

**FILTER CARTRIDGES AND
FILTER HEAD FOR**

Magnesium Mineralized Water

PROTECT

CARE



AQA drink

Filter system for optimising drinking water

**Installation and operating
instructions**

EN



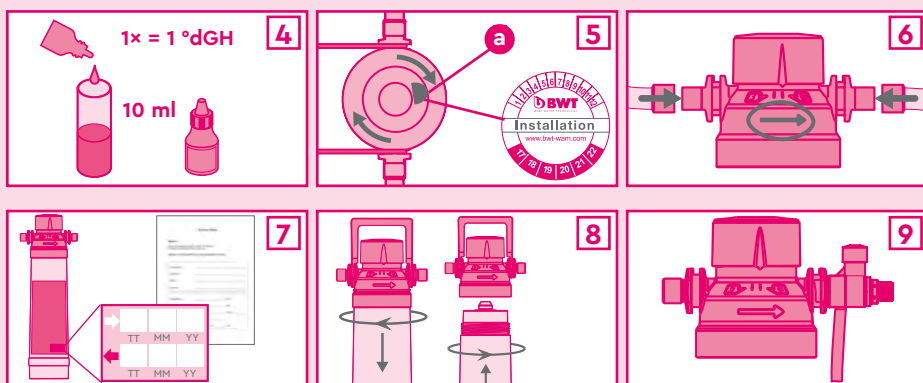
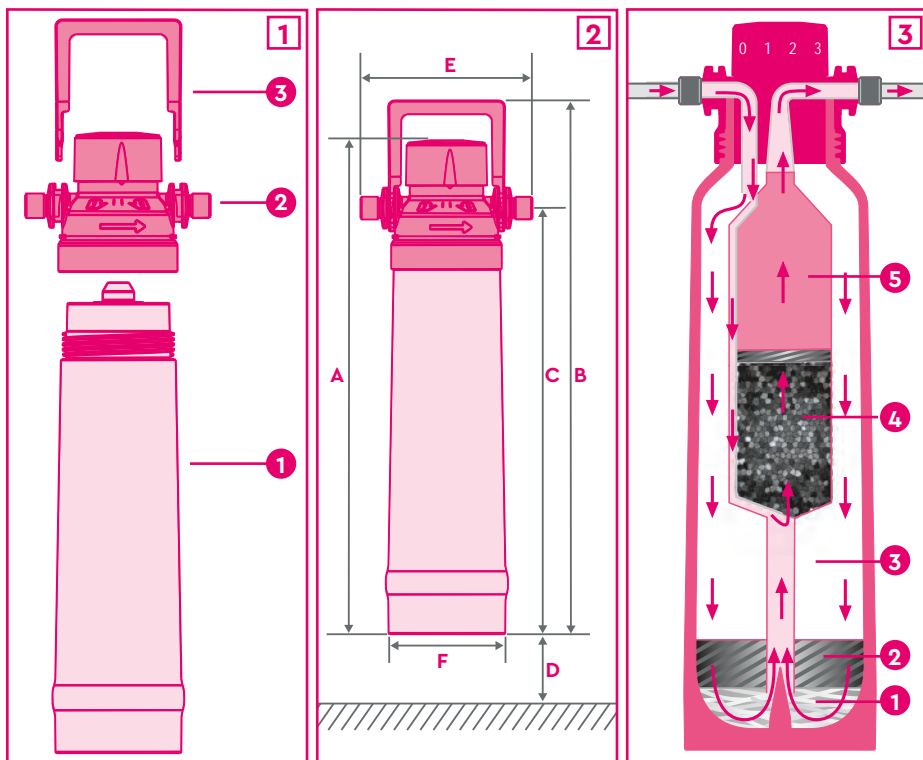


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Explanation of warning notices

WARNING!

- Indicates a possibly dangerous situation which may cause risk of health.

CAUTION!

- Indicates a possibly dangerous situation which may cause damage of property.

NOTE!

- Additional information for an efficient and optimal operation.

1 Scope of delivery

For professional installation of the filter system the following parts are required:

Filter cartridge (1) with hygienic cap and male thread for screwing into the filter head (2).

Filter head (2) with female thread for mounting the filter cartridge (1), suitable for all filter cartridge sizes with installation label. An Aquastop and two non return valves (inlet and outlet) are installed in the filter head.

Bracket (3) for mounting the filter cartridge.

The filter cartridge has to be ordered separately from the filter head. The bracket is included in the scope of delivery of the filter head.

2 Technical Data

2.1 Dimensions und weights

1

			MPC400	MPC500
Total height without bracket, max.	A	mm (inch)	475 (18 ¹¹ / ₁₆)	502 (19 ³ / ₄)
Total height with bracket	B	mm (inch)	500 (19 ¹¹ / ₁₆)	527 (20 ³ / ₄)
Connection height	C	mm (inch)	421 (16 ⁹ / ₁₆)	448 (17 ¹¹ / ₁₆)
Distance from floor	D	mm (inch)	65 (2 ⁹ / ₁₆)	65 (2 ⁹ / ₁₆)
Installation length	E	mm (inch)	125 (4 ¹⁵ / ₁₆)	125 (4 ¹⁵ / ₁₆)
Filter cartridge Ø	F	mm (inch)	130 (5 ¹ / ₄)	147 (5 ¹⁵ / ₁₆)
Weight of dry filter cartridge, approx.		kg (lb)	2.6 (5.7)	4.0 (8.8)
Weight of wet filter cartridge, approx.		kg (lb)	4.3 (9.5)	6.1 (13.4)

2.2 Operating conditions

2

		MPC400	MPC500
Connection thread (intake/outlet)		³ / ₈ " (BSP male)	
Nominal flow	L/h (US gal/h)	180 (48)	
Working pressure range	bar (psi)	2 – 8 (29 – 116)	
Intake water pressure	bar (psi)	> 1.2 (> 17.4)	
Pressure loss at 30 L/h (8 US gallons/h) ¹	bar (psi)	0.05 (0.7)	0.05 (0.7)
Pressure loss at 60 L/h (16 US gallons/h) ¹	bar (psi)	0.10 (1.5)	0.15 (2.2)
Pressure loss at 180 L/h (48 US gallons/h) ¹	bar (psi)	0.40 (5.8)	0.50 (7.3)
Water temperature, min.–max.	°C (°F)	+4 to +30 (+39 to +86)	
Ambient temperature, min.–max.	°C (°F)	+4 to +40 (+39 to +104)	
Ambient temperature during transportation/ storage, min.–max.	°C (°F)	-20 to +40 (-4 to +104)	
Bed volume	L (US gal)	2.00 (0.5)	3.10 (0.8)
Operating position		horizontal or vertical	
Minimum flushing volume	L (US gal)	5 (1.3)	9 (2.4)

¹Bypass setting "2", with a 1.5 m (59.06 inch) hose DN8 fitted to both the intake and outlet.

2.3 Typical capacities and chlorine reduction

		MP400	MP500
Typical capacity at 8 – 14 °dGH ² *	L (US gal)	1370 (362)	1950 (515)
Chlorine reduction according to 5.5.2 EN 14898:2006	Class	1	
Reduction (influent challenge concentration 2.0 mg/l) ³	%	> 50 %	

*The actual capacities in operation can be higher or lower than the capacities stated in the table. The capacities depend on the quality of the input water, the flow rate, the intake water pressure and the flow continuity. The general hardness reduction is reached in accordance with Section 5.5.5 EN 14898:2006 for the stated capacities.

³The concentration of chlorine in water entering the system was reduced to a concentration less than or equal to the permissible limit for water laving the system, as specified in NSF/ANSI 42. While testing was performed under standard laboratory conditions, actual performance of the system may vary.*

- T1** Typical filter capacities and bypass settings with respect to lime scale protection are listed on the last pages of this operation manual.
- T2** Typical filter capacities and bypass settings with respect to magnesium mineralisation are listed on the last pages of this operation manual.

3 Usage and design

3.1 Assigned use

This BWT filter cartridge ...

is only to be used for decarbonizing cold water fulfilling the legal requirements for drinking water.

reduces total* hardness and thus protects appliances against lime scale deposits.

mineralizes drinking water with magnesium.

protects against bacteria, cryptosporidium, giardia, protozoa and microplastics and thus provides hygienically perfect water.

improves flavour of beverages by removing substances responsible for taste and odor (e.g. chlorine).

filters particles* out of the water.

Any other use is deemed to be non-intended.

3.2 Design and function of the filter system

- 1 Pre-filtration: Removal of particles
- 2 Active carbon pre-filtration: Substances responsible for taste and odor (e.g. chlorine) are removed, no oxidation of ion exchanger
- 3 Ion exchanger: Decarbonisation and mineralisation with magnesium
- 4 Active carbon filtration: removal of chlorine, also from bypass water
- 5 Ultrafiltration: retention of 99.9999% of all bacteria, cryptosporidia, giardia, protozoa, microplastics, as well as natural dyes (e.g., humic acids)

3

4 Operating and safety instructions

Despite complying with all safety precautions, risks remain especially in case of misuse or inappropriate handling. Each technical device is to be maintained and serviced regularly to function properly.

WARNING!

- ▶ Any use contrary to the intended use, e.g., if the filter system is fed with water that is not of drinking water quality, results in a health hazard when the water is drunk:
 - Microbiological hazard due to contamination with pathogenic germs
 - Hazard from too high a concentration of heavy metals or organic contamination
- ▶ To protect the drinking water, maintenance and any other work on the filter system has to be carried out considering national directives for drinking water installations (e.g. DIN 1988, EN 1717) and applicable state and local regulations.
- ▶ If the authorities or the operator of the water supply system release instructions to boil the potable water due to microbial contamination it is necessary to boil the filtered water before consumption. If the drinking water quality is restored the filter system must be replaced and connections cleaned.
- ▶ Two type-tested non-return valves (in accordance with DIN EN 13959) are included in the filter head.
- ▶ Separate the filter system from the water supply prior to maintenance work on the drinking water supply. Rinse the water line before reconnecting the filter system.
- ▶ Disconnect the power supply of the appliance prior to installation.

⚠ CAUTION!

- ▶ Observe all national directives for drinking water installations (e.g. DIN 1988, EN 1717) and applicable state and local regulations, general sanitary requirements and technical data for the protection of drinking water.
- ▶ A check (shut-off) valve upstream of the filter system must be installed.
- ▶ Use only connections with gaskets or flat seals. Conical seals damage the filter head connections and will invalidate the warranty claim.
- ▶ The appliance needs to be connected with hoses in accordance with DVGW W 543 or NSF 42/53.
- ▶ If the product has been stored below freezing point (0 °C), leave the unpacked product at the ambient temperature of the installation location for a minimum of 24 hours prior to operation.
- ▶ Do not install the filter system near heat sources, open fire places or naked flames.
- ▶ Chemicals, solvents and vapours must not come into contact with the filter system.
- ▶ The installation location must be protected against freezing and direct sunlight.

❗ NOTE!

- ▶ For installation and operation of the filter system, the BG regulation "Rules for Safety and Health Protection When Working in Kitchens" of the "Food and Beverages" expert committee of BGZ (BGR111) must be observed. The filter system has been hygiene tested in accordance with Section 7.4 DIN 18879-1.
- ▶ The materials are selected in accordance with the requirements of DIN 18879-1 and EN 14898.
- ▶ The pressure resistance of the filter system conforms to DIN 18879-1.
- ▶ The filtered drinking water conforms to liquid category 2 in accordance with EN 1717.
- ▶ Clean and descale the appliance, e.g. coffee machine, before firstly installing the filter system.
- ▶ For immunocompromised people and infants it is recommended to boil the tap water before drinking. This also applies to filtered water.
- ▶ For the protection against microbiological growth the filter cartridge contains a small amount of silver ("bacteriostatic"). There might be a harmless release of silver in concentrations below the recommendations of the World Health Organization (WHO). The term "bacteriostatic" indicates that the system limits the passage or growth of bacteria already existing in the incoming water*. It does not mean that the water leaving the system is safer to drink than the water entering it.
- ▶ During the filtering process, the magnesium content rises slightly. If a special low-magnesium diet is to be followed, BWT recommends to seek medical advice.

4.1 Responsibility of the operator

The installation and operating instructions must be kept in the immediate vicinity of the filter system and must be accessible at any time.

The filter system may only be operated in a technically perfect state ensuring a safe operation.

The instructions in this installation and operating manual must be followed entirely.

4.2 Warranty and exclusion of liability

BWT warrants to the original purchaser/consumer all equipment that it manufactures to be free from defects in material and workmanship for a period of 2 years from the date of purchase. This warranty is subject to exclusions and limitations

The notes and recommendations listed, as well as local drinking water and recycling regulations, must be met. All information and notes in this installation and operating manual account for the applicable standards and regulations, state-of-the-art technology as well as our expertise in water treatment. BWT does not assume any liability for damages or subsequent/secondary damages arising from:

Failure to comply with the instructions in this installation and operating manual

Improper use

Improper or faulty installation

Improper commissioning, operation, maintenance

Mechanical damage of the filter system

Unauthorized modifications

Technical modifications

Use of non-certified, non-approved components

4.3 Qualified personnel

Only authorised, trained persons and professionals shall install, commission and maintain the filter system.

Authorised, trained persons have obtained instructions regarding the assigned tasks and possible risks in case of misuse or improper operation.

Professionals are in a position to install, commission and maintain the device, as a result of their technical training, knowledge and experience, as well as knowledge of applicable regulations.

4.4 Pressure

⚠ CAUTION!

- ▶ If the maximum nominal pressure exceeds 8 bar (116 psi) a pressure reducer must be installed upstream of the filter system.

❗ NOTE!

- ▶ Installing a pressure reducer can reduce the flow.
- ▶ The inlet pressure of the filter system should be higher than 1.2 bar (17.4 psi).

Pressure surges are to be avoided. If they do occur, the sum of pressure surge and idling pressure must not exceed the nominal pressure of 8 bar (116 psi). The positive pressure surge must not exceed 2 bar (29 psi) and the negative pressure shock must not fall below 50% of the settling flow pressure (see DIN 1988 Part 2.2.4).

4.5 Operation after a break or shutdown / Replacement intervals

In the event of longer breaks in operation, close the shut-off valve in the inlet of the filter system. After a break in operation exceeding two days (weekends, vacation, ...), rinse the filter system with 4–5 litres (1.1–1.3 gallons) of water before reuse.

Replace the filter cartridge ...

- on reaching the capacity stated in Section 3.2.
- no later than 6 months after installation.
- after a shutdown of 4 weeks or more.

4.6 Disposal

Dispose of exhausted filter cartridges, surplus parts and packaging according to local regulations. If local collection points are available, recycle all product components to protect the environment.

5 Installing the filter system

❗ NOTE!

- ▶ Decarbonized water contains free carbonic acid. Only appropriate materials are to be used for installation. Original BWT accessories are recommended.

5.1 Unpacking the filter system

Remove the filter system from the packaging. Inspect the delivery for completeness and transport damage. Defective parts must be replaced immediately.

⚠ CAUTION!

- ▶ Faulty or defect parts must be replaced immediately.
- ▶ Always ensure a safe and clean working environment.

5.2 Fitting the filter bracket

⚠ CAUTION!

- ▶ Before installation, read Technical data (Chapter 2) and Operating/Safety instructions (Chapter 4).
- ▶ To connect the filter system to the appliances only use hoses according to DVGW W 543 or NSF 42/53.
- ▶ When installing accessories (hoses, connection sets), observe the installation dimensions and bending radii.

To install the filter system, choose a location that enables simple connection to the water mains.

The bracket has to be aligned and mounted to allow a convenient access and replacement of the filter cartridge.

The filter system must be securely bolted to a wall using the bracket.

The filter system can be operated in a vertical or horizontal position.

2 For easy service and replacement of the filter cartridge after installation a minimum clearance/ distance of 65 mm (2.56 inches) is required at the bottom of the cartridge.

When installing the filter cartridge for horizontal operation, ensure that it is resting on the floor.

5.3 Determining filter capacity and bypass setting

4 The general hardness can be requested from the water supplier or determined with a titration test. The bypass setting can be selected based on the general hardness and its application. The typical filter capacities are shown in Table T1 or T2 (last page).

5 There are four setting options for the bypass. The default bypass setting is "2". The bypass can be set by pressing the button "a" and twisting the cap on the filter head clockwise or counter clockwise until the required bypass setting is reached and the cap snaps into place. The bypass should be sealed with the included warranty label. Note month and year on the label.

ⓘ NOTE!

- ▶ BWT recommends to choose the size of the filter cartridge with its capacity to be due for replacement in 6 month intervals.

5.4 Fitting the filter head

⚠ CAUTION!

- ▶ The filter head is never to be left under mains water pressure without a mounted filter cartridge.
- ▶ The tightening torque of the fittings (inlet/outlet) must not exceed 15 Nm!

ⓘ NOTE!

- ▶ The integrated Aquastop in the filter head prevents a water flow without mounted filter cartridge.

6 Insert the filter head into the filter bracket, observe the correct direction of flow.
Mount hoses (observe the bending radii!) for the water intake and outlet at the filter head.
Connect the water intake hose to the existing check/shut off valve in the intake.
Connect the water outlet hose to the appliance.

5.5 Installing a water meter

BWT recommends the installation of a water meter in the inlet of the filter cartridge in case the filter system is used for a device without an integrated water meter (e.g. coffee machine) which indicates the required replacement of the filter cartridge. With the water meter the filter cartridge's residual capacity can be determined at any time. Observe the operating instructions of the BWT Aquameter.

5.6 Installing/replacing the filter cartridge

⚠ CAUTION!

- ▶ The filter cartridge may only be installed in a genuine BWT filter head.
- ▶ Work cleanly, avoid impurities on the filter system.
- ▶ Close the check/shut off valve before exchanging the filter cartridge.

Unpack the filter cartridge and remove the hygienic cap.
Before installing the filter cartridge mark the installation and replacement date (no later than 6 months) on the type label of the filter cartridge.
In case of replacement unscrew the filter cartridge clockwise out of the filter head.
Screw the new filter cartridge counter clockwise into the filter head.
Open the check/shut off valve and check the system for leaks.

7

8

📌 NOTE!

- ▶ During commissioning, the filter has to be purged/flushed.
- ▶ To avoid airlocks during initial installation, turn the cartridge upside down and flush the required volume through the flush valve. Whilst flushing, press and release the button every 15 seconds for 2–3 seconds each time. This will agitate the resin and help remove any trapped air bubbles.
- ▶ For the best results, occasionally turn the cartridge upside down whilst it is in use. This will remove any accumulated gases that may be trapped within the resin. After a few seconds, return the cartridge to the normal upright position.
- ▶ The minimal flushing volume is given in Section 2.2. The volume of purge water is to be dismissed.

9

6 Service and maintenance

⚠ CAUTION!

- ▶ Failure to respect the replacement intervals of the filter cartridge may cause damage to the downstream appliances.
- ▶ Failure to replace the filter head or the hoses after 5 years can cause property damage.

Drinking water is food	Handle the filter system hygienically. Clean the filter system regularly with a damp cloth. Work cleanly especially when replacing the filter cartridge. Avoid using alcohol based cleaners, acidic and strong chemicals.
Check for leaks	Regularly
Check the pressure hoses	Regularly check for breaks, squeezes and pinch points. Replace damaged hoses.
Break in operation/shutdown	After a break in operation exceeding two days, the filter cartridge should be purged with a minimum of 4–5 liters (1.1–1.3 US gallons) of water.
Replace filter cartridge	After 6 months (regardless of the residual capacity); after a shutdown of more than 4 weeks
Replace filter head	After 5, after 10 years the latest
Replace pressure hoses	After 5 years

7 Trouble shooting

Error	Cause	Action
Filtered water cannot be drawn	Water supply in general is stopped or a valve is closed Filter cartridge not screwed properly into the filter head Filter head fitted incorrectly	Test all valves and open if necessary Unscrew filter by ½ rotation and reinsert as far as possible (Section 5.5) Check flow direction according to the arrow on the filter head and reverse flow direction if necessary (Section 5.3)
Low water flow rate	System pressure is too low	Check system pressure (Section 4.4)
Aquastop in filter head leaking while filter cartridge is removed	Particles deposited in Aquastop	Purge/flush filter system with mounted filter cartridge (Section 5.6)
Threaded /screw connection is leaking	Defective seal	Check seal, replace if necessary
Air bubbles	System not completely purged	Repeat purging/flushing procedure (Section 5.6)
Turbid or white water	Process-related formation of small bubbles of carbonic acid	Turbidity vanishes after 5 minutes.
Heating element, boiler in the appliance not satisfactorily protected against lime scale	Capacity of filter cartridge, filter cartridge too small; change in water hardness from the water supplier.	Check total hardness (Section 5.3) and filter capacity. Fit suitable filter cartridge if necessary.

8 Order numbers

	Order Number
Filter cartridge Magnesium Mineralized Water Protect Care MPC400	812595
Filter cartridge Magnesium Mineralized Water Protect Care MPC500	812596

9 Table of filter capacities

The filter capacities are listed in Table T1 or T2 at the end of this installation and operating manual.



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