

Granular Media Filter Parts

Underdrains, Troughs, and the MULTIWASH® Process



WestTech®

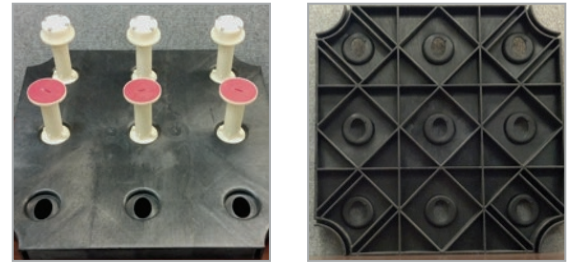
 **SWIRE WATER**

MULTICRETE™ II Filter Underdrain

The MULTICRETE II system is an NSF® Standard 61-certified, nozzle-type, monolithic, concrete-form underdrain system. With the corrosion-resistant nature of its materials, its high structural strength and versatile use, it is ideally suited for municipal water, wastewater, and industrial treatment processes.

The MULTICRETE II system makes it easy for contractors to pour an integral slab underdrain. Once installed, the MULTICRETE II underdrain offers higher structural strength than any block system. The open plenum design beneath the underdrain ensures low headloss, even air and water distribution, and access for inspection and maintenance. Also, the MULTICRETE II system supports a variety of nozzle sizes for maximum flexibility to tailor the underdrain to specific media types and treatment applications. Underdrain media nozzle types range from single-slotted gravel support to multiple-slotted media retaining. These nozzles can be used with any granular media down to 0.25 mm. MULTICRETE II supports a wide range of process flows and any backwash sequence.

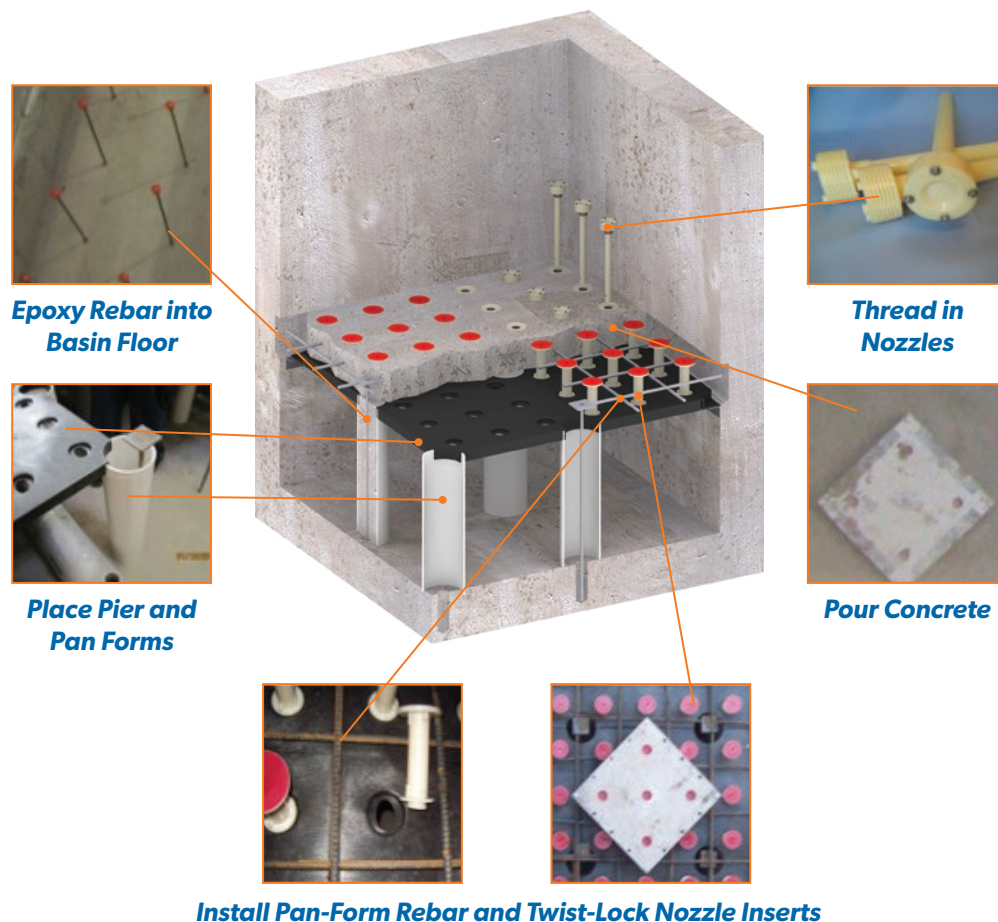
MULTICRETE II underdrains readily combine with WesTech's unique MULTIWASH baffled media-retaining trough system. The MULTIWASH process is the most effective simultaneous air and water backwash cleaning system on the market today. MULTICRETE II underdrain with the MULTIWASH trough system retains the media while providing the widest range of simultaneous air-water backwashing rates available.



MULTICRETE II Pan Form, Nozzle Inserts, and Nozzles

Benefits:

- **Designed for water and wastewater applications**
- **Simple and economical installation**
- **Supports any media configuration**
- **Allows access to underdrain plenum after installation**
- **Greater structural strength and hydraulic capacity than block underdrains**



Epoxy Rebar into Basin Floor

Place Pier and Pan Forms

Thread in Nozzles

Pour Concrete

Install Pan-Form Rebar and Twist-Lock Nozzle Inserts

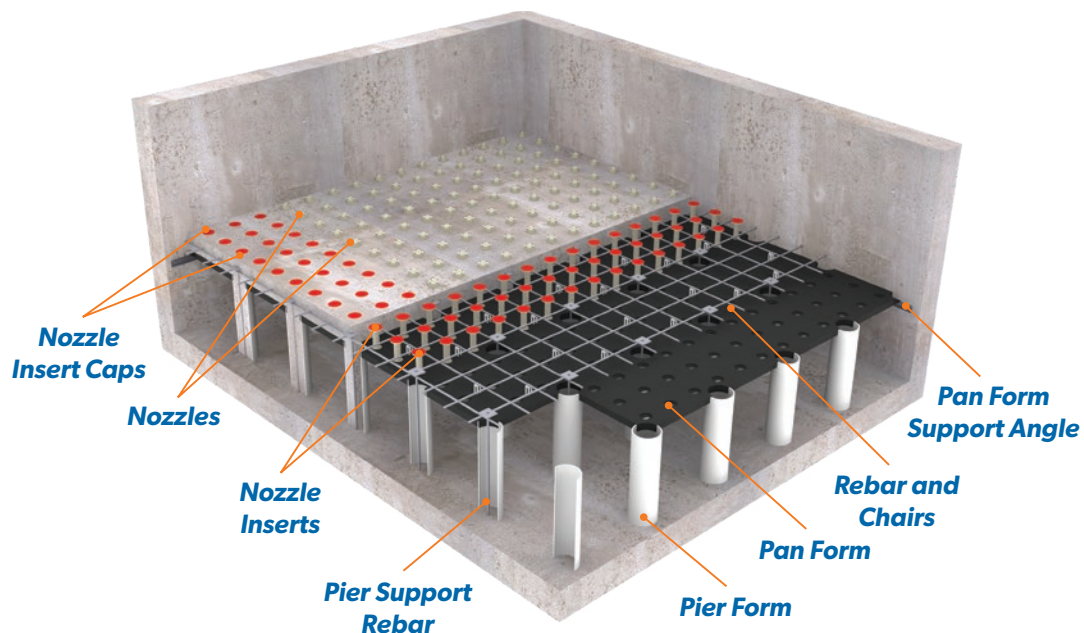
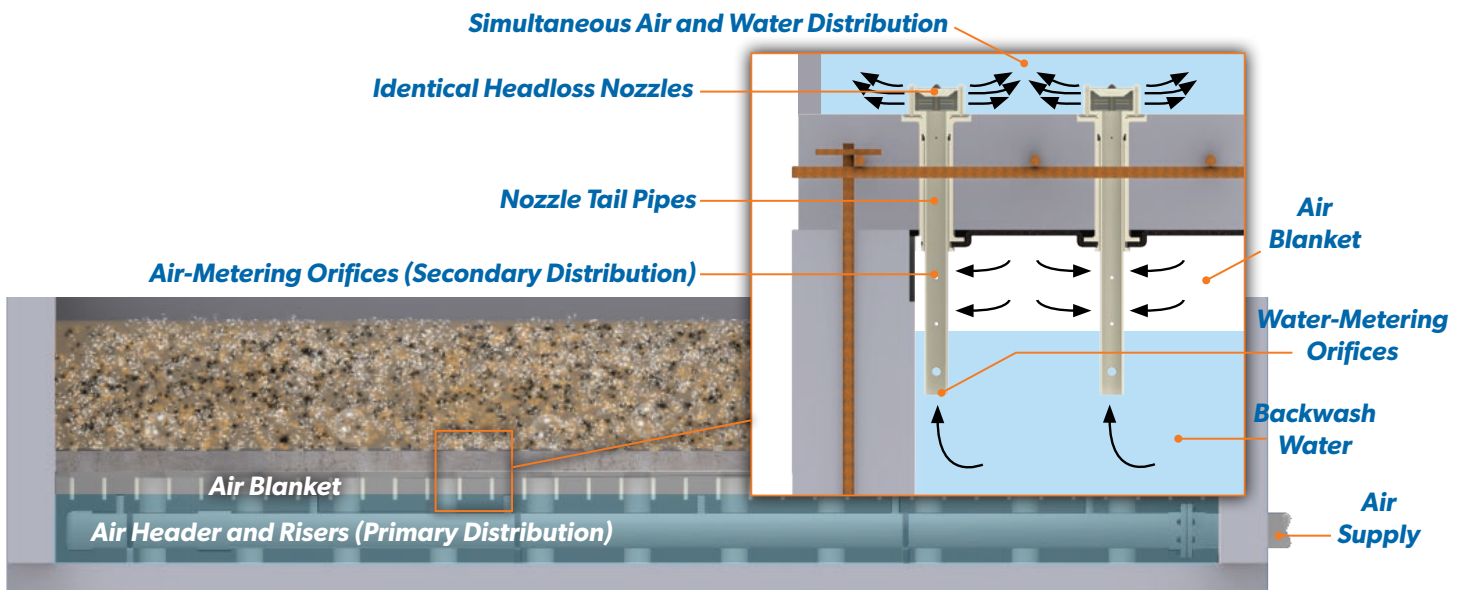
How It Works:

MULTICRETE II is a mechanically strong and versatile underdrain system for backwashing. Dual distribution is essential for even metering of air and water throughout a filter cell in all air and water backwash processes. The MULTICRETE II open plenum design ensures air and water are distributed evenly across the entire filter.

During backwash, water enters the plenum through the filter effluent pipe. The water is metered up through the orifice at the end of each tail pipe. Air is introduced through the primary distribution air

header, then accumulates beneath the underdrain floor, forming a blanket across the entire cell. The air blanket gradually pushes the water down until it reaches the secondary distribution metering orifices in the sides of each nozzle tail pipe. This precise method of metering forces the air to evenly distribute among all of the tail pipes. This combination of precise air and water orifice metering ensures unmatched distribution, making the MULTICRETE II underdrain distribution method the most reliable backwash system available.

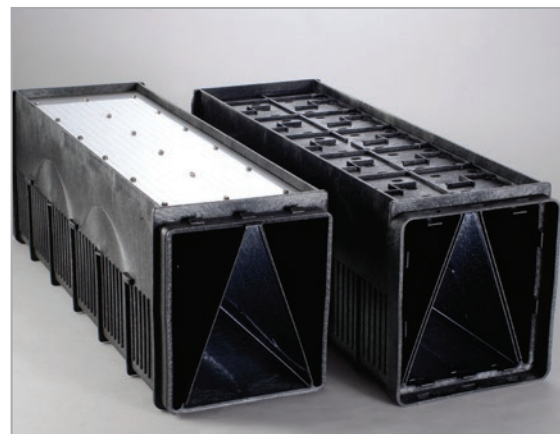
Dual Air Distribution Ensures Uniform Backwash:



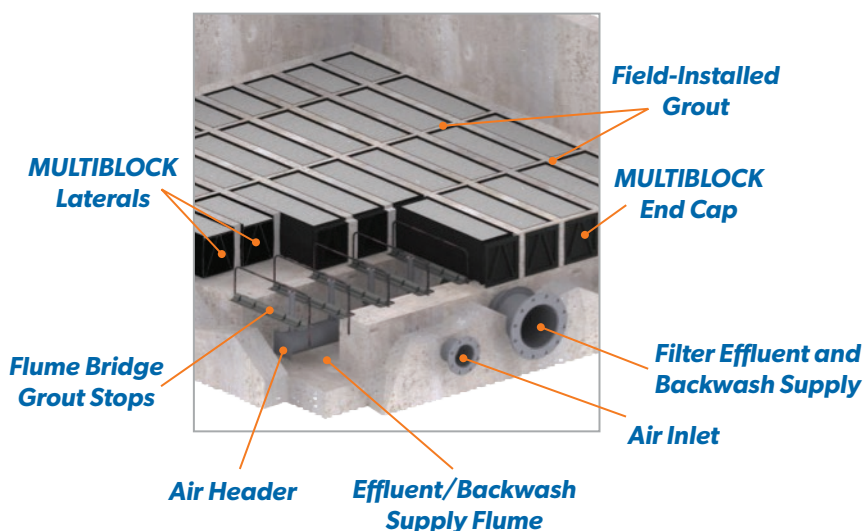
MULTIBLOCK[®] Filter Underdrain

The MULTIBLOCK underdrain is a high-quality, low-cost, versatile underdrain block. This block-style underdrain features a dual-lateral design for even distribution during filtration and combined air-water backwashing processes. MULTIBLOCK underdrains are certified to NSF (R) Standard 61 requirements.

Unique to the MULTIBLOCK underdrain is the Laser Shield[™] media-retaining system. The Laser Shield is a stainless steel plate with laser-cut slots for direct media retention. The Laser Shield media retainer is stronger than slotted-plastic media retainers, has a simpler flow path, and features less total surface area than sintered-plastic bead caps, which means less surface area for media intrusion and fouling. MULTIBLOCK readily combines with WesTech's unique MULTIWASH baffled trough to provide the most effective simultaneous air-water backwashing process on the market.



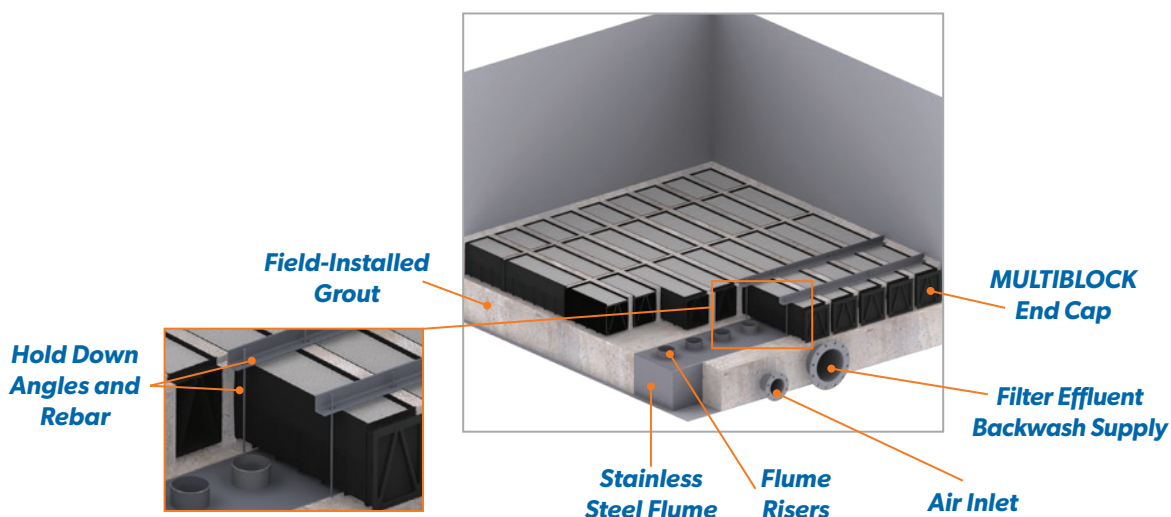
Concrete Basin MULTIBLOCK Installation



Benefits:

- Easy to handle
- Easy to install
- Corrosion-resistant design
- Eliminates support gravel
- Minimizes depth required
- Uniform distribution
- Superior media cleaning

Steel Basin MULTIBLOCK Installation



How It Works:

While typically used in concrete gravity filter cells, Microfloc® has pioneered the use of MULTIBLOCK in steel gravity filters and Microfloc package plants. A unique flume system is added to the steel filter for collection of filtered water and distribution of air and water during backwash. The MULTIBLOCK underdrain system is also ideal for replacement of clay-tile filter underdrain systems.

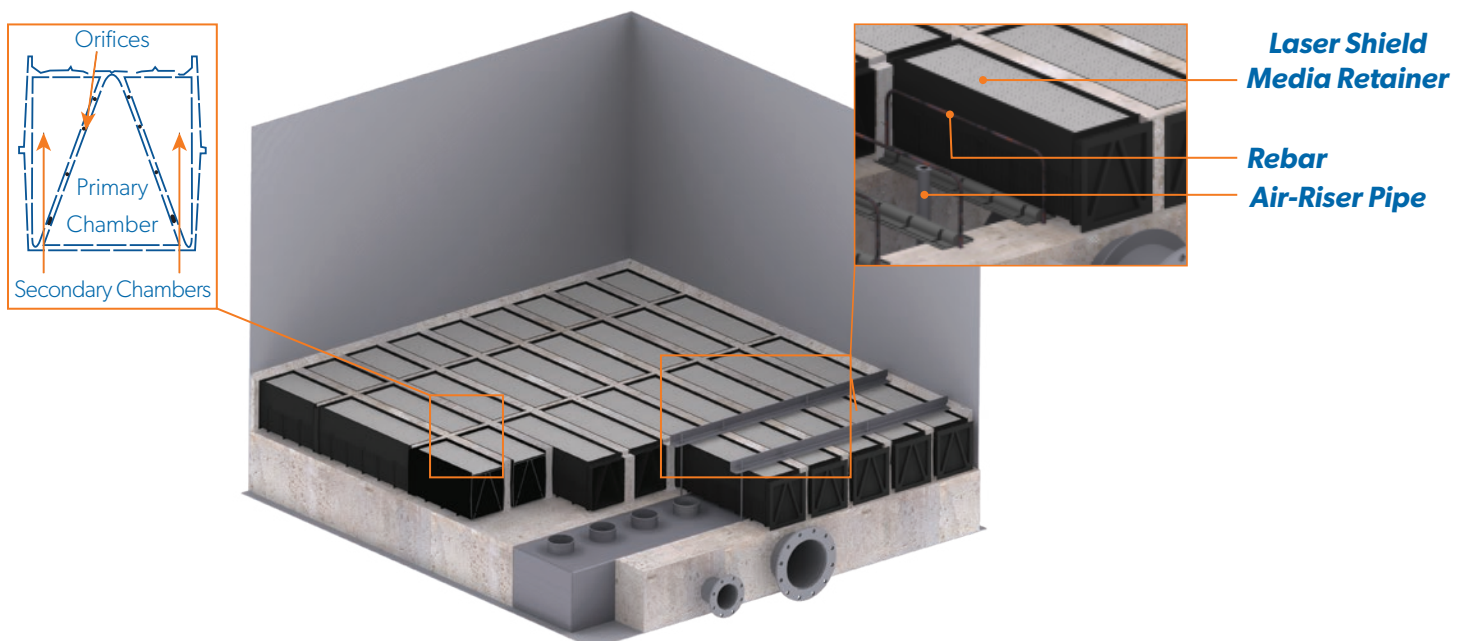
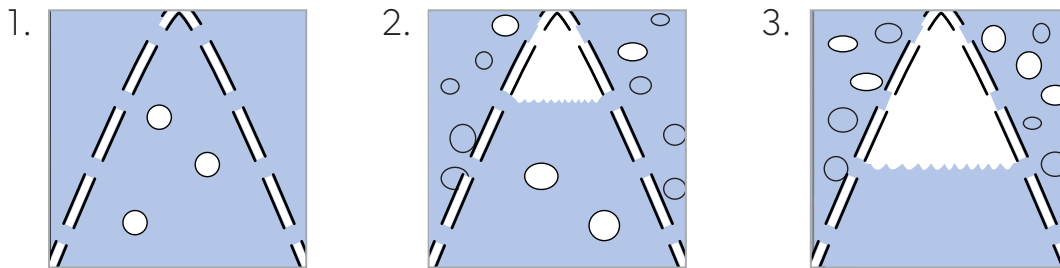
Snap-together construction, using a silicone sealant between the blocks, joins the blocks to form laterals. This eliminates possible O-ring rolling and/or misplaced gaskets failing to provide a proper seal. Light-weight structural foam HDPE construction simplifies installation while providing corrosion resistance. Being fully computationally modeled and physically tested on a specially

equipped test flume, the MULTIBLOCK compensating dual-lateral orifice design distributes backwash water and air to keep filters running at peak performance.

*See diagram below

1. During backwash, air and water enter the primary chamber (left) where air collects at the apex.
2. Air is forced out through the top orifices into the secondary chambers while water is forced through the lower orifices (center).
3. As air and water enter the secondary laterals (right), they pass through the top of the MULTIBLOCK underdrains, creating a uniform air-water backwash.

*MULTIBLOCK backwash air-water introduction process



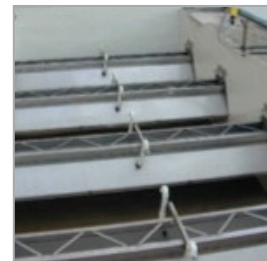
ESSD Washtroughs

ESSD Washtroughs and launder systems must withstand some extremely corrosive conditions. When compared to fiberglass-reinforced plastic, the innovative designs by WesTech Engineering not only make stainless steel a viable economic option, but also make it the most structurally sound, longest-lasting, lowest-maintenance choice for washtroughs and launder systems. Engineered Stainless Steel Design (ESSD®) washtroughs have five key features:

- **Competitive cost**
- **High corrosion resistance**
- **High strength**
- **Pleasing appearance**
- **Design adaptability**

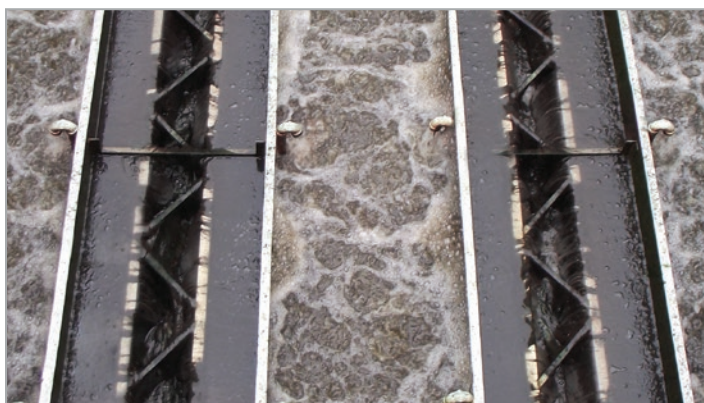
The **MULTIWASH process** combines air and water simultaneously for the duration of the backwash. The simultaneous air and water wash provides a vigorous scouring action to clean the media while specially designed washtrough baffles are used to eliminate media loss as the loosened dirt is flushed from the media bed. The superior cleaning performance of the MULTIWASH process prevents both chemical and biological fouling of the filter media, eliminating expensive chemical cleaning or media replacement while reducing long-term operational costs and improving filtration efficiency.

The MULTIWASH backwash process was originally developed for wastewater applications. Deep filter beds with large media provided long filter runs with good effluent quality. However, the large filter media required very high rates and large volumes of water for proper backwashing. The addition of air to the backwash system increased the scouring action of the backwash, more effectively dislodging solids from the media. However, this extra energy could also lift the media out of the filter cell. General Filter pioneered the development of specially designed media retention baffle troughs to eliminate media loss. All media, including sand, anthracite, GAC, and other specialty media is retained using MULTIWASH baffles.

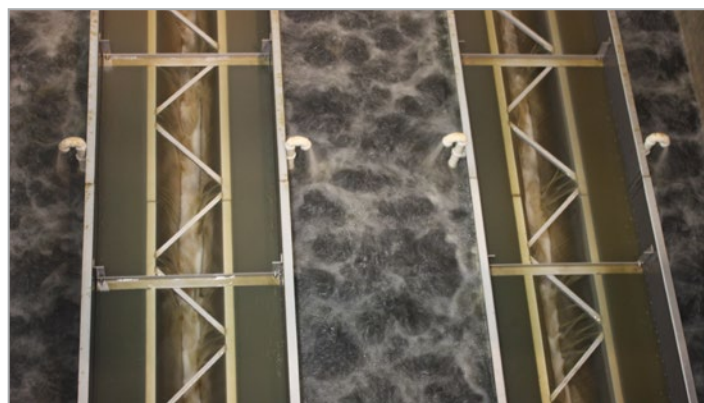


Benefits:

- **Superior media cleaning**
- **Increases scouring energy**
- **Maximizes filter run length**
- **Significantly lowers backwash flow rates**
- **Reduces backwash waste volume**
- **Lower operating costs**
- **Lower capital cost**
- **Smaller backwash pumps, piping, and valves**
- **Flexibility in media selection**
- **Longer media life**
- **Prevents biological solids or chemical precipitates fouling**
- **Optimizes filter performance**



MULTIWASH process in a wastewater application



MULTIWASH process in a water application

MULTIWASH Process

How It Works:

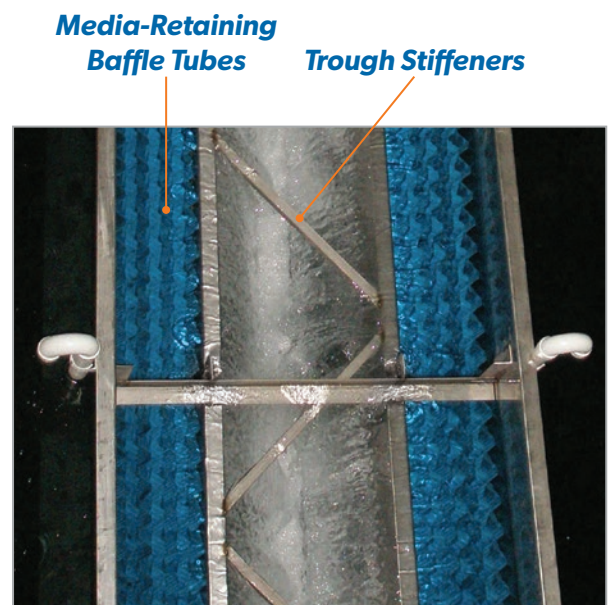
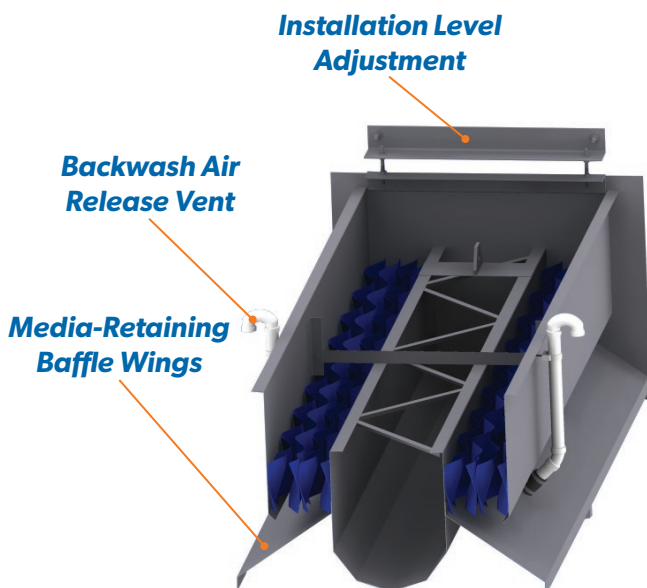
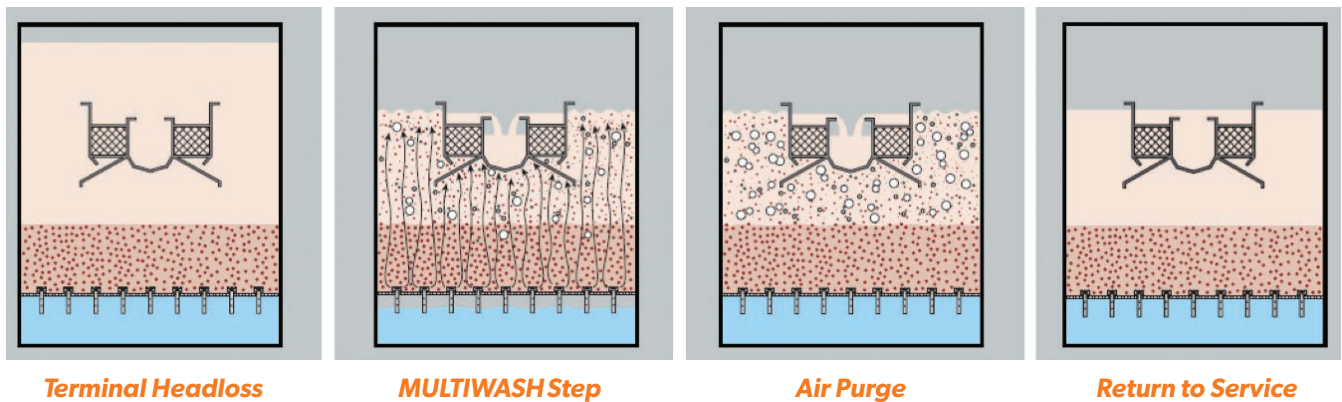
Terminal Headloss: The backwash sequence starts at terminal headloss; the inlet and effluent flows are stopped and the backwash waste valve is opened.

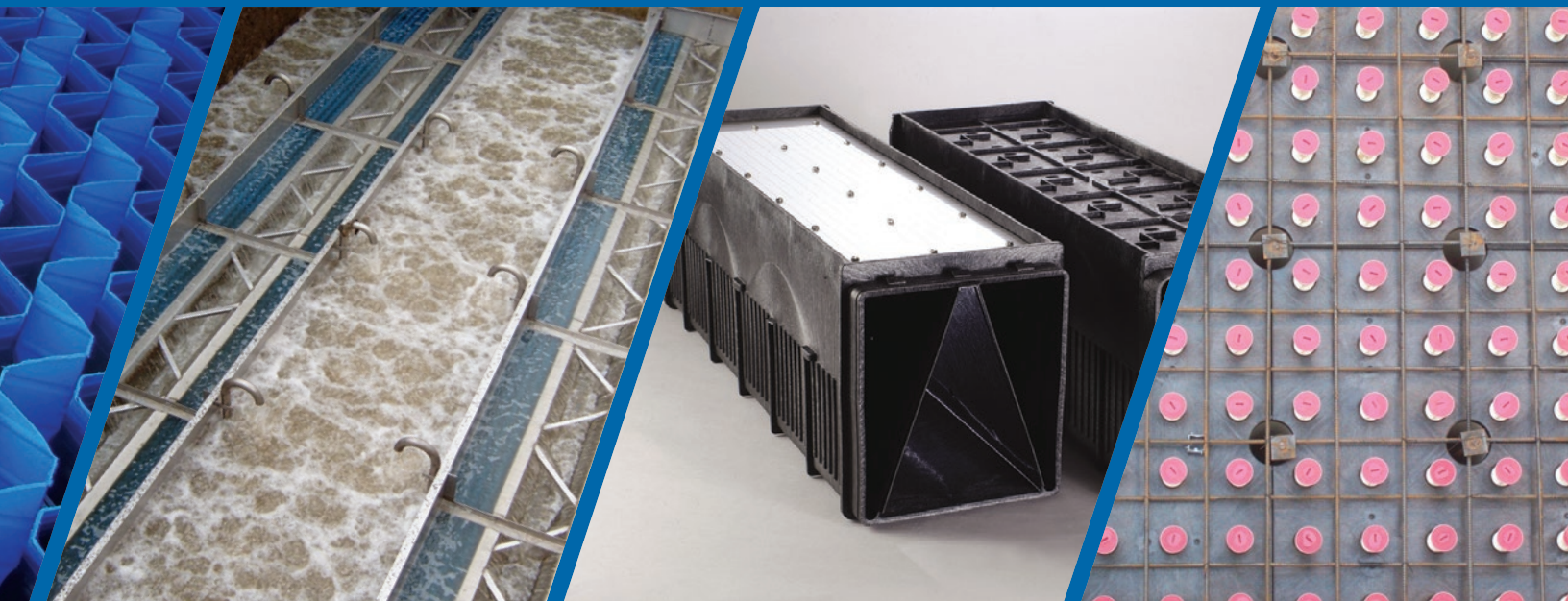
MULTIWASH System: Backwash water and air are started simultaneously when the cell water level reaches the washtroughs. Simultaneous air and water is continuously applied to the media while the backwash wastewater is overflowing the trough.

Air Purge: Once the MULTIWASH backwash cycle is complete, the air is discontinued. The water continues to flow, purging the underdrain and media bed to remove entrapped air.

Return to Service: The filter is then returned to service. If applicable, a filter-to-waste step is performed prior to returning to service.

The MULTIWASH process is the most efficient, effective, and economical backwash cleaning method in the market. Other cleaning methods may not clean the media adequately and require more energy and time to perform. This makes the MULTIWASH process the best choice for any backwash cleaning system.





WESTECH[®]

 SWIRE WATER

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