



### Purpose and use

With more than fifty years of expertise in the water treatment field and an in-house engineering office specializing in sustainable innovation, Metalife has become a leading company in the sector over the years, thanks to its high-end self-cleaning filter lines. What distinguishes these filters is the use of the “Turboclean” calibrated nozzle impeller fed with clean (filtered) water, which allows for efficient and effective cleaning of the filter element, without having to disassemble or remove parts of the filter.



### Filtration mode

As can be seen from Figure No. 1, after flowing along a one-way path, the water to be treated passes through the mesh of the filtering net and finally it rises inside the cartridge, free of any suspended particulate matter. The vortices caused by the turbulent motion that is established close to the filtering net and the cyclonic effect carefully optimized by the filter design, allow:

- The separation of the coarsest particulate matter that precipitates directly to the bottom of the vessel.
- The separation of the smallest particles that accumulate on the filtering net.

In the paragraph “cleaning mode”, the innovative cleaning system with Turboclean impeller will be explained.



### Cleaning mode

As well depicted in Figure n°2, by turning the appropriate green knob clockwise, the cleaning system is activated which, from a technological point of view, can be schematized as follows:

- A simple, but effective counter-ramp system lifts the entire cartridge and at the same time opens the filter drain.

- A carefully designed OR system diverts the entire water flow into the upper part of the cartridge (prefilter), where a filter mesh cleans the impeller feed water.
- The clean water flows through the impeller feed system, which is optimized from a fluid dynamics point of view to minimize pressure drops and at the same time increase the kinetic height of the fluid close to the nozzles.
- The size and orientation of the calibrated nozzles have been carefully studied, in order to guarantee perfect cleaning of the cartridge, optimizing the parameters: rotation speed of the impeller and power of the cleaning water jet (Figure n°3).
- The absence of pressurized water in the vessel (the flow is totally diverted) facilitates countercurrent cleaning of the filter mesh, as the impeller and the water jets do not have to overcome friction with the water in the vessel.



### Advantages

The use of the Turboclean impeller allows:

- Optimal cleaning of the filter element in countercurrent, with minimal water consumption.
- Extension of the useful life of the filter element.
- During the cleaning phase, the supply of clean water to the user remains guaranteed.
- Possibility of automating the cleaning system (in 2025 Metalife will produce and market the automation for the DIDO and MITO series filters).



### Warning

When you purchase a self-cleaning filter, always make sure that it really is: the filter mesh must be cleaned with clean water and not simply by reversing the flow and introducing dirty water into the filter element, otherwise, when the filter is restarted, the particles accumulated inside the filter cartridge will be dragged by the water flow to the user.

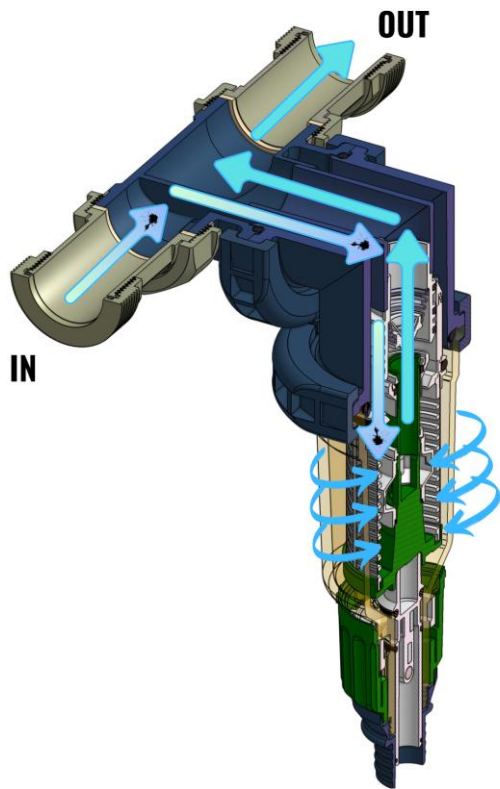


Figure n°1: filtration mode

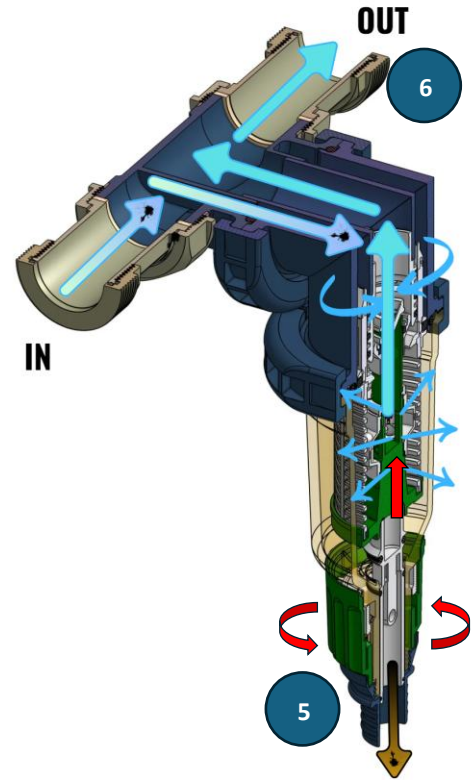


Figure n°2: cleaning mode

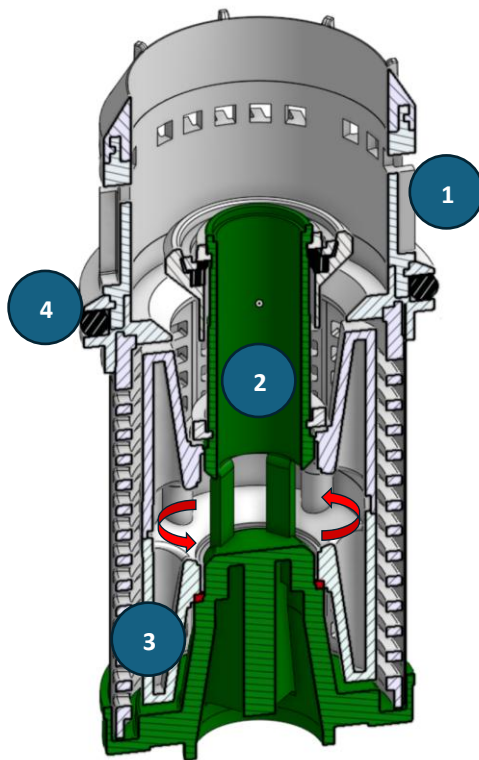


Figure n°3: cartridge cleaning system

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**Pre-filter** – supplies the cartridge cleaning system with filtered water. It is located in the upper part of the cartridge, above the O-ring.

②

**Feed channel** – brings water to the calibrated nozzles of the Turboclean impeller.

③

**Turboclean impeller** – allows the cartridge to be cleaned in countercurrent.

④

**OR cartridge** – in cleaning mode, the OR forces water to enter through the prefilter to power the cleaning system.

⑤

**Drain opening knob** – turning the knob: the cartridge rises, the drain is opened and the water feeds to the cleaning system after being filtered by the prefilter.

⑥

**Water supply to the user** – during cleaning, the device allows the continuous supply of clean water to the user.