

TowerClean Systems

Packaged Separator Systems for Cooling Towers and Remote Sumps

Designed to keep cooling towers free of suspended solids

Eliminate Basin Cleaning!



Energy Efficient, Environmentally Friendly Designs

- *Save energy, water and money*
- *Reduce biofouling and the risk of Legionnaires Disease*
- *Eliminate manual basin cleaning*
- *Minimize maintenance & downtime*
- *Virtually eliminate underdeposit corrosion*
- *Protect the environment and natural resources*
- *Optimize the effectiveness of water treatment programs*
- *Maximize equipment life*
- *Increase thermal performance of your heat exchanger or chiller*

Flow Range: 30-1670 U.S. gpm* (7-379 m ³ /hr)	Standard Pressure Rating: 150 psi on TCX/TCI (10.34 bar)	Max. Fluid Operating Temp: 140°F (60°C)
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*Contact LAKOS for higher flow rate options

TCX Series
featuring accessible separators



Solids Recovery Vessel

TCI Series
featuring non-accessible separators



Automatic Purge Valve
(optional equipment)

WATER USAGE	SOLIDS METER	MAINTENANCE
 Zero Water Loss Options Available	 Micron (µm) Removal	 Zero Maintenance

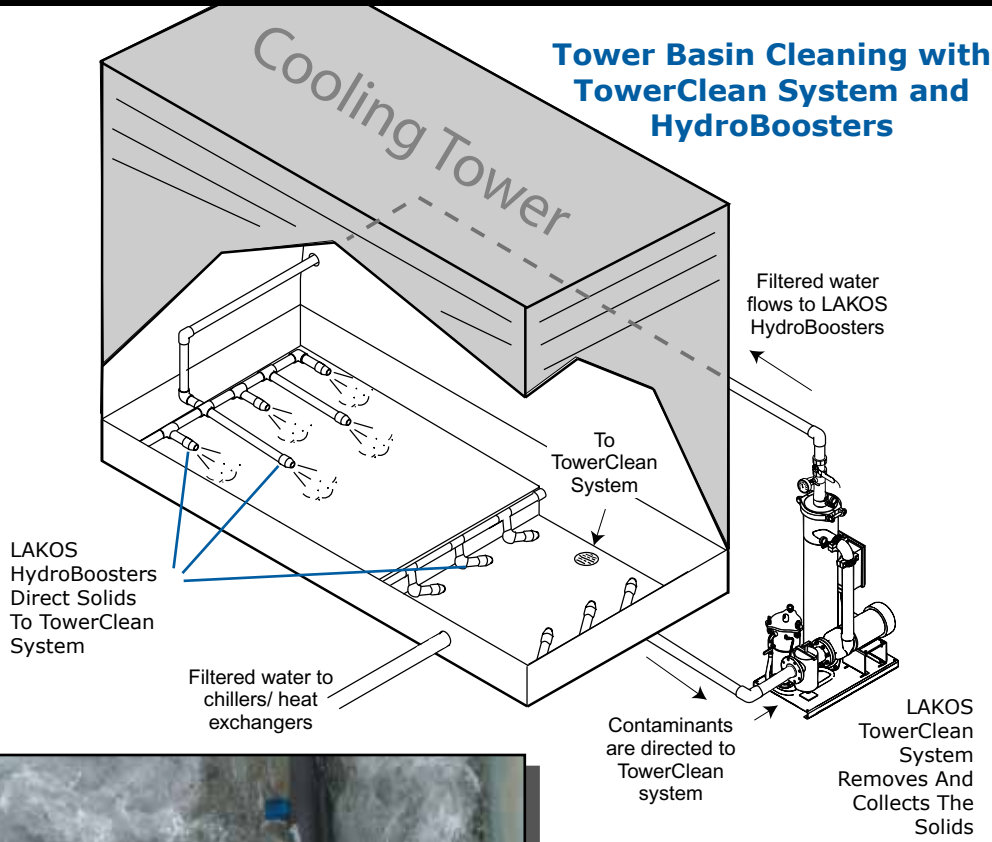


LAKOS is a proud member of ASHRAE and the U.S. Green Building Council



Typical Installations

Tower Basin Cleaning with TowerClean System and HydroBoosters



Model Selection

Since active and directed circulation of basin/sump liquids is required for effective solids removal, model selection for the TowerClean system is based upon the size of the basin or remote sump. This is best determined with these calculations:

For Packaged Cooling Towers

$$\text{Flow Rate} = \frac{\text{Length of Basin (feet)}}{\text{Width of Basin (feet)}} \times 1$$

For Remote Sumps With Water Depth Greater Than 3 ft**

$$\text{Flow Rate} = \frac{\text{Length of Basin (feet)}}{\text{Width of Basin (feet)}} \times 1.5$$



After determining the required Flow Rate, refer to the Max Basin Size column in the Performance section on the next page. Select the model that has an equal or next larger Flow Rate. For Flow Rates larger than those shown, two or more systems are needed or a custom system must be configured. Please consult the factory.

**Please confirm system selection with factory.

HydroBoosters

Directed turbulence maximizes cleaning efficiency in the tower basin/remote sump. LAKOS HydroBoosters provide that turbulence with patented vortexing action as shown. Swivel clips are available as shown in the picture below. Many cooling tower manufacturers offer factory-installed basin sweeping piping. Please consult LAKOS for proper equipment selection.

Model	Connection Size (inches)	Extension Size (minimum)	Input Flow and Output Effect
HB-10-K	3/4" male NPT	3/4"	10 US gpm and 60 US gpm (2 m ³ /hr and 12 m ³ /hr)
HB-18-K	3/4" male NPT	1"	18 US gpm and 108 US gpm (4 m ³ /hr and 24 m ³ /hr)
HB-35-K	1" male NPT	1 1/4"	35 US gpm and 210 US gpm (8 m ³ /hr and 48 m ³ /hr)
*TSN-0025-B	1/4" male NPT	---	4.2 US gpm (1 m ³ /hr)

NOTE: These flow rates are based on an input pressure of 20 psi (1.4 bar) Minimum water level above centerline of HydroBooster should be 2 inches

* This is a flat-fan spray nozzle (brass) for use in applications with a shallow deck in the basin. May be combined with HydroBoosters

1 US gpm enters through HydroBooster
Flow boosted to 6 US gpm through HydroBooster



Video of actual operation is available



HydroBooster with swivel clips

General Specifications

Configurations

TCI or TCX Model	Separator Model		Flow US gpm	Flow m3/hr	Inlet (flanged)	Outlet (grooved)	Inlet Piping To Use*	TCI / Weight		TCX / Weight		Pump HP	Max Basin (sq ft)	Full Load Amperage		
	TCI	TCX						Empty (lbs)	Empty (kg)	Empty (lbs)	Empty (kg)			230V	460V	575V
0030-SRV	ILB-0100	HTX-0016	30	7	1 1/2" thd	1"	2"	311	141	320	145	1	30	4.2	2.1	1.7
0065-SRV	ILB-0150	HTX-0038	65	15	2" thd	1 1/2"	2 1/2"	352	160	424	192	3	65	9.6	4.8	3.9
0100-SRV	ILB-0200	HTX-0060	100	23	3"	2"	3"	477	217	577	262	5	100	15.2	7.6	6.1
0145-SRV	ILB-0250	HTX-0085	145	33	3"	2 1/2"	4"	480	218	631	286	5	145	15.2	7.6	6.1
0200-SRV	ILB-0300	HTX-0130	200	45	3"	3"	4"	547	248	662	300	7.5	200	22	11	9
0280-SRV	ILB-0350	HTX-0200	280	64	4"	4"	6"	656	298	820	372	10	280	28	14	11
0400-SRV	HTH-0285	HTX-0285	400	91	6"	4"	6"	1065	483	1153	523	15	400	42	21	17
0525-SRV	HTH-0285	HTX-0285	525	119	6"	4"	8"	1235	560	1318	598	20	525	54	27	22
0600-SRV	HTH-0450	HTX-0450	600	136	6"	6"	6"	1535	696	1580	717	20	600	68	34	27
0825-SRV	HTH-0450	HTX-0450	825	187	8"	6"	8"	1793	787	1771	803	30	825	80	40	32
1100-SRV	HTH-0500	HTX-0500	1100	250	8"	6"	10"	1794	815	1847	838	40	1100	104	52	41
1670-SRV	HTH-0810	HTX-0810	1670	379	10"	8"	10"	3405	1544	3598	1632	60	1670	154	77	62

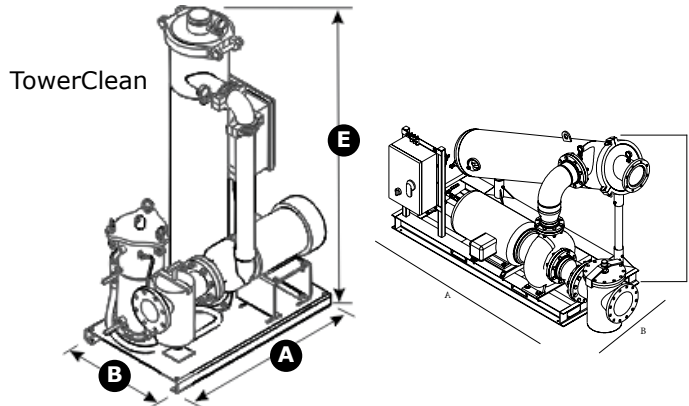
*LAKOS recommended inlet pipe size

All TowerClean systems are rated for 150 psi (10.3 bar) maximum pressure

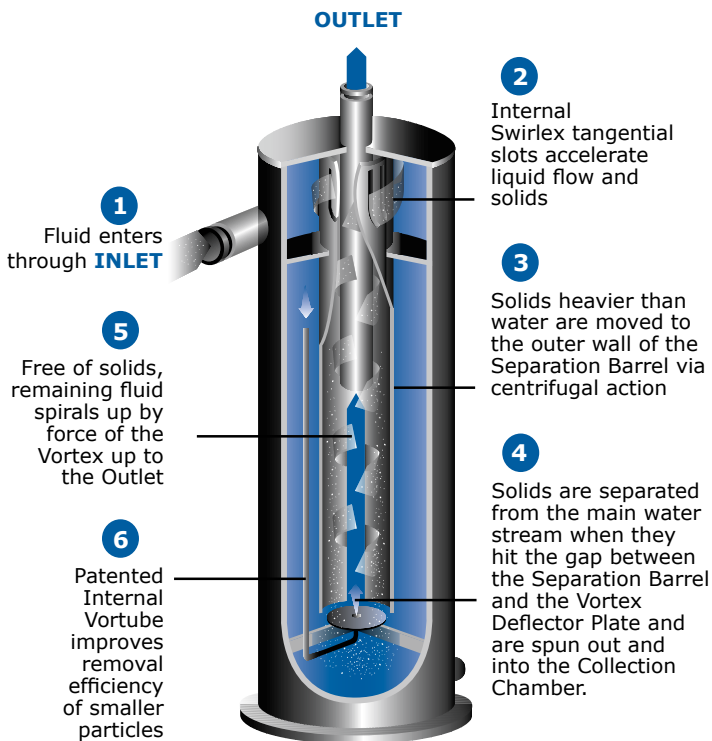
Dimensions

TCI or TCX Model	Dim A		Dim B		Dim E - TCI		Dim E - TCX	
	inches	mm	inches	mm	inches	mm	inches	mm
0030-SRV	39 3/4	1010	24	610	44 5/16	1125	46 1/8	1172
0065-SRV	39 3/4	1010	24	610	44 1/16	1119	46 1/8	1172
0100-SRV	39 3/4	1010	24	610	47	1194	48 1/8	1222
0145-SRV	39 3/4	1010	24	610	47 1/2	1207	49 3/8	1254
0200-SRV	39 3/4	1010	24	610	50 1/12	1283	51 3/8	1305
0280-SRV	39 3/4	1010	24	610	62	1575	67 1/16	1703
0400-SRV	48	1219	30	762	69 3/16	1757	69 3/16	1757
0525-SRV	48	1219	30	762	69 3/16	1757	69 3/16	1757
0600-SRV	60	1524	36	914	84 15/16	2157	84 15/16	2157
0825-SRV	60	1524	36	914	84 15/16	2157	85 1/16	2161
1100-SRV	60	1524	36	914	84 15/16	2157	85 1/16	2161
1670-SRV	117 3/8	2981	46 1/2	1181	67 3/16	1707	63	1600

More detailed CAD drawings and CSI specifications are available at www.lakos.com



LAKOS Separators: How It Works



System Components

- LAKOS Separator (different units for different configurations, see "Configurations" chart above)
- Centrifugal Pump w/silicon carbide/silicon seals, rated for 100 ft. TDH (nominal)
- Basket Strainer
- LAKOS Solids Recovery Vessel (SRV) with Indicator Package (SRI)
- Inlet/Outlet Pressure Gauges
- Fully Assembled On A Skid
- All Interconnecting Piping and Valves
- UL Listed/NEMA 4X Motor Starter and Controls

Optional Equipment:

- Inlet/Outlet Valve Kit (Recommended)
- Dry Electrical Contact (DEC) for Solids
- Recovery Vessel
- Indicator Package (SRI)
- Motorized Ball Valve or Fail-Safe Valve (in place of Solids Recovery Vessel) for Automated Purging
- PLC (programmable logic controller)
- Premium Efficiency Motor
- International voltages and 50 Hz
- Higher pressures available

Automated Purging Accessories



Automated Purge Valve



Solids Recovery Vessel

FOR HIGHER EFFICIENCY USING LESS ENERGY

High Efficiency Tower Clean Systems

Eliminate Basin Cleaning and Reduce Energy Consumption



FLOW RATES:

Basin Sweeping: 80 – 410 US gpm (18 – 93 m3/hr)

Side Stream: 95 – 500 US gpm (22 – 114 m3/hr)

Maximum Pressure Rating: 150 psi (10.3 bar)

Maximum Operating Temperature: 140°F (60° C)

eTCX System

- 99% filtration efficiency of solids down to 25 micron (2.6 Specific Gravity) and larger greatly reduces suspended solids in recirculated cooling tower water; significantly improving equipment life and removing food source for biological activity

Advantages of eTCX System

AVERAGE SYSTEM NOISE REDUCTION (dB comparison)

eTCX Systems 79.8%

79.8% Less Noise

TC Systems

AVERAGE SYSTEM kW REDUCTION

eTCX Systems 29.7%

29.7% Decrease in system kW consumption

TC Systems

See literature LS-910 for more details

PLUS Options for Solids Removal Down to .35 Micron

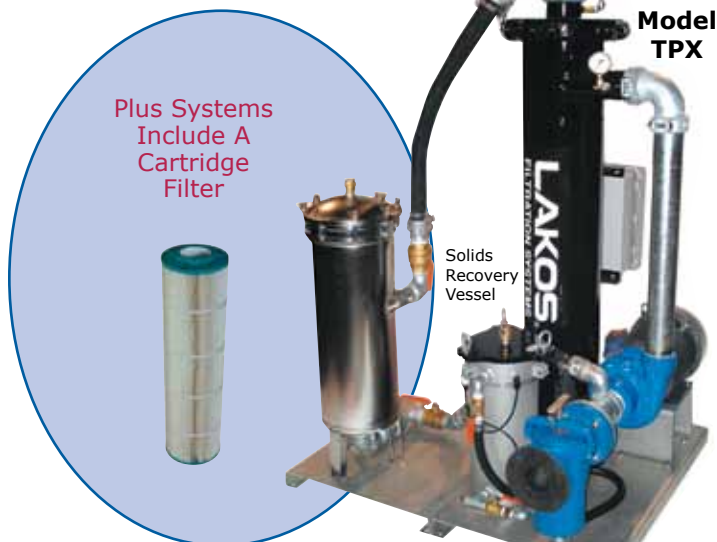
LAKOS is the recognized leader in solids removal from liquids in the Heat Transfer Industry. With the most complete line of filtration, including separators, media and cartridge filtration, LAKOS can provide you with the best filtration solutions to your fouling problems. Choose LAKOS for customized solutions to your filtration needs.

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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Plus Systems Include A Cartridge Filter

Solids Recovery Vessel

Refer to LS-713 for more PLUS information

LS-710K (Rev. 12/15)