

# BRAVADOS

proportional electronic volumetric dosing pump for AcquaSIL 20/40®



## Finality

Lime deposits and corrosion are crucial problems affecting hot and cold sanitary water installations. The proportional dosage of anti-scaling and anti-corrosive products is a safe and proven technology which helps in preventing scale deposition and corrosion processes. Polyphosphates, even at very low concentrations, are able to counteract the formation of scale and corrosion in water distribution lines.

BravaDOS is a proportional electronic dosing pump designed for the precise dosage of AcquaSIL 20/40® an aqueous solution of food grade polyphosphates specific for the treatment of drinking water which prevents scaling and corrosion of hydraulic systems. BravaDOS assures a dosage lower than 5 mg/l of P<sub>2</sub>O<sub>5</sub>.

## Operation

BravaDOS is a self-priming electronic volumetric pump in which pumping is controlled by an automatic electronic board which assures a dosage proportional to the water flow rate. Through a mechanism known as “threshold effect”, polyphosphates, even at concentration in the range of some ppm interfere with the carbonate crystallization phenomena hindering the formation of scale deposits.

Polyphosphates also form a protective layer on metal surfaces protecting them from possible corrosion. AcquaSIL 20/40® is able to slowly dissolve old lime deposits restoring encrusted surfaces.

## Key features

BravaDOS is completely self-priming. To enjoy the benefits of BravaDOS simply install it, connect the plug to a power supply and fill the tank with AcquaSIL 20/40®. A double non-return valve protects BravaDOS from backflow and backpressure allowing the refilling while BravaDOS is in service. Refilling is thus simplified because it does not need to put BravaDOS in bypass. The precise dosage is performed by an electronic board which makes a statistical measurement of the flow rate through an Hall effect transistor. BravaDOS is equipped with an automatic sensor to check the level of AcquaSIL 20/40® in the tank: when the level is too low an acoustic signal is emitted and a red led lights on stopping the dosage. The instantaneous mixing of AcquaSIL 20/40® with raw water is obtained by a specifically designed injection valve. In the front side of BravaDOS there are two led (red and green) which indicate the proper operation or the low level of AcquaSIL20/40® in the tank.

The high injection frequency assures an homogeneous dosage.

BravaDOS doses exclusively AcquaSIL 20/40®. The balanced composition of AcquaSIL 20/40® makes it particularly effective in stabilizing calcium and magnesium salts (responsible for scaling) and preventing corrosive phenomena both in cold and hot water. AcquaSIL 20/40® has proven effective with water having hardness in the range 5 °f - 35 °f.

The stabilizing properties of the product ACQUASIL 20/40® are guaranteed for instantaneous temperatures up to 80 °C and storage temperatures up to 60 °C.

AcquaSIL 20/40® is not classified as dangerous by current legislation.

BravaDOS is available with connections from ½" M up to 1"¼ M. For the model PM010 (½" M connections) the kit for the off-line connection is available as optional (cod. AV005).

## Intended use, use conditions

BravaDOS has been specifically designed for the dosage of AcquaSIL 20/40® in the civil sector and it can be used to protect: boilers (open loop hot water), hot water makers, cold water distribution lines, open loop cooling systems, dishwashers, washing machines and other household appliances requiring hot water.

## Maintenance and duration

BravaDOS requires the periodic refill with AcquaSIL 20/40®.

BravaDOS must be included in the periodic sanitization program planned for the distribution system (who has built the distribution system is in charge of this planning). As a consequence any time the distribution system is sanitized BravaDOS must be sanitized too.

For a proper maintenance two annual inspections are recommended.

## Installation

Install in agreement with local regulations. Install only in hygienically suitable places

BravaDOS should be installed in the cold water line upstream of the appliance (boiler, heat exchanger,

etc.) to be protected. Do not install in the hot water line or downstream of the appliance to be protected. Install by-pass valves. Read the Installation Manual supplied with BravaDOS.

## Warnings

Keep away from direct sunlight and frost. BravaDOS should treat drinking water only. Read Performances and Technical Datasheet paragraph for operating limits. Follow the Instruction Manual. BravaDOS doses exclusively AcquaSIL 20/40®. Warranties on BravaDOS, its performances, the maintenance of drinking water standards immediately decay when any product other than AcquaSIL 20/40® is used.

Do not install BravaDOS upstream of solar boilers. The high temperatures reached in these systems can cause the rapid degradation of AcquaSIL 20/40® compromising its stabilization and protective properties.

## Raw water

BravaDOS has been designed to treat only drinking water. Do not install in non-drinking water lines and contact Acqua Brevetti s.r.l. for further information. The dosage of AcquaSIL 20/40® increase the water concentration of P<sub>2</sub>O<sub>5</sub> which is regulated by current legislation. The P<sub>2</sub>O<sub>5</sub> concentration in the water treated with BravaDOS is lower than 5 mg/l. This value refers to a water having upstream of BravaDOS a concentration of P<sub>2</sub>O<sub>5</sub> <0.05 mg/l.

## Conformity and standards

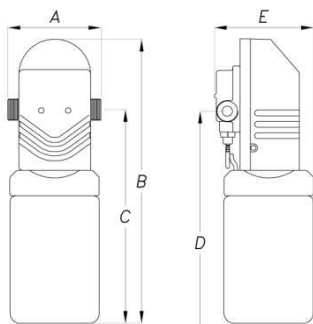
Acqua Brevetti s.r.l. works with a Quality System certified in compliance with the requirements of the UNI-EN ISO 9001:2008 with certificate 501007368 issued by TÜV Italy Srl.

## Endowment

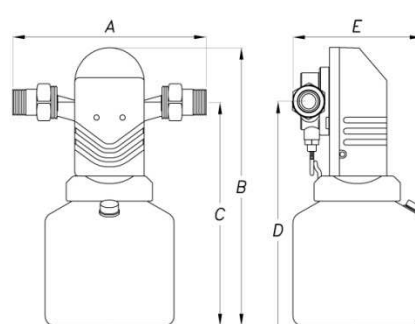
BravaDOS is packaged in a plastic bag put inside a paperboard box. The standard endowment includes: BravaDOS pump, nuts and studs (for code PM012, PM014, PM016), instruction manual (including the conformity declaration), warranty certification.

## Performances and technical datasheet

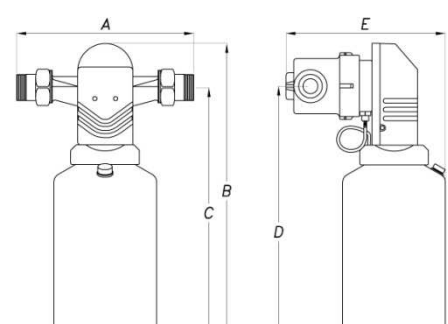
	<i>Units</i>	<i>PM010</i>	<i>PM012</i>	<i>PM014</i>	<i>PM016</i>
<i>Connections</i>	DN	½" M	¾" M	1" M	1¼" M
<i>Minimum flow rate</i>	m³/h	0,03	0,06	0,15	0,15
<i>Flow rate (ΔP=0.2 bar)</i>	m³/h	0.5	1.2	3.0	3.5
<i>Flow rate (ΔP=0.5 bar)</i>	m³/h	1.5	3.0	4.5	6.0
<i>Min –max water hardness</i>	°f	5 – 35			
<i>Max. instantaneous heating temperature</i> <i>Max temperature for stored hot water</i>	°C	80 60			
<i>Tank volume – refill autonomy</i>	cm³ – m³	500 – 22	1000 – 47	2500 - 120	2500 - 120
<i>Min-max exercise pressure</i>	bar	1.5 - 6			
<i>Min-max water temperature</i>	°C	5 - 30			
<i>Min-max room temperature</i>	°C	5 - 40			
<i>N° double serviced flats</i>	N°	1	2	3	4
<i>Power supply</i>	V-Hz-VA	230 – 50/60 – 1VA			
<b>Dimensions</b>					
<i>Width (A)</i>	mm	90	185	230	230
<i>Connections width (B)</i>	mm	210	225	320	320
<i>Total height (C)</i>	mm	282	282	380	380
<i>Tank width (D)</i>	mm	88	130	130	130
<i>Distance from ground (E)</i>	mm	360	450	600	600
<i>Encumbrance (F)</i>	mm	100	115	170	170



**BravaDOS**  
cod. PM010



**BravaDOS**  
cod. PM012

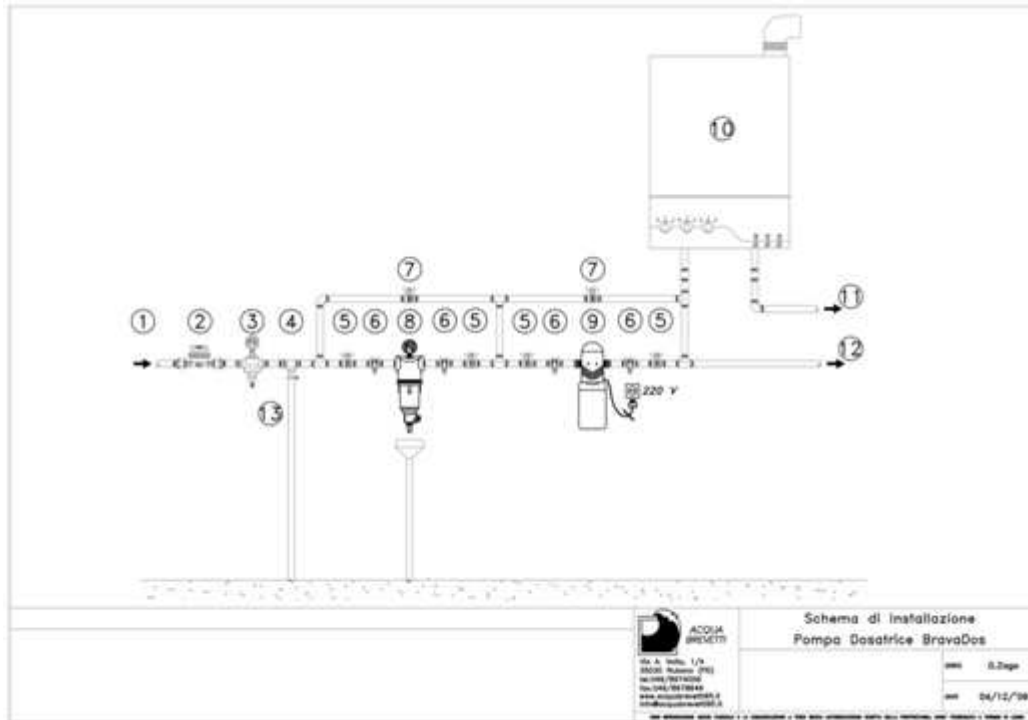


**BravaDOS**  
cod. PM014-PM016

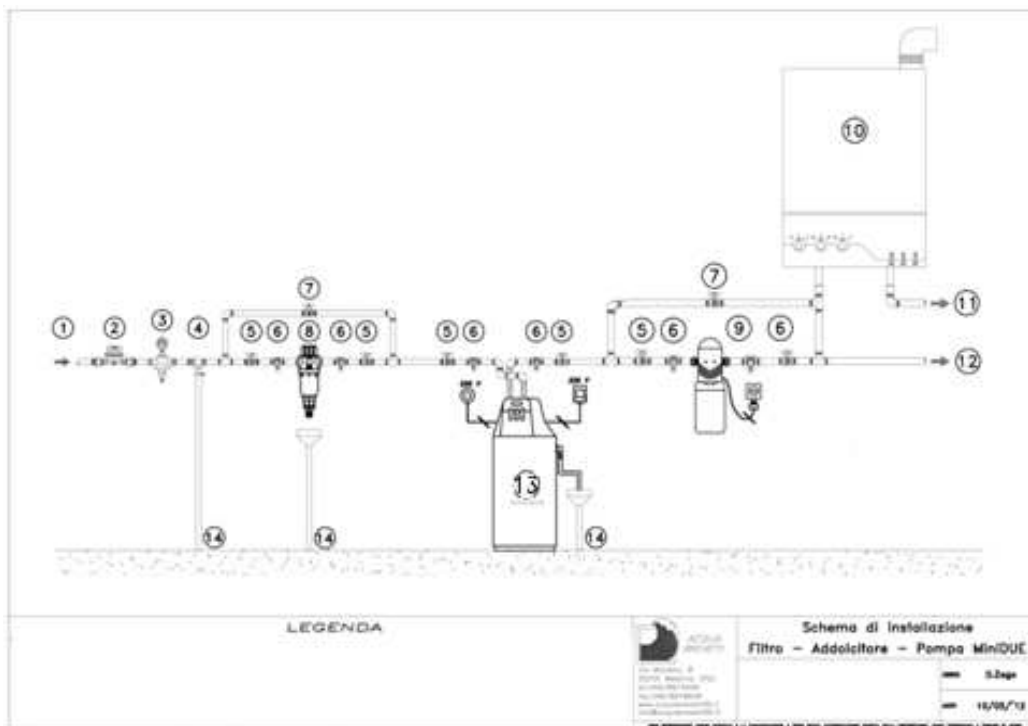
Trattare l'acqua è utile e vantaggioso

## Installation scheme

A. Water with low to medium hardness (es. lower than 25 °f)



B. Water with high hardness (es. higher than 25 °f)



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### Legend

1. Water inlet • 2. Flow meter • 3. Pressure reducer • 4. Backflow preventer • 5. Shut off valve • 6. Sampling tap • 7. By-pass valve • 8. Protection filter • 9. BravaDOS • 10. Water heater • 11. Treated hot water outlet • 12. Cold water outlet • 13. Water softener • 14. Drain.



**ACQUA BREVETTI SRL**

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This Technical Data Sheet is based on the experiences of Acqua Brevetti s.r.l. and it applies to normal and intended use of the product as described in this sheet and in the Manual of Operation and Maintenance; any use other than those described must be communicated to Acqua Brevetti s.r.l. and authorized in writing. For the regular operation and maintenance enter into a contact with an authorized technical service center. Acqua Brevetti s.r.l. reserves the right to change and modify its products without notice. Under the current regulations it is forbidden to use and/or reproduce any part of this document which remains the sole property of Acqua Brevetti s.r.l.

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