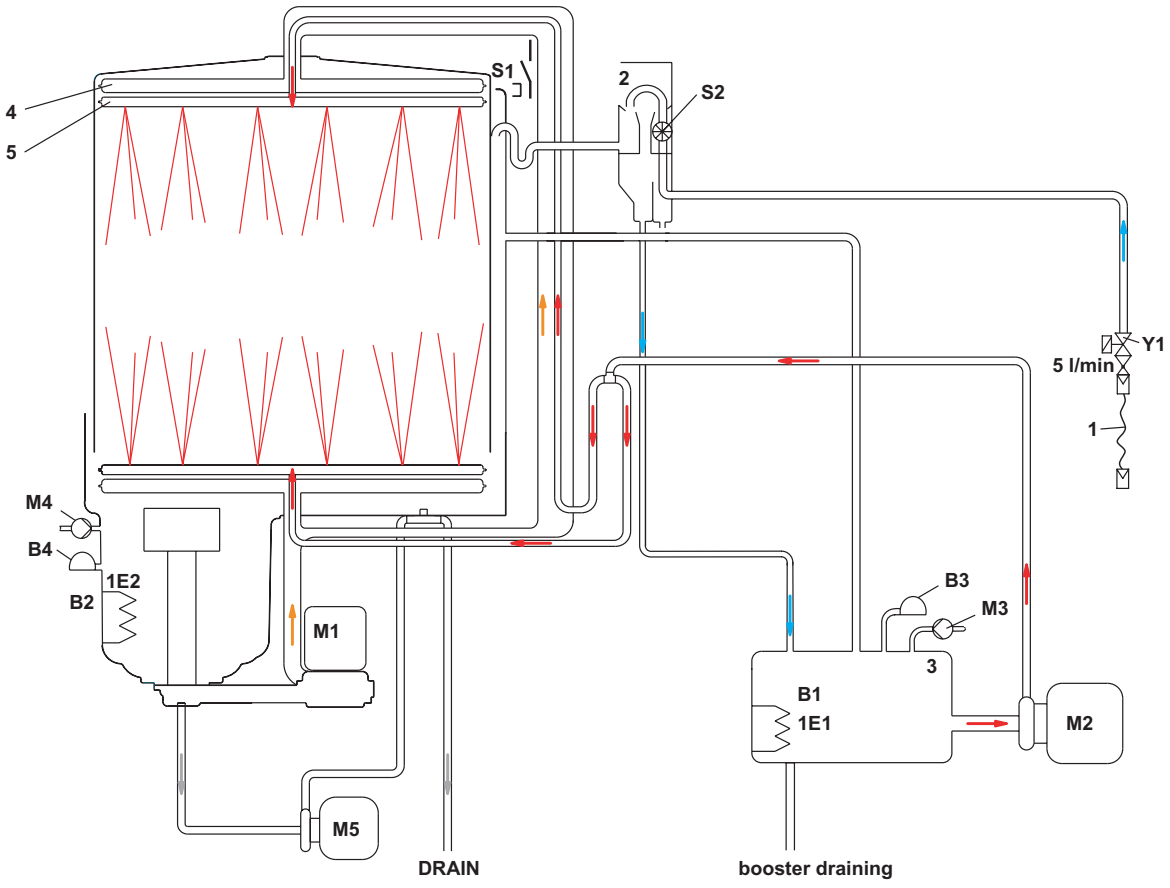
		Ecomax 602-10 602-141	Ecomax 602-11	Ecomax 602S-11	Ecomax 612-10	Ecomax 612S-10	AM-10	AM-11
B1	Temperature sensor booster	X	X	X	X	X	X	X
B2	Temperature sensor tank	X	X	X	X	X	X	X
B3	Pressure transmitter booster	- - -	X	X	X	X	- - -	- - -
B4	Pressure transmitter tank	X	X	X	X	X	X	X
E1	Booster heating 5.50 kW	**A**	- - -	- - -	- - -	- - -	**A**	**A**
E1	Booster heating 6.10 kW	- - -	**A**	**A**	**A**	**A**	- - -	- - -
	Booster heating 4.10 kW Multiphasing 230/50/1 25A	- - -	X	X	X	X	- - -	- - -
E2	Tank heating 2.50 kW	X	X	X	X	X	X	X
M1	Wash pump 0.40 kW/12.5 µF	X	X	X	- - -	- - -	X	X
	Wash pump 0.73 kW/16 µF	- - -	- - -	- - -	X	X	- - -	- - -
M2	Rinse pump	- - -	X	X	X	X	- - -	- - -
M3	Rinse aid dispenser	X	X	X	X	X	X	X
M4	Detergent dispenser	(retrofit kit)	X	X	X	X	(retrofit kit)	X
M5	Drain pump	(retrofit kit)	(retrofit kit)	X	X	X	(retrofit kit)	(retrofit kit)
S1	Reed-switch – hood	X	X	X	X	X	X	X
S2	Impeller	- - -	- - -	X	- - -	X	- - -	- - -
S3	Salt deficiency switch	- - -	- - -	X	- - -	X	- - -	- - -
Y1	Solenoid valve – fill 5 l/min.	- - -	X	X	X	X	- - -	- - -
Y1	Solenoid valve – fill 15 l/min.	X	- - -	- - -	- - -	- - -	X	X
Y3.1	Valve resin	- - -	- - -	X	- - -	X	- - -	- - -
Y4.2	Switching valve softener	- - -	- - -	X	- - -	X	- - -	- - -
1	Water supply hose	X	X	X	X	X	X	X
2	Waterbreak (previously airgap)	- - -	X	X	X	X	- - -	- - -
2a	Backflow preventer	X	- - -	- - -	- - -	- - -	X	X
3	Pressure-less booster	- - -	X	X	X	X	- - -	- - -
	Pressure booster	X	- - -	- - -	- - -	- - -	X	X
4	Wash arms	X	X	X	X	X	X	X
5	Rinse arms	X	X	X	X	X	X	X
6	Salt chamber	- - -	- - -	X	- - -	X	- - -	- - -
7	Resin	- - -	- - -	X	- - -	X	- - -	- - -

Notes:
- **A** = Delivery status connected load (according to wiring diagram)
- Ecomax 612-40 is a machine with rinse pump and 11 kW booster (220/60/30).
- Ecomax 612-41 is a machine with pressure pump and 11 kW booster (380/60/3).
- part number installation kit for **drain pump** Ecomax **602/AM-10-11** with installation manual: **01-240784-1**
- part number installation kit for **detergent dispenser** Ecomax **602/AM-10-11** with installation manual: **01-246480-1**

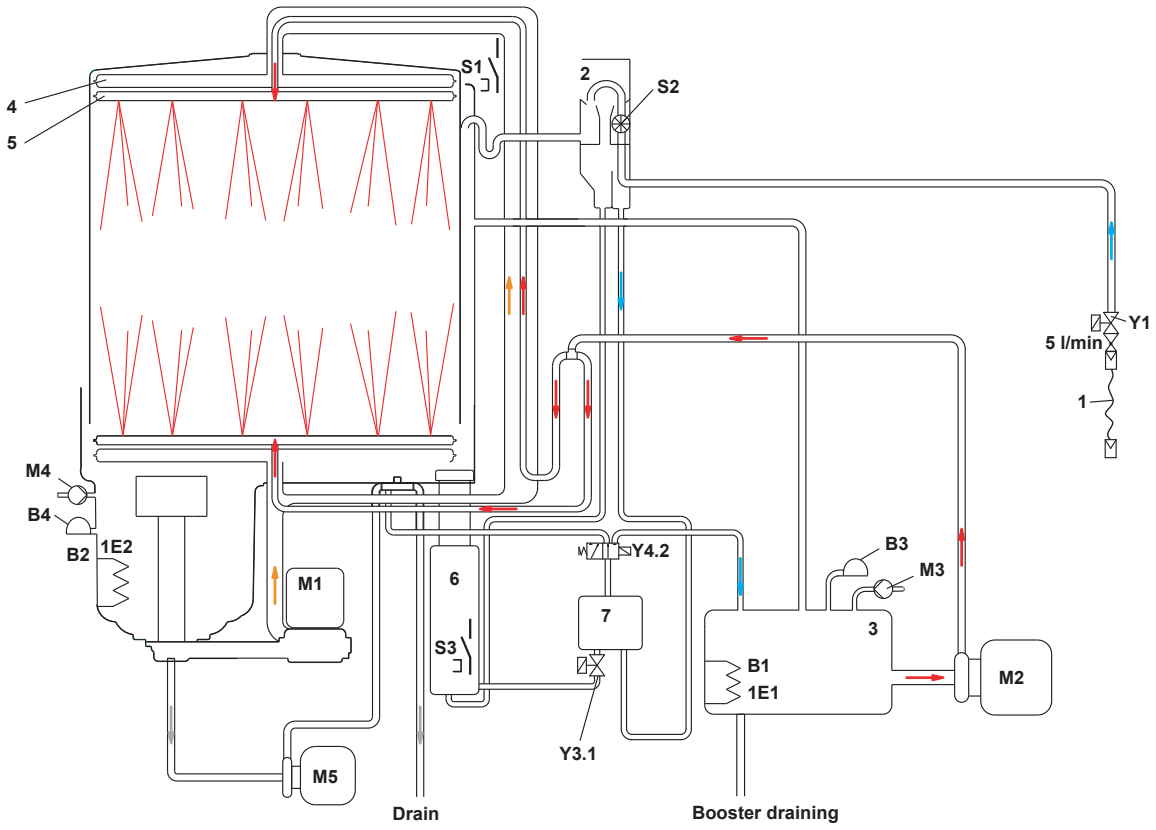
6.2.1 SCHEMATIC FOR ECOMAX 602-10/602-141/AM-10/AM-11 WITH PRESSURE BOOSTER



6.2.2 SCHEMATIC FOR ECOMAX 602-11/612-10/612-40/612-41 WITH PRESSURE-LESS BOOSTER



6.2.3. SCHEMATIC FOR ECOMAX 602S-11/612S-10 WITH PRESSURE-LESS BOOSTER



7. FILLING

7.1 WATERBREAK WITH FLOWMETER

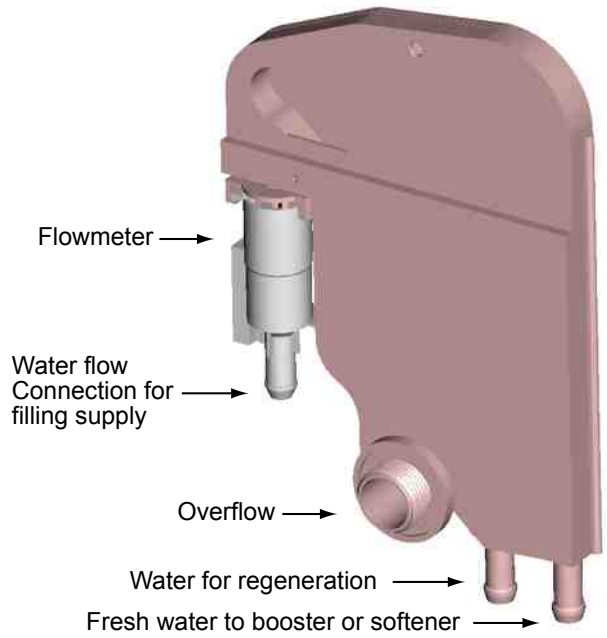
The flowmeter is activated by the impeller magnet.

The impeller monitors the incoming water flow by counting impulses. The count rate is **200 impulses per liter**.

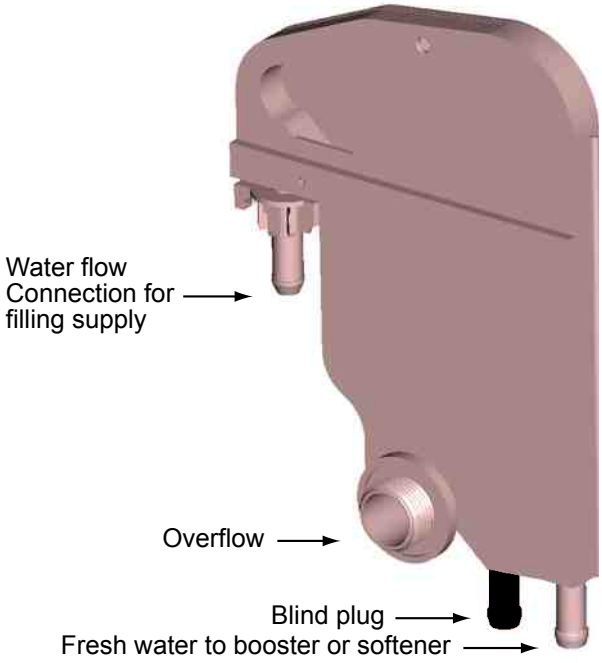
MAINTENANCE

Check whether water leaking from the airgap overflow (see figure) enters the wash tank chamber (visual inspection). If so, the leaking water quantity must not exceed **100 ml** per fill step.

All Ecomax machines with "S"

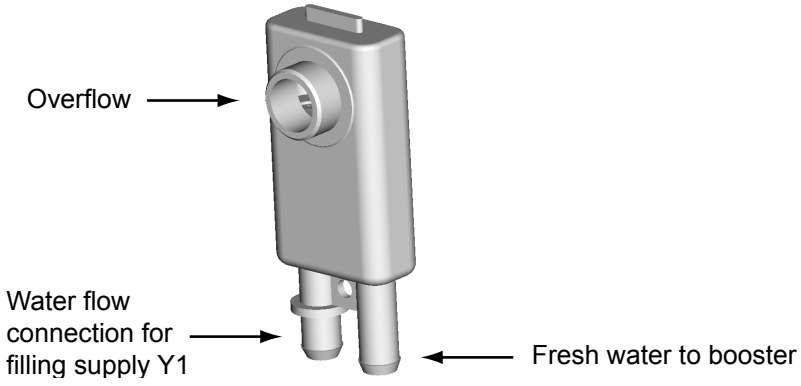


**Ecomax 402-20 / 502-20 /
602-11 / 612-10 / 612-40 / 612-41**



7.1.2. DOUBLE-BALL BACKFLOW PREVENTER

Ecomax machines with pressure booster **(402-10/-12 / 452-90 / 502-10/-12 / 602-10 / AM-10 / AM-11)** have a built-in backflow preventer. **Ecomax 452-91** also has a backflow preventer (pressure-less booster).



7.2 PRESSURE TRANSMITTER B3/B4

Via air traps (booster/wash tank) compressed air will be directed via clear hoses to the pressure transmitter booster (B3) and wash tank (B4). The transmitter changes the upcoming pressure into DC voltage which will be processed by the control as a water level message. Below example: 602S-11

Output Voltage	Pressure Transmitter B3 Booster (if installed)
approx. 0.50 V ± 60 mV	Booster is empty. Fill valve will be activated
approx. 0.60 V	Booster heating will be switched on (heating up to fill start temperature **85 °C**).
approx. 0.90 V	Booster is filled. Fill valve closes.

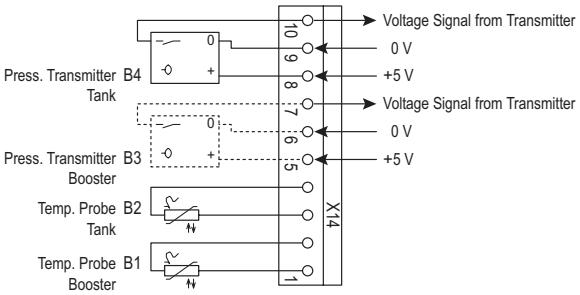
Output Voltage *	Pressure Transmitter B4 Tank
approx. 0.50 V ± 60 mV	Wash tank is empty.
approx. 0.65 V	Tank heating will be switched on.
approx. 0.90 V	Machine is ready for operation (tank is filled).

*** Additions for pressure transmitter B4 (tank):**

Ecomax	Tank Heating ON	Tank Filled	Tank Heating ON While Washing
402	0.60 V	0.65 V	0.58 V
452/502	0.60 V	0.75 V	0.58 V
602/612	0.65 V (approx. 13 l)	0.90 V (approx. 21 l)	0.60 V

NOTE:
- The hoses must incline above tank level and/or booster level to enable the condensate to drain off.
- The voltage value "tank full" is approx. 0.1 V to 0.15 V higher after rinse.

PCB Detail



Transmitter Arrangement

B3
Pressure transmitter Booster (not for Ecomax 402-10/-12, 502-10/-12, 602-10, or AM-10/-11)

B4
Pressure transmitter Tank (all models)

As a preventive measure, the pressure transmitters are covered with a protective foil 01-297533-1, (since April 28, 2009; starting with serial number 8657 1160).

NOTE:
- The voltage supply of the two pressure transmitters is approx. **5 V**. This voltage is measured between **X14 Pin 5 (+5 V)** and **X14 Pin 6 (0 V)** pressure transmitter booster **B3,** respectively, **X14 Pin 8 (+5 V)** and **X14 Pin 9 (0 V)** pressure transmitter tank **B4**.
- The output voltage is measured between **X14 Pin 7 (+)** and **X14 Pin 6 (0 V)** pressure transmitter booster **B3,** respectively, **X14 Pin 10 (+)** and **X14 Pin 9 (0 V)** pressure transmitter tank **B4**.

If the sensor B3, B4 is outside the "normal" range (> 4.0 V / < 0.3 V), then the control is switched off.
Service, customer, or machine selection menu can be still opened.
The transmitter can be checked in the service menu (see section 10.2 Service Diagnostics on page 25).

7.3 DOSING EQUIPMENT

Dispensers				
	Ecomax	**Part No.**	**Delivery Rate**	**Hose Inside**
Detergent	602/612	883828-2	3.0 l/hr	Kit 775608-2
	402/452/502	775556-2		
Rinse aid	602/612	883828-1	0.4 l/hr	Kit 775608-1
	402/452/502	775556-1		
Pre-Adjusted Values				
Detergent	see section 11. Dosage Times on page 31			
Rinse aid				
Dosage				
Detergent	Pre-dosing is activated simultaneous with fill valve **Y1** or rinse pump **M2**. Wash dosing is activated simultaneous with the wash **M1** pump.			
Rinse aid	Pre-dosing is activated after the **end of the fill cycle**. Wash dosing is activated after the **end of wash cycle**.			

Hose priming and factory settings see section 10.1 Customer Settings on page 24.

MAINTENANCE

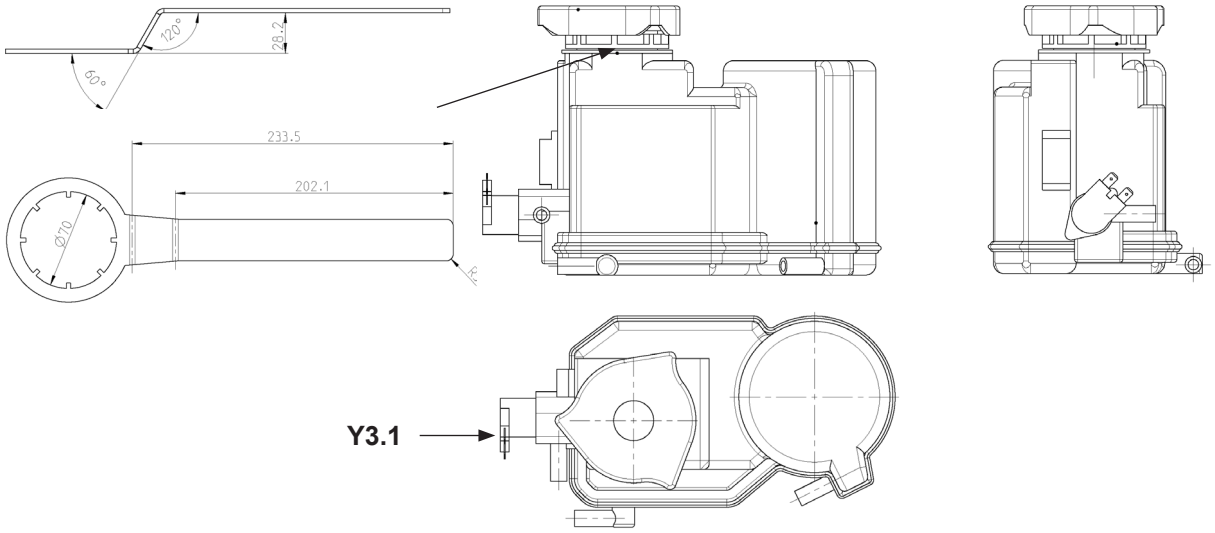
1. Check hoses, dispensers and connections.
2. As a precaution, the dosing hoses have to be replaced every two years (hoses inside dispensers, suction and pressure hoses).

   Dosing hoses (sold by meter) – part no. 01-246301-099

7.4 SOFTENER (ONLY FOR MACHINES WITH "S" OPTION)

7.4.1 GENERAL

Before first run, the softener has to be filled with 1.5 kg of regeneration salt and potable water.



Salt capacity: max. 1.5 kg (coarse grained, 3-8 mm, max.10 mm – no tablets)

Salt consumption: approx. 40 g / regeneration

Softener setting: see page 20

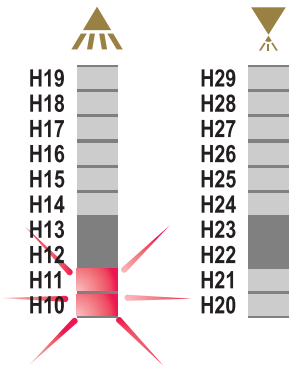
In case of softener replacement the fastening nut has to be re-tightend after three wash cycles.

Special tool needed (softener wrench 775920-1)

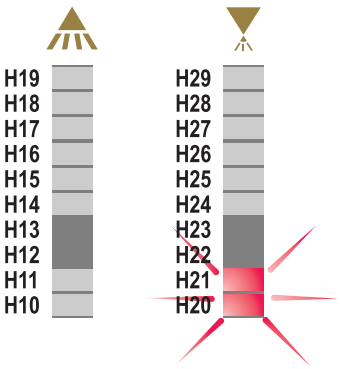
NOTE:

1. Y4.2 (switching drain/booster)
   de-energized = switched to drain
   energized = filling into booster.
2. It will take several wash cycles until the salt indicator switches off.
3. **Salt deficiency** will be indicated by **flashing** LEDs H10 + H11.
4. **Active softener regeneration** is indicated during operation by **flashing** LEDs H20 + H21. The cycle running time may be prolonged.

Salt deficiency



Regeneration in process



7.4.2 SOFTENER CHECK PROCEDURE

What you need to verify the softener function:

1. Test kit to measure the water hardness (part number 607236). Pay attention to expiry-date.
2. A temperature compensated conductivity-meter 609909 (possibly pH indicator strips 609927).

How, respectively, where to measure?

Use clean tea-cup or beaker for sampling water.

1. Take measurement of the total water hardness (°dh) at the tap where the machine is connected to.
2. Measure the conductivity (µS/cm) at the tap where the machine is connected to.
3. Measure the hardness of the water in the booster.
   Therefore, the booster drain hose is to be used. Discard the first cup of water to ensure that no residuals from the hose falsifies the measured value.
4. Measure the conductivity of the booster water.

Adjustment of softener setting according to the hardness of incoming water:

1. Ensure adequate softener setting:
   H01 = up to 7°dh 20 wash cycles (see section 10.1 Customer Settings on page 24)
   H02 = 8 to 14°dh 15 wash cycles
   H03 = 15 to 21°dh 10 wash cycles
   H04 = 22 to 30°dh 5 wash cycles
2. Ensure that the salt chamber contains salt.
3. Ensure that granular salt is used (salt tablets are not allowed).
4. Ensure that the salt chamber has been filled up with water.

Approximate values if softener function is O.K.:

The conductivity of the booster water shall be about 300µS/cm higher than the conductivity of that water taken at the tap.
For example: If the total hardness of the incoming water is 500µS/cm, the conductivity of the booster water will be roughly 800µS/cm. If this value is significantly higher (e.g. 3000 µS/cm), an incorrect softener function is very likely.

Further steps:

1. Adjust the softener to "H04" to ensure a new regeneration will be actuated every 5 cycles.
2. Select the shortest program and take a sample of water (a tea-cup) at the booster drain hose immediately after the program cycle has ceased.
3. Measure and note down the water hardness.
4. Measure and note down the conductivity.

Never run the softener test program at the beginning of the herein described procedure because it is unavoidable that salt will be flushed into the system. Thus, measurements would become incorrect.

Proceed as follows in case of too high hardness and/or conductivity values:

1. Remove the right side panel.
2. Activate the softener test program as described on page 29.

If the sequential operation deviates from the described one, it is very likely that the softener valve **Y4.2** is jammed.

The booster must be flushed thoroughly at the end of this procedure (run 5 wash cycles) to ensure that the chloride content is at an acceptable level to prevent corrosion.

7.5 BOOSTER / TANK / TEMPERATURE PROBES

Parts with Booster Part Numbers				
	Ecomax 402	**Ecomax 452/502**	**Ecomax 602/612**	
Booster heating E1	01-240761-1 (5.5 kW)	01-240761-1 (5.5 kW)	01-240135-2 (6.1 kW)	
Viton-o-ring booster heating	01-240135-11	01-240135-11	01-240135-11	
Air trap booster/tank	01-240076-2	01-240076-2	01-240076-2	
Viton-o-ring air traps	01-276903-56	01-276903-56	01-276903-56	
Temperature probes booster/ tank	775612-1	775612-1	775612-1	
Booster temperature	65 °C	80-85 °C	80-85 °C	
Booster Volume/Water Consumption Rinse Cycle				
	402	**452/502**	**602**	
			Pressure Booster	**Pressure-less Booster**
Booster volume	4.9 l	5.6 l	5.7 l	10.3 l
Water consumption/rinse cycle	2.5 l	2.9 l	2.9 l	2.9 l
Tank Volume/Tank Heating				
	402	**452/502**	**602**	
Tank volume	11 l	22 l/25 l	21 l	
Tank heating	01-240766-1 (1.8 kW)	01-240766-1 (1.8 kW)	883423-1 (2.5 kW)	
Tank temperature	55 °C	60 °C	60 °C	

NOTE:
If one of the temperature probes (B1/B2) is out of "normal" range (>99 °C approx. /< °C) , then the control is switched off. Service, customer, or machine selection menu can be still opened.
The probes can be checked in the service menu (see section 10.2 Service Diagnostics on page 25).

8. WASHING

8.1 TECHNICAL DATA – WASH PUMP/RINSE PUMP

WASH PUMPS – CONNECTED LOAD

MODEL	Part No.	Voltage / Freq. / Phases	Current	Capacitor	Power	Impeller
Ecomax 602 AM-10/AM-11	883833-1	220-240 V / 50 Hz / 1P	3.2 A	12.5 µF	0.40 kW	88 mm
Ecomax 612	883617-1	220-240 V / 50 Hz / 1P	3.2 A	16.0 µF	0.73 kW	105 mm
Ecomax 402	324093-21V	220-240 V / 50 Hz / 1P	1.2 A	5.0 µF	0.25 kW	72 mm
Ecomax 452/502	01-240783-1	220-240 V / 50 Hz / 1P	2.3 A	10.0 µF	0.37 kW	85 mm

WASH PUMPS – SERVICE KITS (HOOD MACHINES ONLY)

Ecomax 602/ AM-10/AM-11	883833-10	50 Hz
Ecomax 612	883617-10	50 Hz

The Service Kits include:
1. O-ring
2. Impeller
3. Mechanical shaft seal

RINSE PUMP (PRESSURE-LESS BOOSTER) – CONNECTED LOAD

Ecomax	Part No.	Voltage / Freq. / Phases	Current	Capacitor	Power	Impeller
602S/602-11, 612(S) 402S-10/402S-12, 402-20/402S-20 502 same codes	775854-1	220-240 V / 50 Hz / 1P	0.46 A	4 µF	0.14 kW	72 mm

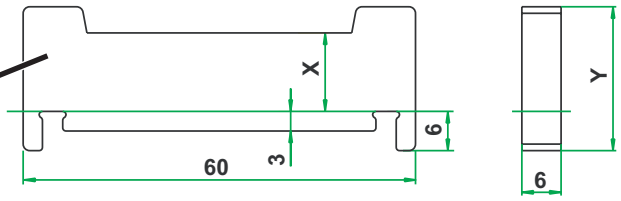
NOTE:
For all machines: Due to a single-phase alternating current pump, a rotation-direction test is not necessary.

9. HOOD – DETAILS

MAINTENANCE

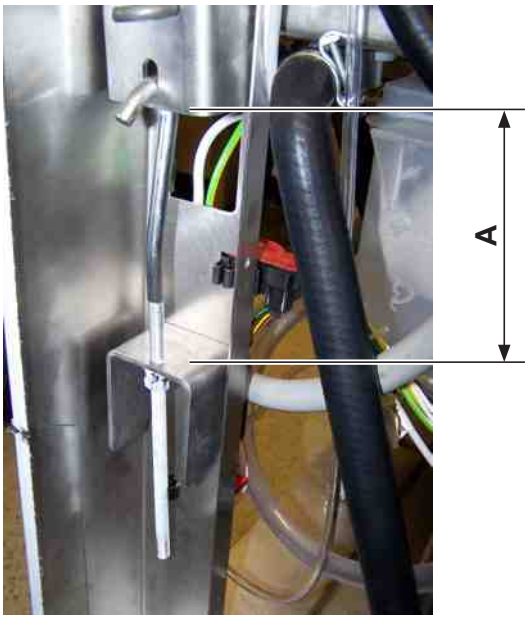
Check plastic bearings for sufficient lubrication (type P2 603219).

Hood lift handle support



Spring bolt (for all models):
883683-2 (**x** = 12 mm / **y** = 22 mm)

Adjustment of tension springs



Distance "A" from lower edge of bend to upper edge of channel:
approx. 18.5 cm – **non-insulated hood**

Tension spring:
2x1 **883636-3**

Insufficient spring force:
The hood does not remain safely in "stand-by" position or closes.

Too much spring force:
The hood does not keep tightly closed during wash cycle.

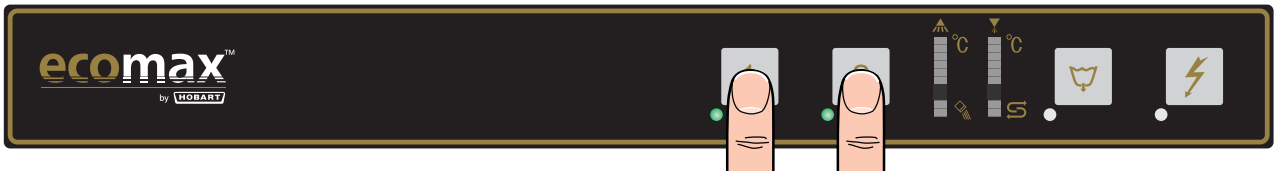
Make sure that in "stand-by" position, the hood neither opens nor slowly closes.

10. ELECTRONIC CONTROL

10.1 CUSTOMER SETTINGS

Requirements: Machine OFF and hood/door open.

☞ Push program buttons [1] and [2] and keep pressed (3 seconds) to enter the Customer Settings. Button LEDs H1 and H2 light up.



SETTING DETAILS:
Left display – The LEDs H10 to H15 illuminate according to the selected function.
Right display – Indicates the adjusted value.

	H19	H18	H17	H16	H15	H14	H13	H12	H11	H10	H29	H28	H27	H26	H25	H24	H23	H22	H21	H20	Detergent Dosage Time	Rinse Aid Dosage Time	Water Hardness
																					35.0 s	25.0 s	- - -
																					31.5 s	22.5 s	- - -
																					28.0 s	20.0 s	- - -
																					24.5 s	17.5 s	- - -
6. Initial booster fill																					21.0 s	15.0 s	- - -
5. Hose priming – rinse aid																					17.5 s	12.5 s	- - -
4. Hose priming – detergent																					14.0 s	10.0 s	H04 22 to 30°d
3. Adjustment of water hardness																					10.5 s	7.5 s	H03 15 to 21°d
2. Rinse aid dosage quantity																					7.0 s	5.0 s	H02 8 to 14°d
1. Detergent dosage quantity																					3.5 s	2.5 s	H01 up to 7°d

1. **ADJUSTMENT OF DETERGENT DOSAGE QUANTITY (LED H10 on):**
   - ☞ Push program button [2] repeatedly, until the desired value is indicated. See section 11. Dosage Times on page 31 for details.
   - ☞ Push program button [1] to select the next function.
2. **ADJUSTMENT OF RINSE AID DOSAGE QUANTITY (LEDs H10 and H11 on):**
   - ☞ Push program button [2] repeatedly, until the desired value is indicated. See section 11. Dosage Times on page 31 for details.
   - ☞ Push program button [1] to select the next function.
3. **ADJUSTMENT OF WATER HARDNESS** (LEDs H10 to H12 on)
   - ☞ Push program button [2] repeatedly, until the required value is indicated.
   - ☞ **CLOSE** the hood/door and push program button [1] to select hose priming.
4. **DETERGENT SUCTION HOSE** (LEDs H10 to H13 on)
   - ☞ Push program button [2] and keep pressed. Detergent dispenser will be activated, indicated by moving light LEDs H24 - H27.
   - ☞ Push program button [1] to select the next function.
5. **RINSE AID SUCTION HOSE** (LEDs H10 to H14 on)
   - ☞ Same procedure as point 4.
   - ☞ Push program button [1] to select the next function.
6. **INITIAL BOOSTER FILL** (LEDs H10 to H15 on)
   - ☞ Procedure see section 5. Initial Booster fill on page 8.

TO EXIT THE MENU:

☞ Up to H10 - H12: close hood/door; starting from H13: open hood/door or do not press any button for 10 seconds.

10.2 SERVICE DIAGNOSTICS (FACELIFT SEE PAGE 32)

Requirements: Machine OFF and Hood/Door open.

☞ Push program buttons [1] and [2] together with the [Drain/OFF] button and keep pressed (3 seconds) to enter the "Service Diagnostics" menu.

1. INPUT SIGNALS (LED H10 on), Example: Ecomax 602S-11

As soon as an input is active = "**1**", the corresponding LED illuminates (e.g. **S1** = "**1**" – **H20** lights up etc.).

LEDs **H29** and **H19** illuminated = Temperature probe **B1** booster/**B2** tank **OK**.
LEDs **H28** and **H18** illuminated = Pressure transmitter **B3** booster (if installed)/**B4** tank **OK**.

SETTING DETAILS:

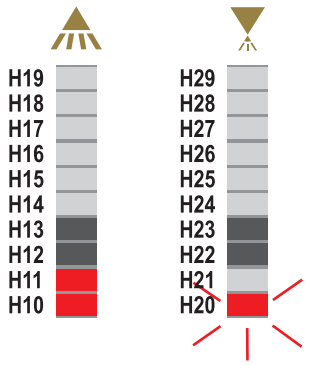
			Input signals
B2 Temp. probe tank OK	H19	H29	**B1** Temp. probe booster OK
B4 Press. transmitter tank OK	H18	H28	**B3** Press. transm. booster OK
	H17	H27	(**S8**)
	H16	H26	(**S7**)
	H15	H25	(**S6**)
5. Test mode operation unit (BAE)	H14	H24	(**S5**)
4. Switching functions	H13	H23	(**S4**)
3. Initial booster fill activation	H12	H22	**S3** Salt deficiency
2. Output control	H11	H21	**S2** Impeller switch (Airgap)
1. Input signals	H10	H20	**S1** Hood/door switch

☞ CLOSE the hood/door.

☞ Push program button [1] to select the next function.

2. OUTPUT CONTROL (LEDs H10 and H11 on)

SETTING DETAILS:

		Control Outputs Ecomax: 602-11(S) 612(S) 402S-10/-12/-20 502S-10/-12/-20 402-20/502-20 452-91	**Control Outputs Ecomax:** 602-10/ AM-10/AM-11 402-10/-12 502-10/-12 452-90
5. Test mode operation unit (BAE) 4. Switching functions 3. Initial booster fill activation 2. Output control 1. Input signals		RL10 **K1/E1** RL 9 (**M2**) RL 8 (**M5**) RL 7 **Y1** RL 6 (**Y4.2**) RL 5 **M4** RL 4 (**Y3.1**) RL 3 **M3** RL 2 **K2/E2** RL 1 **M1**	RL10 **K1/E1** RL 9 **Y1** RL 8 (**M5**) RL 7 RL 6 RL 5 (**M4**) RL 4 RL 3 **M3** RL 2 **K2/E2** RL 1 **M1**

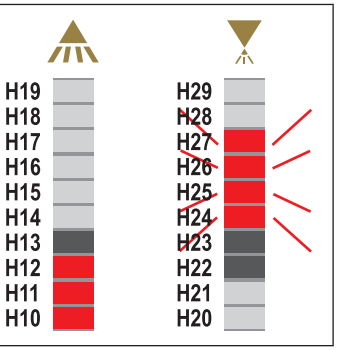
☞ Select output by pushing program button [2].
The corresponding LED flashes (e.g. **Relay "1"** – **H20** flashing etc.).

☞ By pushing the [Drain/OFF] button, the selected relay will be activated as long as the button is pressed. During activation, the corresponding LED stops flashing.

☞ Push program button [1] to select the next function.

3. INITIAL BOOSTER FILL (LEDs H10 to H12 on)

SETTING DETAILS:

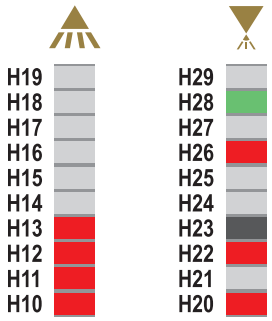
5. Test mode operation unit (BAE) 4. Switching functions 3. Initial booster fill activation 2. Output control 1. Input signals	

☞ Push the [Drain/OFF] button and keep pressed (3 seconds) to activate the booster fill once more.
E.g. necessary after heating replacement (machines with pressure booster).

☞ Push program button [1] to select the next function.

4. SWITCHING FUNCTIONS (LEDs H10 to H13 on), Example: Ecomax 602-10

SETTING DETAILS:

5. Test mode operation unit (BAE) 4. Switching functions 3. Initial booster fill activation 2. Output control 1. Input signals		**Switching Functions** **S10** Reserve **S09** Hood/door start **S08** Nozzle humidification (airgap) **S07** Interlocking - tank heating/booster **S06** Interlocking - tank heating/detergent pump **S05** Autostart **S04** Rinse aid pump **S03** Initial booster fill **S02** Softener **S01** Thermostop booster

☞ Select Switching function (S01 to S10) by pushing program button [2].
The corresponding LED of the chosen function is flashes briefly (2 seconds)
(e.g. S01 selected – H20 flashes for 2 seconds etc.).
Afterwards, the LED indicates whether the switching function is **activated** (**LED on**) or **deactivated** (**LED off**).

☞ Activate/deactivate by pushing the [Drain/OFF] button.

☞ To save the new setting, push the [Machine ON/STOP] button and keep pressed (3 seconds).
The LED flashes.

☞ Push program button [1] to select the next function.

5. TEST MODE OPERATION UNIT (LEDs H10 to H14 on)

☞ Push the [Drain/OFF] button (approx. 3 s.).
All LEDs will be activated one after the other.

TO EXIT THE MENU:

☞ Starting from Menu item "**Output control**" H11 up to "**Switching functions**" H13: OPEN the hood/door.

☞ Menu item "**BAE**" H14: push all four buttons simultaneously.

10.3 MACHINE TYPE SETTING (FACELIFT SEE PAGE 32)

Requirements: Machine OFF and Hood/Door open.

☞ Push program button [2] and [Drain/OFF] button simultaneously and keep pressed (3 seconds) to enter the menu item "Program Number Selection".

The software version is briefly indicated (4 seconds).

EXAMPLE: Revision 1.5
1 is indicated by **LED H10**
5 is indicated by **LED H20 to H24 (LED 4 flashes briefly)**

1. PROGRAM NUMBER SELECTION (LED H10 on)

☞ Select program number (machine type) by pushing the program button [2] repeatedly.
The corresponding LED flashes (e.g. program number 01 selected, H20 flashes).

EXCEPTION: When scrolling, the LED of the **currently programmed program number** is permanently illuminated and does not flash.

☞ Push [Drain/OFF] button for 3 seconds.
The selected program will be saved.

SETTING DETAILS:
Left display – The LEDs H10 to H11 illuminate according to the selected function.
Right display – Indicates the program number (machine type).

Program Number Selection Program number:			**Program Number**	**Machine Type**
11 = Ecomax 402S-10/-12/-20	H19	H29	**10**	Ecomax 402-20
	H18	H28	**09**	Ecomax 402-10/-12
	H17	H27	**08**	Ecomax 502S-10/-12/-20
	H16	H26	**07**	Ecomax 502-20
	H15	H25	**06**	Ecomax 502-10/-12
	H14	H24	**05**	Ecomax 612S-10
	H13	H23	**04**	Ecomax 612-10
	H12	H22	**03**	Ecomax 602S-11
2. Softener Test Program	H11	H21	**02**	Ecomax 602-11
1. Program Number Selection	H10	H20	**01**	Ecomax 602-10/AM-10 / AM-11

After programming, please double-check the program numbers.

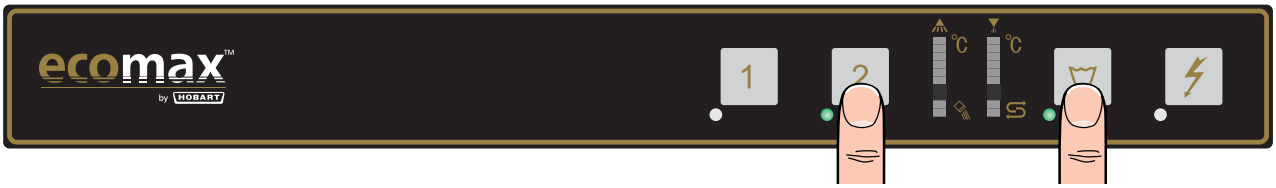
TO EXIT THE MENU:

☞ CLOSE the hood/door.

10.4 SOFTENER TEST PROGRAM (ONLY MACHINES WITH "S" OPTION)

Requirements: Machine OFF and hood/door open.

☞ Push program button [2] and [Drain/OFF] button simultaneously and keep pressed (3 seconds) to enter the menu item "Program Number Selection".



☞ Push program button [1] to select the menu item "Softener Test Program".

☞ CLOSE the hood/door.

2. SOFTENER TEST PROGRAM (LEDs H10 and H11 on)

☞ Push the [Drain/OFF] button to activate the test program.
Test sequence see below.

SETTING DETAILS:
Left display – The LEDs H10 to H11 illuminate according to the selected function.
Right display – Indicates the sequential operation.

	H19	H18	H17	H16	H15	H14	H13	H12	H11	H10	H29	H28	H27	H26	H25	H24	H23	H22	H21	H20	Sequential Operation	Details
2. Softener Test Program 1. Program Number Selection							■	■									■	■			**10.** Filling 2 **9.** Pause **8.** Filling 1 **7.** Pause **6.** Wash out 2 **5.** Pause **4.** Wash out 1 **3.** Pause **2.** Salting 2 **1.** Salting 1	50 pulses Y1 + Y4.2 to booster 3 seconds 50 pulses Y1 + Y4.2 to booster 3 seconds 50 pulses Y1 to drain 3 seconds 50 pulses Y1 to drain 3 seconds 5 seconds Y3.1 5 seconds Y3.1 + 3 seconds break

Notes:
Step 1/2: The water level in the transparent hose sinks due to static pressure if the salt valve Y3.1 is opened.
Step 4/6: The fill water flows down the drain.
Step 8/10: The fill water flows into the booster. If the booster is already filled, the water flows through the booster overflow into the machine.

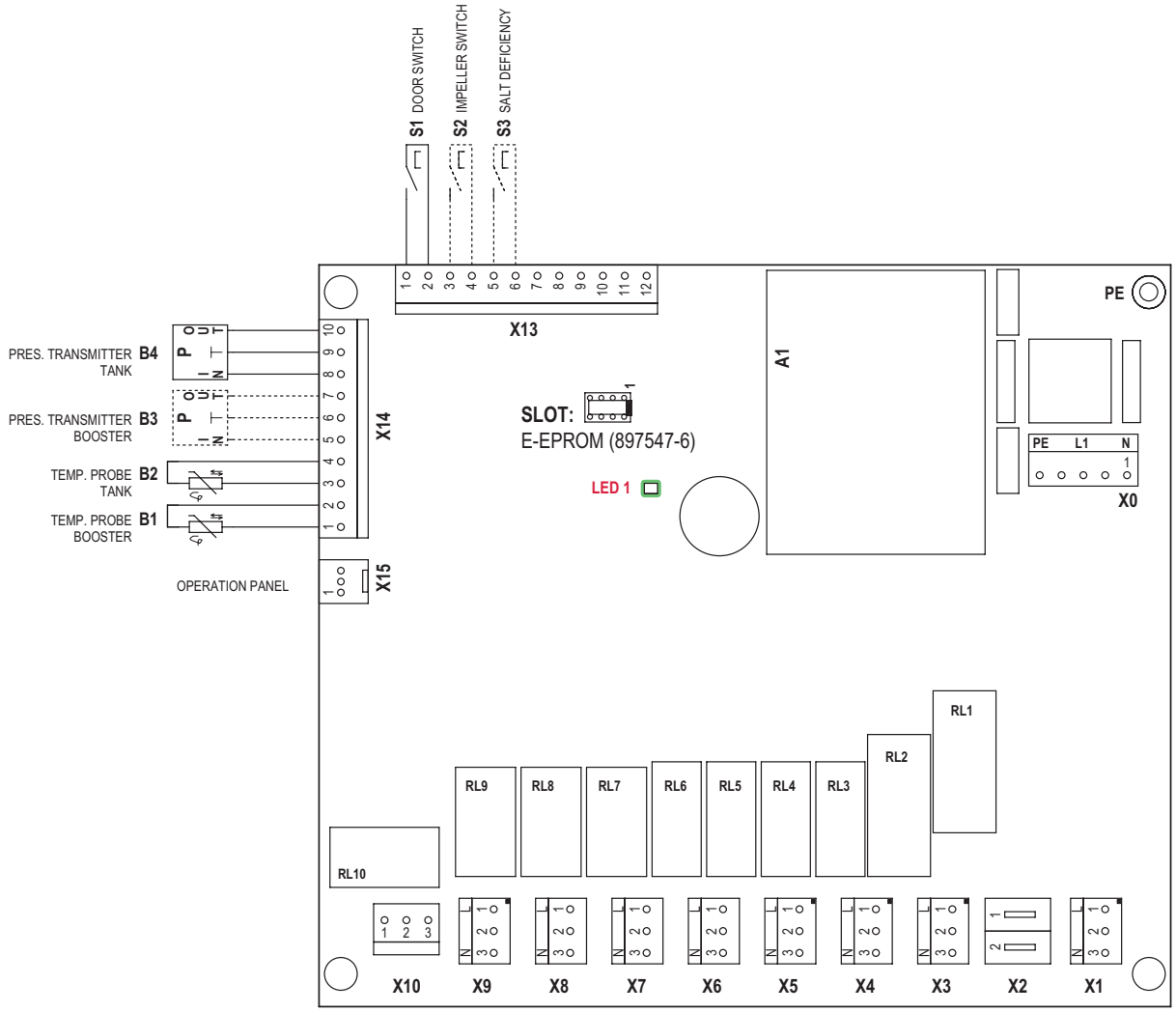
TO EXIT THE MENU:

☞ OPEN the hood/door.

10.5 PRINTED CIRCUIT BOARD (FACELIFT SEE PAGE 34)

Fitting position of board:

– 602/612/AM: as displayed
– 402/452/502: board is rotated 180°



LED 1 *processor function: flashing = voltage on, processor running*
permanent = voltage on, processor not running

NOTE:
Generally, the partly-equipped PCB (897545-**3**) is built-in.
As a replacement, the fully-equipped PCB (897545-**1**) can also be used.
EEPROM 897547-6 / 897547-17 (Ecomax facelift) must be ordered separately.
The control works with or without plugged EEPROM.

TO INSTALL A NEW SOFTWARE RELEASE:

1. Disconnect control fuse F1.
2. Plug in the new EEPROM (observe notch direction) and reconnect F1.
   A check is carried out and the stored software will be updated automatically.
   The progress is indicated by a moving light:
   Fully equipped PCB (897545-1): LEDs H20 to H29, partly equipped PCB (897545-3): LEDs H10 to H19.
   As soon as the software update is completed, the indicator switches off.
3. Set machine type as described on page 19 (also to be done after replacing the PCB) and double-check.
4. Disconnect control fuse F1, remove EEPROM and reconnect F1.

11. DOSAGE TIMES

Ecomax 402 (3 LEDs)				
Rinse volume per cycle: 2.50 l				
Detergent Pump	**3.00 l/h**		**Rinse Aid Pump**	**0.40 l/h**
11.67 g/l	35.00 s	H29	1.11 g/l	25.00 s
10.50 g/l	31.50 s	H28	1.00 g/l	22.50 s
9.33 g/l	28.00 s	H27	0.89 g/l	20.00 s
8.17 g/l	24.50 s	H26	0.78 g/l	17.50 s
7.00 g/l	21.00 s	H25	0.67 g/l	15.00 s
5.83 g/l	17.50 s	H24	0.56 g/l	12.50 s
4.67 g/l	14.00 s	H23	0.44 g/l	10.00 s
3.50 g/l	10.50 s	H22	0.33 g/l	7.50 s
2.33 g/l	7.00 s	H21	0.22 g/l	5.00 s
1.17 g/l	3.50 s	H20	0.11 g/l	2.50 s

Ecomax 452/502 (3 LEDs)				
Rinse volume per cycle: 2.90 l				
Detergent Pump	**3.00 l/h**		**Rinse Aid Pump**	**0.40 l/h**
9.72 g/l	35.00 s	H29	0.93 g/l	25.00 s
8.75 g/l	31.50 s	H28	0.83 g/l	22.50 s
7.78 g/l	28.00 s	H27	0.74 g/l	20.00 s
6.81 g/l	24.50 s	H26	0.65 g/l	17.50 s
5.83 g/l	21.00 s	H25	0.56 g/l	15.00 s
4.86 g/l	17.50 s	H24	0.46 g/l	12.50 s
3.89 g/l	14.00 s	H23	0.37 g/l	10.00 s
2.92 g/l	10.50 s	H22	0.28 g/l	7.50 s
1.94 g/l	7.00 s	H21	0.19 g/l	5.00 s
0.97 g/l	3.50 s	H20	0.09 g/l	2.50 s

Ecomax 602/612 (3 LEDs)				
Rinse volume per cycle: 2.90 l				
Detergent Pump	**3.00 l/h**		**Rinse Aid Pump**	**0.40 l/h**
10.06 g/l	35.00 s	H29	0.96 g/l	25.00 s
9.05 g/l	31.50 s	H28	0.86 g/l	22.50 s
8.05 g/l	28.00 s	H27	0.77 g/l	20.00 s
7.04 g/l	24.50 s	H26	0.67 g/l	17.50 s
6.03 g/l	21.00 s	H25	0.57 g/l	15.00 s
5.03 g/l	17.50 s	H24	0.48 g/l	12.50 s
4.02 g/l	14.00 s	H23	0.38 g/l	10.00 s
3.02 g/l	10.50 s	H22	0.29 g/l	7.50 s
2.01 g/l	7.00 s	H21	0.19 g/l	5.00 s
1.01 g/l	3.50 s	H20	0.10 g/l	2.50 s

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12.1 NEW EQUIPMENT AND PROGRAM FUNCTIONS

Start serial numbers are
- **Ecomax 402/502: 8663 4000**
- **Ecomax 602/612/AM: 8657 3000**
- **Ecomax 702: 8656 1001**

1. **Display panel:** The LEDs H18/H19 and H28/H29 are now **red** instead of **green**. Temperature values are also displayed.

2. **Implementation of new software:** 897547-17 (the program numbers remain unaffected).
   Additional programs: 12 (Ecomax 612-40/-41) and 13 (Ecomax 702-10).
   After programming, please double-check the program numbers.

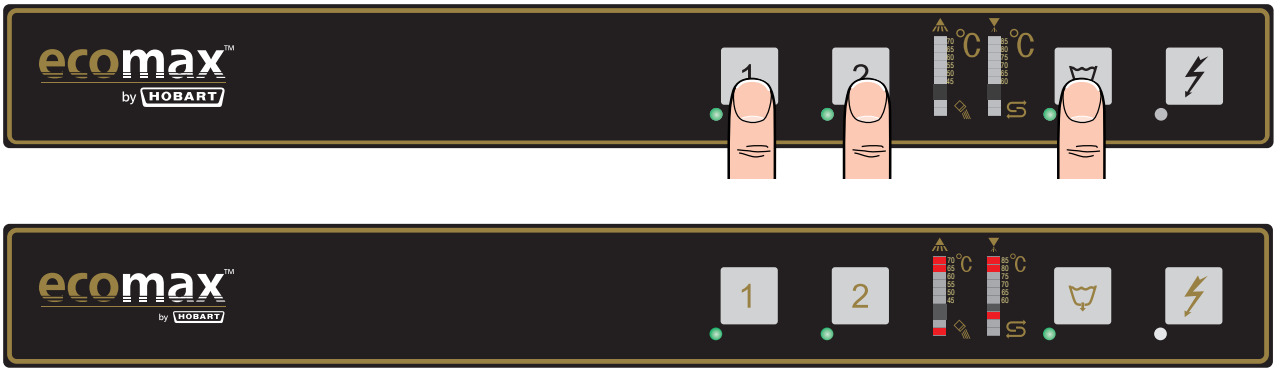
Program Number Selection Program number:			**Program Number**	**Machine Type**
11 = Ecomax 402S-10/-12/-20	H19	H29	**10**	Ecomax 402-20
12 = Ecomax 612-40/-41	H18	H28	**09**	Ecomax 402-10/-12
13 = Ecomax 702-10	H17	H27	**08**	Ecomax 502S-10/-12/-20
	H16	H26	**07**	Ecomax 502-20/452-91
	H15	H25	**06**	Ecomax 502-10/-12/452-90
	H14	H24	**05**	Ecomax 612S-10
	H13	H23	**04**	Ecomax 612-10
	H12	H22	**03**	Ecomax 602S-11
2. Softener Test Program	H11	H21	**02**	Ecomax 602-11
1. Program Number Selection	H10	H20	**01**	Ecomax 602-10/AM-10/AM-11

3. Machines with drain pump: overflow pipe omitted.
   Intermediate drainage according to water level, controlled by B4.
4. Initial booster fill procedure changed (hood/door must be closed).

– **Machines without drain pump:** Overflow pipe must be inserted.
– The initial booster fill is automatically carried out when the machine is switched on for the first time. The fill valve is activated until:
  - For machines with **pressure booster**: The ready level of the **wash tank** is reached (measured by pressure transmitter B4).
  - For machines with **rinse pump**: The ready level of the **booster** is reached (measured by pressure transmitter B3).
– During this procedure, the [Machine ON/STOP] button flashes in 0.5 sec. intervals.
– **During initial booster fill, the door must not be opened!**
– The switching function S03 only switches to "0" if the fill procedure runs without interruption (e.g. by opening the hood/door or switching off the machine).
– As soon as S03 switches to "0", the actual filling of the machine begins.

5. In Service Mode, the wash and rinse temperatures can be changed.
   - Requirements: Machine OFF and Hood/Door open.
   - Press both program buttons and drain button for 3 sec. to enter Service Mode.

12.2 TEMPERATURE MODIFICATION



☞ CLOSE the hood/door.

☞ Push program button [1] five times until LEDs H10-H15 briefly light up to enter the menu item "Temperature Settings".

6. Temperature setting 5. Test mode operation unit (BAE) 4. Switching functions 3. Initial booster fill activation 2. Output control 1. Input signals	H19 H18 H17 H16 H15 H14 H13 H12 H11 H10	H29 H28 H27 H26 H25 H24 H23 H22 H21 H20

TEMPERATURE SETTING (F02 AND F05): (LEDs H12-13 and H22-23 on)

The LEDs show the current setting for F02 (>60°C) in the wash temperature display and F05 (>80°C) in the rinse temperature display.

Tank Temp. B2 all models		Booster Temp. B1 all models except -702	
F02= >70°C	H19	H29	F05= >85°C
F02= >65°C	H18	H28	F05= >80°C
F02= >60°C	H17	H27	F05= >75°C
F02= >55°C	H16	H26	F05= >70°C
F02= >50°C	H15	H25	F05= >65°C
F02= >45°C	H14	H24	F05= >60°C
--------	H13	H23	--------
--------	H12	H22	--------
--------	H11	H21	--------
--------	H10	H20	--------

☞ To change the setting of the **wash** temperature, push program button [2].

☞ To change the setting of the **rinse** temperature, push the [Drain/OFF] button.

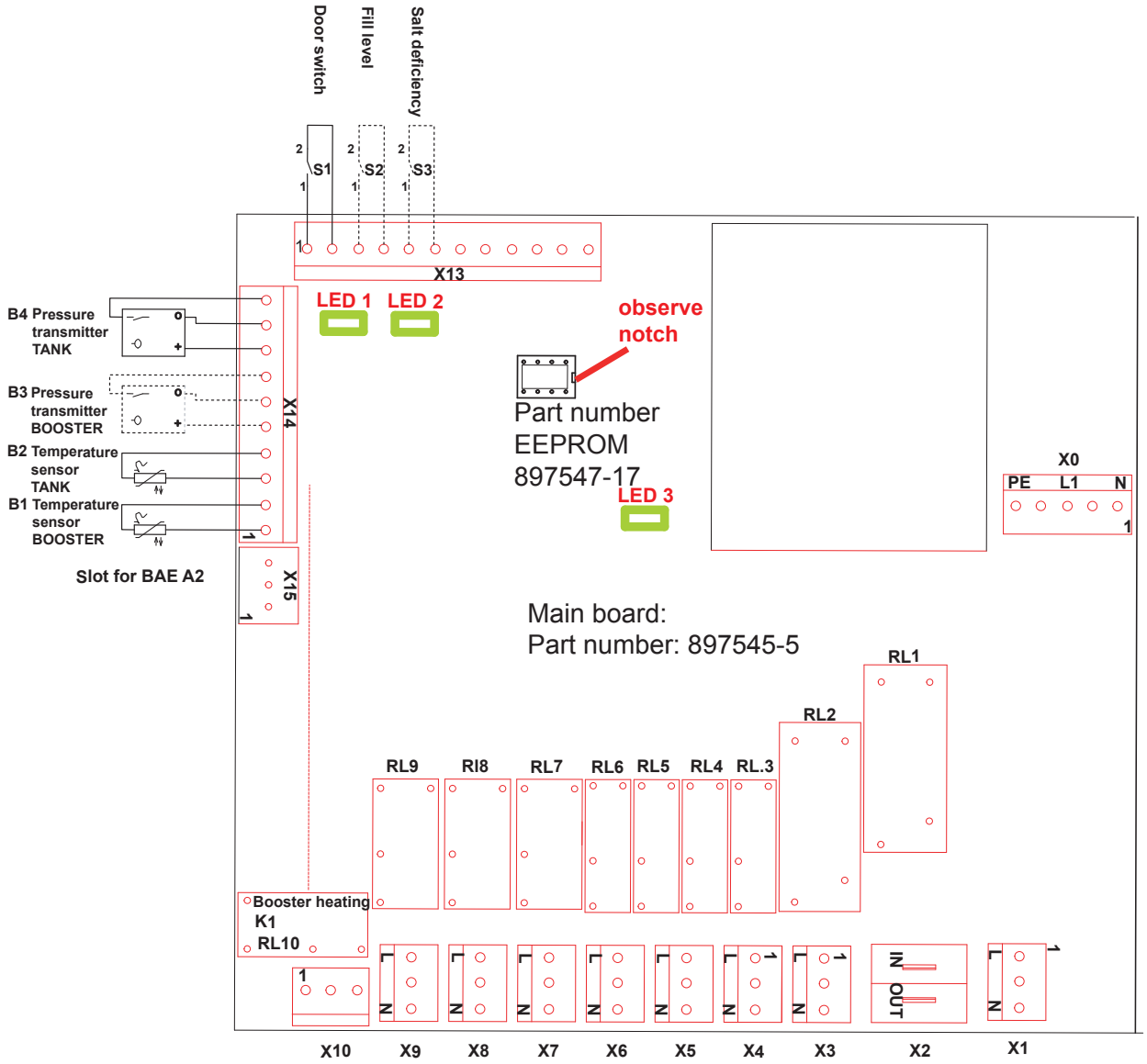
By repeatedly pushing the button, the LEDs switch to the next setting. If the current setting is identical to the saved setting, the respective LED illuminates permanently. If the settings are not identical, the LED flashes "ON" and "OFF" in 0.5 sec. intervals.

☞ Push and hold [Machine ON/STOP] button for 3 seconds to save both settings.
The LEDs now illuminate permanently.

12.3 CHANGES ON THE CIRCUIT BOARD

Installation of circuit board with two additional LEDs (LED 1 / LED 2)

NOTE:
PCB 897545-**5**: PCB with new part number and larger memory.
PCB 897545-**1**: can also be used.
PCB 897545-**3**: **cannot** be used **in combination** with **EEPROM 897547-17.**



LED 1 *door function:*	*off*	*= door/hood open (low signal)*
	on	*= door/hood closed (high signal)*
LED 2 *impulse sensor function:*	*on*	*= high signal from impulse sensor*
	off	*= low signal from impulse sensor*
	flashes quickly	*= impulse sensor works correctly*
LED 3 *processor function:*	*flashes*	*= voltage supplied, processor running*
	on	*= voltage supplied, processor not running*

NOTE:
After the processor is running (LED 3 flashes), please load the correct program number.

NOTES

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