

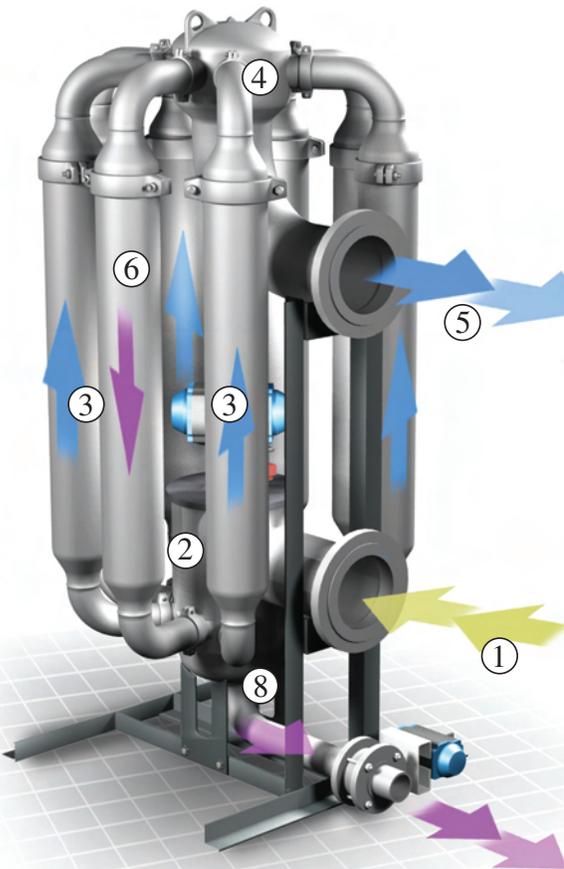
# Pressure Tactics

Tubular backwashing systems save you time and money compared with disposable media systems. The permanent media of Eaton's AFR, AFC, and F-Series systems is "cleaned-in-place" using reverse flow technology. System maintenance is significantly reduced and the cost of landfill disposal is eliminated.

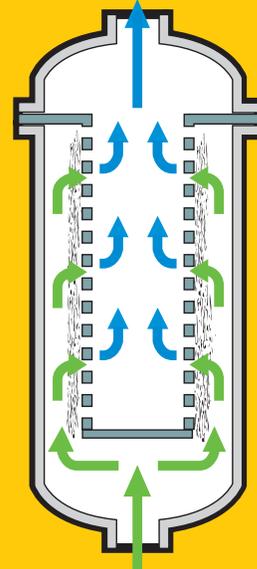
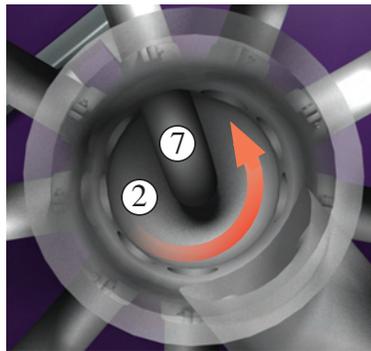
### How the AFR-Series Works

The simple, space-saving design of the AFR-Series – with only a single moving part – is ideal for the most demanding applications. The unit features a circular configuration of up to 8 tubes surrounding a central cleaning valve. During the filtration phase, filtrate travels from the inlet (1) to the diverter chamber (2) and up into the filter tubes (3). Cleaned liquids flow to the upper chamber (4) and out the large outlet near the top of the unit (5).

All tubes can be in filtration mode or the diverter mechanism can be rotated so that each individual tube (6) can be backwashed while the others remain in filtration mode.

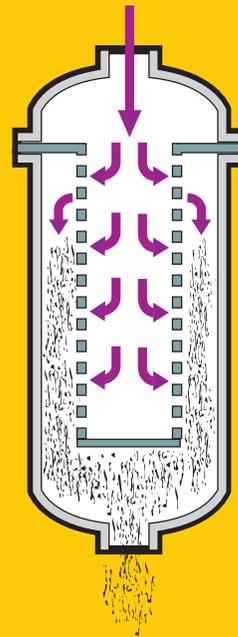


During backwash, a diverter (7) inside the cleaning valve rotates to the tube to be cleaned. This closes the tube to the incoming process liquid and opens it to the atmosphere via the drain line (8). The result causes outlet process liquid to flow in reverse through the element, cleaning it of contaminants and expelling them through the drain (8).



### Filtration Cycle

Contaminated material flows up the outside of the filter tubes, through the filter media, and the cleaned fluid is expelled to the top from inside the tube. Debris collects on the outside surface of the screen forming a cake, which facilitates efficient filtration.



### Backwashing Cycle

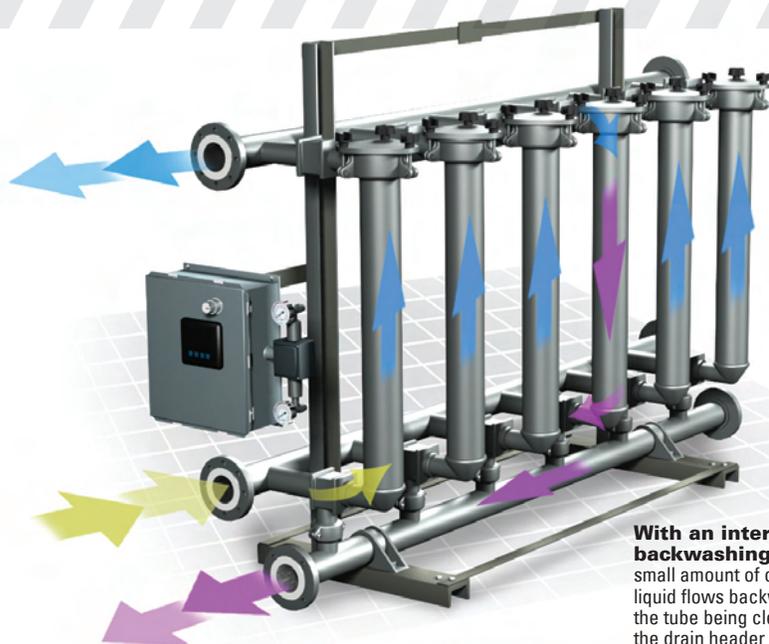
During backwash, triggered by time or pressure differential, the direction of the flow is reversed in the filter tube causing contaminants on the media surface to become dislodged and allowing them to be purged downward and out the drain valve.



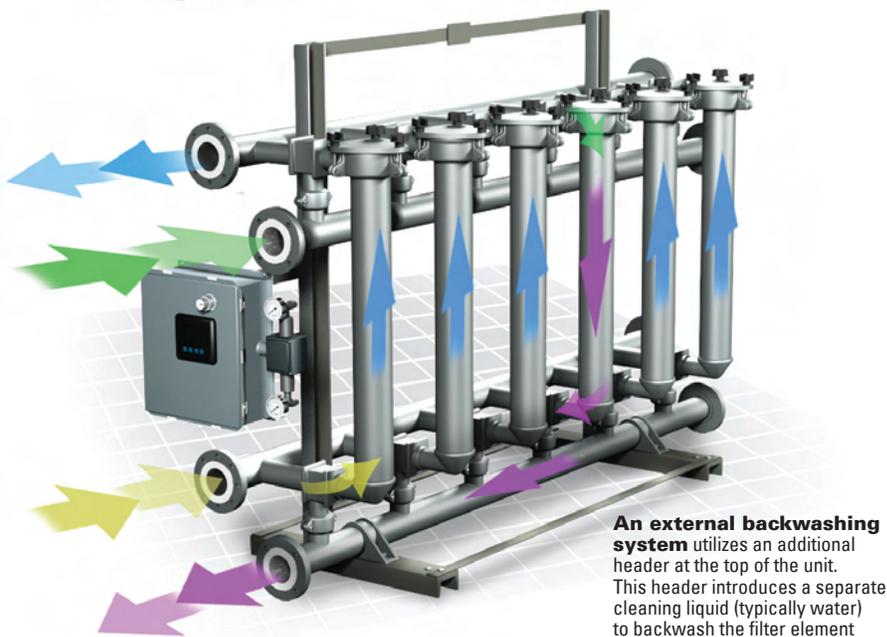
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# TECHNICAL INFORMATION

## Tubular Backwashing Systems



**With an internal backwashing system, a small amount of clean process liquid flows backward through the tube being cleaned and out the drain header at the unit base.**



**An external backwashing system utilizes an additional header at the top of the unit. This header introduces a separate cleaning liquid (typically water) to backwash the filter element to the drain.**

### F-Series and AFC-Series

Eaton's F-Series and AFC-Series are designed for the best possible performance. During backwash, a single tube is taken off-line from the process flow via a three-way valve. Once an element is clean, it is returned to service and the next element may be cleaned. The remaining elements in the filter remain operational throughout this cycle. F-Series and AFC-Series multiplex units consist of 2-20 individual tubes valved in parallel to common inlet, outlet, and drain headers. AFC-Series units are also available in economical single and duo tube configurations, which must be removed from service for manual cleaning.

### Internal and external backwashing configurations

Eaton's F-Series and AFC-Series tubular multiplex systems are available in both internal and external backwashing configurations. Internal backwashing systems are designed for processes with system pressure greater than or equal to 45 psi (3.1 bar) and low viscosity process liquids. External backwashing systems are designed for applications with high-value process liquids and/or processes with low operating pressures.

### System control

Designed to monitor and operate the backwash cleaning system, Eaton automatic control systems are simple to operate, reliable, and easily maintained. They are set to clean on differential pressure with a timed backup. The design allows field adjustments to suit the demands of the service conditions, ensuring effective cleaning with a minimum use of backwash fluid. Systems are available in automatic intermittent or continuous backwashing modes.



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