Pump Protection Separators

Prevents sand abrasion damage to pumps, increasing life and maintaining efficiency

PPS

Models available for both turbine and submersible pumps.

Prevent premature failure of pumps due to sand damage with a LAKOS Pump Protection Separator. Controlled centrifugal action separates troublesome sand and keeps it from entering the pump's internal components. The LAKOS patented design removes 95% of particles 100 mesh and larger preventing damage before it starts.

Reduce sand worn impellers, bowls and other components. Reduce hassles of decreased performance and frequent repairs.

Once installed, PPS Separators are maintenance free. There are no moving parts to wear out, no screens or filter elements to clean or replace. Constructed of durable carbon steel, they are easily installed with turbine or submersible pumps.

- **Dramatically reduces sand wear**
- **Extends the pump's life by four times or more**
- **Controls excessive efficiency loss and energy costs**
- **Minimizes breakdowns and replacements**
- **Reduces downstream filtration burden**

Flow range: 100 - 3,180 U.S. gpm (23 - 723 m^3/hr)

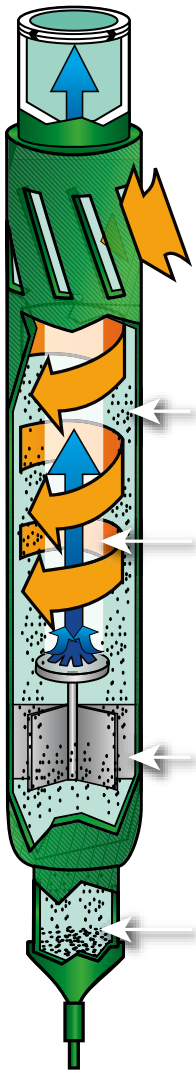
Sub-K models available for lower flow submersible pumps.

Options for VFD (constant pressure/constant flow) pumps available.

LAKOS®

Separators and Filtration Solutions

How It Works



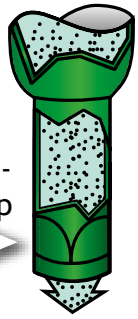
1. Sandy water is drawn through tangential inlet slots into separation chamber.
2. Sand is centrifugally separated from water and tossed to perimeter of chamber.
3. Sand-free water is drawn to center of separator and up through vortex outlet to pump's suction.
4. Sand particles fall downward, along perimeter, to bottom of separator.
5. Flapper Valve **CLOSED** - Sand accumulates in separator.

Where Does the Sand Go? Will Separated Sand Fill Up the Well?

The PPS Separator is designed to prevent excessive sand from damaging a pump. Unchecked, sand wear costs significant time and money. Instead, the separator offers a more cost-effective alternative.

Separated sand is periodically discharged deep into the well. Experience has proven that accumulation is not an issue to fear. While rare cases occur where the sand accumulation requires bailing of the well, more often the actual flow of the aquifer serves to evacuate much of the sand to prevent troublesome build-up. In addition, extensive research by Ohio State University addressed this exact concern (Water Well Journal, Oct. 1985). Their study revealed that the accumulation of some sand by a PPS Separator actually changes the inflow of water into the well, creating a state of equilibrium that drastically decreases the flow of further sand into the well.

6. Flapper Valve **OPEN** - Sand discharges deep into well.



How to Select a PPS Pump Protection Separator

1. Find your pump's flow range in the chart. The best fit model is in the middle of the range. **Do not oversize.** For VFD (constant pressure/constant flow pumps, make your selection based on maximum flow.
2. Verify your minimum well ID to ensure the unit will fit. If necessary, select another model.
3. Verify the well will accomodate the required pump submergence (the amount of water above the pump during operation).
4. For submersible pumps, a shell or shell kit is required (see page 3).

If you have any problems with model selection, call LAKOS for assistance. We'll need to know your flow rate, well ID, pump setting and submergence. Let us help you.

Model	Flow Range		Minimum Well I.D.		Required Minimum Submergence	
	U.S. gpm	m^3/ hr	in	mm	ft	meters
PPS-100-D	100-175	23-40	6	152	30	9.2
PPS-125-E	125-250	29-57	7	178	30	9.2
PPS-150-F	150-325	34-74	8	203	30	9.2
PPS-325-GSA	325-520	74-118	9-3/4	248	60	18.4
PPS-520-GGA	520-710	118-161	9-3/4	248	60	18.4
PPS-325-G	325-650	74-148	10-3/4	273	30	9.2
PPS-600-HSA	600-910	136-207	12	305	60	18.4
PPS-880-HHA	880-1375	200-312	12	305	60	18.4
PPS-550-H	550-1110	125-252	13-1/4	337	30	9.2
PPS-1290-ISA	1290-1700	293-386	13-1/4	337	60	18.4
PPS-825-I	825-1450	187-329	15-1/4	387	30	9.2
PPS-1460-JSA	1460-2040	332-463	15-1/4	387	60	18.4
PPS-1010-J	1010-1800	230-409	17-1/4	438	30	9.2
PPS-1780-KSA	1780-2420	404-550	17-1/4	438	60	18.4
PPS-1640-K	1640-2560	373-582	19-1/4	489	30	9.2
PPS-2520-KKA	2520-3180	573-723	19-1/4	489	60	18.4

General Specifications:

- Removes 95% of 100 mesh and larger particles
- Head Loss: Typically, 9-14 feet (2.74-4.27m)
- Requires minimum of 20 feet (6.1m) of clearance from bottom of separator to bottom of well.
- Maximum Particle Size: 1/4 inch (6.3mm)
- Maximum Particle Concentration: 1,000 ppm
- For pumps with continuous operation, consult factory concerning recommendation for continuous sand evacuation.

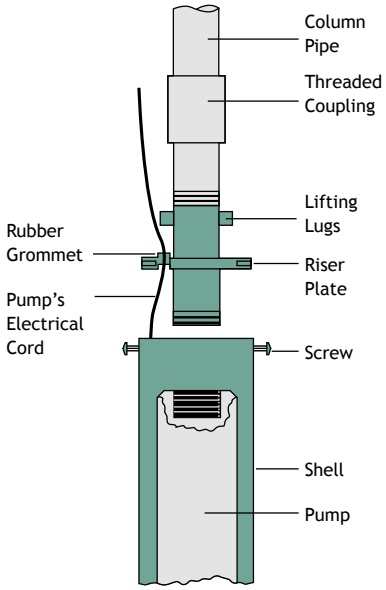
For Submersible Pumps, Choose a Shell Option

What is a Shell?

A Pump Enclosure Shell ensures that incoming water to the pump first passes through the LAKOS Pump Protection Separator. In order to properly size a shell, the following information is necessary (in addition to the pump's gpm):

- Overall length of the pump and motor assembly.
- Riser size of the submersible pump.
- Diameter of the pump or motor (whichever is greater).

The pump is attached to the shell as noted in illustration to the right. Remove riser plate from shell and attach pump to inside riser connection. Insert pump into Pump Enclosure Shell and secure with provided screws. A proper hole is provided for the submersible pump's electrical cord to pass through the riser plate. Use a waterproof sealant to fill-in any gaps or holes that would otherwise allow water to pass through the assembly. Attach the LAKOS Pump Protection Separator to the bottom of the Pump Enclosure Shell (note "Installation" on page 4).



Choose Your Shell Option:

1) Have the LAKOS factory fabricate a shell to your project's specifications. See bullet points above for required data to size/construct the proper shell.

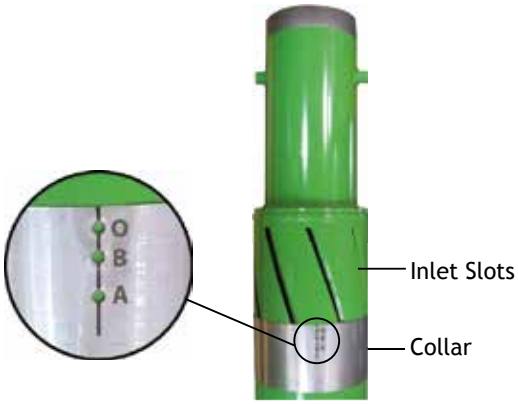
2) Fabricate your own shell with a LAKOS Shell Kit. When time/money does not allow, consider the shell kit, featuring the riser assembly, top piece and bottom piece of a typical shell (see photo to the right). Available in sizes up to 10-inches in diameter, the shell kit requires the required length of shell diameter pipe to be welded on-site (with customer-provided pipe) onto the shell kit parts. Saves time. Reduces shipping costs. Saves money.

Shell Kit:

you supply the pipe

Optimizing Operation to Your Specific Flow

On selected models, the flow adjustment collar allows for fine-tuning of LAKOS Pump Protection Separators. The collar is easily adjusted using the set screw to place the collar in the position for the system flow rate. The collar can be set at either of the three positions:
O, allowing full flow through the separator inlet slots; and A or B, which allows partial restriction of the slots to allow the most efficient operation of the separator for the system flow. See the chart to the right to determine the best collar position for the most efficient operation of the separator.



Model	Flow Range U.S. gpm	Flow Range m^3/ hr.	Position Of Collar
PPS-125-E	125-200	27-45	Collar On
	200-250	45-57	Collar Off
PPS-150-F	150-210	34-48	A
	210-275	48-62	B
	275-325	62-74	Collar Off
PPS-325-G	325-425	74-97	A
	425-525	97-119	B
	525-650	119-148	Collar Off
PPS-550-H	550-675	125-153	A
	676-825	154-187	B
	826-1110	188-252	Collar Off
PPS-825-I	825-1050	187-238	A
	1050-1225	238-278	B
	1225-1450	278-329	Collar Off
PPS-1010-J	1010-1275	230-290	A
	1275-1450	290-329	B
	1450-1800	329-409	Collar Off
PPS-1640-K	1640-1890	373-429	A
	1890-2250	429-511	B
	2250-2560	511-582	Collar Off

Other Specifications

Model	Outside Diameter		Length With Riser & Flapper Valve		Riser Size	Weight	
	in	mm	in	mm	N.P.T.	lbs	kg
PPS-100-D	5-5/8	143	88-3/8	2245	2-1/2 "	93	42
PPS-125-E	5-9/16	141	106	2692	3"	142	64
PPS-150-F	6-5/8	168	120-1/4	3054	4"	220	100
PPS-325-GSA	8-5/8	219	124	3150	6"	191	87
PPS-520-GGA	8-5/8	219	130	3302	6"	213	97
PPS-325-G	8-5/8	219	132-1/2	3366	6"	267	121
PPS-600-HSA	10-5/8	270	141-1/2	3594	8"	281	128
PPS-880-HHA	10-5/8	270	145-3/4	3702	8"	315	143
PPS-550-H	10-3/4	273	147	3734	8"	390	177
PPS-1290-ISA	10-3/4	273	150-1/2	3823	8"	393	178
PPS-825-I	12-3/4	324	154	3912	8"	454	206
PPS-1460-JSA	12-3/4	324	158	4013	10"	492	223
PPS-1010-J	14	356	163	4140	10"	526	239
PPS-1780-KSA	14	356	170	4318	10"	575	261
PPS-1640-K	16	406	185	4699	10"	703	319
PPS-2520-KKA	16	406	204	5182	12"	754	342

Other LAKOS Products

For other solutions, see the Complete Family of LAKOS Irrigation and Landscape Filtration Solutions

For more information go to www.LAKOS.com and refer to literature LS-848

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.

Installation

Required Data for Proper Model Selection:

A. Maximum & minimum flow rate of pump

B. Minimum inside diameter (I.D.) of well

C. Depth of well

D. Depth of pump setting

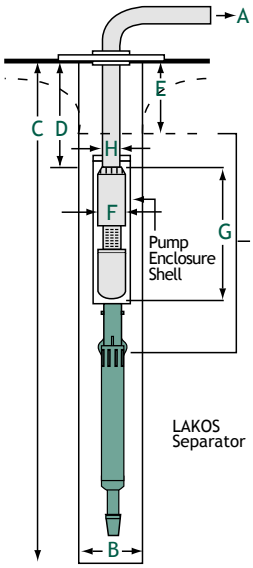
E. Pumping water level

F. Maximum diameter of pump/motor

G. Overall length of pump and motor

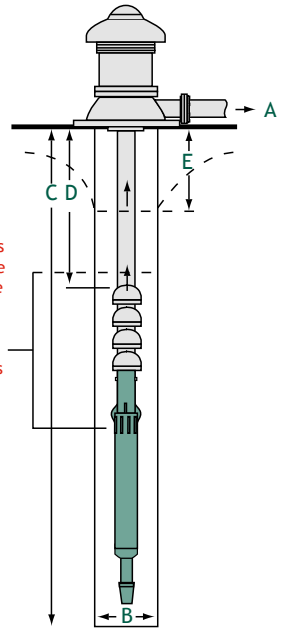
H. Pump's riser size

For Submersible Pumps



IMPORTANT
Separator models with single-letter designations (i.e. D, E, F, etc.) require a minimum submergence of 30 feet (9.2m) below the drawdown water level. Models with three-letter designations require 60 feet (18.3m) submergence. Minimum clearance below separator's purge discharge: 30 ft (9.2M)

For Turbine Pumps



LAKOS Pump Protection Separators come in a variety of sizes and may be shipped in a variety of ways. Most often, however, each unit is shipped complete, strapped onto a wooden skid. Before installation, remove all labels, decals and shipping instructions from each unit to avoid plugging the inlet slots. LAKOS Pump Protection Separators are designed to continuously flush separated particles back into the source water.

For Turbine Models:

LAKOS Turbine Separators are manufactured with a standard riser size (note "Other Specifications" chart shown above). Should this riser not match the connection to your pump's bowl assembly, you'll need to arrange for the proper connection (i.e. reducer, etc.). Lifting lugs are provided on the riser of all models size "E" through "K" for ease of installation. Connect the separator to the bowl assembly, then install the flapper valve.

At this point, you may proceed with your customary routine for installing the pump.

For Submersible Models:

See instructions on page 3 for proper installation of the pump in the shell. Attach separator to Pump Enclosure Shell.

Installation may now proceed as normal for submersible pumps.

Once installed, LAKOS Pump Protection Separators require no routine maintenance.

Maintenance:

Should you ever need to pull your pump, always take such an opportunity to inspect the separator and purge assembly. LAKOS Pump Protection Separators must be operated according to the flow range per model designated in the chart on page 2. Should your original flow rate vary significantly, note the instructions on page 3 for use of the adjustable flow collar on selected models.

Printed on recycled paper LS-384S (Rev. 3/15)

LAKOS®
Separators and Filtration Solutions
A wholly owned subsidiary of Lindsay Corporation

1365 North Clovis Avenue
Fresno, California 93727 USA
Telephone: (559) 255-1601
FAX: (559) 255-8093
www.lakos.com
info@lakos.com