

# High Efficiency Liquid-Solid Separators

## Continuous Filtration with Zero Maintenance



### FLOW RATES:

15 – 770 US gpm (3 – 175 m<sup>3</sup>/hr)

For higher flow rates, two or more separators can be manifolded (see page 4)

**Maximum Pressure Rating:** 150 psi (10.3 bar)

**Maximum Fluid Operating Temperature:** 180° F (82° C)

*A high efficiency liquid-solid separator that provides the finest filtration using centrifugal action for cooling tower systems; resulting in reduction of maintenance and water consumption.*

*The eHTX Separator is the latest in technology from LAKOS, the leader in liquid-solid filtration for HVAC applications.*

**Innovative. Reliable. Effective. Energy Efficient.**

### eHTX Features and Benefits:

- Filter performance rated to remove 98% of all solids 44 micron (325 mesh), 2.6 specific gravity, and larger in a single pass and 99% down to 25 micron (550 mesh) in recirculated systems
- No moving parts to wear out; no barriers or media to change
- Space saving vertical profiles
- Low and steady pressure loss; as low as 2 psid
- Options for zero water loss
- Continuous filtration and no backwashing; periodic automated purging eliminates routine maintenance and messy service routines
- Optional materials of construction and ASME code available
- Improve downstream thermal efficiency of heat transfer surfaces
- eHTX Separators include pressure gauges

### FILTRATION APPLICATIONS:




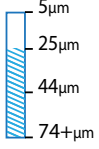

Full Stream



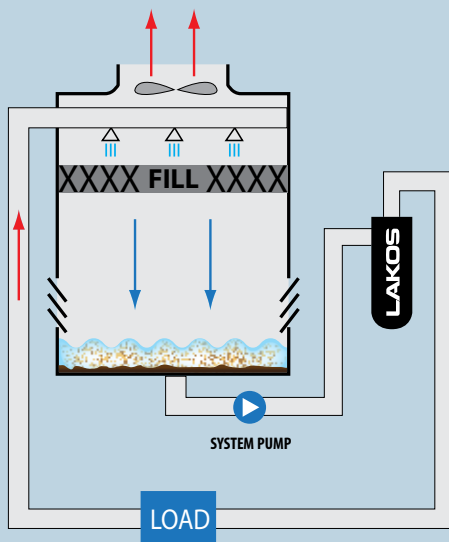
Side Stream



Closed Loop

| WATER USAGE   | SOLIDS METER   | MAINTENANCE  |
|---|--|--|
| <br>Zero Water Loss<br>Options<br>Available | <br>Micron<br>Removal<br>µm (microns) | <br>Zero<br>Maintenance |

# Full Stream

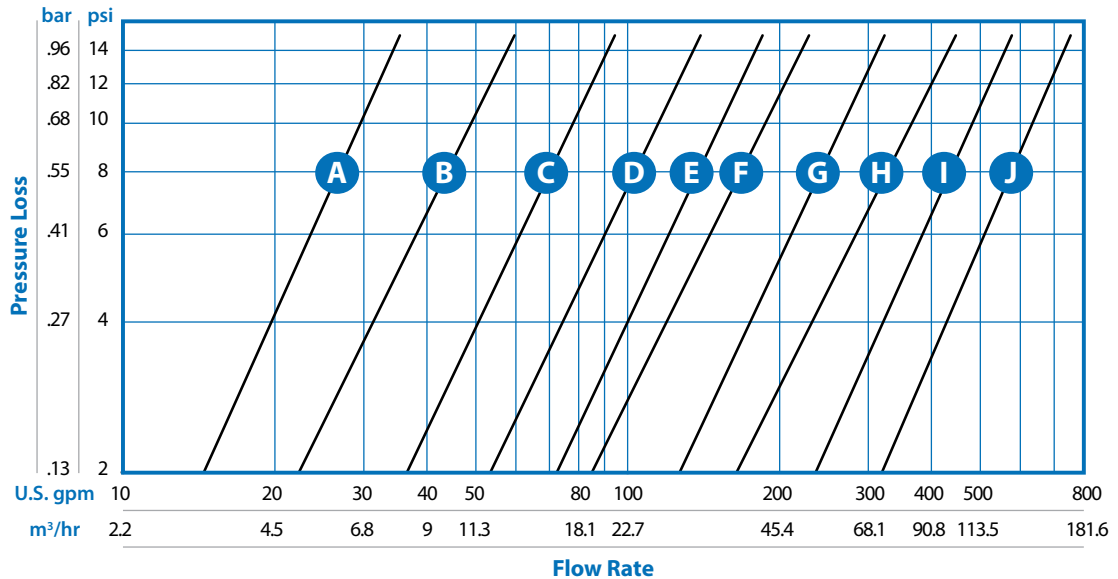


## Benefits:

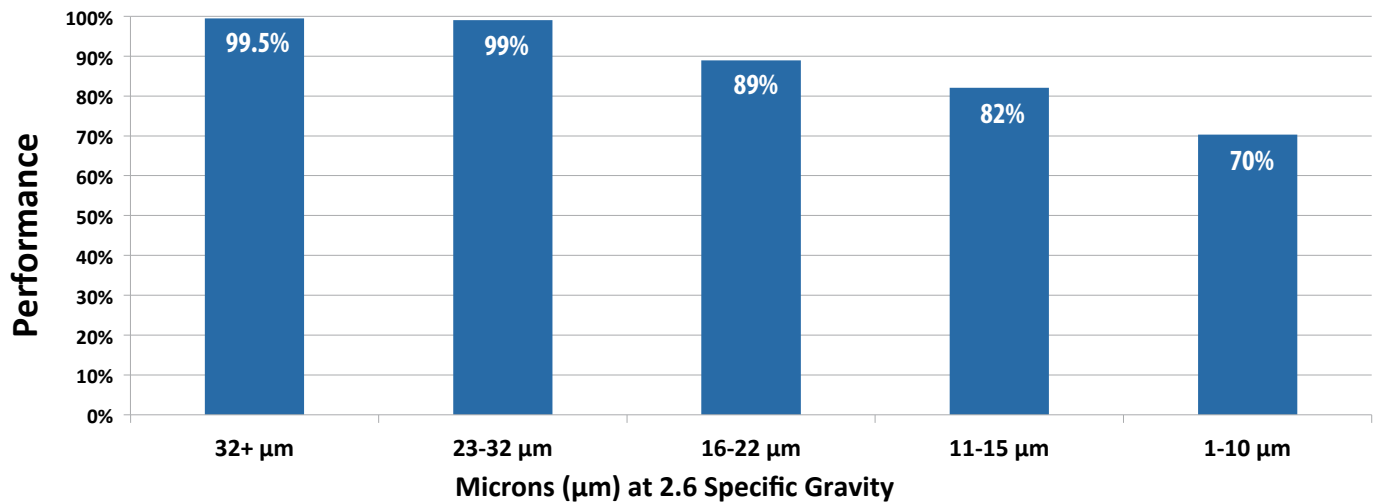
- Filter 100% of flow from the cooling tower to downstream equipment – with zero downtime
- Maintain design heat transfer efficiencies on new and existing equipment
- Significantly extend maintenance intervals for cleaning chiller tubes, plate heat exchangers, compressors, etc.
- Zero filtration maintenance when using LAKOS Controllers and Automated Purge Valves
- Point of use application

## Flow vs. Pressure Loss Chart

- A** eHTX-0015
- B** eHTX-0025
- C** eHTX-0040
- D** eHTX-0060
- E** eHTX-0080
- F** eHTX-0090
- G** eHTX-0140
- H** eHTX-0185
- I** eHTX-0260
- J** eHTX-0320

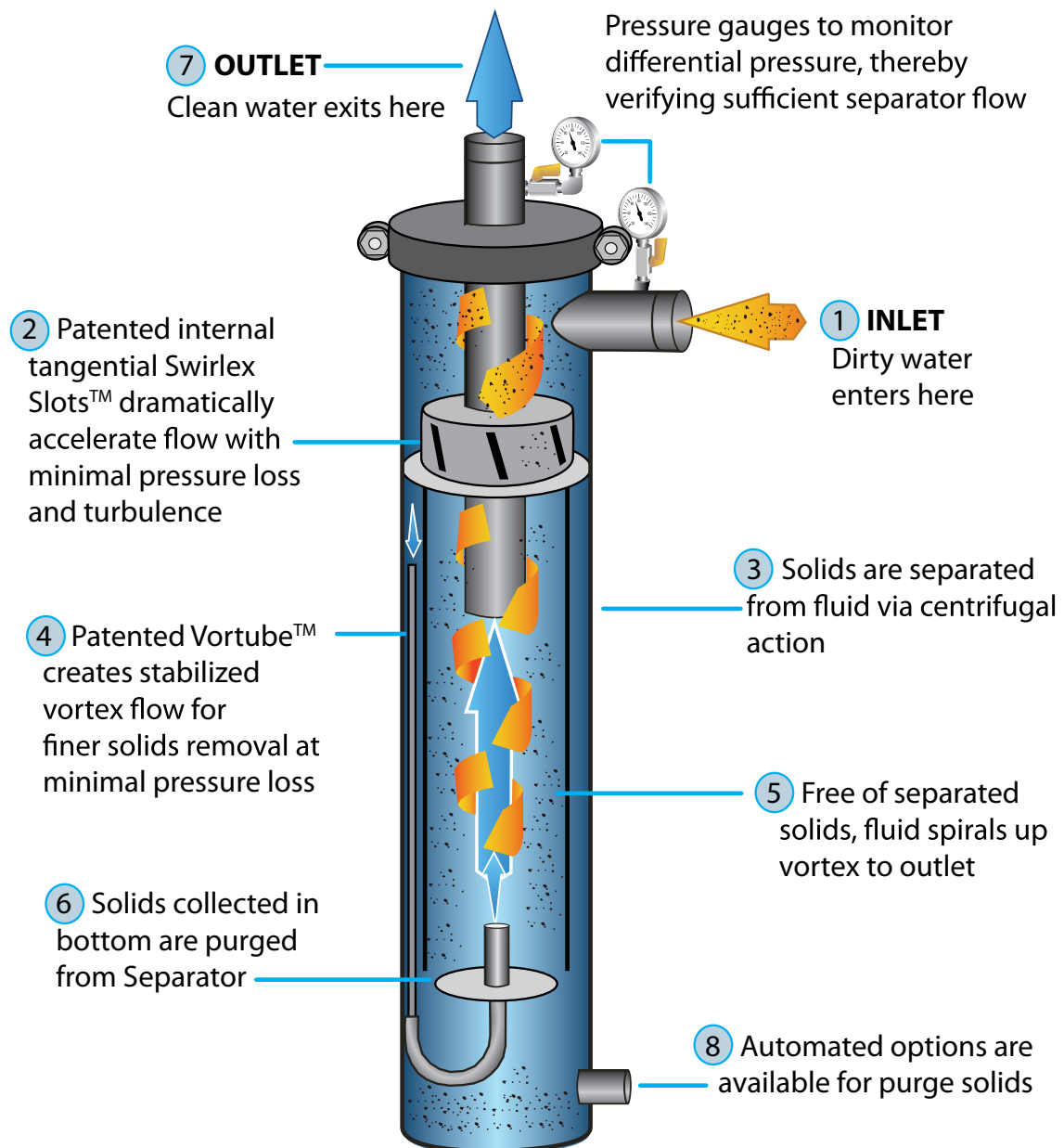


## Solids Removal Chart: Recirculated flow at 20% Side Stream

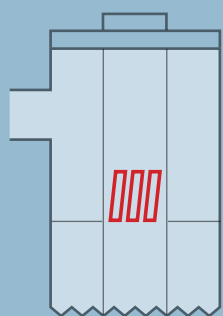


The above efficiency results were based upon 20% side stream within 16 hours. Field results may vary depending on side stream percentage and basin size. Performance results verified by independent testing.

# How It Works



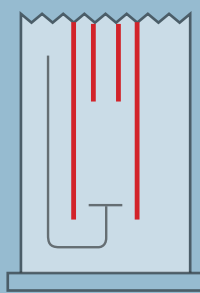
## PATENTED SWIRLEX SLOT



**2**

Patented Swirlex slots dramatically accelerate flow to efficiently magnify separation without increased turbulence and efficiently remove troublesome solids without abrasive wear.

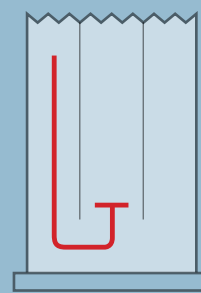
## INTERNAL BARREL



**3**

Proprietary lower vortex stabilization methodology further enhances solids separation.

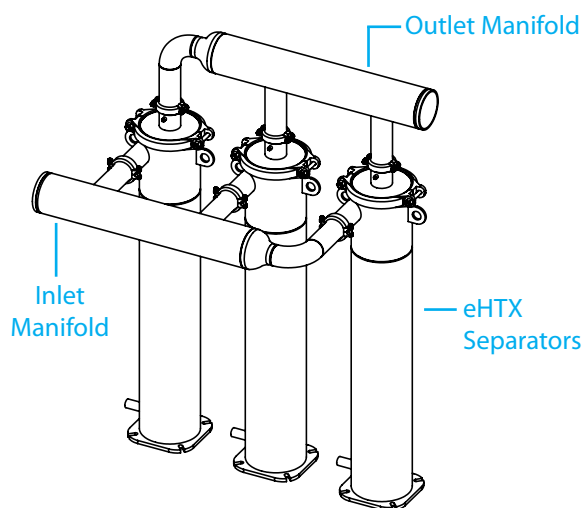
## PATENTED VORTUBE



**4**

Patented Vortube geometry capitalizes on strong pressure gradient present at the center of the vortex to effectively pull finer solids into the collection chamber.

# Higher Flow Rates



## Manifolding in Parallel for High Flow Rates

When water system flow rates exceed that of any single LAKOS Separator, manifolding two or more units together can help achieve large flow requirements. LAKOS can assist with separator manifold design and build for high flow rate applications. Manifolding multiple units keeps units smaller, easier to install and provides for future flow rate changes.

*Example: Three eHTX-0185 Separators increase flow range to 555 – 1350 US gpm (126 – 307 m<sup>3</sup>/hr)*

# Separated Solids Disposal

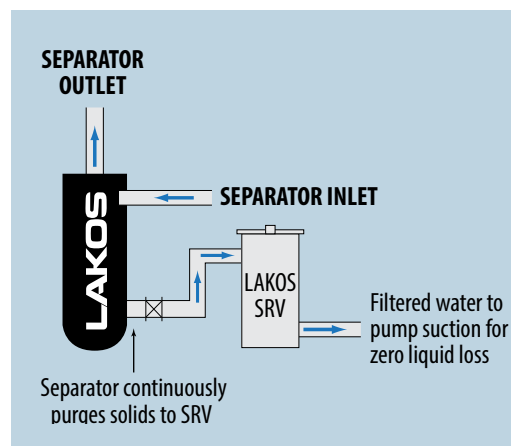
## Solids Recovery Vessel (SRV)

### Features and Benefits:

- Solids Recovery Vessel (SRV-833) features double capacity to allow for fewer bag change outs; includes two ten micron bags on order
- Lower waste treatment costs, meet waste disposal requirements and greatly reduce chemical loss
- eHTX Separators can purge to either SRV-816 or SRV-833 for separated solids collection
- Optional indicator package to facilitate bag change-outs
- For more information see LAKOS literature LS-622



SRV-833 SRV-816



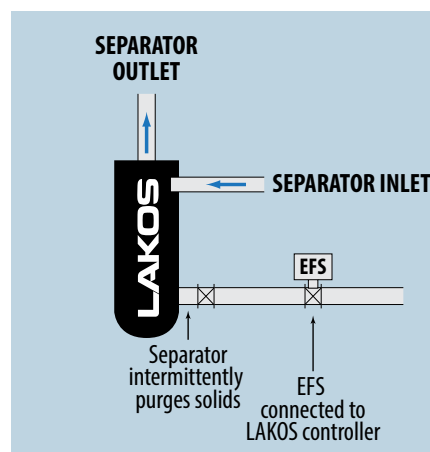
## Electric Fail-Safe Valve (EFS)

### Features and Benefits:

- Battery backup electric fail-safe option automatically closes valve in event of power failure
- Eliminates manual purging
- EFS actuator features an electronic circuit that automatically adjusts the motor speed (depending on torque variations) to keep cycle time constant – maintaining consistent purge durations
- Ability to set both purge duration and interval
- For more information see LAKOS literature LS-913

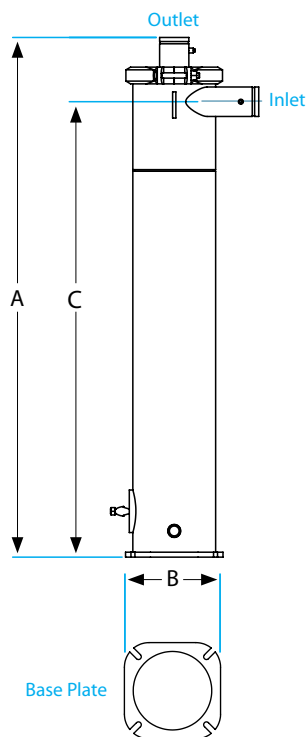


EFS

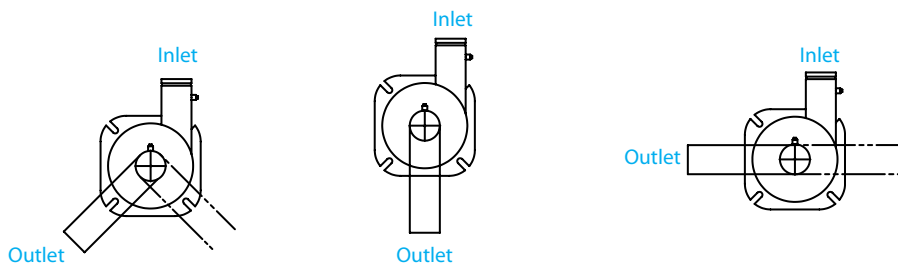


# Models & Dimensions

## eHTX Separator



Recommended direction of inlet/outlet piping to control vibration



## MODELS AND DIMENSIONS:

| Model       | A   |      | B  |     | C  |      |
|-------------|-----|------|----|-----|----|------|
|             | in  | mm   | in | mm  | in | mm   |
| eHTX-0015-V | 31  | 787  | 9  | 229 | 25 | 629  |
| eHTX-0025-V | 36  | 914  | 9  | 229 | 30 | 756  |
| eHTX-0040-V | 42  | 1067 | 13 | 330 | 36 | 905  |
| eHTX-0060-V | 48  | 1219 | 13 | 330 | 41 | 1037 |
| eHTX-0080-V | 56  | 1422 | 13 | 330 | 48 | 1230 |
| eHTX-0090-V | 64  | 1626 | 13 | 330 | 55 | 1400 |
| eHTX-0140-V | 73  | 1854 | 15 | 381 | 64 | 1630 |
| eHTX-0185-V | 79  | 2007 | 15 | 381 | 70 | 1767 |
| eHTX-0260-V | 93  | 2362 | 19 | 483 | 83 | 2105 |
| eHTX-0320-V | 103 | 2608 | 21 | 533 | 91 | 2313 |

**NOTE:** eHTX-0320-V available in low profile configuration. Consult factory for details.  
Hand-hole included on eHTX-0140 and larger models only.

## SPECIFICATIONS:

| Model       | Flow Range<br>US gpm |      | Flow Range<br>m <sup>3</sup> /hr |      | Inlet/<br>Outlet | Purge Size | Solids<br>Collection<br>Capacity |        | Empty Weight |     | Weight w/Water |     |
|-------------|----------------------|------|----------------------------------|------|------------------|------------|----------------------------------|--------|--------------|-----|----------------|-----|
|             | low                  | high | low                              | high |                  |            | gal                              | liters | lbs          | kg  | lbs            | kg  |
| eHTX-0015-V | 15                   | 30   | 3                                | 7    | 1"               | 3/4"       | .25                              | .95    | 97           | 44  | 125            | 57  |
| eHTX-0025-V | 25                   | 60   | 6                                | 14   | 1-1/4"           | 3/4"       | .25                              | .95    | 115          | 52  | 148            | 67  |
| eHTX-0040-V | 40                   | 95   | 9                                | 21   | 1-1/2"           | 3/4"       | 0.6                              | 2.3    | 184          | 83  | 257            | 117 |
| eHTX-0060-V | 60                   | 140  | 13                               | 31   | 2"               | 3/4"       | 0.6                              | 2.3    | 221          | 100 | 305            | 138 |
| eHTX-0080-V | 80                   | 185  | 18                               | 42   | 2-1/2"           | 3/4"       | 1.2                              | 4.5    | 298          | 135 | 456            | 207 |
| eHTX-0090-V | 90                   | 230  | 20                               | 52   | 3"               | 3/4"       | 1.2                              | 4.5    | 328          | 149 | 508            | 230 |
| eHTX-0140-V | 140                  | 325  | 32                               | 74   | 4"               | 1-1/2"     | 1.7                              | 6.4    | 486          | 220 | 772            | 350 |
| eHTX-0185-V | 185                  | 450  | 42                               | 102  | 4"               | 1-1/2"     | 1.7                              | 6.4    | 498          | 226 | 807            | 366 |
| eHTX-0260-V | 260                  | 585  | 50                               | 133  | 4"               | 1-1/2"     | 3.2                              | 12.1   | 768          | 349 | 1362           | 609 |
| eHTX-0320-V | 320                  | 770  | 73                               | 172  | 6"               | 1-1/2"     | 3.4                              | 12.8   | 979          | 444 | 1789           | 813 |

## SEPARATED SOLIDS DISPOSAL:

| Solids Recovery Models | Solids Collection Capacity   | Liquid Retention Capacity |
|------------------------|------------------------------|---------------------------|
| SRV-816                | 360 cubic inches (6 liters)  | 5 gallons (19 liters)     |
| SRV-833                | 732 cubic inches (12 liters) | 8 gallons (30.5 liters)   |

| Purge Valve Models | Purge Valve Size       |
|--------------------|------------------------|
| EFS-07             | 3/4 inches (19.05 mm)  |
| EFS-15             | 1 1/2 inches (38.1 mm) |
| ABV2-07            | 3/4 inches (19.05 mm)  |
| ABV2-15            | 1 1/2 inches (38.1 mm) |

For more information about ABV2 valves, see LAKOS literature LS-239.

# Independent Testing

## Filtration Test completed on LAKOS 3" Separator Design Iteration 200/8/12.

The filter assembly was installed with test components defined as follows installed in the following order starting upstream:

- 1) 3" turbine-type flow meter
- 2) 20 micron disc filter assembly
- 3) 4" pipe spool with sand-injection pump
- 4) 3" spool
- 5) Separator under test
- 6) 3" pipe spool
- 7) 20 micron disc filter assembly

**Test Conditions:** 200 gpm, 11.4 psi loss

### Sample Breakdown (Grams):

45-75 micron: 75.000

Total sample size: 75.000

**Recovered grams from downstream filters:** 1.001

**Filter efficiency:**  $73.999 / 75.000 = 98.7\%$

**Note:** Sand sample: Quartz, Silicon Dioxide by Powder Technology Inc.

**Date:** August 1, 2012



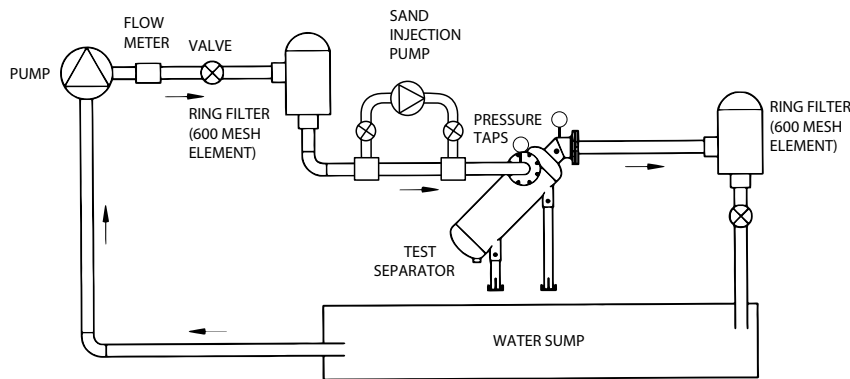
LAKOS Separators have been independently tested and certified by an independent testing agency, the International Center for Water Technology (ICWT), confirming our separators' filtration performance and capability to remove troublesome particle matter from pumped water.

For over 30 years the internationally recognized ICWT/CIT Testing Laboratories have been providing independent, third party testing to a wide range of irrigation and other industries around the world.

ICWT has experience with hydraulics, pumps, filters, and valves. Fluid component testing provides manufacturers, distributors and end-users with accurate performance data for applicability assessment and enable product development. ICWT was recently certified by IAPMO R&T - North America's premier third party certification body for plumbing and mechanical products. More information about the testing agency and testing process can be found at [www.californiawater.org](http://www.californiawater.org).

This test agency is available and approachable to confirm its test methodologies and results.

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Claude Laval Corporation, headquartered in Fresno California since 1972, is recognized worldwide for engineering, manufacturing and marketing the original centrifugal action solids from liquids separator and being the world-wide leader in cyclonic separation technology.

LAKOS Separators are manufactured in the USA. 

All LAKOS eHTX Separators are warranted for five (5) years from date of delivery.  
For detailed warranty information visit <http://www.lakos.com>

LAKOS is an active member of the U.S. Green Building Council  
LAKOS is a proud and contributing member of ASHRAE for over 30 years

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; 5,578,203; 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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