Powdercoated Carbon Steel Sand Media Filtration Systems

PRO II

Features and Benefits

Rugged Carbon Steel Construction With Internal/External Polyester Powdercoating

Injection Molded PVC Underdrain

Exclusive, precision-engineered underdrain system. Encourages optimum/even flow across the entire media surface area. No dead spots. Industry-best backwash characteristics for more thorough cleaning and longer operating cycles.

15 Year Underdrain Warranty

Top Quality Components

Modular inlet/outlet manifolds are stainless steel on 48-inch diameter tanks. Backwash valves are cast ductile iron in an exclusive LAKOS design and powdercoated inside and out for durability and reliability.

Modular Manifold Design

Modular manifold design makes system installation, changes and expansion both simple and economical.

Lightweight, ultra-durable polythylene material, for ease of handling and installation. Impact and chemical resistant. Not available in all sizes. Contact factory for your configuration.

Flow range:
Standard systems up to 3140 US gpm (713 m^3/hr)

Pressure:
80 psi max (5.5 bar) for 48-inch diameter tanks
125 psi max (8.6 bar) for 32-inch diameter tanks
150 psi max (10.3 bar) for 21-inch diameter tanks

*LAKOS Sand Media Filters also available in 304L Stainless Steel. For Pre-Filter to media tanks and to reduce backwash water loss by up to 50% or more, ask about the **LAKOS BRS Systems** (not pictured).*

LAKOS SST Series System

LAKOS®
Separators and Filtration Solutions

Material Specifications

Filter Tanks

Carbon steel tanks with 12 gauge wall and dome thickness with internal/external polyester powdercoating. Top and side inspection/access port and lower port for sand clean-out.

Backwash Valves

Ductile iron body. Coated inside and out. Stainless steel shaft and guide bushing. Stainless steel disc with vulcanized Buna-N rubber to seal the backwash port.

Controller

Steel housing, water-resistant, key-lock. Solid-state timing. Operates from 12 volt continuous, 110/220 AC.

Lateral/Underdrain Assembly

Injection molded PVC with internal V-slotting. Open area is 3.6x greater than tank inlet.

Modular Manifold Piping

Stainless steel is standard material on all 48-inch diameter tanks. DuroBlack PE Manifold is standard on all 21 and 32-inch diameter tanks.

Media Sand Options

Required media sand is **not** included with basic LAKOS Sand Media Filter System. The following information is provided for guideline and reference purposes only. Sand available from LAKOS and sources worldwide.

Sand Spec	Sand Description/ Size Range
#12 Crushed Silica	12 to 16 mesh (1680-1190 micron)
#16 Crushed Silica	16 to 40 mesh (1190-420 micron)
#20 Crushed Silica	20 to 50 mesh (841-297 micron)

As with all LAKOS underdrains, layering of filter media is not required, a SINGLE grade media is acceptable.

General Specifications

Model*	Flow Range** U.S. gpm	Flow Range** m^3/hr	System Manifold Inlet/Outlet Grooved Couplings	Media Sand Requirement*** (complete system) lbs.	Media Sand Requirement*** (complete system) kg	Maximum Filter Tank Pressure psi	Maximum Filter Tank Pressure bar	System Weight (without sand) lbs.	System Weight (without sand) kg	Filtration Area ft^2	Filtration Area m^2	Minimum Backwash Line Size
PRO-II-2104-2	75-120	17-27	4-inch	600	272	150	10.3	200	91	4.8	0.45	3-inch
PRO-II-2104-3	110-180	25-41	4-inch	900	408	150	10.3	300	136	7.2	0.67	3-inch
PRO-II-3204-2	170-275	39-62	4-inch	1400	635	125	8.6	450	205	10.8	1.00	3-inch
PRO-II-3204-3	255-415	58-94	4-inch	2100	953	125	8.6	675	306	16.2	1.51	3-inch
PRO-II-4806-2	380-625	86-142	6-inch	2600	1179	80	5.5	690	313	25.1	2.3	4-inch
PRO-II-4806-3	570-940	129-213	6-inch	3900	1769	80	5.5	1075	488	37.7	3.5	4-inch
PRO-II-4808-4	755-1255	171-285	8-inch	5200	2358	80	5.5	1490	676	50.2	4.6	4-inch
PRO-II-4810-5	945-1570	215-357	10-inch	6500	2948	80	5.5	1850	839	62.8	5.8	4-inch
PRO-II-4810-6	1135-1880	258-427	10-inch	7800	3537	80	5.5	2200	998	75.4	7.0	4-inch
PRO-II-4810-7	1320-2195	300-499	10-inch	9100	1165	80	5.5	2965	1345	87.9	8.1	4-inch
PRO-II-4810-8	1510-2510	343-570	10-inch	10400	1350	80	5.5	3360	1525	100.4	9.2	4-inch
PRO-II-4812-10	1885-3140	428-713	12-inch	13000	1680	80	5.5	4010	1820	125.6	11.6	4-inch

* Model numbers identify individual tank size/diameter (first two numbers), inlet/outlet size (second two numbers) and number of tanks per system (last number). Add an "A" at end of model number for an Automatic system. Add an "M" for a Manual system.

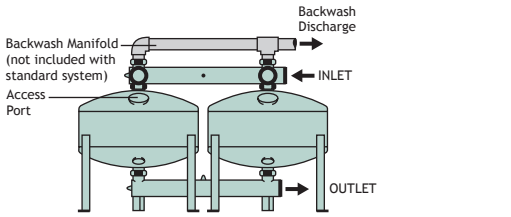
** Flow range based on a filtration range of 15-25 U.S. gpm/ft^2 (37-61 $m^3/hr/m^2$). Select a larger model if the water has an above-average quantity of particulates/organics.

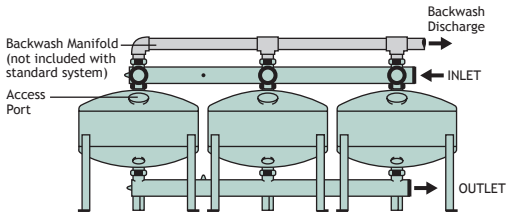
*** NOTE: 100 lbs. = 1 cubic foot = 2 standard size bags of media sand.

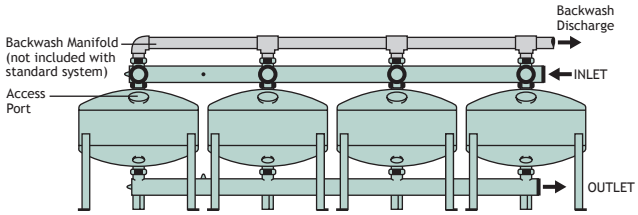
High Pressure PRO Series

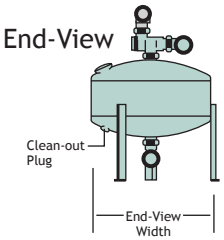
For operating pressures up to 150 psi, specify the original LAKOS PRO Series, featuring polyester powdercoating, inside and out. Also, the original LAKOS underdrain with PVC well screen lateral assembly. Heavy-gauge wall (10-gauge) and dome (3/16-inch) construction.

End-Feed Installation Configurations









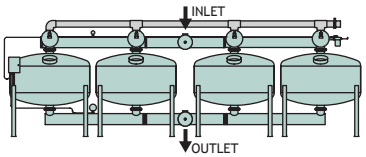
Dimensions

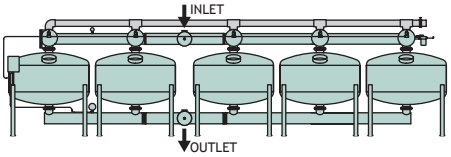
Tank Qty.	End-View Width in	End-View Width mm	Overall Length in	Overall Length cm
21-inch Diameter Tanks				
2-Tank	24½	623	61½	156
3-Tank	24½	623	97½	248
32-inch Diameter Tanks				
2-Tank	35	889	70½	179
3-Tank	35	889	106½	271
48-inch Diameter Tanks				
2-Tank	50½	1283	100	264
3-Tank	50½	1283	152	396
4-Tank	50½	1283	204	557

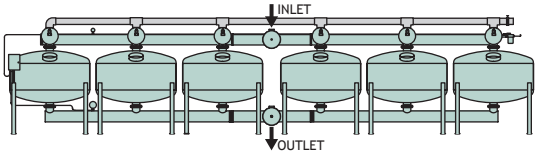
NOTE: Use 50½ inches (128cm) for all End-Feed and Center-Feed 48-inch tank system end-view widths.

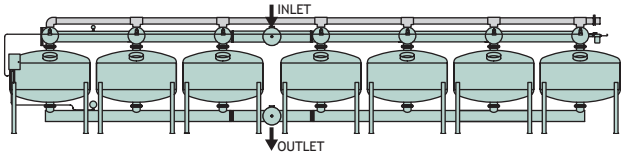
Center-Feed Installation Configurations

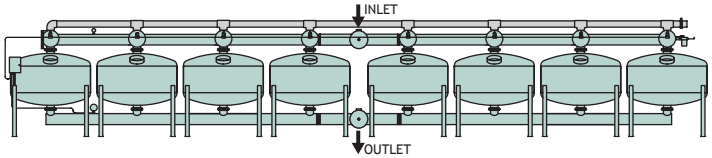
Diagrams illustrate 4-10 tank systems. Consult factory for other requirements.











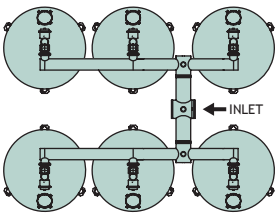
Dimensions

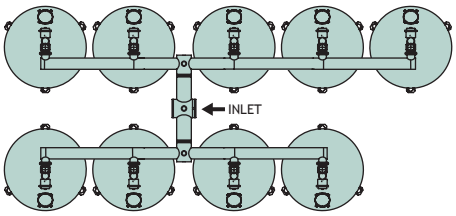
Tank Qty.	Overall Length in	Overall Length cm
4-Tanks	211	536
5-Tanks	263	668
6-Tanks	315	800
7-Tanks	367	932
8-Tanks	419	1064

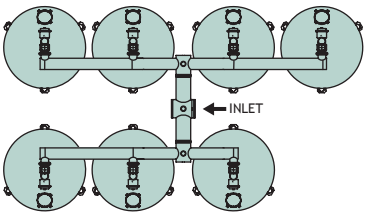
Overall Width (all 48-inch tank systems): 50½ inches (128cm)

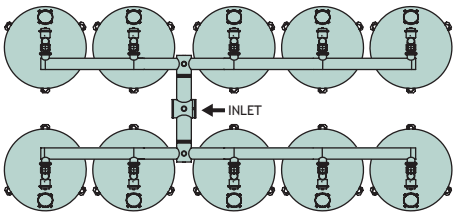
H-Pattern Installation Configurations

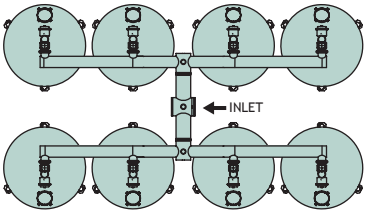
Diagrams illustrate 6-10 tank systems. Consult factory for other requirements.











NOTE: H-Pattern outlets are directly below and in-line with inlets. Other variations may be applied.

H-Pattern configurations are only available from California warehouse.

Dimensions

Tank Qty.	Overall Length in	Overall Length cm
6-Tanks	159	404
7-Tanks	211	536
8-Tanks	211	536
9-Tanks	263	668
10-Tanks	263	668

Overall Width (all 48-inch tank systems): 120 inches (305cm)

Modular Manifold System

Exclusive design provides maximum flexibility to change patterns, add tanks to existing systems and adjust system configuration without wasting manifold piping. Easier to handle and install, too. Available for end-feed, center-feed and H-pattern configurations. Stainless steel is standard material on 48-inch diameter tanks.

First Tank Manifold

This short length features all service connection ports.

Single Tank Sections

Each added tank to a system includes its own manifold. Easy to install. Maximizes flexibility and expansion options.

Unlimited Options

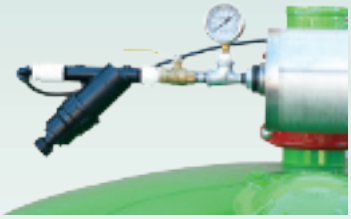
With the appropriate connecting and cross-over tees, system requirements can be achieved with simple additions and little or no wasted parts/expense.

See page 3 for H-pattern options, using same modular manifolding.

Installation Ready

Water Uptake Kit

Automatic Solenoid Kit



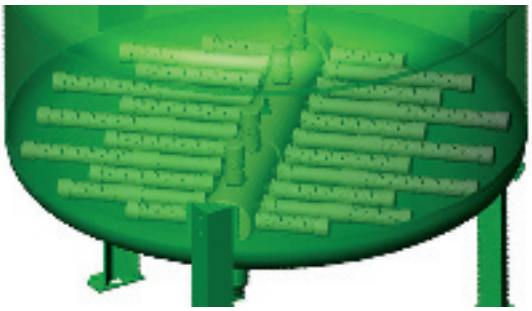
Inlet Pressure Gauge Kit

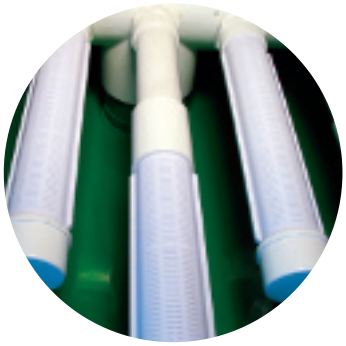
Outlet Pressure Gauge Kit

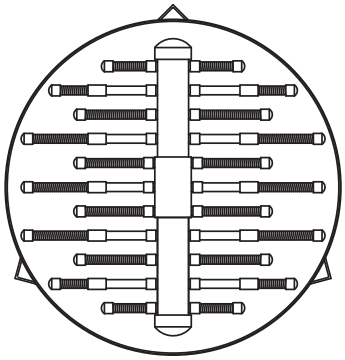
Automatic Controller

Exclusive LAKOS Underdrain

A full-coverage pattern that encourages maximum flow-through characteristics and optimum backwash performance. Avoids channeling as flow is drawn evenly from the surface level completely through the sand media. Lowest pressure loss in the industry (see details below). Most effective backwash, with positive and aggressive flow direct from the underdrain, surging upward from its expansive pattern for better cleaning, prevention of in-media and/or surface dead spots and longer overall sand media life. Full coverage pattern eliminates the need for gravel to accomplish this important operation.







LAKOS 48-inch diameter tanks feature a total underdrain open screen area ratio of 3.6:1 greater than the filter inlet size

Pressure Loss Comparisons

The following data was compiled via independent testing through the International Center for Water Technology (full test report available upon request).

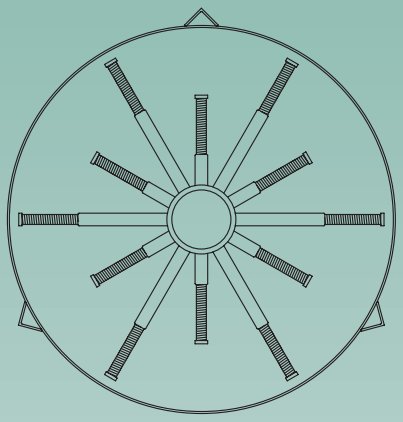
Flow Rate*	Pressure Loss Through Sand Filter (tank inlet-to-outlet)		
	LAKOS-PRO-II	Yardney-SS	Fresno Valve-SS
240 gpm	1.36 psi	1.21 psi	1.65 psi
260 gpm	1.66 psi	1.63 psi	2.14 psi
280 gpm	1.96 psi	2.07 psi	2.65 psi
300 gpm	2.27 psi	2.53 psi	3.20 psi

*Pump operated at 40-50 psi. Testing conducted on 48-inch diameter tanks.

With a lower pressure loss, the LAKOS Underdrain promotes longer operating cycles and less frequent backwashing to increase overall filter system life. Controls loss of backwash water. Better backwash flow for more aggressive cleaning to maintain its low pressure loss capability.

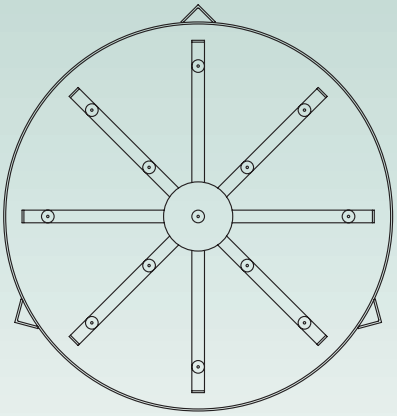
- Up to 17% lower pressure loss than hub & spoke designs
- Up to 35% lower pressure loss than flat lateral designs

vs. Competition



Hub and Spoke Design - 48-Inch Diameter Tank

Total screen open area ratio of only 1.4:1 greater than filter inlet size. The LAKOS Underdrain offers more than 250% more open area.



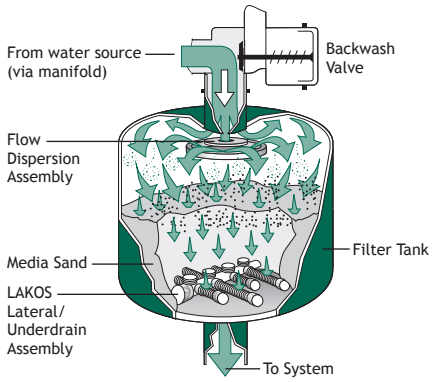
Flat Lateral Design - 48-Inch Diameter Tank

Total screen open area ratio of only 0.7:1 less than filter inlet size. The LAKOS Underdrain offers more than 500% more open area.

Limited Warranty

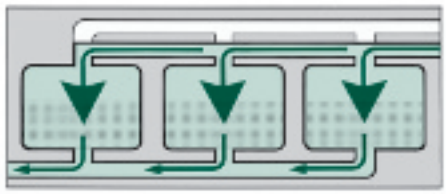
LAKOS products are factory tested to meet the highest quality standards in the filtration industry. Please refer to http://www.lakos.com/warranty for information about the warranty on this and all other LAKOS products.

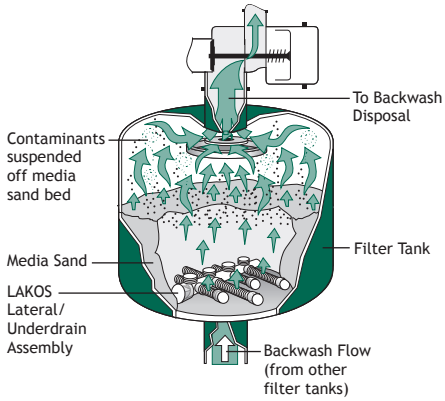
Operation



The Filtering Process

The filtering process engages the use of a specified sand media (see page 2) to trap foreign matter on the surface layer, allowing filtered water to percolate through the sand media and LAKOS internal v-slotted lateral assembly, discharging at the bottom of each tank to the outlet manifold.



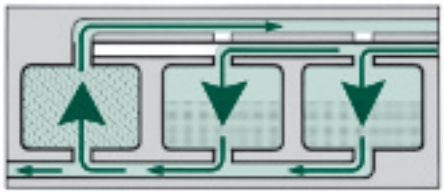


The Backwash Cycle

The backwash cycle flushes trapped debris from the sand media and out of the filter tanks. Each tank in a LAKOS System is flushed individually for maximum agitation of the sand media. Triggered by pressure differential, by elapsed time or manually, each tank's backwash valve is alternately activated into the backwash mode, which simultaneously interrupts inlet flow to that particular tank. Overall system pressure then directs partial system flow back into and through the tank's lateral assembly.

Flow continues for a prescribed period of time (typically one minute), suspending the foreign matter and carrying it out through the tank's top port (normal inlet) and out through the backwash valve and piping. The backwash valve then returns to its original position and restores the now "clean" filter tank to normal service.

NOTE: The LAKOS automatic controller provides a variable time delay between stations to avoid overlapping backwash cycles and maximize backwash efficiency.



The information, specifications and performance data stated in this literature are representative of engineering and production standards at the time of publication. Despite quality control, slight variations may occur due to manufacturing, product design improvements and/or sample selection. Actual data may also be revised without notice and you are encouraged to verify pertinent data with the manufacturer when appropriate.

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Lakos Separators are manufactured and sold under one or more of the following U.S. Patents: 5,320,747; 5,338,341; 5,368,735; 5,425,876; 5,571,416; 5,578,203; 5,622,545; 5,653,874; 5,894,995; 6,090,276; 6,143,175; 6,167,960; 6,202,543; 7,000,782; 7,032,760 and corresponding foreign patents, other U.S. and foreign patents pending.

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LS-675J (Rev. 6/15)

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Separators and Filtration Solutions

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