

SMART CLEAN™

**Magnetic self-cleaning dirt separator filter
adjustable or straight for hydraulic circuits**



STEC0019HCE.EN.00



Function

SMART CLEAN™ allows to solve particle pollution problems, especially rust and sand, which are formed by corrosion and encrustations during the normal operation of a system. Through its effective and constant action, the magnetic filter collects impurities in the circuit, preventing their circulation, thus avoiding wear and damage to all the components that make up the system. The impurities stopped by the filter accumulate on the bottom of it, and are eliminated simply by opening the adjustable drain valve. In this way, all magnetic (ferrous residues) and non-magnetic (algae, mud, sand, ...) contaminants present in the system are removed.

Plus

- Eliminates impurities
- Self-cleaning
- Extends the life of the boiler



Magnetic
filtration

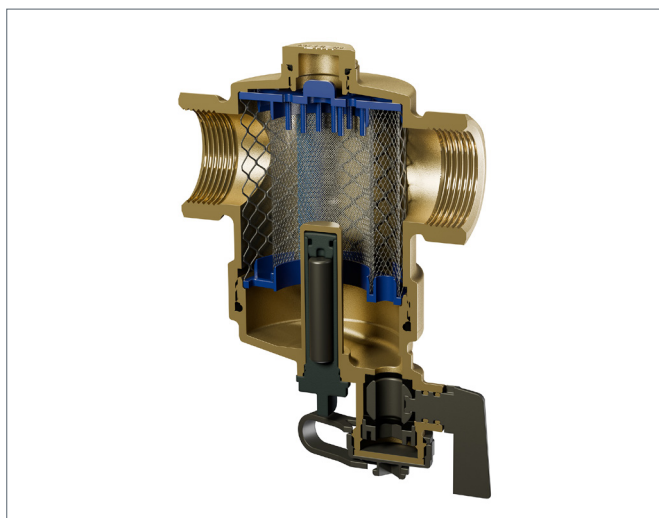


Mechanical
filtration

Product range

CODE	DESCRIPTION	SIZE	COLOUR
DF01700034	Magnetic brass dirt separator - Straight	3/4" F x 3/4" F	Brass
DF01700100	Magnetic brass dirt separator - Straight	1" F x 1" F	Brass
DF01700114	Magnetic brass dirt separator - Straight	1" 1/4 F x 1" 1/4 F	Brass
DF01700022	Magnetic brass dirt separator - Straight	ø 22 x ø 22	Brass
DF01700028	Magnetic brass dirt separator - Straight	ø 28 x ø 28	Brass
DF01600034	Magnetic brass dirt separator - With adjustable tee	3/4" F x 3/4" F	Brass
DF01600100	Magnetic brass dirt separator - With adjustable tee	1" F x 1" F	Brass
DF01600022	Magnetic brass dirt separator - With adjustable tee	ø 22 x ø 22	Brass
DF01600028	Magnetic brass dirt separator - With adjustable tee	ø 28 x ø 28	Brass

 **MADE IN ITALY**



Materials

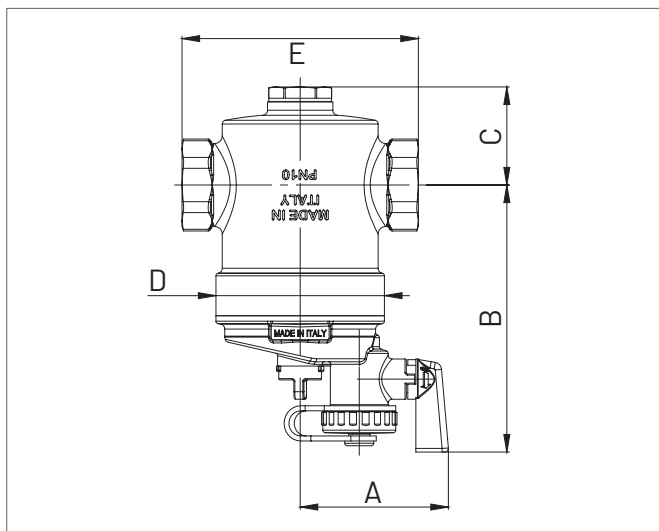
Body: Brass EN 12165 CW617

Filter cartridge: AISI 304 Stainless Steel

Cartridge insert: PA66 + FV 30 %

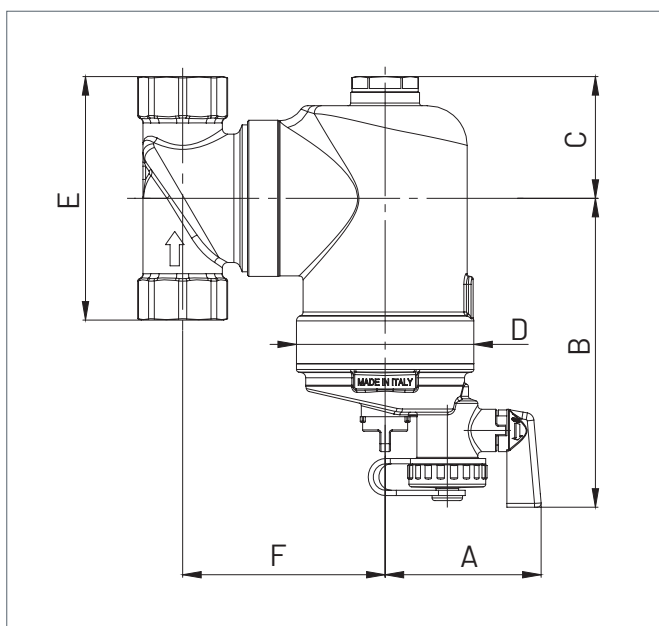
Magnet: Neodymium

Seals: Peroxide cured EPDM



Dimensions (Straight model)

SIZE	ø 22 mm	ø 28 mm	3/4"	1"	1" 1/4
A	59	59	59	59	59
B	106	106	106	106	106
C	39	39	39	39	39
D	ø 67	ø 67	ø 67	ø 67	ø 67
E	110	114	94	100	100

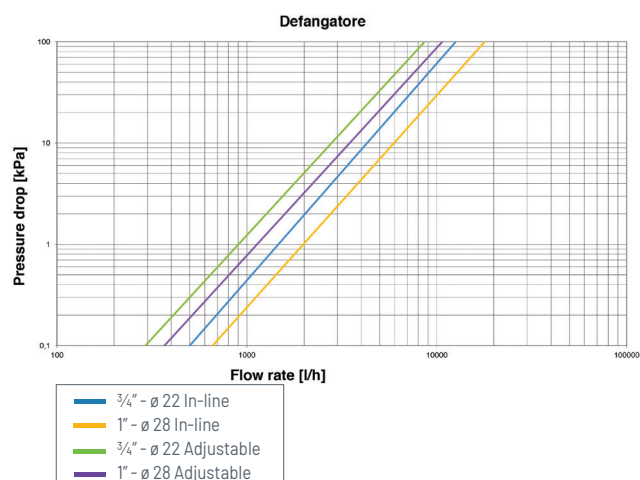


Dimensions (Adjustable model)

SIZE	ø 22 mm	ø 28 mm	3/4"	1"
A	59	59	59	59
B	117	117	117	117
C	46	46	46	46
D	ø 67	ø 67	ø 67	ø 67
E	108	116	92	98
F	76,5	76,5	76,5	76,5

HYDRAULIC CHARACTERISTICS

Flow rate vs Pressure Drop



Technical data

Magnet: 12000 Gauss

Filtering cartridge: Multilayer stainless steel

Working temperature: 0 ÷ 100 °C

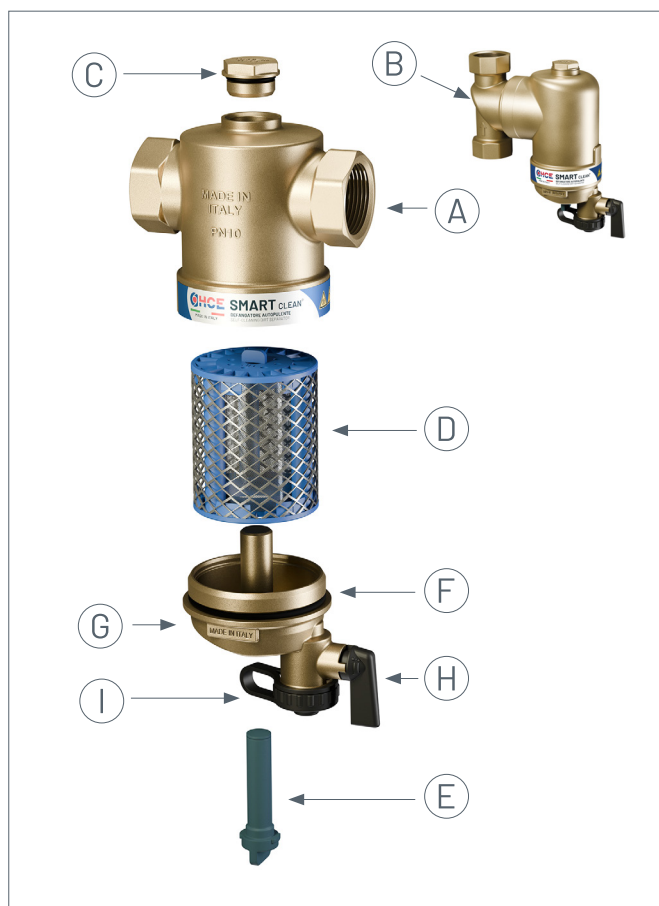
Max. Temperature: 110 °C

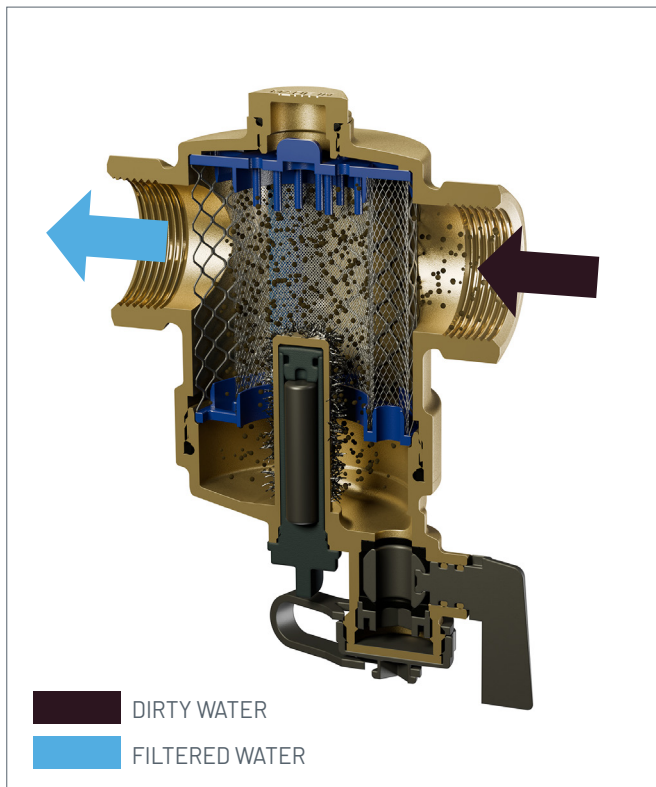
Maximum working pressure: 10 bar

Compatible fluids: water, water + glycol 50% max

Description

- A. Upper body with connections
- B. Adjustable inlet and outlet connections (only for adjustable model)
- C. Upper cap 1/2" for air vent valve or additives loading
- D. Multilayered cartridge with satellites (patent pending)
- E. Magnet
- F. O-ring
- G. Lower body
- H. Integrated drain cock
- I. Plug





Operating principle

Via a forced path, the fluid is forced to enter the filtering chamber and to pass through the mesh of the cartridge.

Through the simultaneous action of:

- MULTILAYERED cartridge WITH SATELLITES
- Magnet with central extension
- Thanks to the design choices of the filtration chamber, water with debris is filtered.

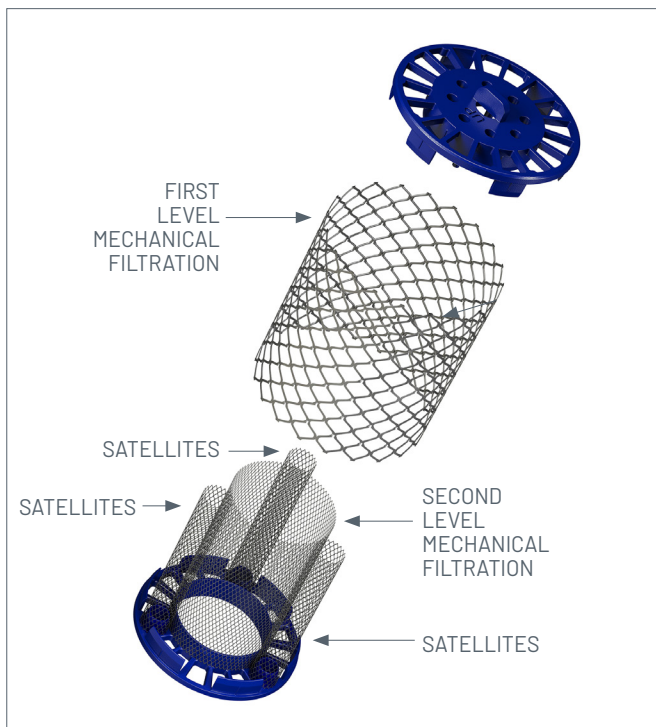
The sudden change of section (the filtration filtering chamber has a much larger diameter than the duct), slows down the fluid motion and consequently the particles dragging speed.

The particles collide with the filtering cartridge mesh and they slow down further their motion.

Gravity prevails over the drag force, making the heavier particles precipitate downward.

The magnet, placed inside a cylinder positioned in the centre of the filtering chamber, attracts all impurities with magnetic characteristics.

In this way, all magnetic contaminants (ferrous residues) and some of the non-magnetic contaminants (algae, sludge, sand, etc.) in the system are removed.



The cartridge

The special stainless steel cartridge with a high degree of filtration does not resist the passage of the fluid (low pressure drops).

But - unlike other dirt separators, thanks to the presence of particular satellites, the fluid always passes through the meshes. This guarantees a better filtration efficiency. The central magnet helps in the removal of ferrous particles and magnetite.



Installation instructions

It is recommended to install SMART CLEAN™ on the return circuit, at the entrance to the boiler, to protect it from all impurities in the system, especially in the start-up phase. The central magnet helps in the removal of ferrous particles and magnetite. SMART CLEAN™ must be installed with the impurity drain cock facing downwards. The articulated part allows installation on pipes:

- Vertical
- Horizontal
- Diagonal

There is a 1/2" female connection in the upper part of the filter, which can be used to install an automatic air vent valve or to load additives. The valve can be used to eliminate air that was not expelled during the filling phase or to eliminate the micro bubbles caused by the normal functioning of the system.

- A. Directional arrow
- B. Connection G 1/2"
- C. Adjustable connection
- D. Cartridge / magnet holder body
- E. Impurity drain cock

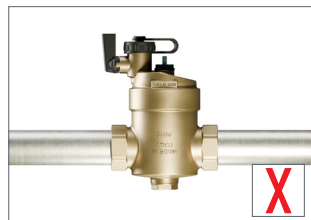
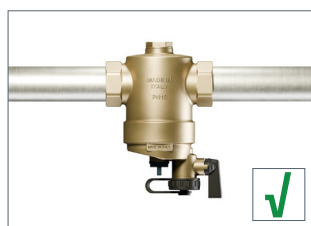
The dirt separator filter should preferably be installed on the return pipe from the generator.

NOTE

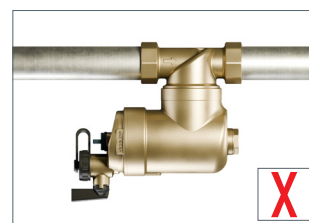
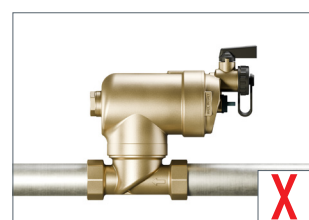
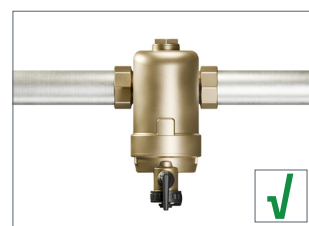
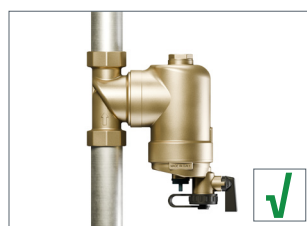
For detailed information on the fitting, use and maintenance of the SMART CLEAN™ dirt separator, see the relative instruction sheet. If instructions are lost, please, request a copy.

THE DEVICE MUST BE INSTALLED ACCORDING TO CURRENT REGULATIONS AND BY A QUALIFIED TECHNICIAN.


Installation - Inline model



Installation - Adjustable model



Inspection, cleaning and maintenance operations

 **Warning.** Before any inspection, cleaning or maintenance, switch off the generator, close the shut-off valves upstream of the dirt separator and wait until the components are cold.

The amount of debris that accumulates in the dirt separator depends on the condition of the system. Carry out the ROUTINE CLEANING and EXTRAORDINARY CLEANING operations according to the recommended deadlines.

Routine cleaning

Carry out routine cleaning every three months during the heating season

PROCEDURE:

1. Switch off the boiler and make sure that the system water is at room temperature*.
2. Write down the system operating pressure shown by the pressure gauge on the boiler*.
3. Close the inlet shut-off valve (system side).
4. Withdraw the magnet E by unscrewing it from the bottom of the dirt separator.
5. Unscrew the cap I and place a bucket under it.
6. Open the drain cock H for a period of 2/3 seconds, close it carefully and wait a few seconds. Repeat the operation.
7. Refit the cap I.
8. Reposition magnet E and reopen the shut-off valves.
9. Put the system back into operation.

Extraordinary cleaning - thorough cleaning

Perform extraordinary cleaning at least once a year

PROCEDURE:

1. Switch off the boiler and make sure that the system water is at room temperature*.
2. Write down the system operating pressure shown by the pressure gauge on the boiler*.
3. Close the shut-off valves upstream and downstream of the dirt separator to isolate it.
4. Withdraw the magnet E by unscrewing it from the bottom of the dirt separator.
5. Release the pressure using the drain valve and unscrew the lower body using a pipe wrench.
6. Remove the filter cartridge D.
7. Rinse both the filter and the other components under running water.
8. Fit the filter cartridge D back into the upper body.
9. Screw back the lower body using a pipe wrench.
10. Reposition the magnet E.
11. Check that the drain cock H is closed and sealed with the cap I.
12. Reopen the shut-off valves.
13. Put the system back into operation by restoring the pressure noted in step 2*.

* NB consult the boiler's use and maintenance manual if necessary.

Package contents

- POWER CLEAN™ dirt separator

Technical specifications

Self-cleaning magnetic dirt separator filter for hydraulic circuits, SMART CLEAN™ model. Brass body. Brass cartridge / magnet holder body. AISI 304 stainless steel filter cartridge. EPDM PEROX seals. FF-UNI-EN-ISO 228 threaded fittings (or compression type for copper pipe). Max. operating pressure 10 bar. Working temperature 0 ÷ +100 °C. Max. working temperature 130 °C.

Neodymium magnet $B = 12000$ gauss. $B(T_{max}) / B(T_{room})^* < 1\%$ where $* T_{max} = 110^{\circ}\text{C} - T_{room} = 21^{\circ}\text{C}$. Eliminates all impurities; self-cleaning; excellent hydraulic characteristics; installation on vertical, horizontal and diagonal pipes; prolongs the useful life of the boiler; fights corrosion; it guarantees the efficiency of the system. Available size STRAIGHT MODEL: 3/4" - 1" - 1 1/4" (or compression for copper pipe $\varnothing 22$ and $\varnothing 28$). Available size ADJUSTABLE MODEL: 3/4" - 1" (or compression for copper pipe $\varnothing 22$ and $\varnothing 28$).

HCE Srl reserves the right to make improvements and changes to the products described and to the related technical data at any time and without notice: always refer to the instructions attached to the components supplied, this sheet is an aid if they are too schematic. Our technical office is always available for any doubt, problem or clarification.