



Electrolux

SERVICE MANUAL FABRIC CARE

FOR INTERNAL AND PARTNERS USE ONLY

© ELECTROLUX HOME PRODUCTS

Consumer Service - EMEA

WASHING MACHINES FRONT LOADED
Module

AutoDose



EN

Publication number

599 83 10-08

Edition: 06/2019 - Rev. 00

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1 PURPOSE OF THIS MANUAL

The purpose of this Service Manual is to provide Service Engineers who are already familiar with the repair procedures with information regarding:

Washing machines

fitted with **EWX14** electronic control systems and **AutoDose**.

The document no. **599.815-348** describes the basic functional concepts of all User Interface types designed for:

▲ **POne**

▲ **Diamond**

For each aesthetic level, according to buttons/lights layout, specific electronic boards are provided.

Such boards are separated from the main power board that controls the appliance and communicates with it by means of MACS serial protocol.

The compatible main boards are based on:

PCB	EWX11	EWX13	EWX14
UI	POne		✓
	Diamond		✓

The manual deals with the following topics:

- Technical and functional characteristics

DOCUMENT REVISIONS

Rev.	Date	Description	Author
00	06/2019	Document creation	Marcin Pluta

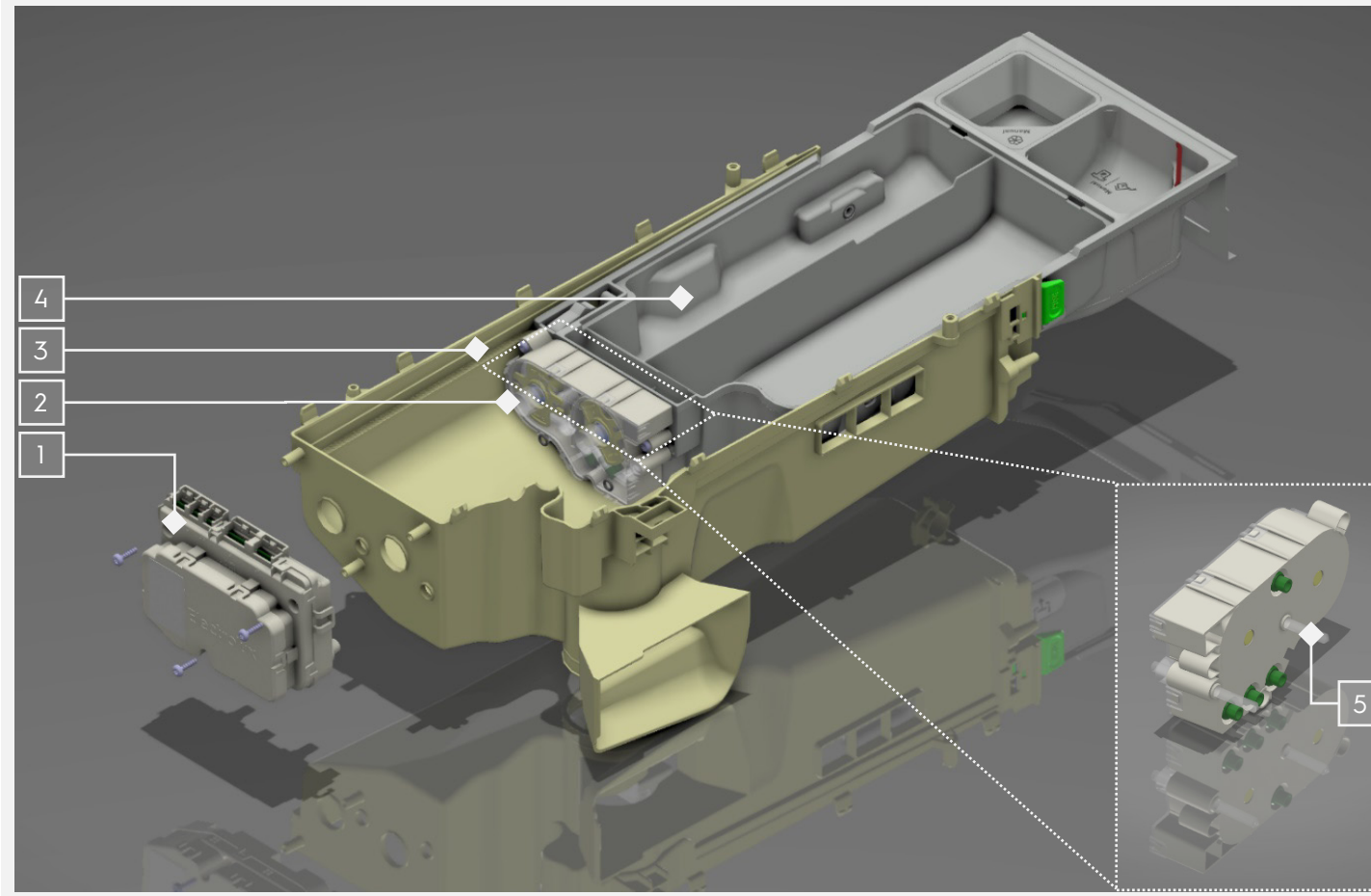


Safety

- All the work to be performed inside the appliance requires specific skills and knowledge and may only be carried out by qualified and authorised Service Engineers
- This platform is not fitted with an ON/OFF switch.
Before you access internal components, take the plug out of the socket to disconnect the power supply.
- Some of the components in the mechanical part could cause injuries, so wear suitable protection and proceed with caution.
- Always empty the appliance of all the water before laying it on its side.
- If the appliance has to be placed on its side for maintenance or another reason, lie it on its left side, to avoid the risk of any residual water falling onto the main circuit board.
- Never place the appliance on its right side (electronic control system side): some of the water in the detergent dispenser could leak onto the electrical/electronic components and cause these to burn.
- When replacing the heating element, replace it with one that has the same characteristics (2 thermal fuses) in order not to compromise the safety of the appliance.
NEVER remove/ switch the NTC sensors between heating elements.

3 TROUBLESHOOTER

3.1 QUICK GUIDE OF AREAS TO CHECK



- 1 Motor module
- 2 Pump module
- 3 Housing assembly
- 4 Drawer
- 5 Light guide



Related document



Service Manual 599 83 09-55

To check electrical components functionality, go into **Service Mode**.



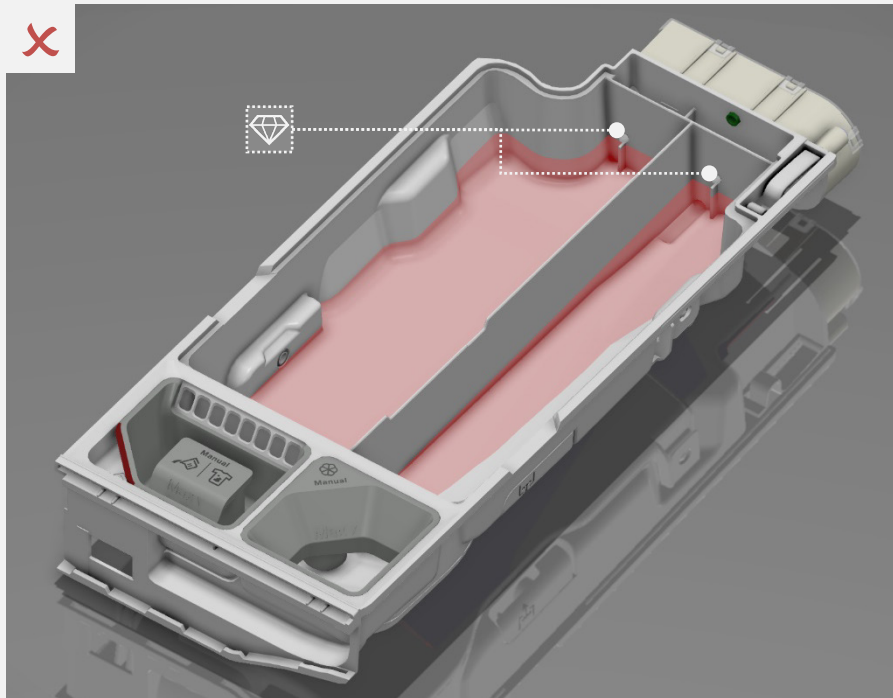
Areas to check

- 1 Reserve sensor / light guide functionality
For the software the tank is "empty" until detergent reaches the **optical prism level** of the reserve sensor
- 2 Failures on motors / pumps
Inspect visually if the **pump** module is **clogged**
Jellification or **solidification** of liquid **detergent** inside the **tanks**
- 3 Drawer open / close sensor functionality
Close the drawer **firmly** and check if the appliance is giving an error

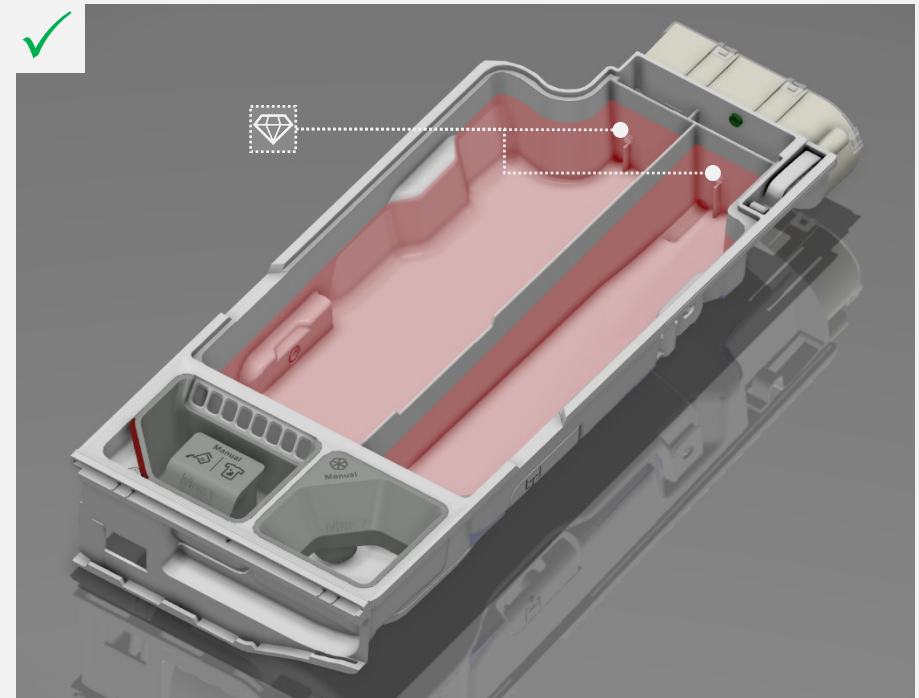
1 Light guide

optical prism 

Detergent level

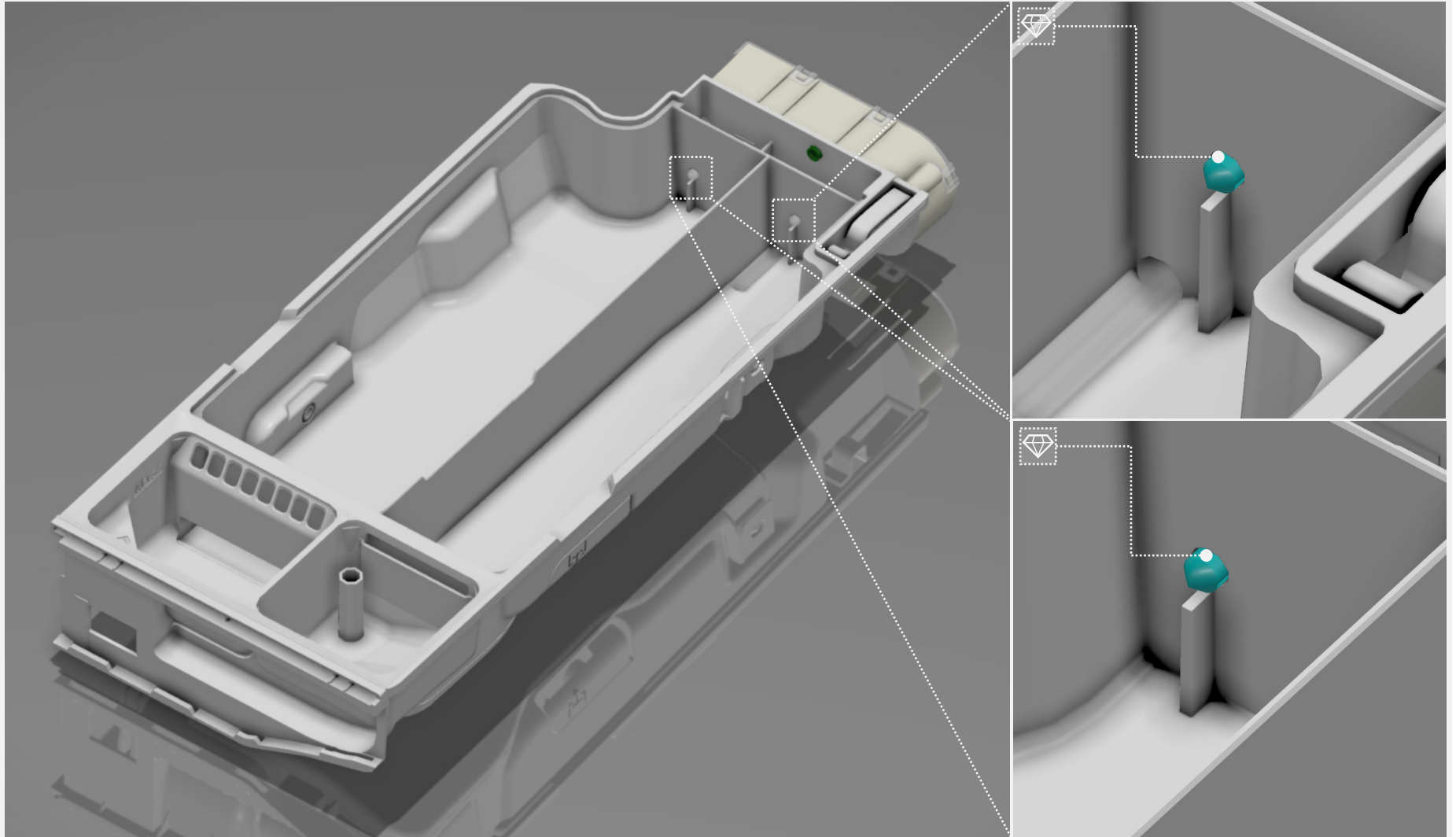


"EMPTY"



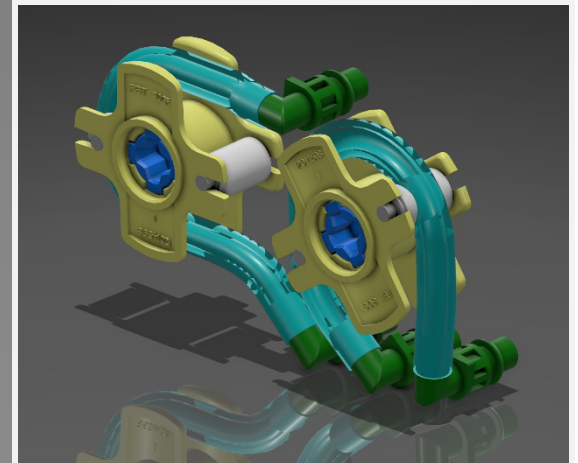
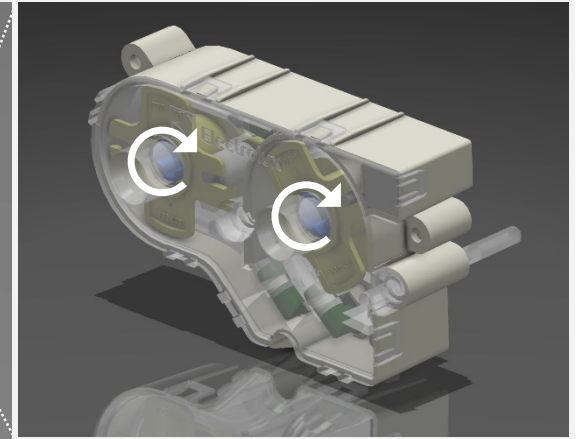
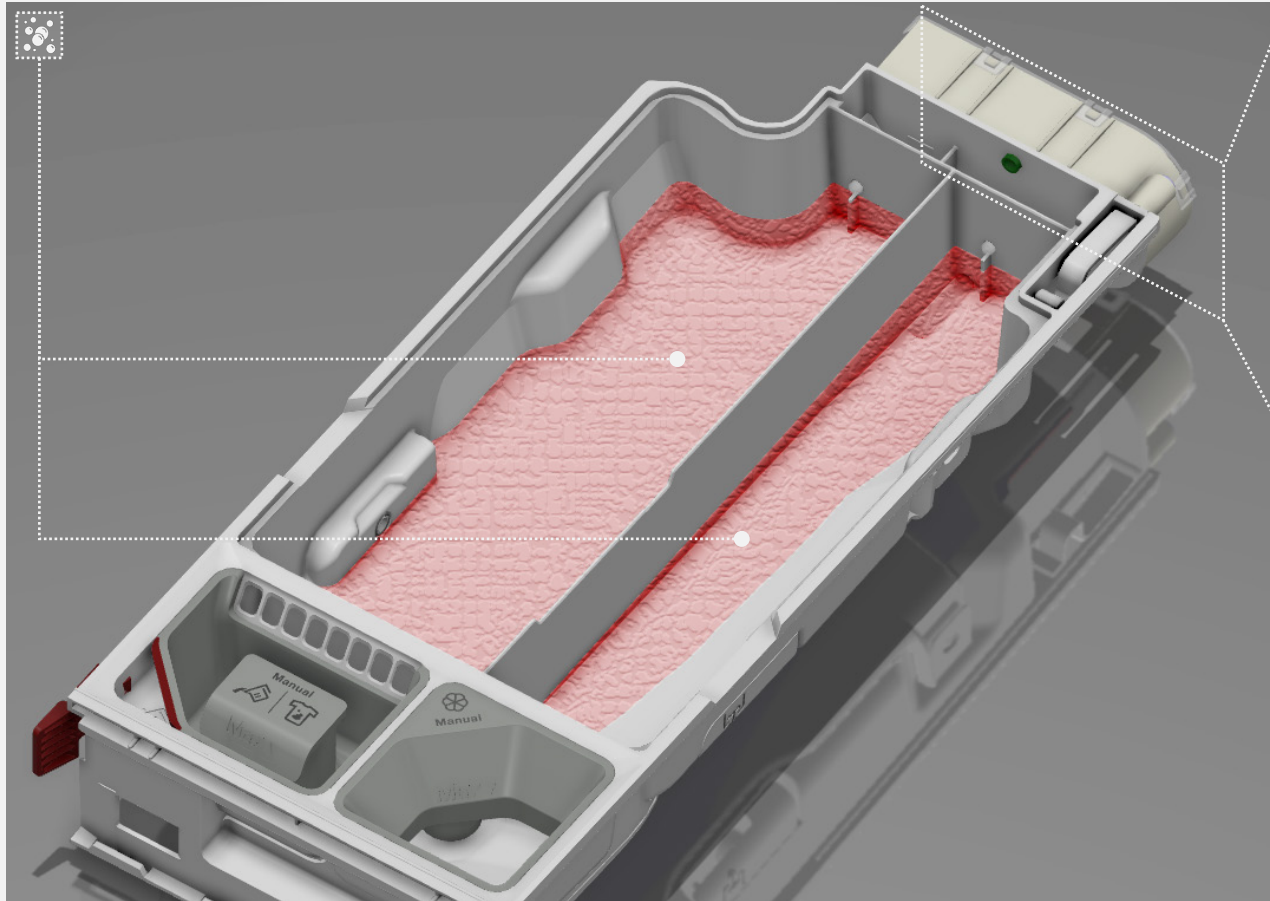
"FULL"

● Light guide defective




The **optical prism** will not work if gets **deep scratches**. That might happen if the Consumer was not careful enough during the drawer cleaning and for instance used a scrubbing sponge.

● Pumps blocked

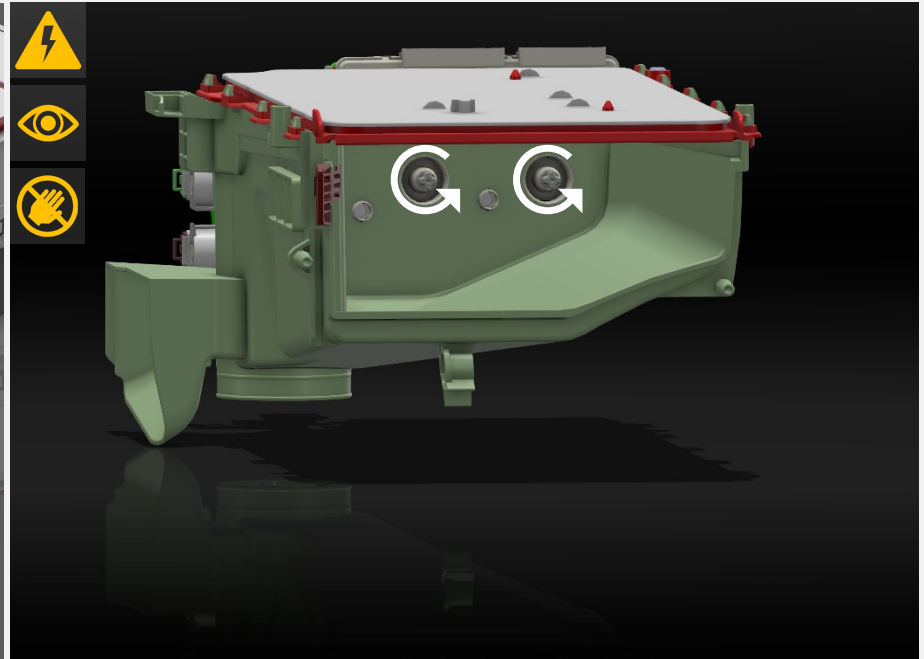
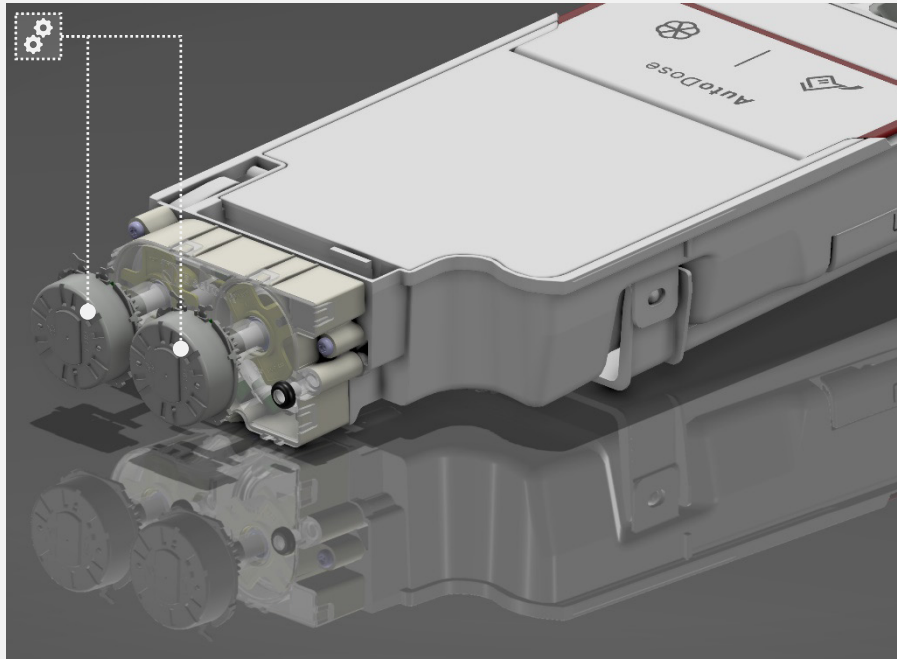


Inspect visually if the **pump** module is **clogged**.

If the **liquid detergent** undergoes **jellification** or **solidification** process inside the **tanks**, it will **not** be **pumped**.

 jellification or solidification process

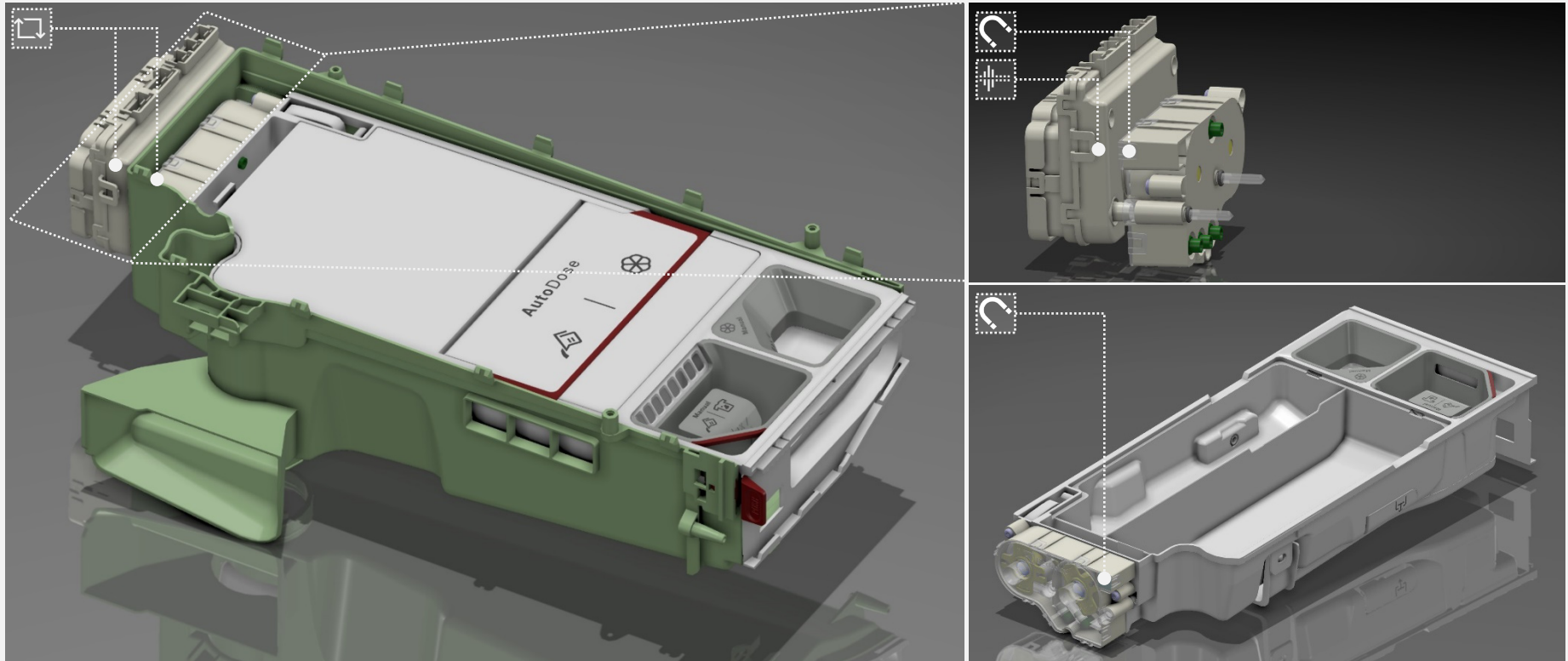
● Motors faulty



During the Auto-Dosing test in the **Service Mode** extract the drawer to see if the **pump shaft** is **rotating**.

3 Open / close sensor


● Drawer not properly closed




Motor module is equipped with a PCB that contains drawer position sensor.

If the drawer is not properly closed, the magnet placed on pump module is not close enough to the sensor.

The appliance will not start and give a warning by a string "OFF" blinking on the UI.

 connection established

 reed switch



Wrong detergent dosage

Not dosing

If the appliance seems **not dosing** a detergent it might be a **wrong settings**, for instance if set to 55ml for a load of 3kg it will dose 25ml.

This change of detergent volume in a drawer might be hardly noticed.

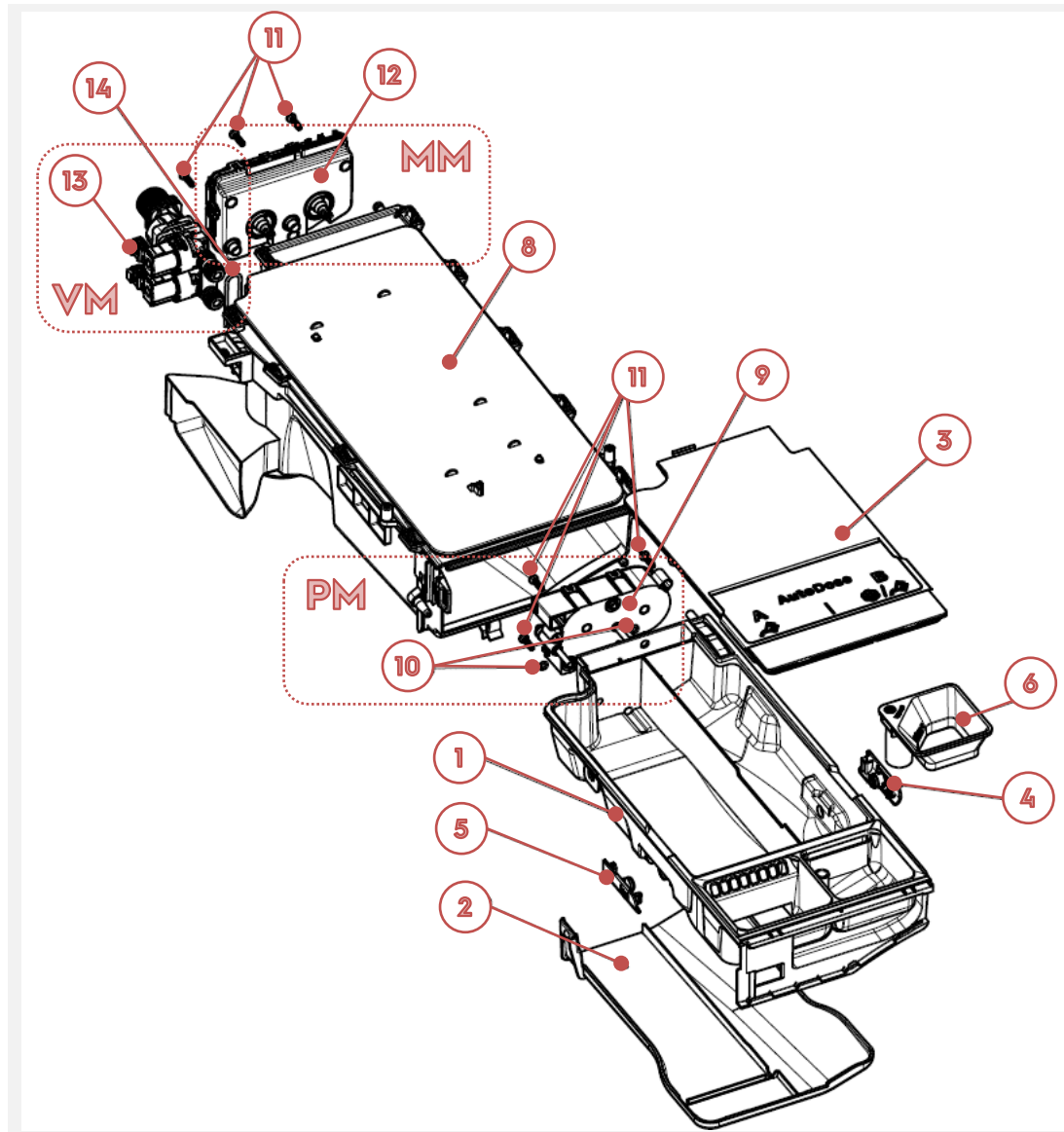
Overdosing / Foaming

If the appliance is consuming too much detergent or the **foaming** phenomenon is observed, then the **dosage** is set **too high** then.

4 AUTODOSE SYSTEM

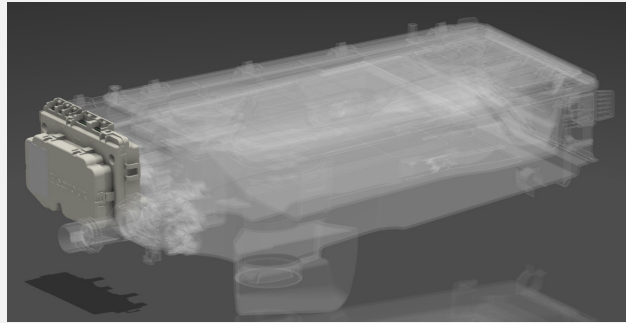
4.1 EXPLODED VIEW

This specification has for its object all AD for household washing appliances in order to have an automatic detergent dosage

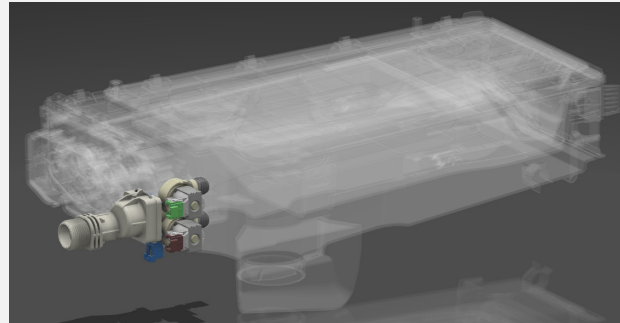


1	Drawer
2	Drawer lower conveyor
3	Drawer cover & lid
4	Drain plug right
5	Drain plug left
6	Additive siphon
7	Liquid box assembly
8	Detergent dispenser housing & conveyor
9	Pump module
10	Light guide O-ring
11	Screws pump & motor module
12	Motor module
13	Valve module
14	Valve fixing spring
MM	Motor Module
VM	Valve module
PM	Pump Module

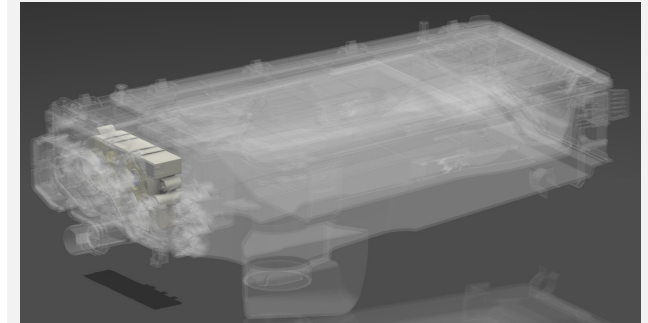
Motor Module



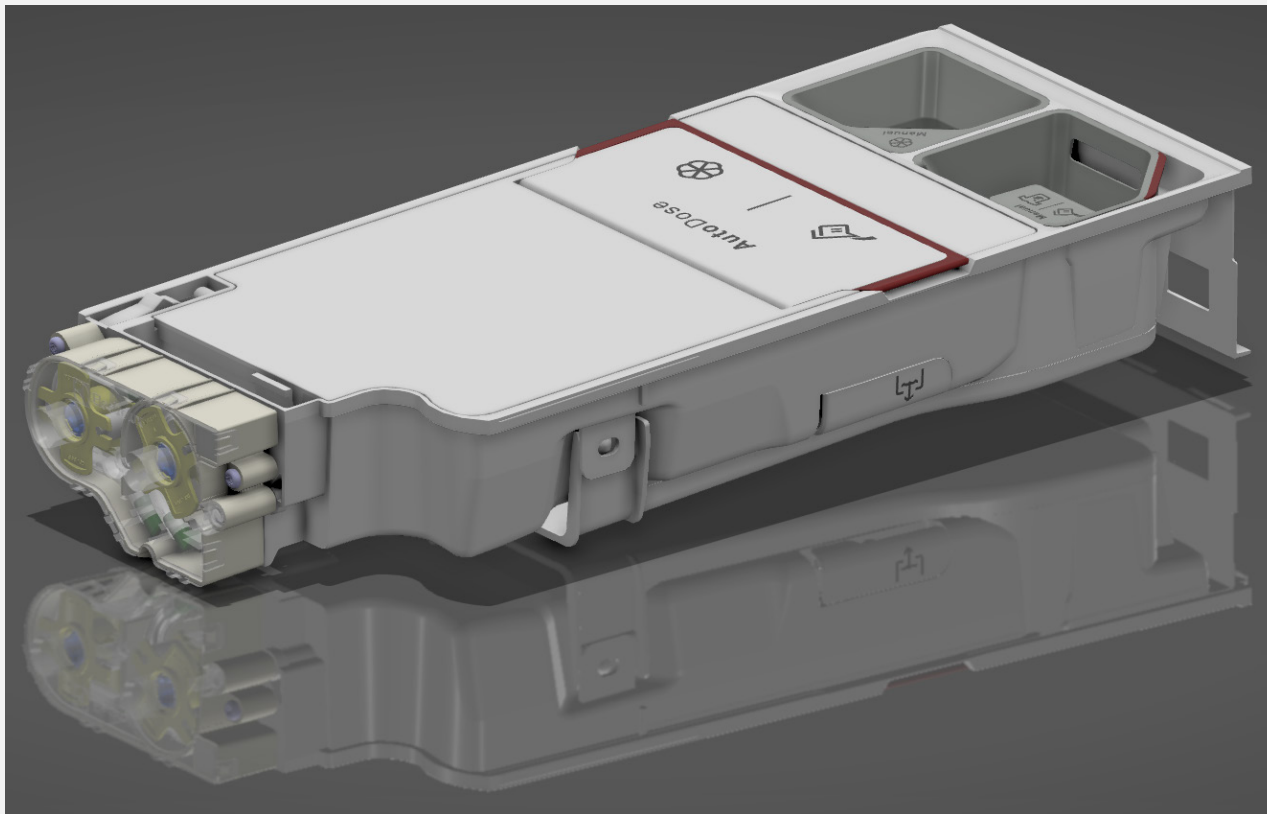
Valve module



Pump Module



Pump Module + Asmy Drawer



4.2 WORKING AREAS



Cleaning

The drawer can be removed for cleaning, all parts are washable because there aren't any electrical parts.

A Autodose area

M Manual area

AD functional areas

Manual area

- with the functionalities of normal detergent dispenser
- can manage liquid DT in the liquid box, powder DT removing the liquid box, Softener or rinse additives in the softener chamber

Autodose area

- composed by two DT storage tanks
- can be filled by **liquid DT only**, with different types
- tanks have several functionalities for management:
 - A&B with two different DT, e.g. classic wash DT & Wool DT
 - wash DT & Softener
 - or same DT in both tanks for long charge function

Autodose and Manual can be used combined to manage special functions as main wash (tank) + whitening powder additive (manual chamber), stain removal (liquid or powder) or softener if in the second tank is filled with other DT.

5 TECHNICAL AND FUNCTIONAL DESCRIPTION

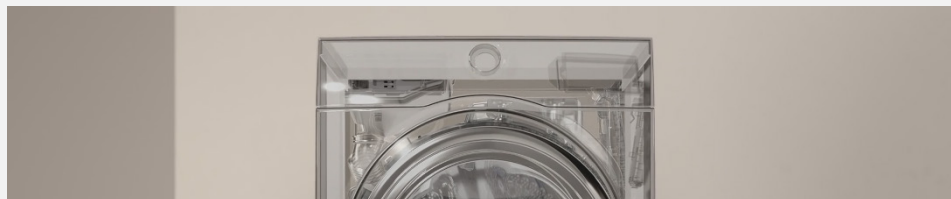
5.1 WORKING PRINCIPLE



Fill up the AutoDose drawer with 1.0L of liquid detergent



And 0.5l of softener, enough for approximately 20 washes



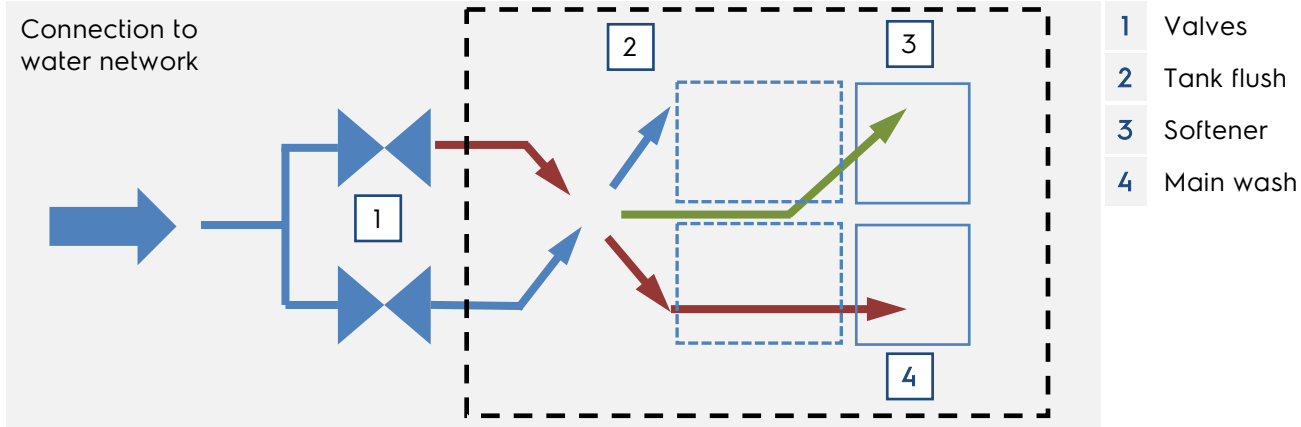
After the size of the load is detected



Then, optimal amount of detergent and softener is calculated and quickly released

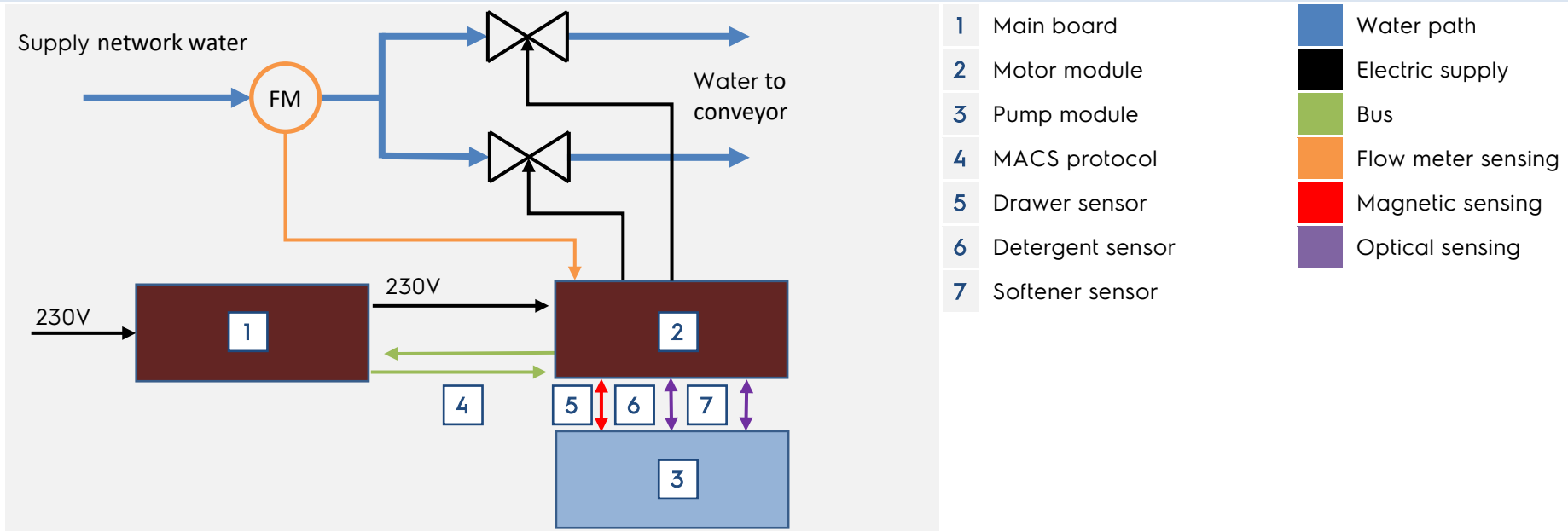


5.2 HYDRAULIC SCHEME



- Cold water Electro-valves have **5.5l/min** nominal **flow rate**, please refer to the official drawing for more details
- Hot EV is not foreseen in the application

5.3 ELECTRIC AND ELECTRONIC SCHEME



5.4 MAIN FUNCTIONALITIES

The AD module will deliver the washing products in automatic or manual way to the washing machine tub. Also combination of both can be possible (manual and automatic)

The automatic or manual dosage is related to the user setting managed by user.

Basic AD functionality

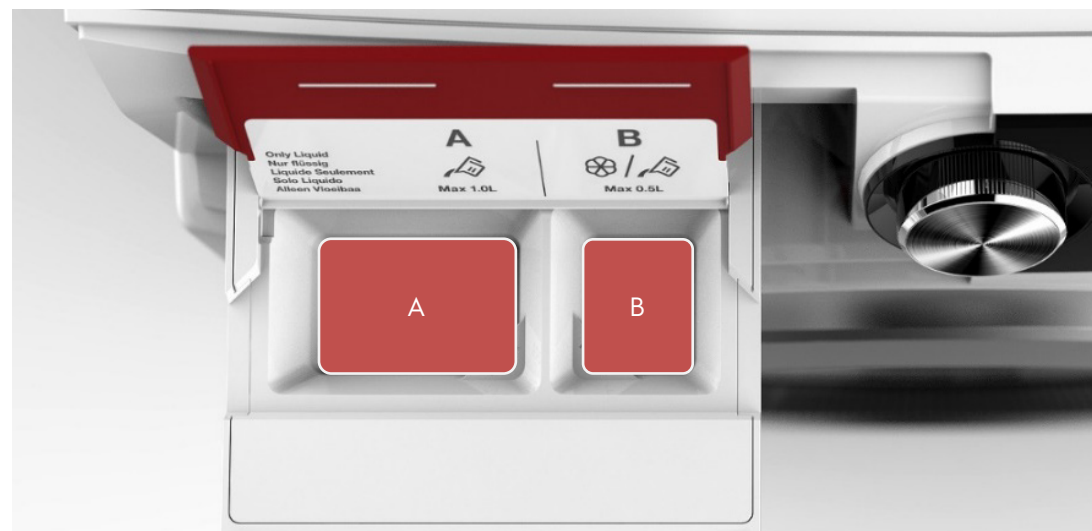
▪ Dosing

Automatic detergent to dose is calculated by load weight estimated by the motor.

For fabric softener the dose amount is fixed and is the same set by the user.

Default Settings [ml]		User Set LIMIT [ml]	
		MIN	MAX
Detergent	A	90	200
	B	90	
Softener	B	25	100

The machine will dose a minimal amount of a detergent and a set amount of a fabric softener (for instance 25ml) if a cycle with AD ON is run with an empty drum.



- **Water management detergent loading**

- ▲ **Preload** of water is managed before the detergent dosing
- ▲ **Detergent dosing** is managed after the load detection.
- ▲ **Detergent loading** and fabric softener is delivered in one single shot (including also possible extra-dose setting provided by the user)
- ▲ **Water loading** and refills are managed after the detergent loading completion.
- ▲ **Manual or automatic detergent dosing** operation is detected by the machine based on the user settings
 - If both or one of the tanks are switched OFF by the user machine will work in Manual way including the electrovalves settings
 - If both or one of the tank are switched ON by the user machine will work in automatic way including electrovalves setting (see below)
 - Mixed situation Manual + automatic will managed in the same way
 - Prewash is managed in the same way (if manual prewash is dosed by the user directly into the drum)
 - Link tank mode is managed in the same way



AD	Autodose area
MA	Manual area

▪ Summarized possible common use cases setup coming by user setting

#	Drum	1	2	A	B
1				Main Wash	Softener
2			Softener or Rinse Additive	Main Wash	-
3		Intensive	Softener or Rinse Additive	-	Main Wash (APP)
4				Main Wash	Softener
5			Softener or Rinse Additive	Main Wash	-
6			Softener or Rinse Additive	-	Main Wash (APP)
7		Main Wash / Intensive	-	-	Softener
8		Main Wash / Intensive	Softener or Rinse Additive	-	-
9		Intensive	-	Pre-Wash / Main Wash	Softener
10		Intensive	-	Pre-Wash / Main Wash	Softener
11		Intensive	Softener or Rinse Additive	Pre-Wash / Main Wash	-
12		Intensive	Softener or Rinse Additive	Pre-Wash / Main Wash	-
13	Pre-Wash	Main Wash / Intensive	-	-	Softener
14	Pre-Wash	Main Wash / Intensive	Softener or Rinse Additive	-	-
15			Softener or Rinse Additive	Main Wash (APP)	
16		Intensive	Softener or Rinse Additive	Main Wash (APP)	
17		Intensive	Softener or Rinse Additive	Pre-Wash / Main Wash (APP)	
18	Pre-Wash	Intensive	-	Main Wash	Softener
19	Pre-Wash	Intensive	Softener or Rinse Additive	Main Wash	-
20	Pre-Wash	Intensive	Softener or Rinse Additive	-	Main Wash
21	Pre-Wash	Intensive	Softener or Rinse Additive	Main Wash (APP)	
*			Fragrance	-	-

(APP) - the option can be activated only by using APP on a mobile device (please refer to User Manual)

▪ The type of laundry products managed by the system

TANK A

- ▲ Universal liquid detergent (regular, compact, super compact)
- ▲ Colour liquid detergent
- ▲ Detergent for delicates
- ▲ Bio Eco detergent

TANK B

- ▲ Fabric softener (regular, compact)
- ▲ Universal liquid detergent (regular, compact, super compact)
- ▲ Colour liquid detergent
- ▲ Detergent for delicates
- ▲ Detergent for wool (not in A tank)
- ▲ Bio Eco detergent

MANUAL 1

- ▲ Universal liquid detergent (regular, compact, super compact) (LIQUID BOX)
- ▲ Colour liquid detergent (LIQUID BOX)
- ▲ Detergent for delicates (LIQUID BOX)
- ▲ Bio Eco detergents (LIQUID BOX)
- ▲ Powder detergents
- ▲ Powder additives

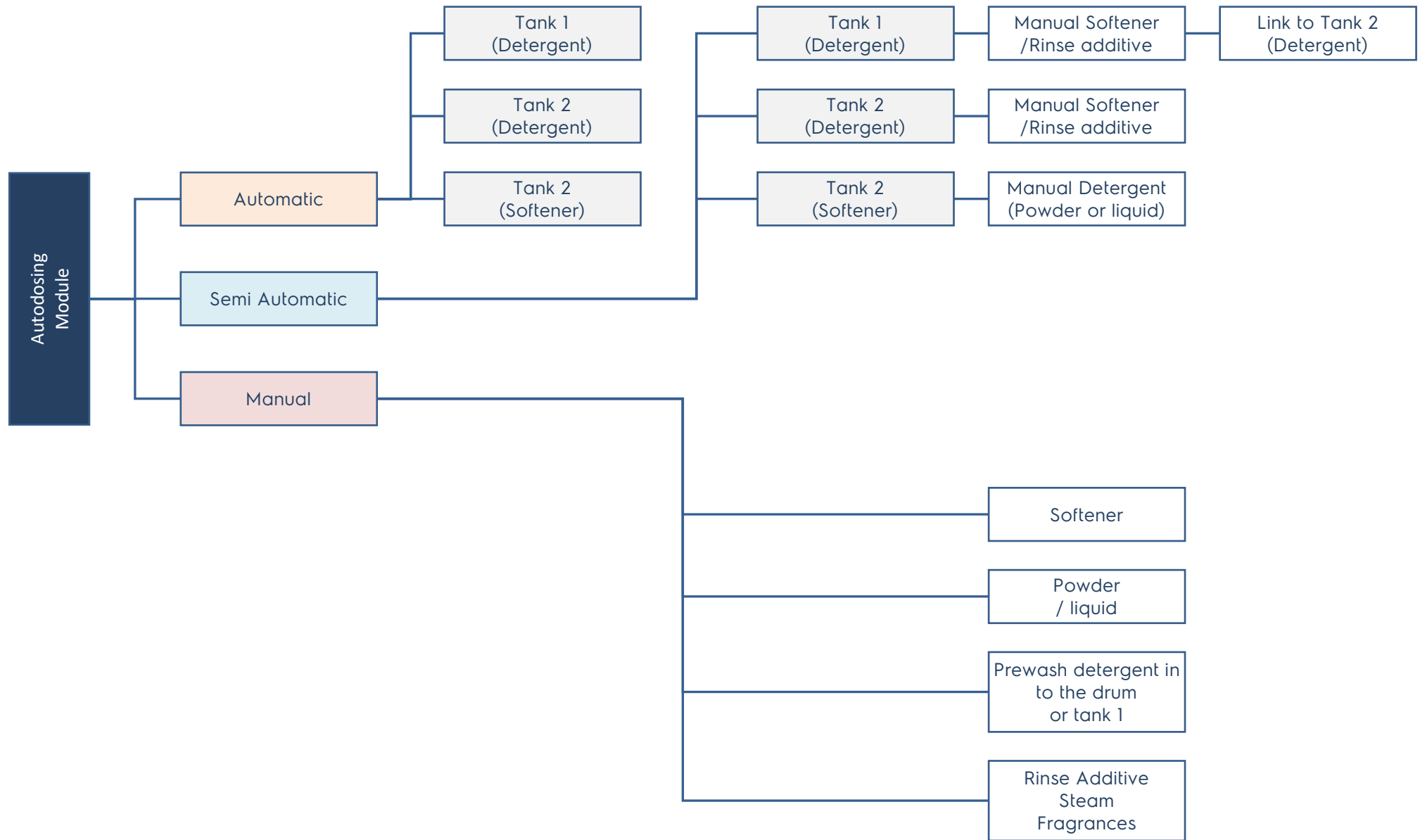
MANUAL 2

- ▲ Fabric softener
- ▲ Rinse additives
- ▲ **STEAM** Fragrances

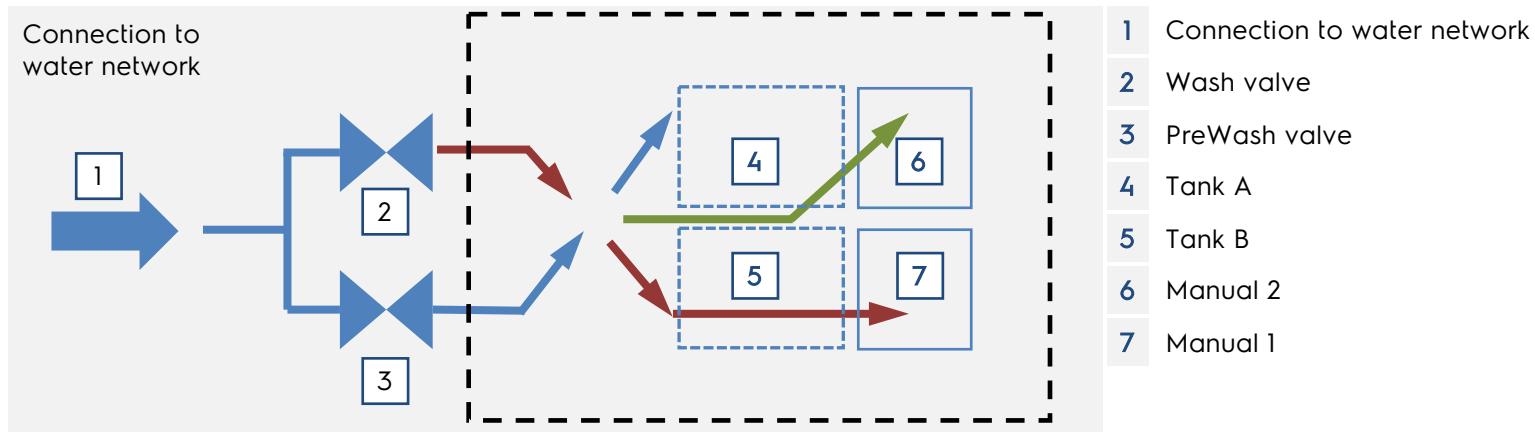
▪ **Electro valves management**

The delivery of the different products in to the washing tub is possible by the right management of the electro valves.

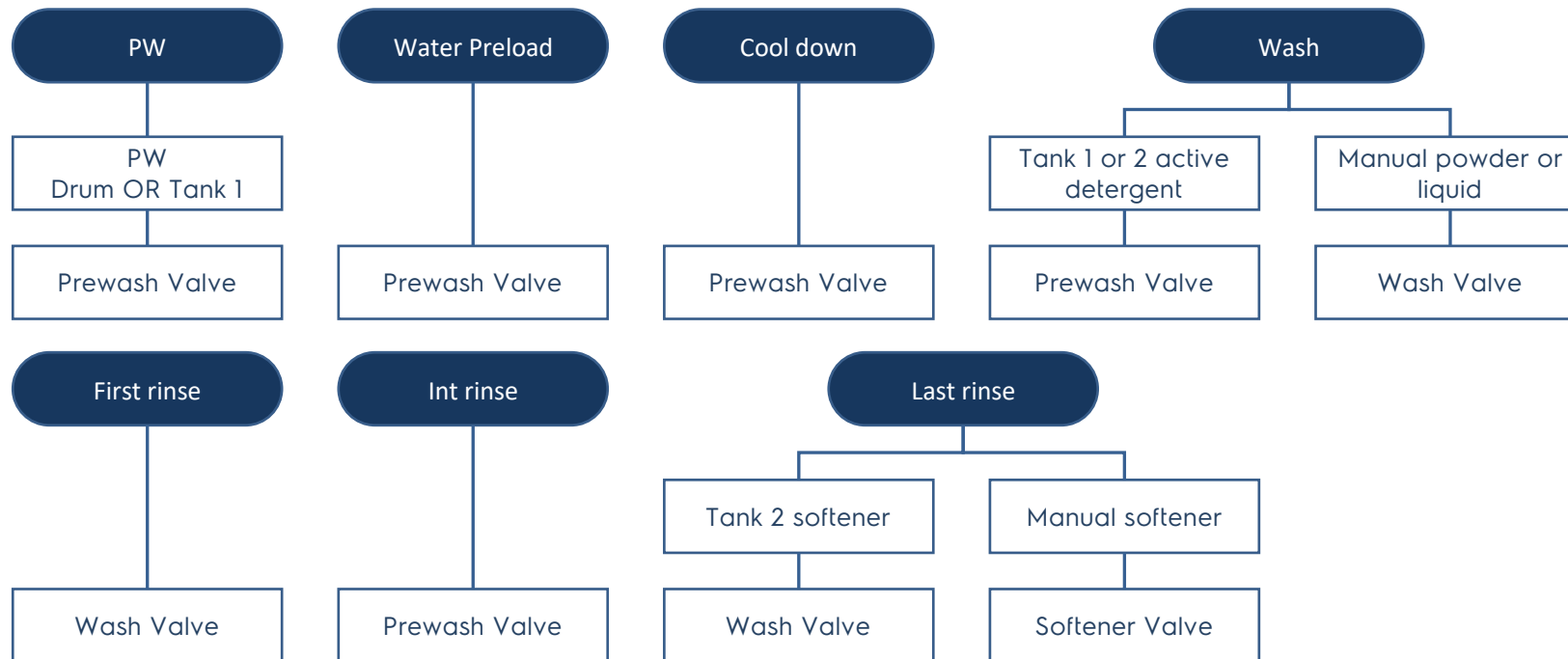
The two electro valves can manage all the possible use cases selected by the user (automatic dose, manual dose, manual + automatic dose, Intensive option).

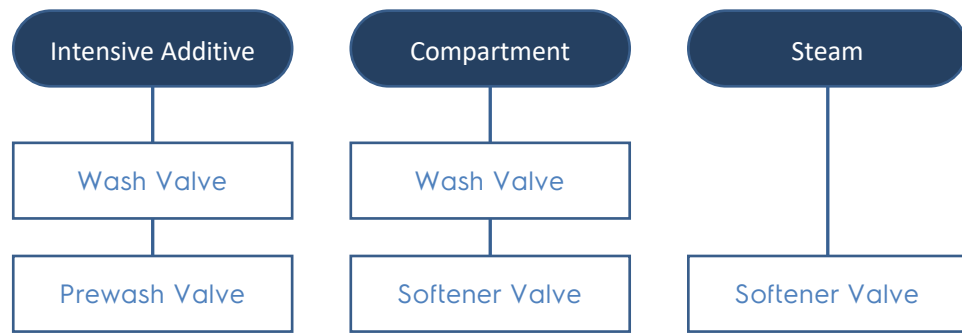


The sketch below summarize the possible water patterns possible over the cycle step and related options.



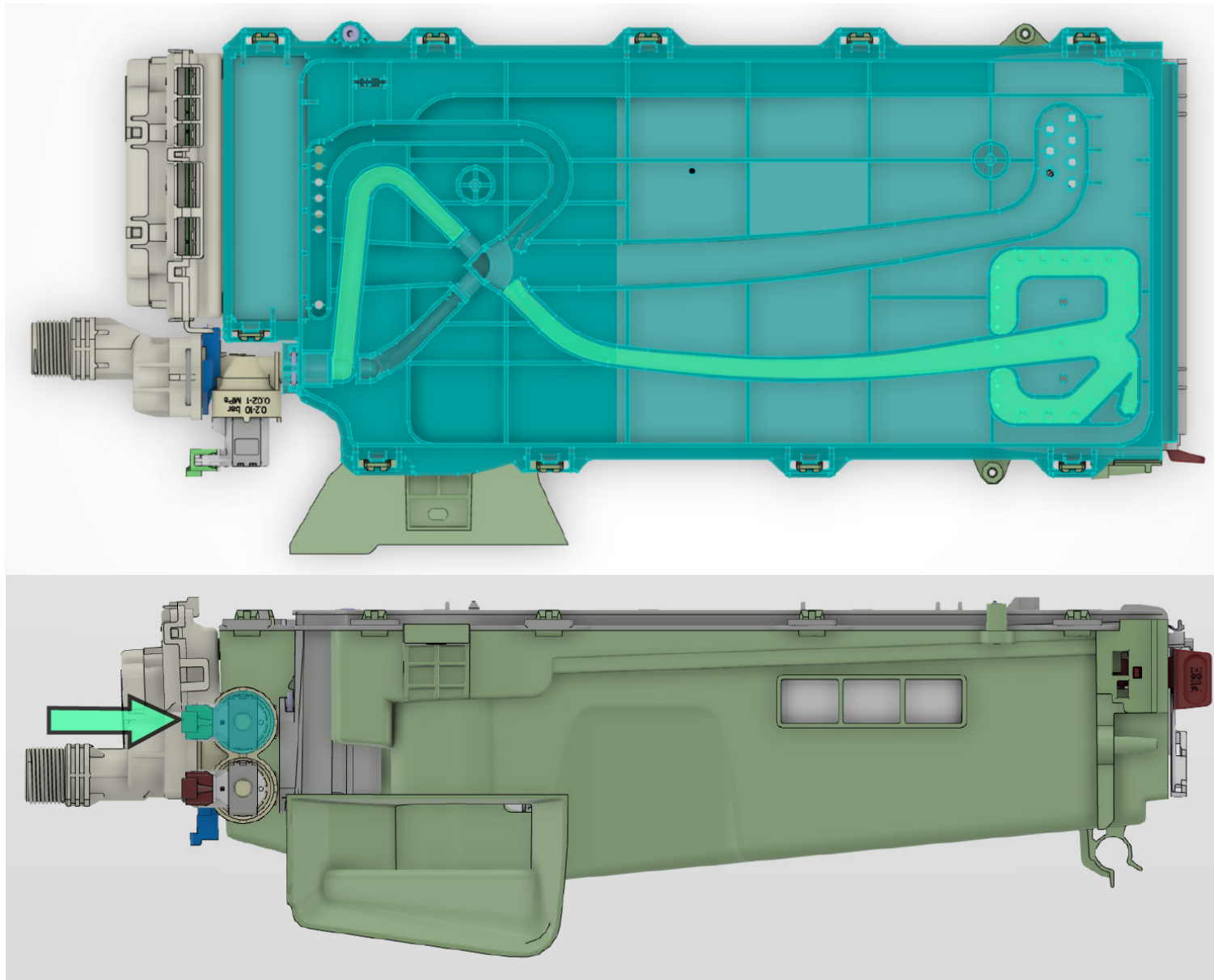
Washing cycle step and related electro valves activation



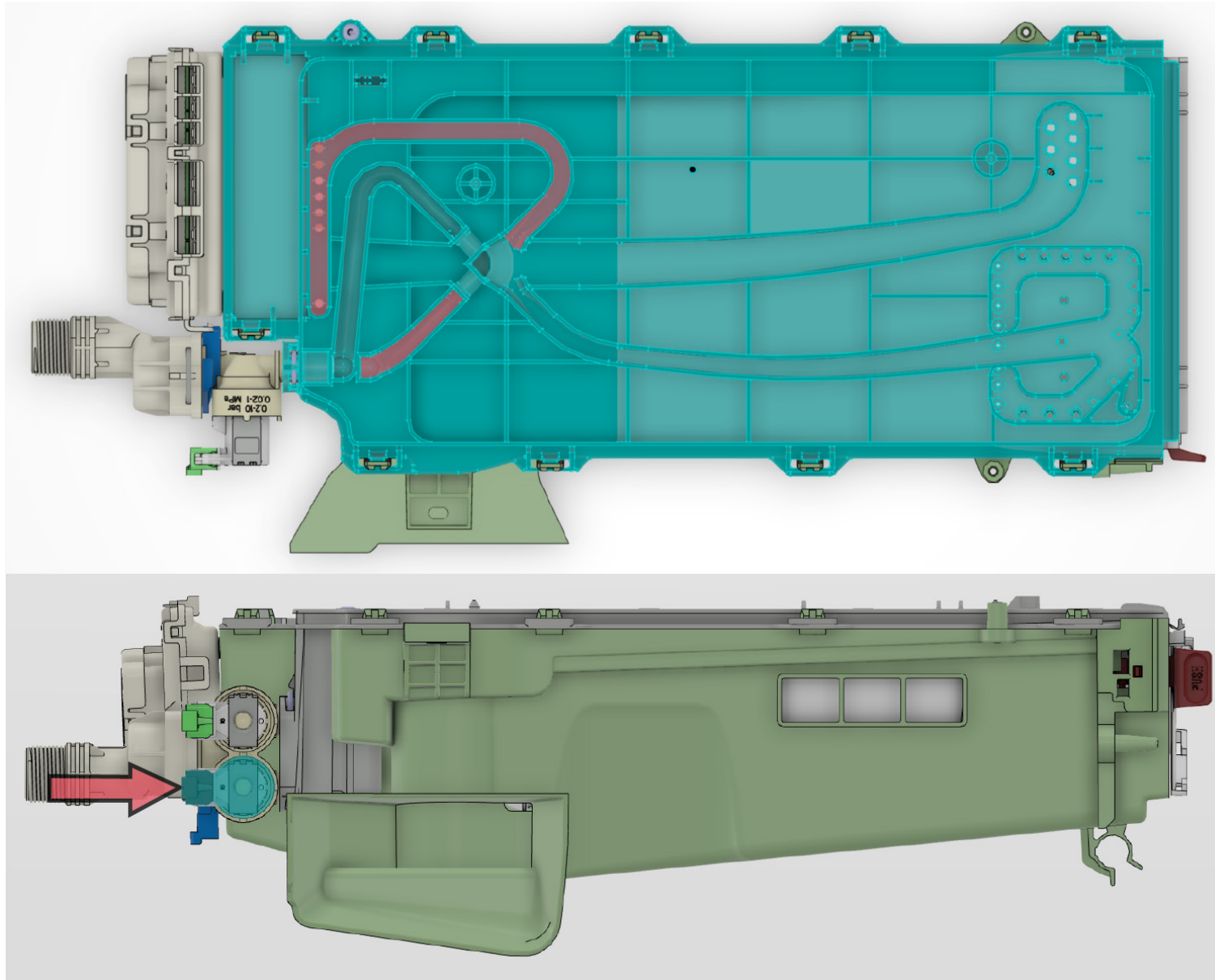


5.5 WATER INLET PATHS FROM SUPPLY NETWORK (REPRESENTATIVE ONLY)

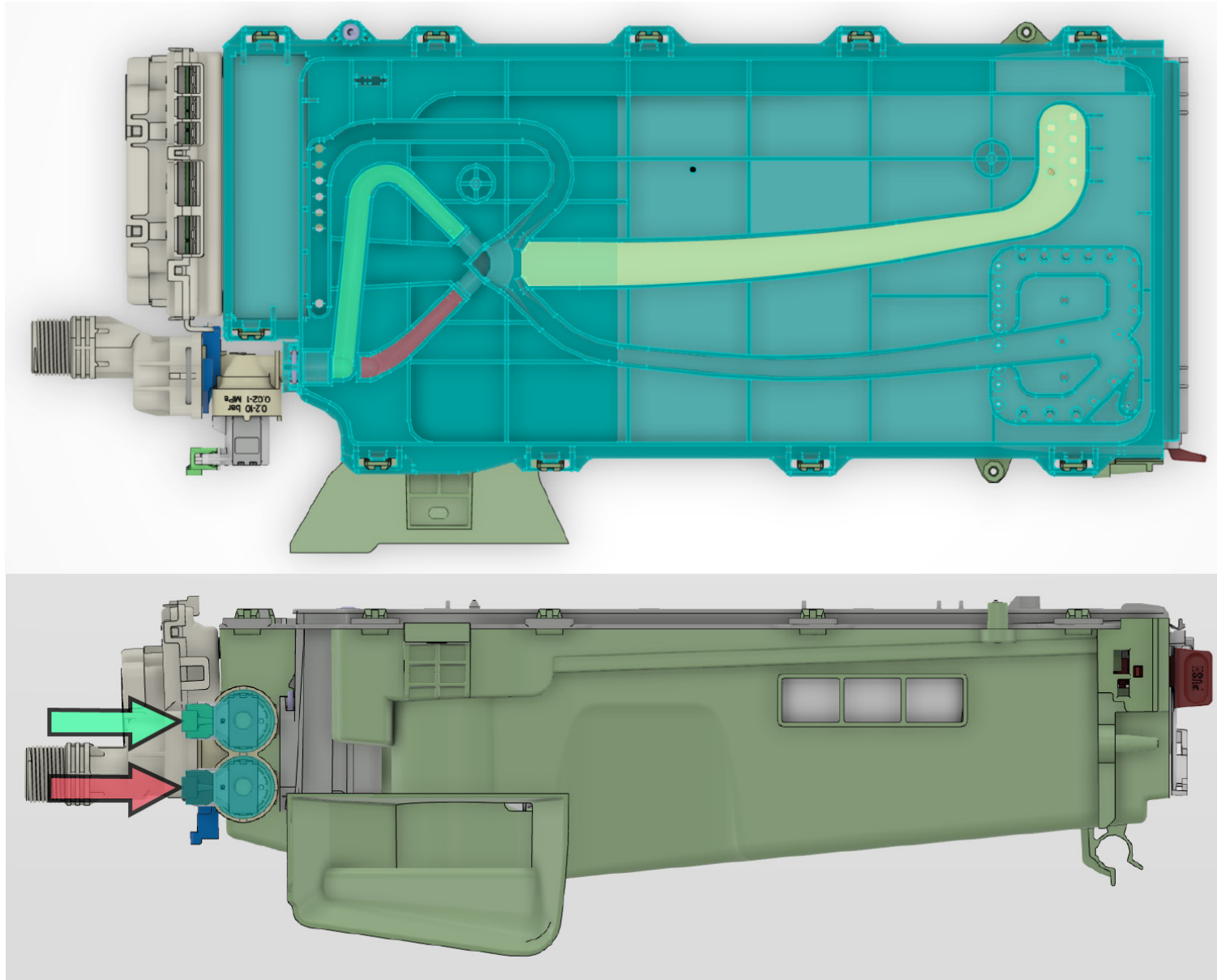
5.5.1 MAIN WASH PHASE MANUAL



5.5.2 PREWASH OR PRELOAD, AD TANKS WASH



5.5.3 SOFTENER PHASE, MANUAL



6 OPERATING CONDITIONS

6.1 STANDARD AND OPERATING CONDITIONS FOR THE APPLIANCE

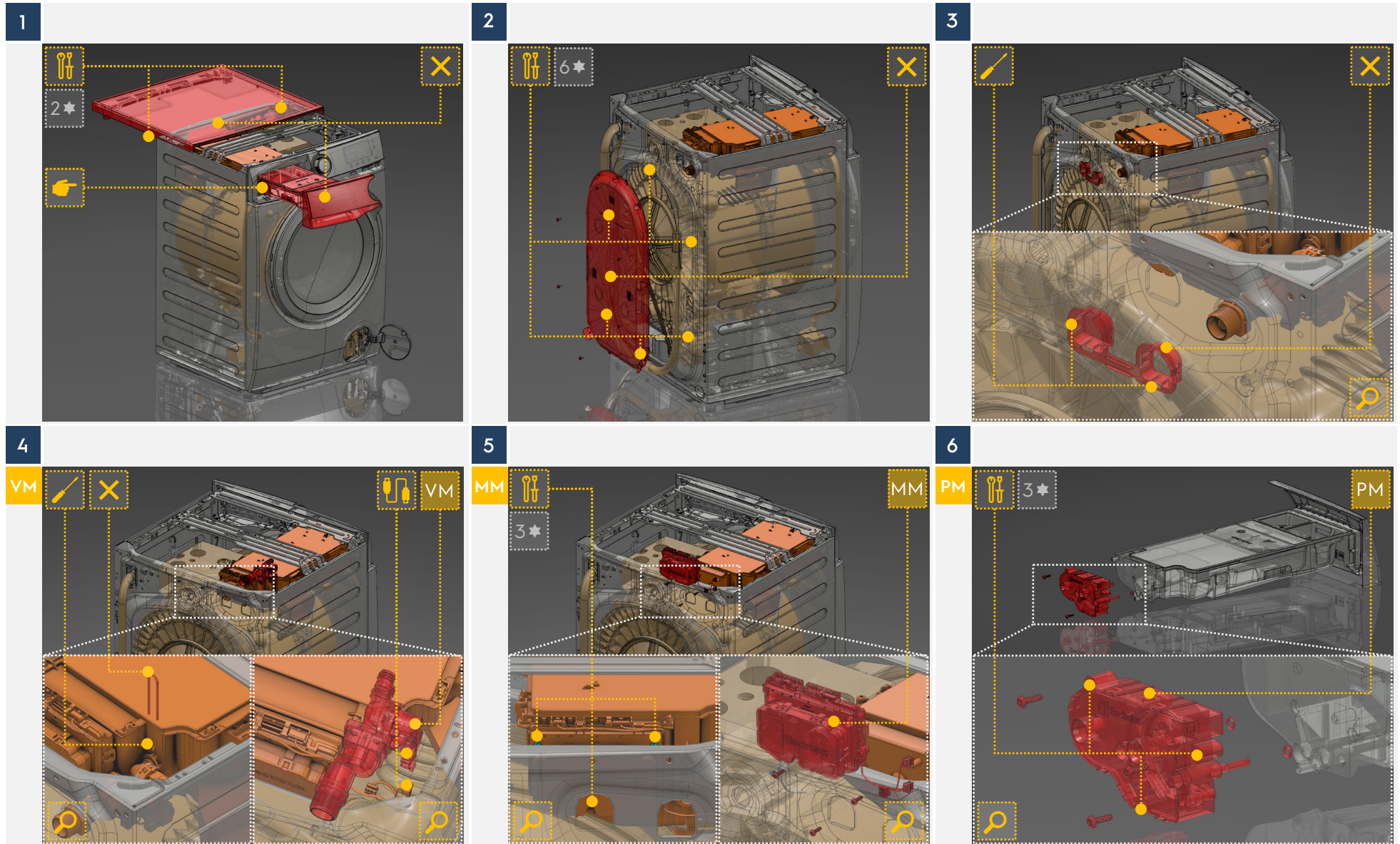
Standard conditions specify ambient, supply water and power conditions that must be withstood by the appliance, on which the component is fitted, whenever a performance test is carried out.

Physical magnitude	Unit of measure	Standard conditions			Appliance operating conditions		
		Europe range	North America range(AHAM)	Asia Pacific range	Europe Range	North America Range	Asia Pacific Range
Ambient temperature	°C	In compliance with internal documents			5÷40	5÷40	5÷40
Ambient relative humidity	%				30÷93	30÷93	30÷93
Ambient pressure	Bar	Atmospheric pressure			Atmospheric pressure		
Supply water temperature	°C	10÷20	13÷19	10÷20	2÷20	2÷20	2÷20
Supply water static pressure	Bar	1.9÷2.9	0.7÷8	1.9÷2.9	0.3÷8	0.7÷8	0.3÷8
Supply water hardness	°F	23÷27	=<5	23÷27	5÷40	5÷40	5÷40
Supply power voltage	V	In compliance with nominal values in internal documents			In compliance with working range in internal document		
Supply power frequency	Hz	In compliance with internal document			In compliance with internal document		

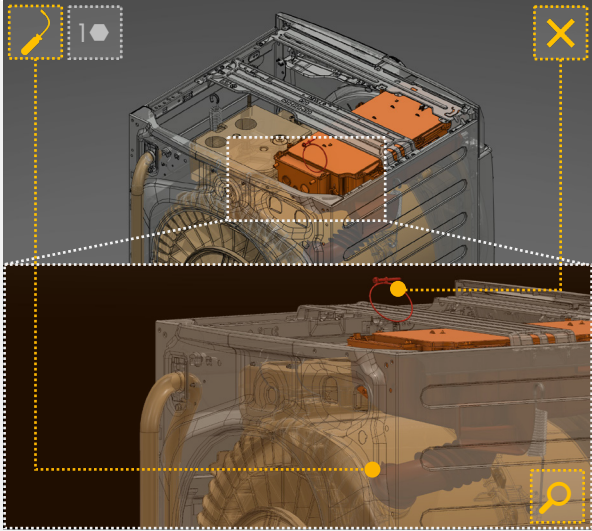
Instead operating conditions specify acceptable limits of ambient, supply water and power conditions that the appliance must be able to withstand when used in the field by the customer or whenever a not performance test is carried out.

7 DISASSEMBLY

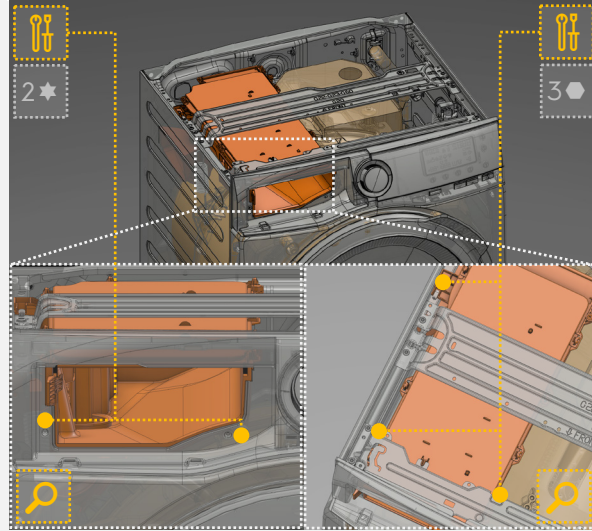
7.1 AUTODOSE



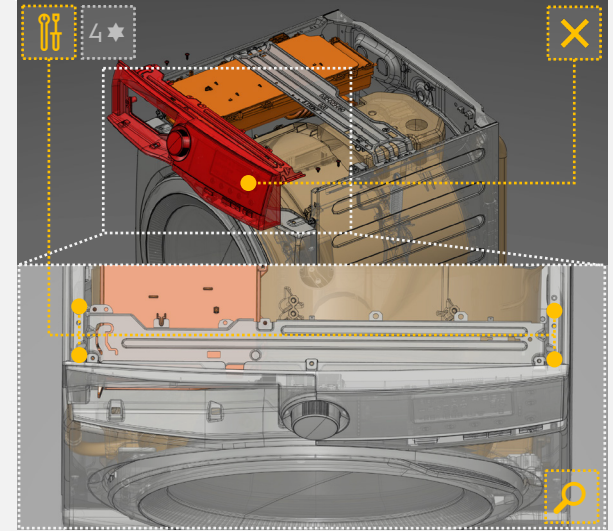
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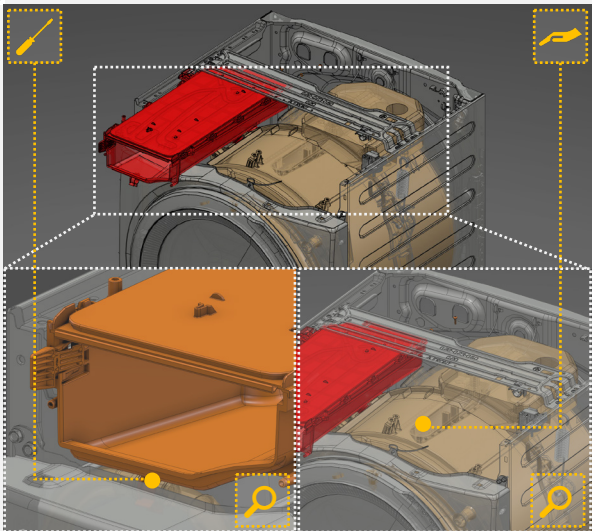
8



9



10





Icons

● Actions / tools



Unscrew



Flexible screwdriver



Unclip



Remove



Press



Push down



Disconnect



2 x Phillips/PH screw



2 x Slotted screw



2 x Torx®/Star screw



2 x Hex screw



2 x Pozidriv®/PZ



Zoom



Module name

DEFINITION OF TERMS, ACRONYMS AND ABBREVIATIONS

AB	Anti Boiling
AD	Autodose Detergent Dispenser assemblies
CCF	Cycle Configuration File
D&L	Density & Level sensors
DD	Detergent Dispenser
DDWS	Detergent Dispenser assemblies with integrated a Water Softener
DM	Diverter Motor
DSP	Digital Signal Processors
DT	Detergent
DV	DiVerter
FCV	Field Control Vectorial, generally used to indicate motor control board
FM	Flow-Meter sensor
Hard EV	Electro-Valve to load hard water in the DD
Hot EV	Electro-Valve to load hot hard water directly into the tub
MB	Main board, Motherboard
MCF	Machine Configuration File
MM	Motor Module
NIU	Network Interface Unit
NIUX	NIUX is only a specific type of NIU (NIU LinuX version).
NTC	Negative Temperature Coefficient
PCB	Printed Circuit Board
PM	Pump Module
RTO	Resin Tank Outlet to DV
Soft EV	Electro-Valve to load soft water in the DD
UI	User Interface
WD	Washer Dryer
WM	Washing Machine
WS	Water Softener
WSP	Water Softener Pump