Automatic water treatment unit

code 580020

01360/21 EN
replaces dp 01360/20 EN

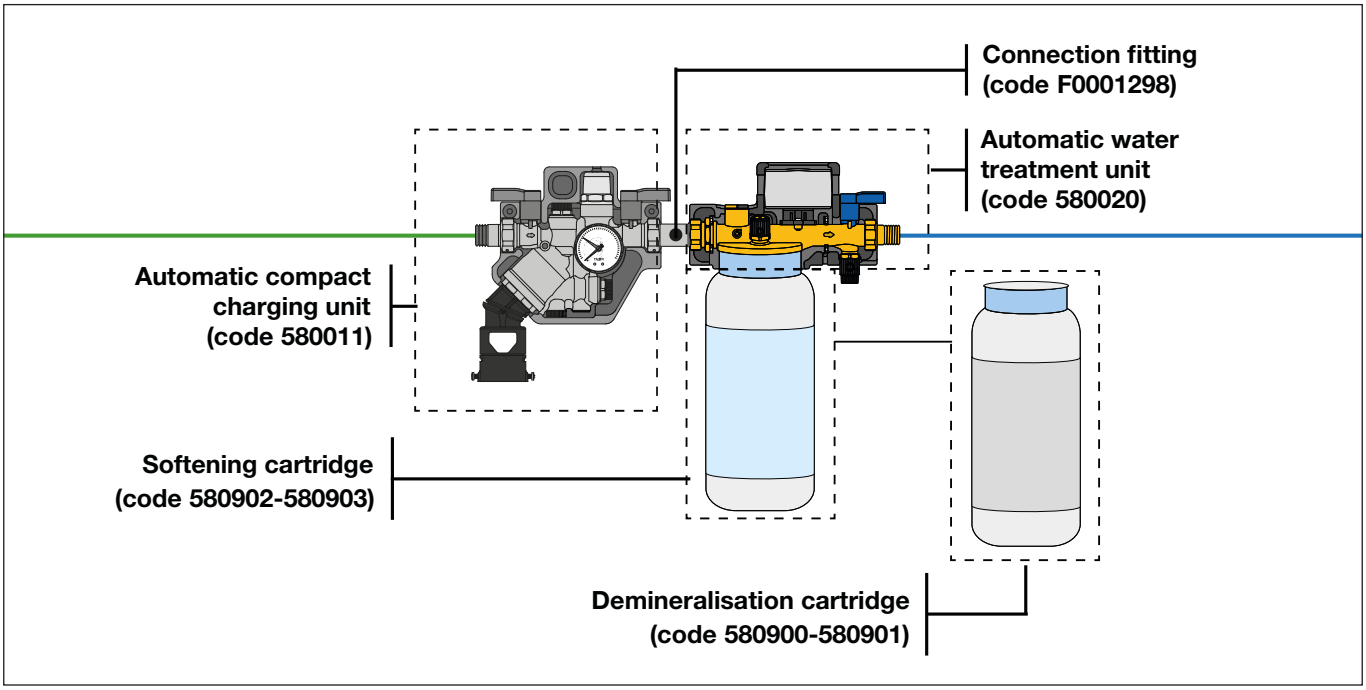
Function

The automatic water treatment unit, installed on the inlet pipe, is used to treat water in the closed circuits of heating and cooling systems.
It consists of an upstream check valve, an electronic controller with positive displacement meter and electrical conductivity measuring cell, a by-pass regulator, a downstream ball shut-off valve and adjustable drain cocks and air vent.
It can be set up with different types and sizes of cartridge, which means demineralisation or softening treatments can be performed in line with system requirements.
It is complete with pre-formed shell insulation, bracket and anchors for wall mounting.

To avoid the backflow of water from the heating system, which is potentially polluted and dangerous for human health, **it is essential to install a pre-assembled charging unit with a backflow preventer.**
The correct use of hydraulic backflow preventers is governed by the European reference standard EN 1717: 2000 *"Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow".*

Product range

Code 580020 Automatic water treatment unit. With insulation	DN 15 (1/2")
Code 580900 Disposable demineralisation cartridge	2,7 l
Code 580901 Disposable demineralisation cartridge	4,5 l
Code 580902 Disposable softening cartridge	2,7 l
Code 580903 Disposable softening cartridge	4,5 l
Code 580001 Hose adapter	3/4" M
Code 570923 Reusable demineralisation cartridge	12 l
Code 570933 Reusable demineralisation cartridge	24 l
Code 570917 Reusable cartridge refill	



Water treatment unit technical specifications

Material

Body:	brass EN 12164 CW617N
Ball shut off valve:	dezincification-resistant alloy
Ball:	brass CW617
Hydraulic seals:	EPDM
Level handle:	PA6G30
Material insulation:	EPP
Density insulation:	30 kg/m^3

Performance

Medium:	water
Max. working temperature:	30 °C
Maximum working pressure:	4 bar
Connections:	R 1/2" (EN 10226-1)

DISPOSABLE **SOFTENING** CARTRIDGES

Technical specifications code 580902 – 580903

Materials

Container:	polymer
Contents:	resin

Performance

Nominal flow rate:	
- 580902	2 l/min
- 580903	4 l/min
Max. working pressure:	4 bar
Working temperature range:	4–30 °C
Warehouse storage temperature range:	5–40 °C
Hardness of water after treatment:	< 0,1°f/°dH
Connections:	2" 1/2-8 NPS

DISPOSABLE **DEMINERALISATION** CARTRIDGES

Technical specifications code 580900 – 580901

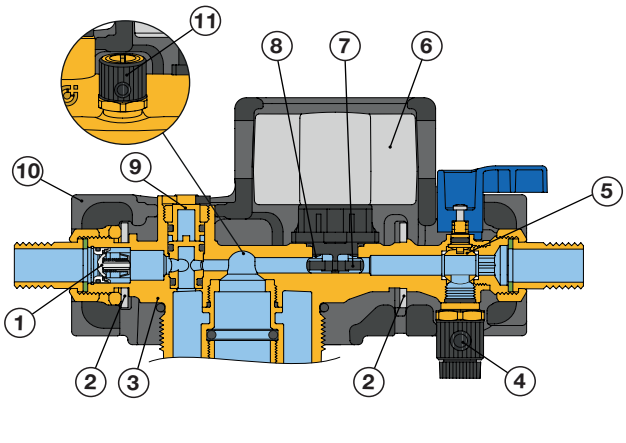
Materials

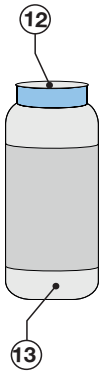
Container:	polymer
Contents:	mixed bed ion exchange resins

Performance

Nominal flow rate:	
- 580900	2 l/min
- 580901	4 l/min
Max. working pressure:	4 bar
Working temperature range:	4–30 °C
Warehouse storage temperature range:	5–40 °C
Electrical conductivity after treatment:	< 10 µS/cm
Connections:	2" 1/2-8 NPS

Treatment unit characteristic components

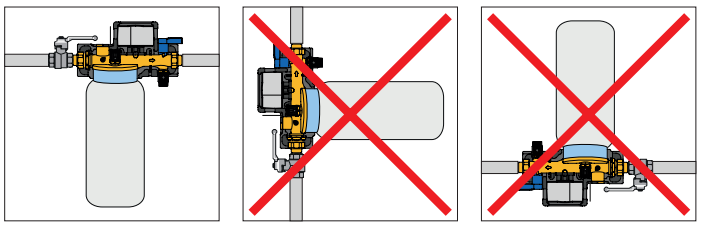




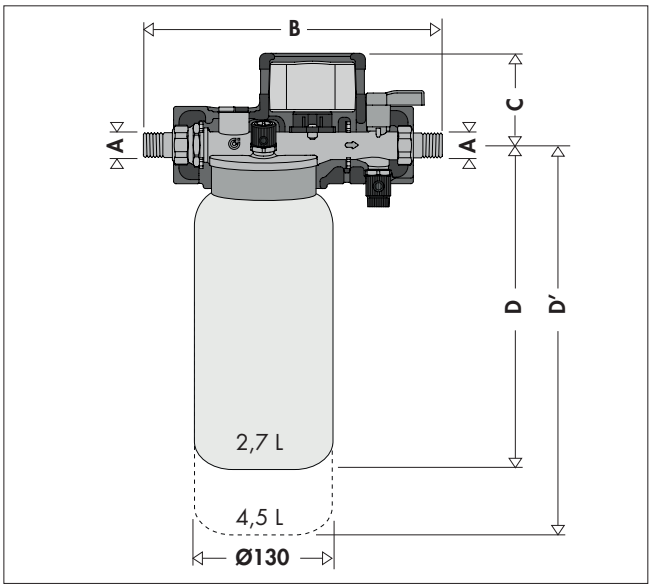
1. Upstream check valve
2. Wall mounting bracket
3. Unit body
4. Drain cock
5. Downstream ball shut-off valve
6. Electronic controller
7. Flow meter
8. Conductivity measuring cell
9. By-pass regulator
10. Pre-formed shell insulation
11. Air vent cock
12. Cup
13. Disposable cartridge

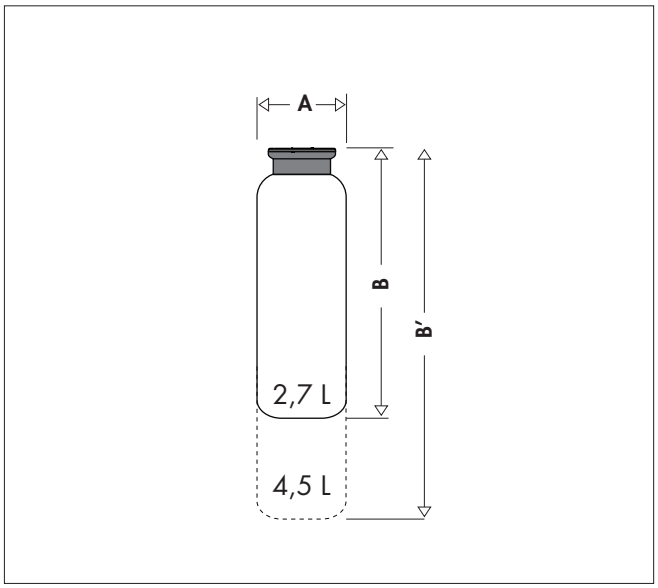
Water treatment unit installation

The water treatment unit should be installed horizontally on the heating and cooling closed circuit filling pipe, observing the flow direction shown by the arrow on the valve body.
Installation in an upside-down position and on vertical pipes is not permitted.



Dimensions





Code	Cartridge	Volume	A	B	C	D	D'	Mass (kg)
580020	**580**900	2,7 L	1/2"	247,5	76	338	-	4,9
	580901	4,5 L	1/2"	247,5	76	-	412	5,4
	580902	2,7 L	1/2"	247,5	76	338	-	5,1
	580903	4,5 L	1/2"	247,5	76	-	412	5,8

Code	A	B	B'	Volume	Empty mass (kg)
580900	Ø 130	321	-	2,7	3,4
580901	Ø 130	-	395	4,5	3,9
580902	Ø 130	321	-	2,7	3,6
580903	Ø 130	-	395	4,5	4,3

Demineralisation and softening cartridges

The unit has a connection for both demineralisation cartridges and softening cartridges.
Possible configurations are:

- **disposable softening cartridges** 580 series (fig. A) with a single type of resin;
- **disposable demineralisation cartridges** 580 series (fig. B) with mixed bed resins (cation resin and anion resin).

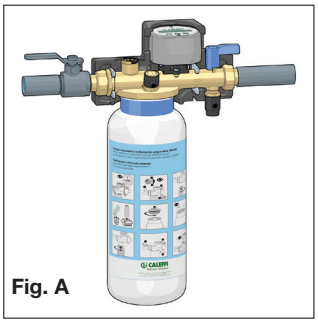


Fig. A

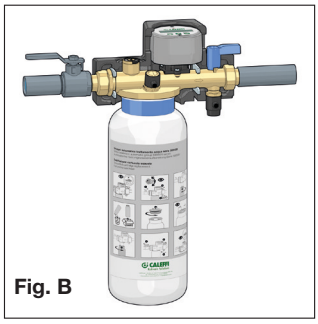
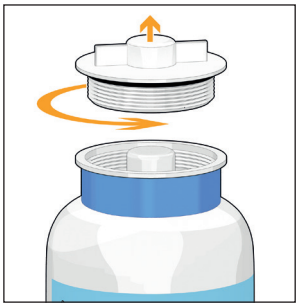
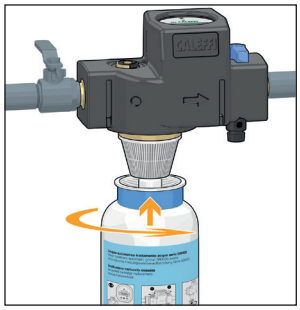


Fig. B

Disposable cartridges

Once the required **disposable cartridge** (580 series) has been identified, remove the safety cap and keep it safe to use on the same cartridge once it has been exhausted. Make sure the inner pipe is in the centre of the resin bed in order to make changing the cartridge easier and to allow more efficient water circulation. Next, fit the cartridge to the unit that has already been installed on the filling pipe, inserting the inner pipe into the white filter and fully screwing the cartridge body onto the brass body. If it is difficult to insert the inner pipe, slight lubrication may be required. Once the cartridge has been exhausted, it should be removed and replaced.





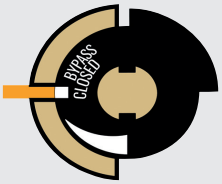
Cartridge hydraulic characteristics

The cartridges are equipped with an outlet **flow rate limiter** which regulates the flow and ensures correct exchange with the resins.
The unit's maximum filling flow rate coincides with the specific nominal flow rate of each cartridge.

Cartridge code	Nominal flow rate (l/min)
580900	2
580901	4
580902	2
580903	4

Before proceeding with cartridge installation, make sure that the by-pass regulator is in the **BYPASS CLOSED** position.

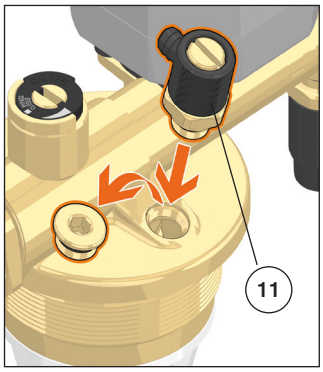
It should never be rotated during the demineralisation treatment.



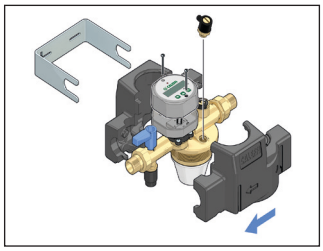
Functional components

Upstream check valve
The unit has a check valve at the inlet to prevent the backflow of treated water towards the distribution system.

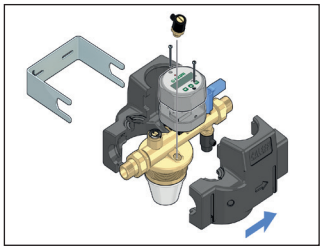
Drain cocks, air vent and mounting bracket
The unit has a drain cock downstream of the cartridge, underneath the shut-off valve.
Plus, two 1/4" caps are screwed onto the sides of the brass body, one of which should be loosened and replaced with an air vent cock. The side with the air vent cock must face outwards, while the side with the screwed-on cap should remain on the bracket side.



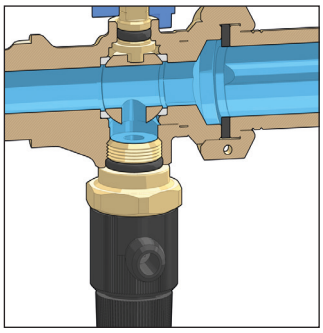
The cocks, one upstream and one downstream of the cartridge, will have the respective tasks of removing trapped air during filling and draining the water from inside the body before replacing cartridges, as well as functioning as drawing points.



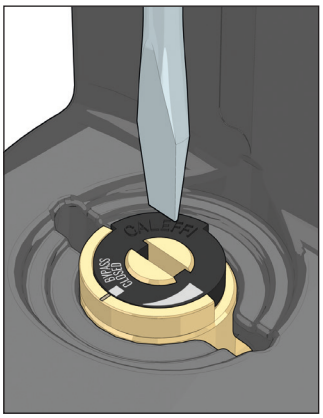
Wall mounting bracket
The unit comes complete with a practical wall mounting bracket (2) and wall anchors for full bracketing.
Its versatility means all components can be adjusted, depending on the installation side.



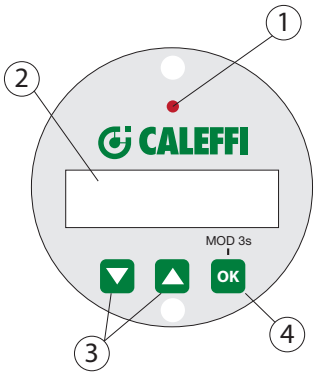
Downstream ball shut-off valve
The downstream ball shut-off valve is tasked with isolating the unit during cartridge replacement procedures.
The internal three-way ball means it is always possible, if necessary, to drain water via the adjustable drain cock.



By-pass regulator
The unit is equipped with a by-pass regulator upstream of the cartridge: its function is to divert part of the water flow entering the unit and prevent it from undergoing treatment by the bed of resins.
This procedure, **which can only be carried out in the softening process**, is intended to change the degree of water hardness as it exits the outlet.
The by-pass regulator can be set using a slot-head screwdriver; once a position has been secured the outlet water hardness must be checked (see paragraph *Softening cartridge sizing*).



Electronic controller
The unit is equipped with an electronic controller, which is capable of monitoring water demineralisation and softening treatments alike.
It is possible to set parameters and data relating to a specific treatment, directly from the front panel of the controller.



1. LED indication

Red flashing LED:
alarm condition / cartridge reset

2. LCD display

3. Function keys

4. Confirm action key

Electronic controller programming

The electronic controller is equipped with:

- **Integrated flow meter** which measures the water flow rate passing through the unit. The value appears on the electronic controller's LCD display.
- **Conductivity measuring cell** is in contact with the treated water leaving the cartridge outlet. It constantly monitors the electrical conductivity value of the outlet water; if the value exceeds the maximum set limit, an alarm will appear on the display.
- **Software** will automatically calculate all parameters for correct operation (refer to instruction sheet H0007428).
- **Alarms.** The controller will signal 3 different types of alarm with a red flashing LED, displaying an alarm message on the LCD display. If several errors occur at once, the messages will be displayed in succession, in the order in which they occurred.

The controller battery is low or has not been inserted properly.

The cartridge is exhausted and therefore correct ionic exchange between the resins and the water to be treated cannot be guaranteed.

The maximum electrical conductivity value at the unit outlet has been exceeded.

Funzioni

Demineralisation treatment

If the controller is set to carry out this treatment, the device will be able to monitor and automotically calculate:

- remaining capacity of the cartridge fitted;
- the electrical conductivity of the treated water;
- the volume of water treated;
- the flow rate.

The parameters to be entered are:

- the treatment type (DEMI);
- the size of cartridge fitted (cartridge volume);
- the electrical conductivity value of the untreated water (at the inlet from tha mains);
- the maximum electrical conductivity value permitted before the controller issues an error.

Softening treatment

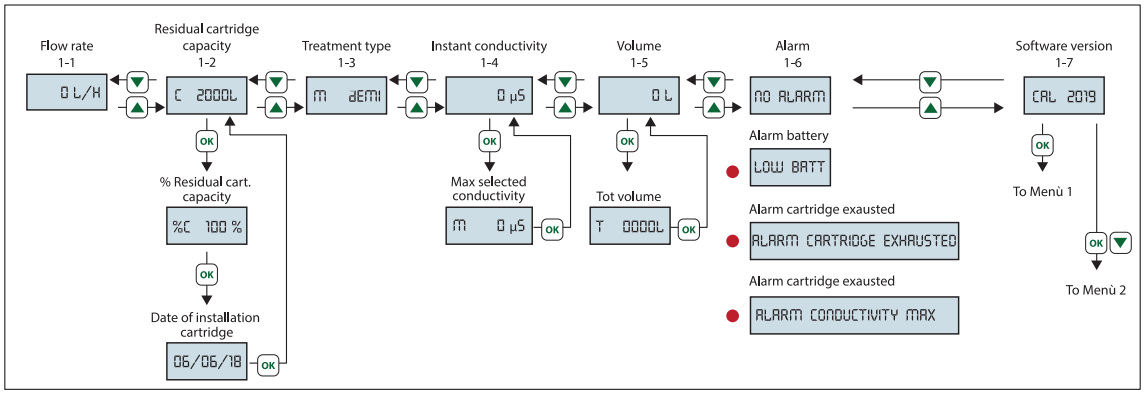
If the controller is set to carry out this treatment, the device will be able to monitor and automotically calculate:

- remaining capacity of the cartridge fitted;
- the volume of water treated;
- the flow rate.

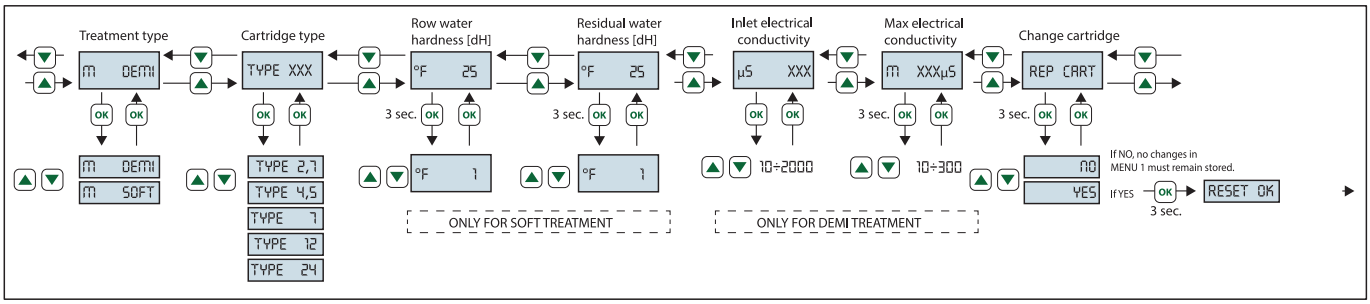
The parameters to be entered are:

- the treatment type (SOFT);
- the size of cartridge fitted (cartridge volume);
- the harness value of the untreated water (at the inlet from tha mains);
- the harness value of the untreated water and the water hardness value you wish to achieve

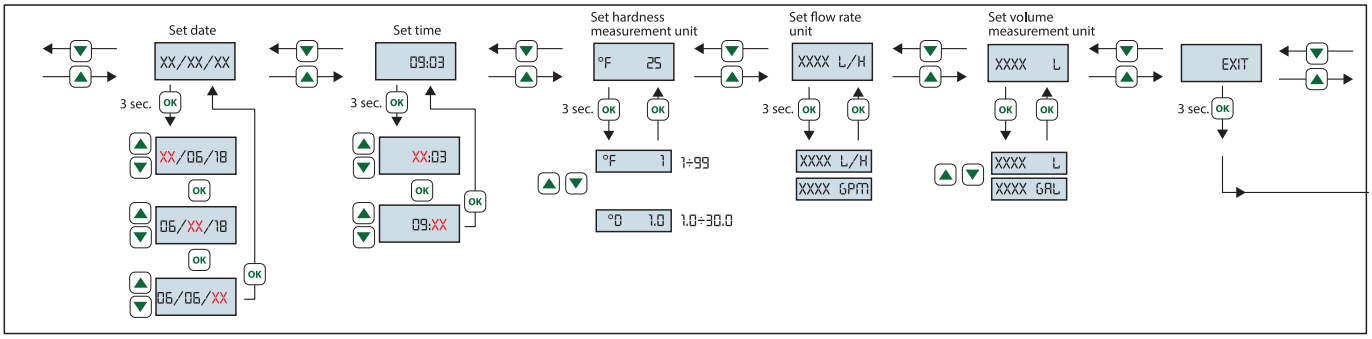
MAIN MENÙ



MENÙ 1: SETTING PARAMETERS



MENÙ 2: SETTING DATE - TIME - MEASUREMENT



Softening cartridge sizing

To choose the correct type and quantity of cartridges to be used it is necessary to know:

- the **hardness** value of the untreated water coming in from the mains;
- the desired **hardness** value of the water after treatment;
- the **volume** of water to be introduced into the system;
- the corresponding **sizing coefficient** for each cartridge.

Code	Cartridge volume	Sizing coefficient	
		for French degrees (°f)	for German degrees (°dH)
580902	2,7 litres	26	14
580903	4,5 litres	43	24

The volume of water that can be treated (with hardness < 1 °f) by each cartridge can be calculated using the formula below:

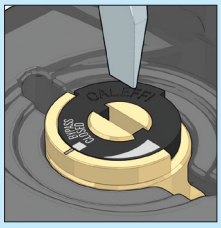
Volume of water that can be treated (m^3)

$$V = \frac{C}{H_{in} - H_{out}}$$

C= Sizing coefficient
H_{in}= Untreated water hardness (°f/°dH)
H_{out}= Treated water hardness (°f/°dH)
V= Volume of water that can be treated (m^3)

Full treatment

For full treatment, resulting in a residual hardness of the treated water **<1°f/°dH**, the by-pass regulator must be kept in the BYPASS CLOSED position.



Partial treatment

The by-pass regulator can be used to change the hardness of the treatment unit outlet water.
If partial treatment is necessary, i.e. the residual hardness for the treated water needs to be greater than 1 °f/°dH, you will need to carry out the following operative steps:

1. Setting the by-pass valve to halfway.
2. Flush through approximately twice the volume of the fitted cartridge (see paragraph *Commissioning the water treatment unit*).
3. Take a sample from the downstream drain cock.
4. Measure the hardness of the sample using the measuring kit, code 575003 (see paragraph *Accessories*).
5. Depending on the result obtained, adjust the regulator setting to obtain the desired hardness and repeat the previous steps.

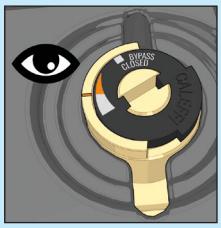


Fig. 1

Fig. 2

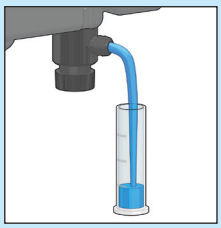


Fig. 3

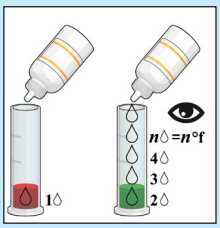
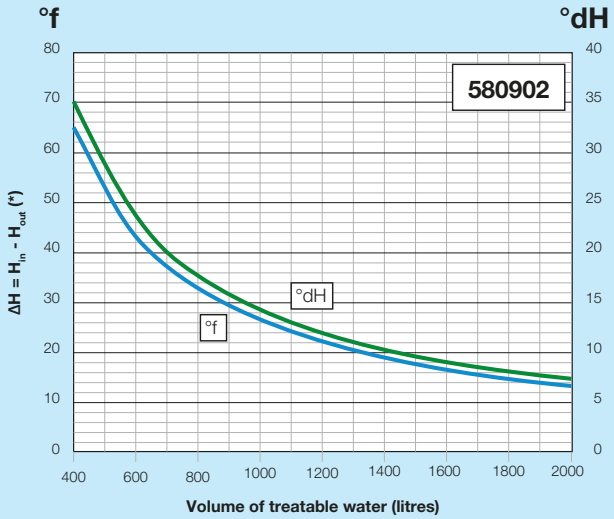
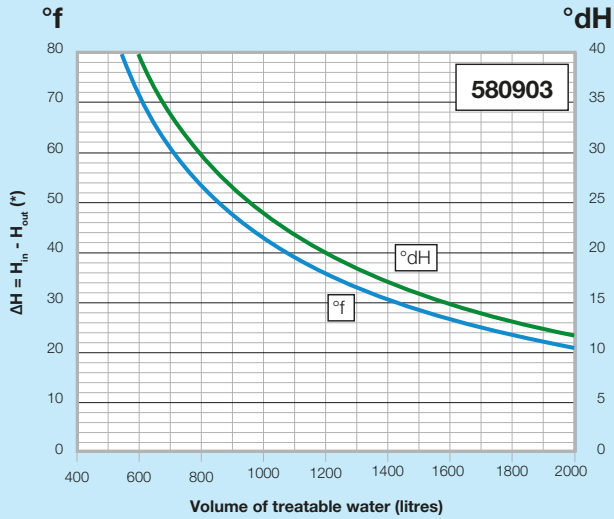


Fig. 4

Disposable cartridge sizing graphs



(*) ΔH = raw water hardness (H_{in}) - treated water hardness (H_{out})



(*) ΔH = raw water hardness (H_{in}) - treated water hardness (H_{out})

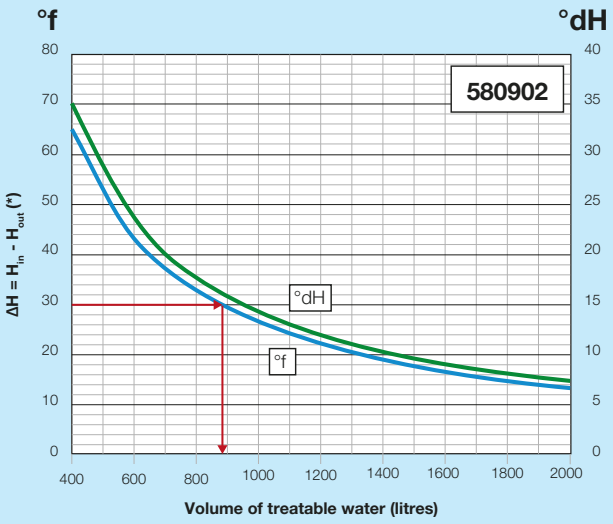
Example 1: full softening treatment

A sizing example for achieving an outlet water hardness value under 1°f is provided below..

Untreated water hardness (H_{in}): 30 °f
Treated water hardness (H_{out}): 0 °f
Cartridge used: disposable cartridge code 580902
Sizing coefficient (C): 26

$$V = \frac{26}{30\text{-}0} = 0{,}86\ m^3\ (860\ litres)$$

This means, by using a cartridge code 580902 it is possible to soften 860 litres of untreated water, with a hardness of 30°f, and obtain treated water at a value of 1°f.



(*) ΔH = raw water hardness (H_{in}) - treated water hardness (H_{out})

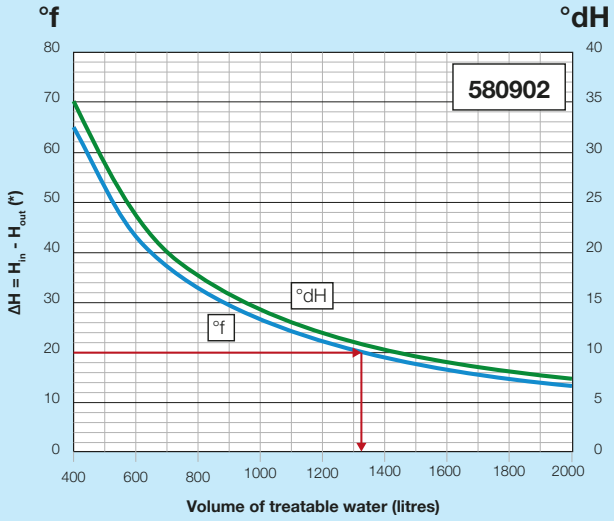
Example 2: softening treatment with residual hardness

In this case a sizing example for achieving a treatment unit outlet water hardness value equal to 10°f (using the by-pass regulator) is shown.

Untreated water hardness (H_{in}): 30 °f
Treated water hardness (H_{out}): 0 °f
Cartridge used: disposable cartridge code 580902
Sizing coefficient (C): 26

$$V = \frac{26}{30\text{-}10} = 1{,}3\ m^3\ (1300\ litres)$$

This means, by using a cartridge code 580903 it is possible to soften 2150 litres of untreated water, with an initial hardness of 30°f, and obtain treated water at a value of 10°f.



(*) ΔH = raw water hardness (H_{in}) - treated water hardness (H_{out})

Demineralisation cartridge sizing

To choose the correct type and quantity of cartridges to be used it is necessary to know:

- the **electrical conductivity** of the water coming in from the mains;
- the **volume** of water to be introduced into the system;
- the corresponding **sizing coefficient** for each cartridge.

Code	Cartridge volume	Sizing coefficient	
		residual cond. < 10 µS/cm	residual cond. < 50 µS/cm (*)
580900	2,7 litri	140	220
580901	4,5 litri	180	280
570923	12 litri	320	510
570933	24 litri	800	1320

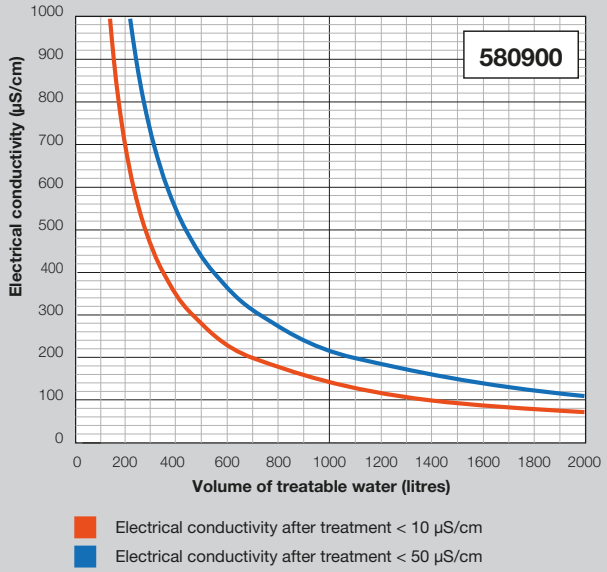
(*) If a full demineralisation treatment is not required (residual conductivity < 10 µS/cm), it is preferable to use the sizing coefficient for residual conductivity < 50 µS/cm.

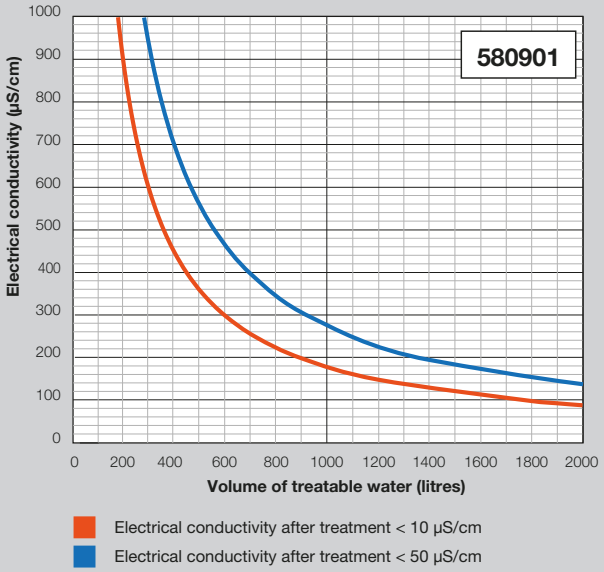
The following formula can be used to calculate the volume of water that can be treated by each cartridge.

Treatable volume of water (m^3)

$$V = \frac{\text{Sizing coefficient}}{\text{Electrical conductivity (µS/cm)}}$$

Disposable cartridge sizing graphs





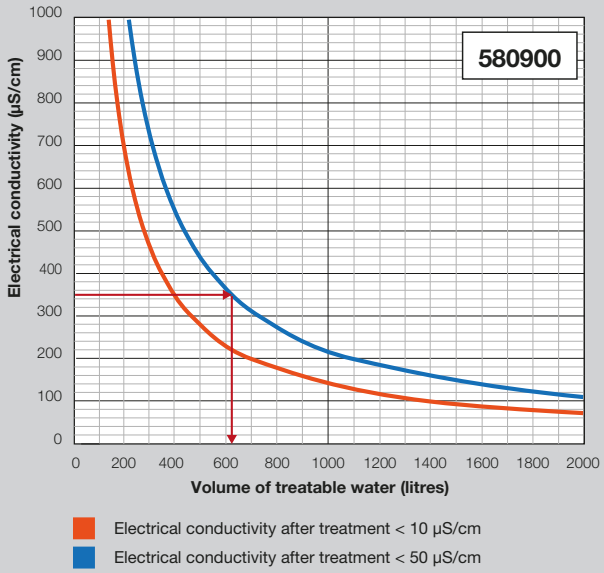
Example

A sizing example for treating untreated water coming in from the mains with electrical conductivity of 350 µS/cm is provided below.

Untreated water conductivity: 350 µS/cm
Cartridge used: disposable cartridge code 580900
Treated water conductivity: < 50 µS/cm
Sizing coefficient: 140

$$V = \frac{140}{350} = 0{,}4\ m^3\ (400\ litres)$$

Cartridge cod. 580900 can be used to treat 400 raw water litres with electrical conductivity of 350 µS/cm.



Commissioning the water treatment unit

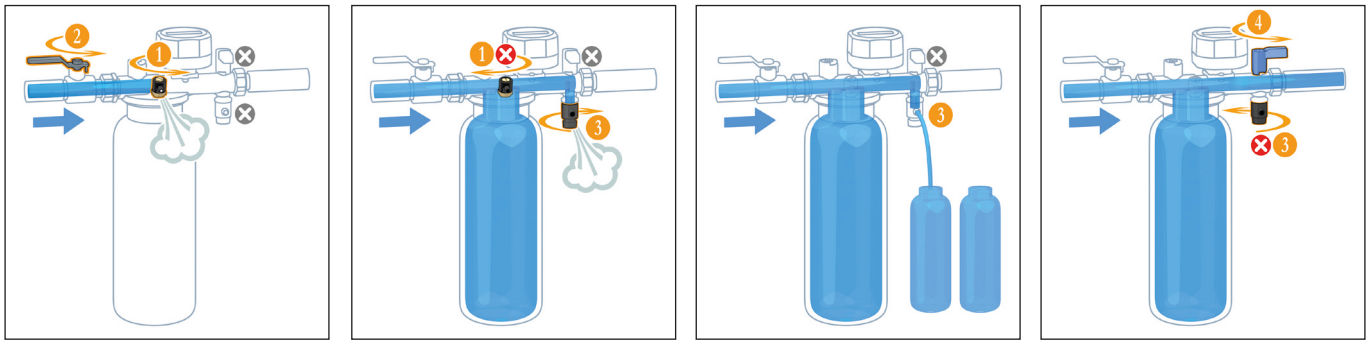
A flushing procedure is required to complete the water treatment unit commissioning process. During this procedure, you must make sure that the by-pass regulator is turned to the BYPASS CLOSED position

Installing a new cartridge

If commissioning a new installation, follow the steps below:

- Open the air vent cock (1) and slowly open the upstream shut-off valve (2).
- When water starts to come out, close the air vent cock (1) and open the drain cock (3).
- The amount of water to flush from the drain cock (3) is **twice the volume** of the fitted cartridge.
- Close the drain cock (3) and open the downstream shut-off valve (4).

This ensures all the air inside the body and pipe is eliminated, exchange between the resins is activated and the unit is ready for optimal use.

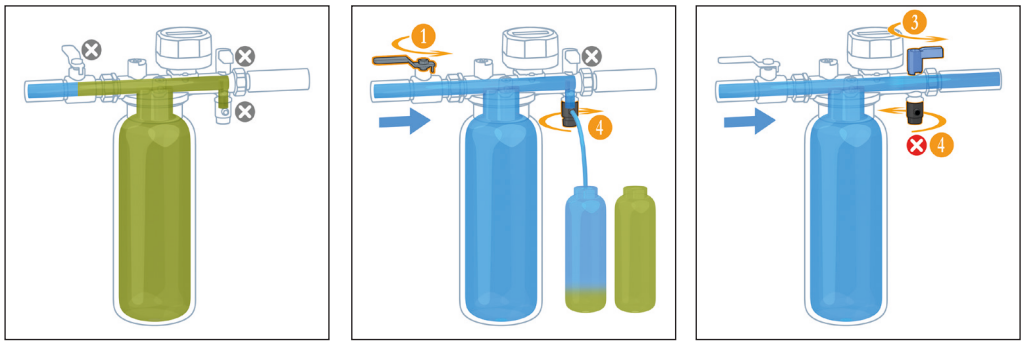


Cartridge installed

If the unit is temporarily shut off for cartridge replacement or maintenance operations, the water inside remains stagnant in the resin bed and it is therefore necessary to carry out the following steps:

- Open the upstream shut-off valve (1) and the drain cock (4), flush through an amount of water equal to **twice the volume** of the fitted cartridge.
- Close the drain cock (4) and open the downstream shut-off valve (3).

By doing so, the stagnant water inside the cartridge will have been replaced with fresh water from the main water system.

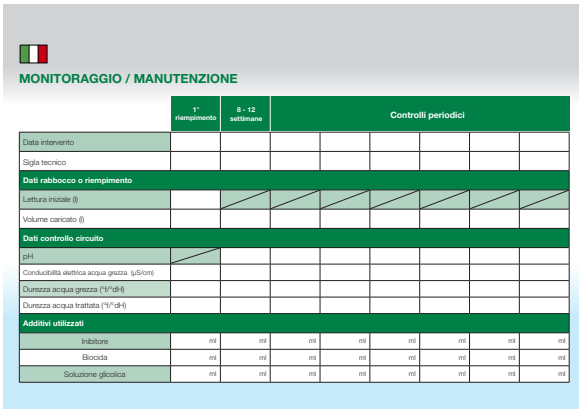


Treatment checking

The water exiting the treatment cartridge has a hardness < 0.1°f and electrical conductivity of less than 10 μS/cm. After approximately 8 – 12 weeks of system operation (with water circulation and heating cycles) the electrical conductivity and pH values stabilise: it is therefore necessary to check these parameters to ensure that treatment is effective and that the requirements specified in the applicable standards are met.
The pH value must fall within the limits established in standards.

Periodic checks

The pH value of the treated heating water must be checked 8-12 weeks after filling and at least once a year. The values measured must be recorded in the maintenance logbook supplied in the package with the unit.



MONITORAGGIO / MANUTENZIONE

	1° riempimento	8 - 12 settimane	Controlli periodici					
Data intervento								
Sigla tecnico								
Dati rabbocco o riempimento								
Lettura iniziale (l)								
Volume caricato (l)								
Dati controllo circuito								
pH								
Conducibilità elettrica acqua grezza (μS/cm)								
Durezza acqua grezza (°f/°dH)								
Durezza acqua trattata (°f/°dH)								
Additivi utilizzati								
Inibitore	ml	ml	ml	ml	ml	ml	ml	ml
Biocida	ml	ml	ml	ml	ml	ml	ml	ml
Soluzione glicolica	ml	ml	ml	ml	ml	ml	ml	ml

Problems associated with water quality

Limescale deposits

Limescale deposits are caused by the precipitation of calcium and magnesium carbonates (also known as hardness minerals). Water contains calcium, magnesium and carbon dioxide in the form of bicarbonates (soluble substances).
An increase in water temperature causes part of the carbon dioxide to be released, thereby transforming the calcium and magnesium bicarbonates into **carbonates**, which are less soluble and subject to precipitation, according to the following reaction:

$$Ca(HCO_3)_2 \rightleftharpoons CaCO_3 + CO_2 + H_2O$$

CALCIUM CARBONATE	CALCIUM CARBONATE	CARBON DIOXIDE	WATER

The resulting limescale obstructs the passages and builds up on the electrical resistors and the exchangers, where it acts as a heat insulator, thus increasing the energy consumption required to heat the water to the desired temperature: 1 mm of limescale reduces exchange efficiency and increases energy consumption by 10 %.
Limescale deposits in pipes, furthermore, reduce the effective flow diameter and can also cause spot corrosion and failure.

Corrosion

Corrosion can be caused by various factors:

- parasitic currents
- dissolved oxygen
- electrolysis

It may appear in various forms (spot or widespread corrosion), but is usually fostered by the simultaneous **presence of deposits** on metal surfaces.
Corrosion generally affects the system as a whole and not just individual parts of it. The appearance of corrosion in one point may therefore be symptomatic of general corrosion of the entire system.
The onset of corrosion is particularly fast in hot water systems, because the oxygen/metal reaction speed is directly proportional to temperature.
The speed and intensity of the corrosion process is closely connected with the presence of dissolved salts in the water.

I parametri dell'acqua

Water hardness

The best predictor of the possible formation of limescale is hardness, i.e. calcium and magnesium salt content.
Temporary hardness is caused by the presence of calcium bicarbonates $Ca(HCO_3)_2$, which are unstable salts and tend to precipitate easily. **Permanent hardness** is caused by the presence of other salts in addition to calcium and magnesium carbonate. **Total hardness** is the sum of the two.
Generally, account is taken of the temporary hardness of the water, which is measured in **ppm**, i.e. **mg of $CaCO_3$ per kg of water**.
Measurements are also expressed in **French degrees °f**: 10 ppm of $CaCO_3$ = 1°f.

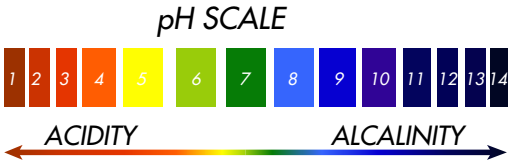
Water classification	Hardness (°f)
Very soft	0–8
Soft	8–15
Slightly hard	15–20
Medium hard	20–32
Hard	32–50
Very hard	> 50

Electrical conductivity

The presence of dissociated salts (positive ions and negative ions) turns water into an electrical conductor, whose conductivity varies according to the number of ions present. Although not all the salts are dissociated in equal measure, therefore, **the electrical conductivity of the water can be used as an indicator of its total salinity.**
Low conductivity equates to low salinity, whereas high conductivity denotes the presence of a large quantity of ions and hence of dissolved salts.

pH

pH is a numerical indicator, which expresses the acidity or alkalinity (basicity) of a solution.
The pH scale ranges from 0 (acidic solution) to 14 (basic solution, i.e. with a high salt content).
Since it is a logarithmic scale, a solution with pH 4 is 10 times more acidic than one with pH 5, and a solution with pH 3 is 100 times more acidic.



Water treatment standards

To prevent limescale and corrosion Italian legislation - specifically **DM dated 26th June 2015 (DMISE)**, dictates that the quality of the water used to fill heating circuits should be checked and if necessary treated to restore the values to a level below the limits specified by standard **UNI 8065/2019**.

DM 26th June 2015 (DMISE)

Article 2, clause 5 of this Ministerial Decree refers to heating systems in new builds and renovated existing buildings, and defines suitable water treatment systems according to temporary hardness.
In thermal systems for climate control in winter, with or without domestic hot water production, **a chemical conditioning treatment is always compulsory**. For systems with a firebox heating capacity greater than 100 kW and where the feed water has a total hardness greater than 15 French degrees, the water from the system must undergo a softening treatment (see table).

Nominal power	Temporary hardness	Required treatments
any Pn	≤ 15°f	**chemical conditioning**
Pn < 100 kW	> 15°f	**chemical conditioning**
Pn ≥ 100 kW	> 15°f	**chemical conditioning + softening**

UNI 8065/2019.

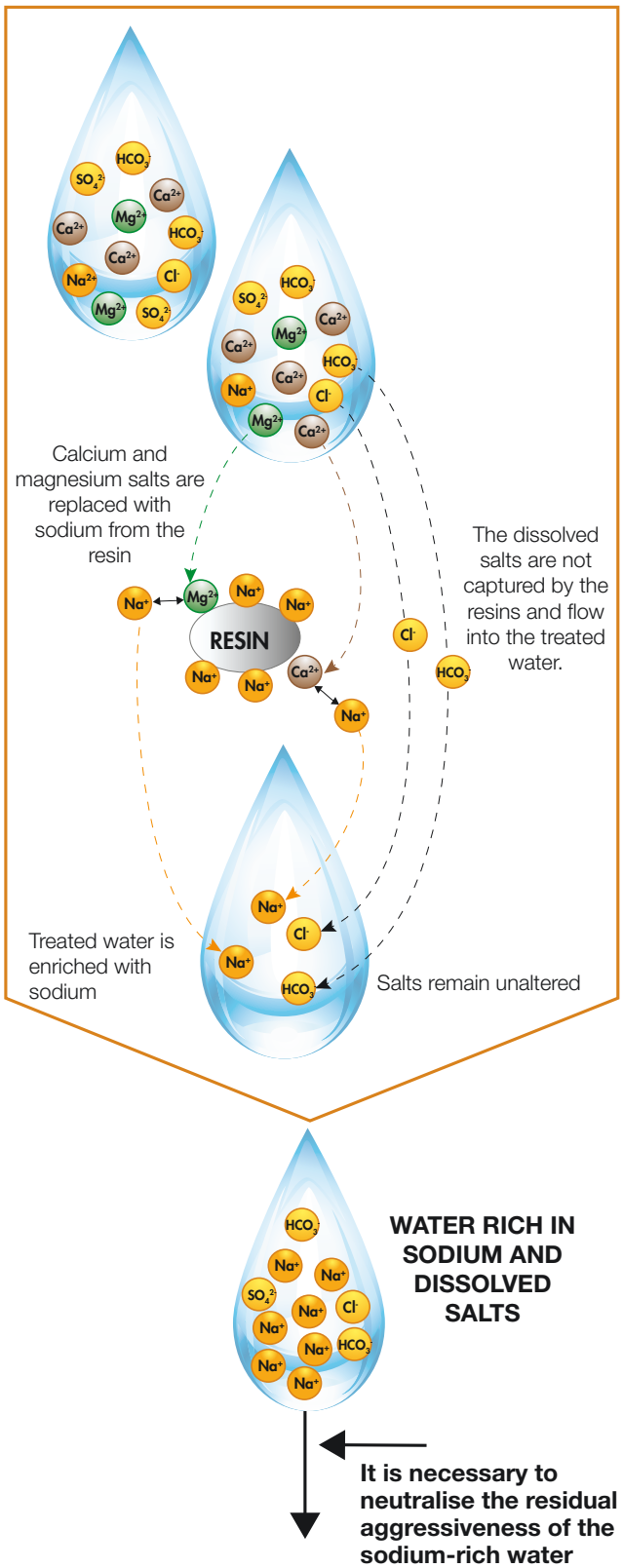
pH	in the absence of aluminium and its alloys: between 6,5 and 9,5 in the presence of aluminium and its alloys: between 7 and 8,5
Conditioners	present in the concentrations specified by the manufacturer
Iron (as Fe)	< 0,5 mg/kg (higher values of iron are due to corrosive characteristics that must be eliminated)
Copper (as Cu)	< 0,1 mg/kg (higher values of copper are due to corrosive characteristics that must be eliminated)
Aluminium (as Al)	< 0,1 mg/kg (higher values of aluminium are due to corrosive characteristics that must be eliminated)

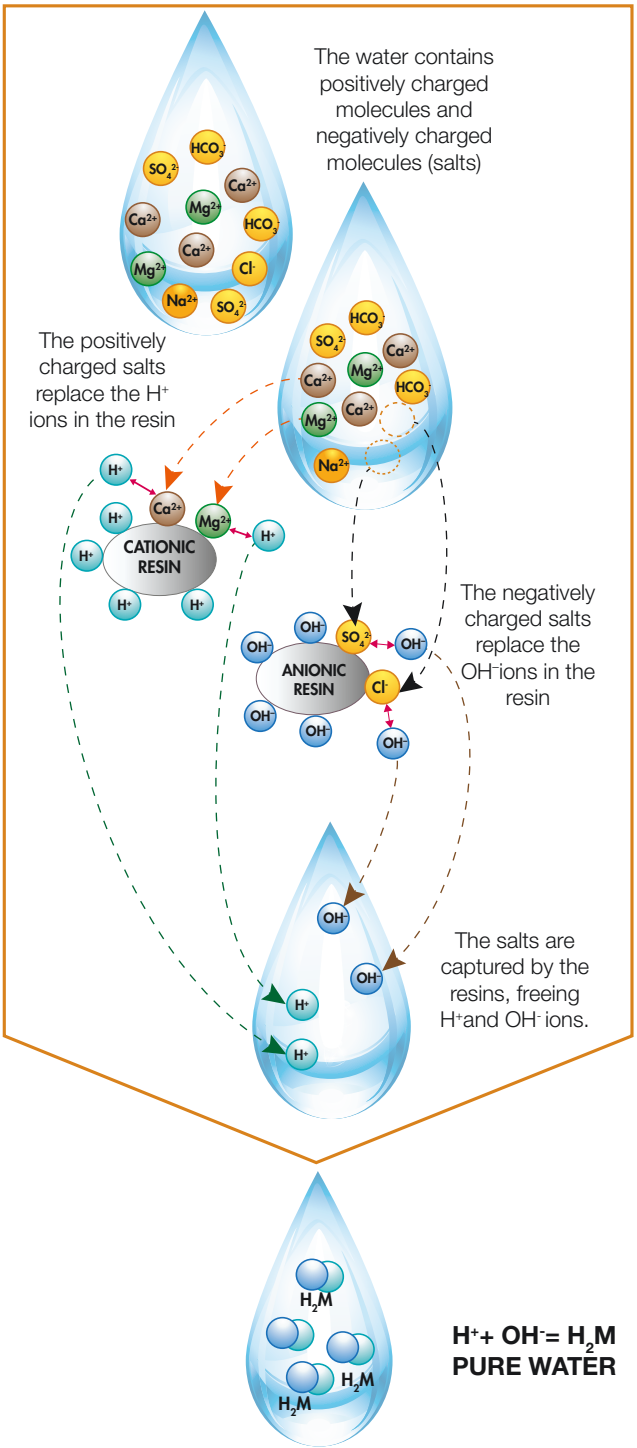
SOFTENING

The softening cartridges contain one type of resin only, to which the positive sodium (Na^+) ions bond.
The calcium (Ca^{2+}) and magnesium (Mg^{2+}) ions in the filling water bond with the resin and replace the sodium ions which are released into the water.
The treated water no longer contains calcium and magnesium ions (thereby preventing the formation of limescale), but the other salts remain (possibility of corrosion).
It is therefore always necessary to introduce chemical additives into the heating circuit to minimise corrosion.

DEMINERALISATION

The demineralisation cartridges contain two different types of resins: anion resins, to which negative ions (OH^-) bond, and cation resins, to which positive ions (H^+) bond.
The positively charged salts in the filling water (Na^+, Ca^{2+}, Mg^{2+}) replace the positive ions H^+. The negatively charged salts (SO_4^{2-}, Cl^-, HCO_3^-) replace the negative ions (OH^-).
The resins retain the salts and release H^+ and OH^- , which bond to form pure water.





Accessories

5750

Hardness measurement kit.
Accuracy: 1°f / 1°dH.

Code

575003

5709

Resin refill for reusable cartridges, for 5709 series demineralization.
Warehouse storage temperature: 5–40 °C.

Code

570917	1 refill for cartridge code 570923
	2 refills for cartridge code 570933

580

Connection fitting with nut and gasket.
For code 580020 and 580011.

Code

F0001298	3/4" F x 3/4" F

580

Automatic compact charging unit to EN 1717 standard with **BA type** backflow preventer, shut-off valve, strainer, pressure test ports for controlling the backflow preventer, pressure reducing valve. For horizontal or vertical installations.
Brass body. With insulation.
Filling unit setting pressure range: 0,8–4 bar.
Max. working pressure: 10 bar.
Max. working temperature: 65 °C.
Backflow preventer certified to EN 12729 standard.
Pressure reducing valve certified to EN 1567 standard.

Code

580011	1/2"

Function

The compact automatic charging unit is composed of a shut-off valve with an inspectable strainer, a BA-type controllable reduced pressure zone backflow preventer and an automatic filling unit. It is installed on the water inlet piping in closed circuit heating systems. It maintains the pressure of the system stable at a set value, automatically topping up with water as required. The backflow preventer prevents the contaminated water of the closed heating circuit from flowing back into the domestic water supply, in accordance with the provisions of EN 1717. The device is supplied complete with preformed shell insulation and features a compact design to facilitate installation.

Reference documentation

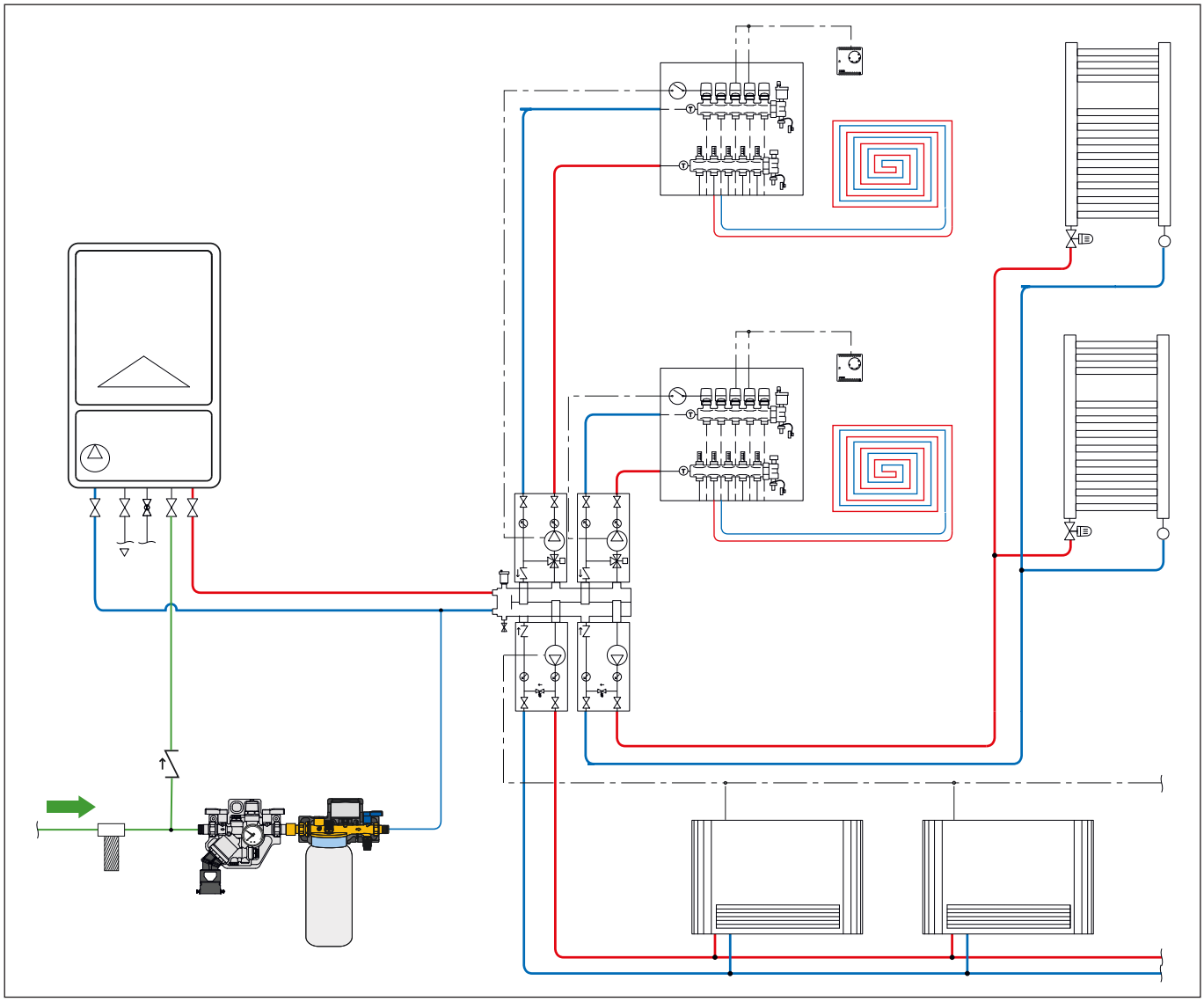
- Brochure 01322 Backflow preventer 580 series

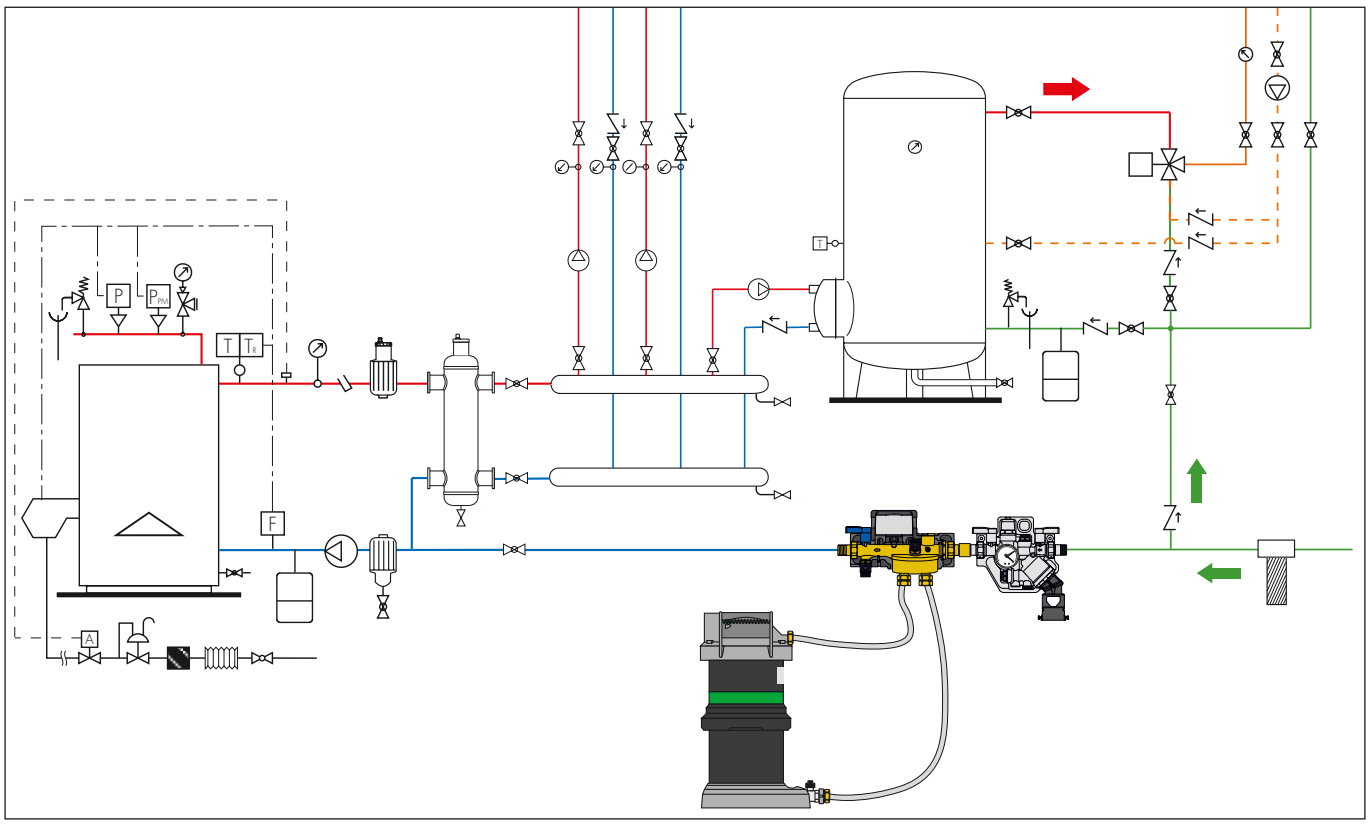
Using the backflow preventer in reference to European standards

The use of the BA type backflow preventer is regulated by the European regulations about the prevention of pollution from backflow.
The reference standard is **EN 1717:2000** "Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow".
This standard classifies the water in the systems according to the level of risk it represents for human health.
Category 1: Water to be used for human consumption coming directly from a potable water distribution system.
Category 2: Fluid presenting no human health hazard, as per 1, the quality of which can have undergone a change in taste, odour, colour or temperature.
Category 3: Fluid representing some human health hazard due to the presence of one or more harmful substances.
Category 4: Fluid presenting a human health hazard due to the presence of one or more "toxic" or "very toxic" substances or one or more radioactive, mutagenic or carcinogenic substances.
Category 5: Fluid presenting a human health hazard due to the presence of microbiological or viral elements.

According to this classification, suitable backflow prevention devices must be fitted in water distribution circuits.
BA type backflow preventers can be used to protect against the risk of pollution from backflow for types of water up to category 4. For category 5 types of water an air gap separation must be used.
The table entitled "Protection matrix" lists a series of systems with category 4 medium based on the indications provided in the European regulation.
European regulation EN 12729 "Devices to prevent pollution by backflow of potable water". Controllable backflow preventer with reduced pressure zone. Family B - Type A" defines the functional, dimensional and mechanical requirements of controllable reduced pressure zone backflow preventers of type BA.

Application diagrams





SPECIFICATION SUMMARY

Code 580020
Automatic water treatment unit without cartridge. Connections 1/2” (EN 10226-1) M. Maximum working temperature 30 °C. Maximum ambient temperature 40 °C. Maximum working pressure 4 bar. Medium: water. Consisting of:
- Electronic controller with integrated positive displacement meter and electrical conductivity measuring cell;
- By-pass regulator upstream of the cartridge. Brass stem. EPDM hydraulic seals;
- Adjustable drain cocks and air vent;
- Ball shut-off valve in dezincification-resistant alloy. Brass ball. EPDM hydraulic seals. PA66G30 lever handle;
- Insulation in PPE, density 30 kg/m^3;
- Bracket and wall anchors for wall bracketing.

Code 580900
Disposable polymer cartridge for water demineralisation treatment using mixed bed ion exchange resins. Connections 2 1/2" F. Volume 2,7 l. Nominal flow rate 2 l/min. Maximum working pressure 4 bar. Working temperature range 4–30 °C. Warehouse storage temperature 5–40 °C. Sizing coefficient with residual conductivity < 10 µS/cm: 140.

Code 580901
Disposable polymer cartridge for water demineralisation treatment using mixed bed ion exchange resins. Connections 2 1/2" F. Volume 4,5 l. Nominal flow rate 4 l/min. Maximum working pressure 4 bar. Working temperature range 4–30 °C. Warehouse storage temperature 5–40 °C. Sizing coefficient with residual conductivity < 10 µS/cm: 180.

Code 580902
Disposable polymer cartridge for water softening treatment via ion exchange resin. Connections 2 1/2" F. Volume 2,7 l. Nominal flow rate 2 l/min. Maximum working pressure 4 bar. Working temperature range 4–30 °C. Warehouse storage temperature 5–40°C. Sizing coefficient with end hardness < 0,1 °f:26; with end hardness < 0,1 °dH:14.

Code 580903
Disposable polymer cartridge for water softening treatment via ion exchange resin. Connections 2 1/2" F. Volume 4,5 l. Nominal flow rate 4 l/min. Maximum working pressure 4 bar. Working temperature range 4–30 °C. Warehouse storage temperature 5–40 °C. Sizing coefficient with end hardness < 0,1 °f:43; with end hardness < 0,1 °dH:24.

Code 570917
Resin cartridge refill, for 5709 series demineralization. Warehouse storage temperature range 5–40 °C.

Code 575003
Water hardness value measurement kit. Accuracy: 1°f / 1°dH.

Cod. F0001298
Connection fitting with nut and gasket. For code 580020 and 580011.

Cod. 580011
Automatic compact charging unit with BA-type backflow prevention valve. 1/2” M connections (EN 10226-1) with union. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Medium drinking water.
Consisting of controllable reduced pressure zone backflow preventer, BA-type, compliant with EN 12729. Brass body, POM-EPDM sealing gaskets. Stainless steel springs. Complete with discharge tundish with collar for fixing to the drain pipe; pre-adjustable charging unit. Brass body, dezincification resistant alloy control stem. PA6G30 cover. EPDM diaphragm and sealing gaskets. Adjustment range 0,8–4 bar. Pressure gauge with 0–4 bar scale; brass ball shut-off valve. Dezincification resistant alloy ball. EPDM hydraulic seals. PA6G30 lever handle; Upstream strainer with mesh size Ø 0,4 mm; EPP insulation, density 30 kg/m^3.

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