



Leopold Type S[®] Technology Underdrain

PART OF A COMPLETE LEOPOLD WATER OR WASTEWATER FILTER SYSTEM



Type S® Technology Underdrain

Benefit from the Advantages – Only from Leopold

Improved Underdrain Performance for Superior Results

Because the upward flow of air through an underdrain creates low-pressure zones in the underdrain, some orifices can become starved for flow . . . or even reverse flow. Leopold has designed a water recovery channel into its Type S® technology underdrain to help ensure uniform and continuous airflow from all of the top deck orifices. The water recovery channel is designed to allow water to re-enter the underdrain to equalize the low-pressure areas. This dramatically improves the performance of the underdrain and provides superior results, particularly with the dual lateral design.

The results of Type S technology are real:

- Broader airflow range, now 1 to 5 scfm/sf.
- Improved air stability under all operating conditions with all orifices providing uniform and continuous airflow.
- Lower water maldistribution — less than 5 percent (total).



There's a Leopold Type S technology underdrain available for every filter design, making it the only truly "universal" underdrain.



Leopold Type S technology underdrain features a unique water recovery channel for superior air scouring and water backwash performance.

Cleans the Media Better

All Leopold Type S technology underdrains feature closely spaced, non-clogging orifices for uniform distribution of air and/or water backwash. This does more than promote trouble-free operation. It cleans the media better.

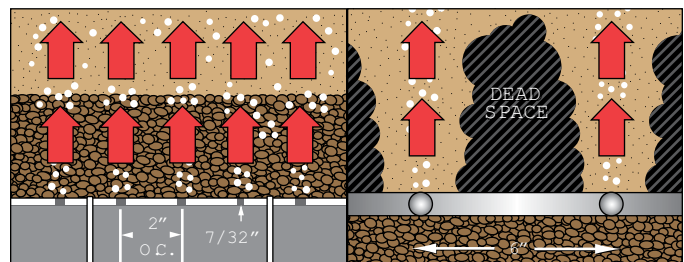
With other underdrain designs whose orifices are more widely spaced, dead zones can occur. This means the air does not reach and scour the media. The closely spaced orifices of Leopold Type S technology underdrain prevent the formation of dead spaces. As a result, all the media is exposed to the cleaning action of the air with Type S technology underdrain.

Collapse Pulse Cleaning, Regardless of Media Configuration

The wide, uniform air distribution of Leopold Type S technology underdrain enables various media configurations to benefit from collapse pulse cleaning during a concurrent backwash. Other underdrains limit the air flow rates. This can limit or even eliminate the possibility of collapse pulse cleaning.



Better air scour action – and better media cleaning – is the result of closely spaced, non-clogging orifices and uniform distribution of air throughout the length of the underdrain lateral.



The closely spaced, non-clogging orifices designed into Leopold Type S technology underdrain (left) provide uniform distribution of air and/or water backwash for trouble-free operation. With orifices widely spaced, dead spaces and inefficient cleaning of the media can occur.

More Forgiving Level Tolerances

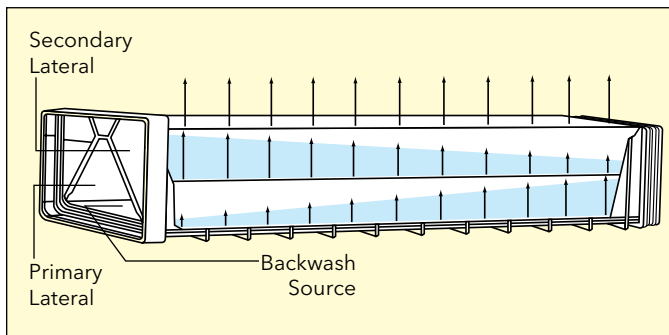
Older underdrain required a levelness of $\pm 1/8$ inch. Type S technology underdrain with internal baffles for reduced level sensitivity can be installed to a level tolerance of $\pm 1/4$ inch, which is more forgiving in existing, older installations where the construction tolerances were not as rigid.

Cost-Saving Installation and Operation

More forgiving installation tolerances means simpler installation. This means lower filter construction costs. Improved filter performance means cleaner water and longer runs between backwashing. And this means lower operating costs per gallon of water filtered.



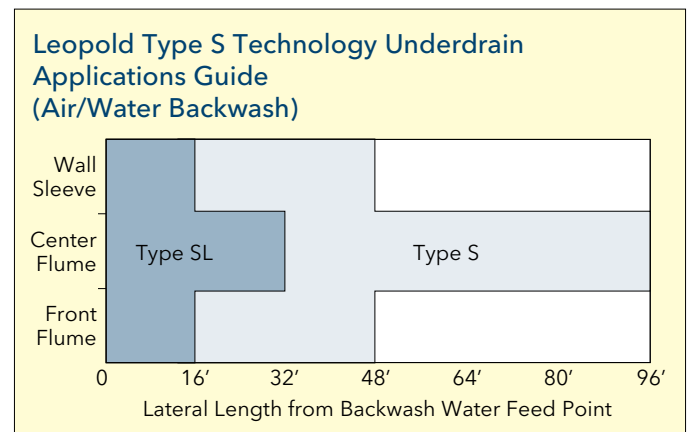
Installation is easier with Type S technology underdrain because blocks can be set to level $\pm 1/4$ inch (left). Assembly of laterals is easier because the blocks simply snap together to form leak-resistant, distribution efficient laterals (right).



The dual lateral design pioneered by Leopold ensures uniform distribution of both water and air at each dispersion orifice opening even in extra long lengths – up to 100 feet in a center flume filter installation. Because more water and air flow through the openings in a lateral that are farthest from the source, discharge variances exist along the length of the primary feeder laterals. Any unbalanced flow from the feeder laterals creates an opposing flow, forming a directly compensating lateral into a uniform pressure condition throughout its length.

There's a Leopold Type S® Technology Underdrain for Every Filter Design

Leopold Universal Type S® underdrain is ideal for installations requiring longer laterals. Leopold universal Type SL® underdrain features a lower profile (it's 4 inches lower) making it ideal for shallow filters where greater filter media depth is desired. Both feature Type S technology developed by Leopold for superior air scouring and water backwash performance. With Type S technology available for every filter design, only Leopold offers a truly "universal" underdrain.



Filter Applications for Leopold Universal Type S Technology Underdrain

- Turbidity (Solids) Removal
- Lime Softening
- Iron/Manganese Removal
- Wastewater Treatment Solids Removal
- Denitrification
- Any Water or Wastewater Treatment Process

More Features of Leopold Universal Type S and Type SL Underdrain

- 75 years of proven dual lateral design pioneered by Leopold
- Light weight for easy handling
- High-density polyethylene (HDPE) construction for strength and corrosion resistance
- Smooth surface for reducing the potential for calcification

Leopold I.M.S.* Cap Eliminates the Need for Support Gravel

The Leopold Universal Type S and Type SL underdrain can be specified with Leopold I.M.S (integral media support) cap factory-installed on the top of the underdrain block.

Another filter technology innovation pioneered by Leopold, the I.M.S cap was developed by Leopold as a replacement for support gravel in filters equipped with Leopold dual lateral underdrain. By eliminating the support gravel, the overall depth of the filter can be reduced which could also allow for deeper media in existing filters. In addition, Leopold I.M.S cap allows for easy removal and change of media such as activated carbon.

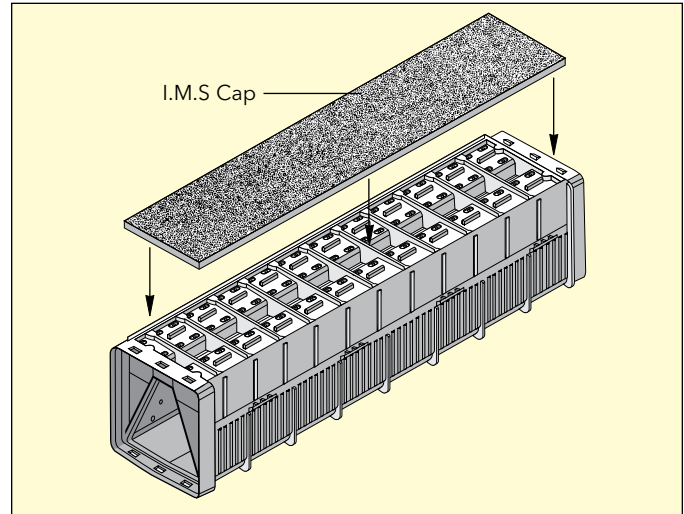
Put the Leopold Filter System Advantage to Work for You

Leopold has assembled an array of technologies giving us the capability of engineering and delivering a complete filter system for virtually any filter design, virtually any performance requirements. Leopold Type S technology underdrain is just one of those technologies. When Leopold supplies Type S technology underdrain as part of a complete Leopold filter package, we can assure guaranteed filter performance and process results.

Pace-setting filter technologies. More than 75 years of filter process knowledge, experience, and expertise. Unparalleled support. All for assured guaranteed filter performance and process results. This is the Leopold filter system advantage.

Leopold Universal Type S Technology Underdrain Technical Specifications

	Type S	Type SL
Material:	High-Density Polyethylene (HDPE)	High-Density Polyethylene (HDPE)
Size:	Length - 48" (Nominal) Width - 11" (Nominal) Height - 12" (Nominal)	Length - 48" (Nominal) Width - 11" (Nominal) Height - 8" (Nominal)
Weight:	25 lb (approx)	19 lb (approx)



The Benefits of Leopold I.M.S Cap

- Eliminates support gravel
- Light weight
- Easy change to deeper media or carbon
- Proven flow distribution
- Removable for inspection
- Compatible with water treatment chemicals

Insure quality, specify Leopold as your single source for:

- Filter Equipment
- Instrumentation
- Membrane Filtration
- Fiber Glass Products
- Clarification
- Filter Media
- Filter Controls
- Dissolved Air Flotation
- Filter Rehabilitation



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