



- Pair of pressure gauges to control the inlet / outlet pressure and filter clogging.
- Self-cleaning
- Ensures system efficiency
- Limited overall dimensions

## PRODUCTION RANGE

Connections	Standard Degree of filtration [µm]	Filtering surface [cm <sup>2</sup> ]	Size	Code	Kv [m <sup>3</sup> /h] <sup>(1)</sup>
THREADED UNION MM UNI-EN-ISO 228	100	52.28	1/2"	2516.04.00	3.10
		68.14	3/4"	2516.05.00	5.80
		68.14	1"	2516.06.00	8.55
		173.28	1"1/4	583.07.00	21.00

## DESCRIPTION

*The Self-cleaning filters with double pressure gauge RBM* represent the best solution for solving engineering problems caused by suspended particle pollution with a range suitable for small, medium and large systems.

The filtration of water intended for domestic use or for industrial uses, coming from urban mains or well water, shows pollution of various kinds, sediment or in suspension which, if positioned during precipitation, may subsequently interact giving rise to unpleasant compounds and, in turn, contaminants.

**The filters are characterised by the presence of two pressure gauges: one measures the input pressure and the second the output pressure.**

### OPERATION

Through a mandatory path the fluid is forced to pass through the cartridge meshes which prevents the crossing of the larger particles.

The impurities stopped by the filter are accumulated on its bottom as long as the opening of the specific discharge valve allows the expulsion thereof.

### USE

Generally used in plumbing and heating systems, they can be used in all circuits whose transiting fluid (hot or cold) is compatible with the construction materials.

The application of the self-cleaning filters in the heating and air conditioning systems is a proper prevention in the formation of **sludge** for dissociation of the mineral salts contained in thermal fluid and recirculation waters.

### ASSEMBLY

The filter must be installed with the **impurities discharge valve facing downwards**, respecting the **directional arrow located on the filter body**.

(for further information, refer to that reported on page 6 in this sheet).

### MAINTENANCE

The filter cartridge is made of stainless steel AISI 304, and can be regenerated and replaced for maintenance or changed with a different degree.

The filter has excellent flow rates even with clogging of 50%, after which cleaning is recommended.

*The RBM Self-Cleaning filters* must be subjected to scheduled routine maintenance (cleaning and, if necessary, change the filtering mesh) at least once every six months;

(for further information, refer to that reported on page 6 in this sheet).

(1) Clean filter and standard cartridge 100 µm. For flow rates with cartridges with different filtering rating, refer to the diagrams shown on pages 4 and 5.

## CONSTRUCTION FEATURES

• Body:	Nickel Plated Brass CW 617N UNI EN 12165
• Filter holder cap:	Nickel Plated Brass CW 617N UNI EN 12165
• Filter:	AISI 304 stainless steel (UNI 6900-71)
• Seals:	Nitrile
• Union threaded connections:	MM UNI-EN-ISO 228

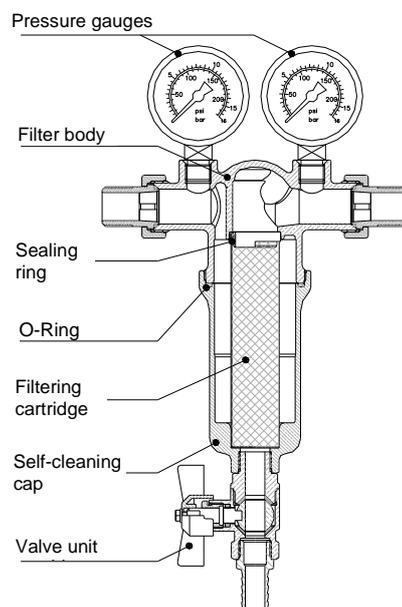
## TECHNICAL FEATURES

• Max. operating pressure:	16 bar (1600 kPa)
• Max. operating temperature:	100°C (Water)
• Fluid of use:	Water
• Standard filtration:	100 µm
• Degree of filtration available:	100 µm - 300 µm - 800 µm
• Pressure gauge scale:	0...16 bar

## STRUCTURAL COMPONENTS

The RBM double pressure gauge self-cleaning filter is composed as follows:

- Filter holder cap with hose connection impurity discharge valve;
- Filtering cartridge in AISI 304 stainless steel having the following features:
  - Reinforced to operate at high pressure;
  - Double filtering surface with respect to the DN section used (to guarantee greater cleaning autonomy);
  - Standard degree of filtration **100** micron; (available as accessory cartridges with filtration from **300 and 800** micron).
- Pair of pressure gauges (scale 0...16 bar), to control the inlet / outlet pressure and filter clogging.



## OPERATING PRINCIPLE

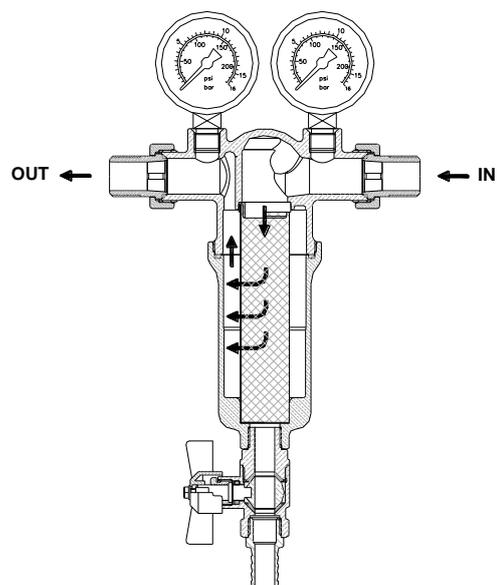
Through a mandatory path the fluid is forced to pass through the cartridge meshes where it is cleaned and then made to continue towards the outlet.

The impurities stopped by the filter are accumulated on its bottom as long as the opening of the specific discharge valve allows the expulsion thereof.

During this operation, the fluid that flows out drags with it the impurities that were trapped in the cartridge mesh, freeing the transit sections.

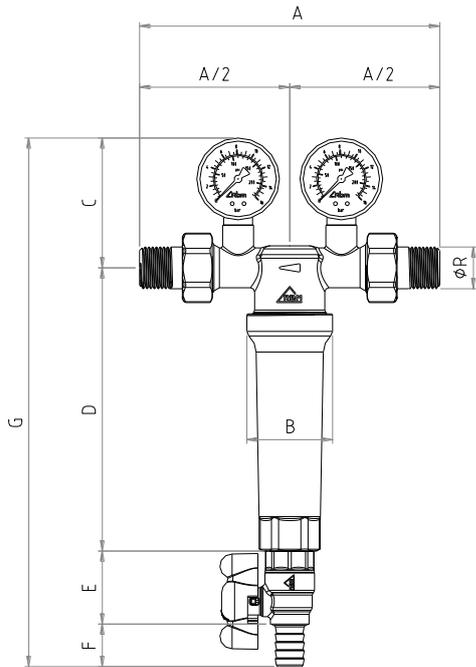
The pressure gauges on the self-cleaning filter are both displays of the inlet and outlet pressures and check blockage of the cartridge.

This is displayed when the pressure difference indicated by the pressure gauges at a given flow rate, with a clean filter, increases gradually over time.



**Diagram of water passing through the filter**

## DIMENSIONAL FEATURES



MM connection union threaded self-cleaning filter							
Size (R)	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
1/2"	145	41.5	63	138.5	36	21	258.5
3/4"	155	47	65.5	134.5	36	21	257
1"	174	57	70	140	36	21	267
1"1/4	183	79	90	178	36	21	325

## SPARE PARTS

### CARTRIDGE FOR SELF-CLEANING FILTER WITH DOUBLE PRESSURE GAUGE



MEASUREMENT	VALUES OF FILTRATION			Filtering surface [cm <sup>2</sup> ]
	800 [µm]	300 [µm]	100 [µm] *	
	code	code	code	
1/2"	1171.003	1171.013	1171.023	52.28
3/4"	1172.003	1172.013	1172.023	68.14
1"	1173.003	1173.013	1173.023	68.14
1"1/4	1201.003	1201.013	1201.023	173.28

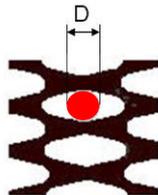
\* Standard degree of filtration

#### SELECTING THE FILTER:

The choice of the filtering mesh is always at the discretion of the user; As a rule, we indicate:

- 100-300-800 micron for drinking water
- 300 micron for well water

## TO KNOW MORE



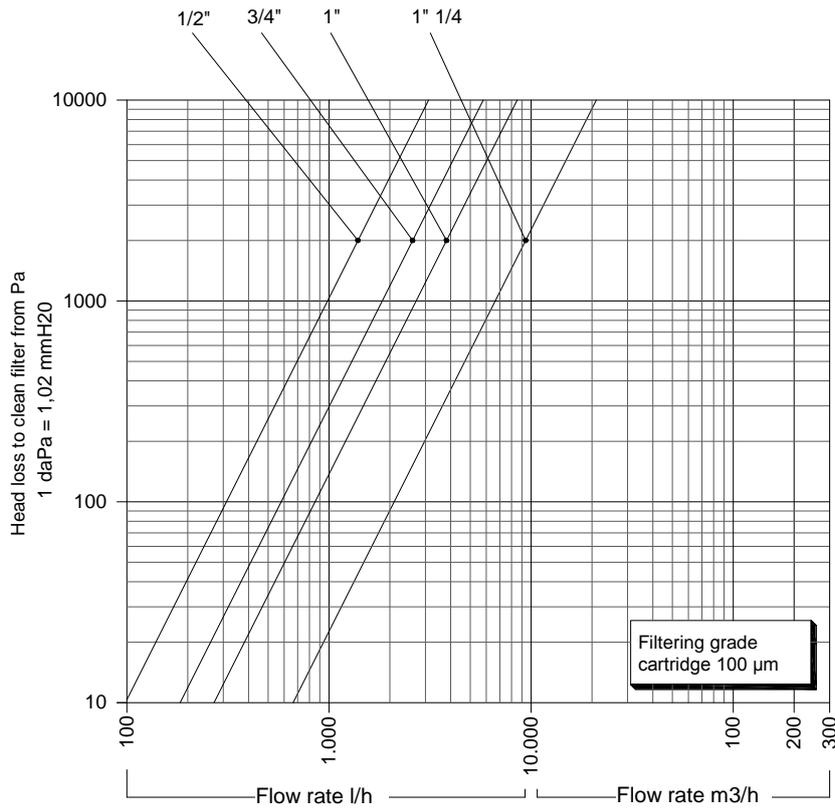
The filtering cartridge is the most important element of the filter; it has a cylindrical body with rhomboidal mesh in stainless steel AISI 304.

The number of meshes present per square metre is an essential element to correctly select the filter. A filtering cartridge, in fact, stands out from other depending on the amount of meshes present. The narrower the filter meshes the tighter will the filter be; therefore, the higher the number of meshes per square metre and the greater the filtering capacity of the filter. It is necessary to know the light of a single filtering mesh to understand how many are present per square metre.

Each filtering cartridge is accompanied by a number expressed in micron [ $1\mu = 0.001\text{ mm}$ ] that expresses its filtering capacity. This number represents the diameter of the rim [D: see figure] enclosed inside the diamond mesh of the filter cartridge. The higher the value expressed in micron, the wider the filter mesh will be, so less meshes per square metre and, therefore, lower filtering capacity.

# FLUID DYNAMICS FEATURES

## Load losses diagram



Analytical procedure for the filter dimensioning valid for liquids with  $\rho \cong 1$  kg/dm<sup>3</sup>

$$Kvs = Q * \left( \frac{10000}{\Delta P} \right)^{0.5}$$

valid for water with temp. from 0 to 30°C

kvs correction for fluids with  $\rho$  different from 1 kg/dm<sup>3</sup>

$$Kvs' = Kvs * \sqrt{\rho'}$$

Analytical procedure for determining the pressure drop for liquids with  $\rho \cong 1$  kg/dm<sup>3</sup>

$$\Delta P = \left( \frac{Q}{Kvs} \right)^2 \times 10000$$

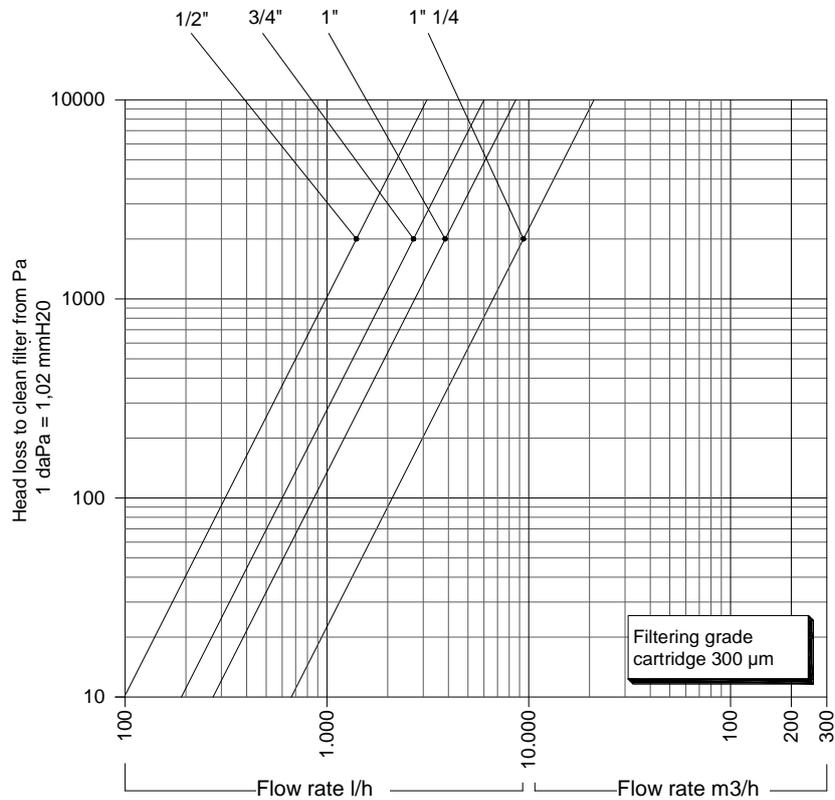
valid for water with temp. from 0 to 30°C

correction of  $\Delta P$  for fluids with  $\rho$  different from 1 kg/dm<sup>3</sup>

$$\Delta P' = \Delta P \times \rho'$$

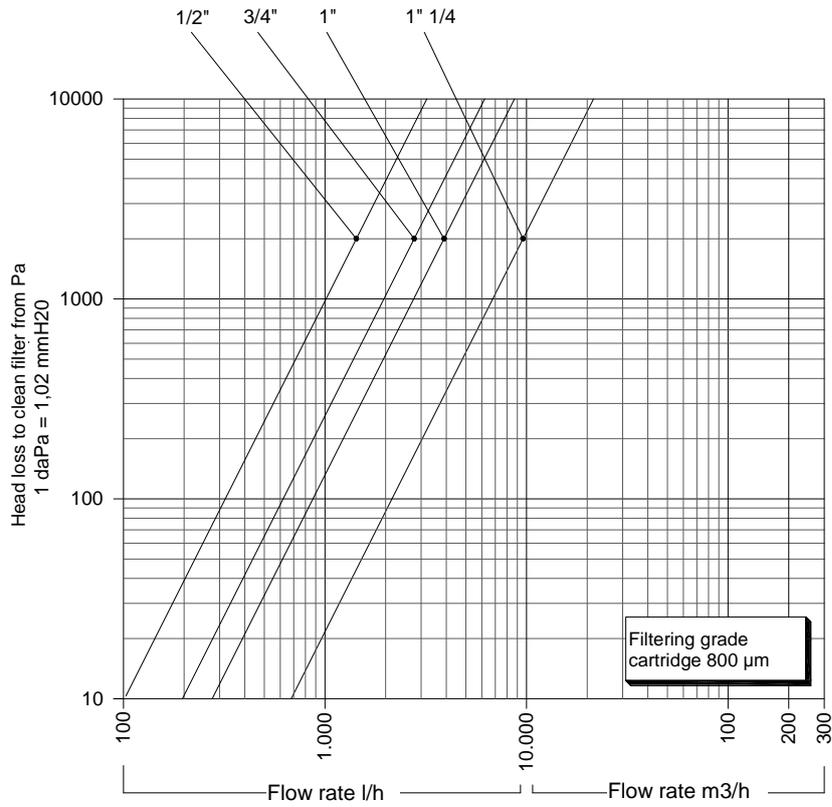
### Key

$\Delta P$  = head loss in daPa (1daPa=10Pa).  
 $\Delta P'$  = correct head loss in daPa (1daPa=10Pa).  
 $\Delta P_{max}$  = pressure difference recommended for correct operation.  
 Q = flow rate in m<sup>3</sup>/h  
 Kvs = hydraulic feature in m<sup>3</sup>/h (1m<sup>3</sup>/h=1,000 l/h)  
 $\rho'$  = liquid density in kg/dm<sup>3</sup>



## FLUID DYNAMICS FEATURES

### Load losses diagram

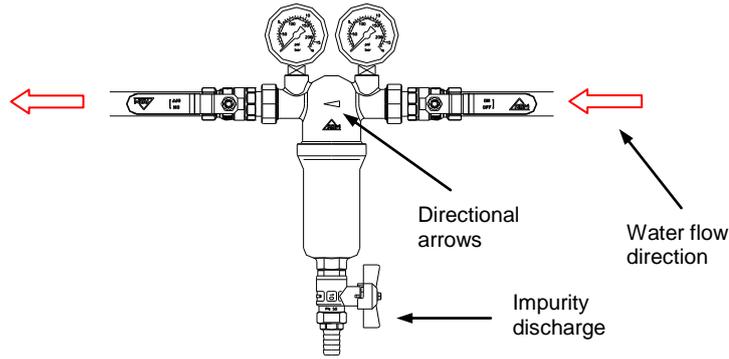


### FOR QUICK SELECTION OF THE SELF-CLEANING FILTER WITH DOUBLE PRESSURE GAUGE

MEASUREMENT	WATER FLOW IN TRANSIT [l/h]					
	Filter of 100 μm		Filter of 300 μm		Filter of 800 μm	
	with ΔP 1,000 Pa	with ΔP 10,000 Pa	with ΔP 1,000 Pa	with ΔP 10,000 Pa	with ΔP 1,000 Pa	with ΔP 10,000 Pa
1/2"	310	980	315	990	320	1.010
3/4"	580	1.840	600	1.900	620	1.950
1"	860	2.700	865	2.720	890	2.810
1" 1/4	2.100	6.640	2.110	6.660	2.150	6.750

\* The specified flow rate values are obtained with filtering cartridge perfectly clean and not blocked.  
The table has the sole purpose of supplying the technician with a quick reference to match the chosen component with a given system size.  
The values shown in the table are not binding and therefore do not represent the performance limits of the components.

## ASSEMBLY



**Assembly diagram of the self-cleaning filter inside a hydraulic circuit**

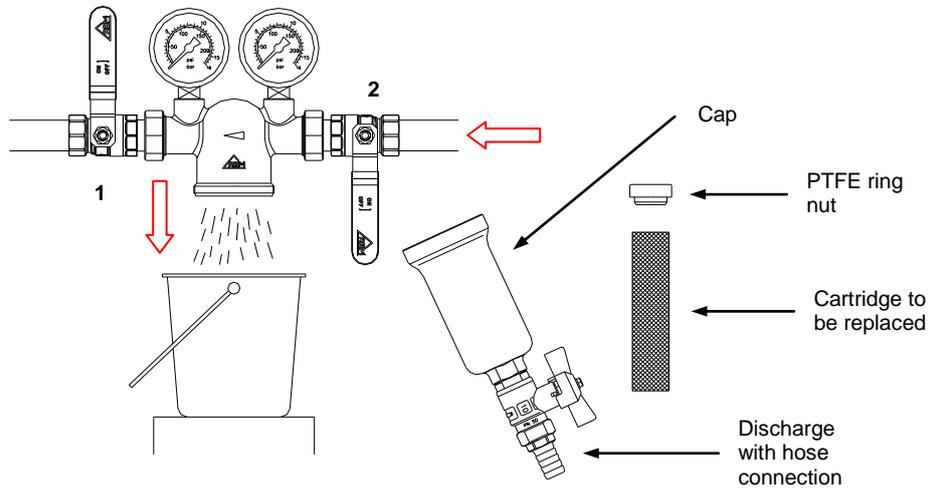
The image shows how the RBM self-cleaning filter must be installed inside a hydraulic circuit.

The filter must be installed with the impurities discharge valve facing downwards, to facilitate the deposit of particles in suspension on the bottom.

The filter must be placed inside the circuit, respecting the directional arrow stamped on the body of the filter, which indicates the flow direction of the circuit.

Always provide a shut-off valve located upstream of the filter to simplify maintenance / cleaning.

## MAINTENANCE



### **WASHING THE CARTRIDGE:**

To wash the cartridge, drain the liquid by opening the drain valve with hose connection;

N.B.: During this operation, the shut-off valves **1** and **2** must be open.

### **FILTERING CARTRIDGE REPLACEMENT:**

#### **PRECAUTIONS:**

For the routine maintenance of the filter and to prevent the emptying of the system, apply a shut-off valve (ball valves) in the area of operation.

**N.B. :** It is not essential that the shut-off valves are in proximity of the filter.

It is sufficient that in any case there are two cocks in a well delimited part of the circuit in order to avoid an excessive outflow of water that could create serious washout problems in the environment.

#### **OPERATIONS:**

- Bring the containers which must contain the outflow of water closer;
- Close the cocks **1 / 2**;
- Unscrew the cap, (if high temperature fluid circulates in the circuit, use the due precautions and the specific protections to avoid direct contact with the fluid).
- Extract the cartridge has already used, wash it and if necessary replace it with the new one. (filtering mesh available, ranging between **100** and **800** micron).
- Pay attention to insert the PTFE ring nut on the filter cartridge;
- Close the filter with the relevant cap;
- Re-open the valve upstream of the filter to open the hydraulic system.

## SPECIFICATION ITEMS

### **SERIES 2516**

Self-cleaning water filter, with removable filtering cartridge and visual detection of degree of clogging, complete with double dial pressure gauge and discharge bib-cock with hose connection. Nickel plated brass body. Stainless steel 304 stretched mesh filter. Nitrile seals. Threaded union connections MM UNI-EN-ISO 228. Max operating pressure 16 bar. Max operating temperature 100 °C. Pressure gauge scale 0...16 bar. Standard filtering 100 µm. Available sizes 1/2" + 1"1/4



RBM reserves the right to improve and change the described products and relative technical data at any moment and without prior notice: always refer to the instructions attached with the supplied components; this sheet is an aid, should the instructions be extremely schematic. Our technical department is always at your disposal for any doubt, problem or clarification.

