



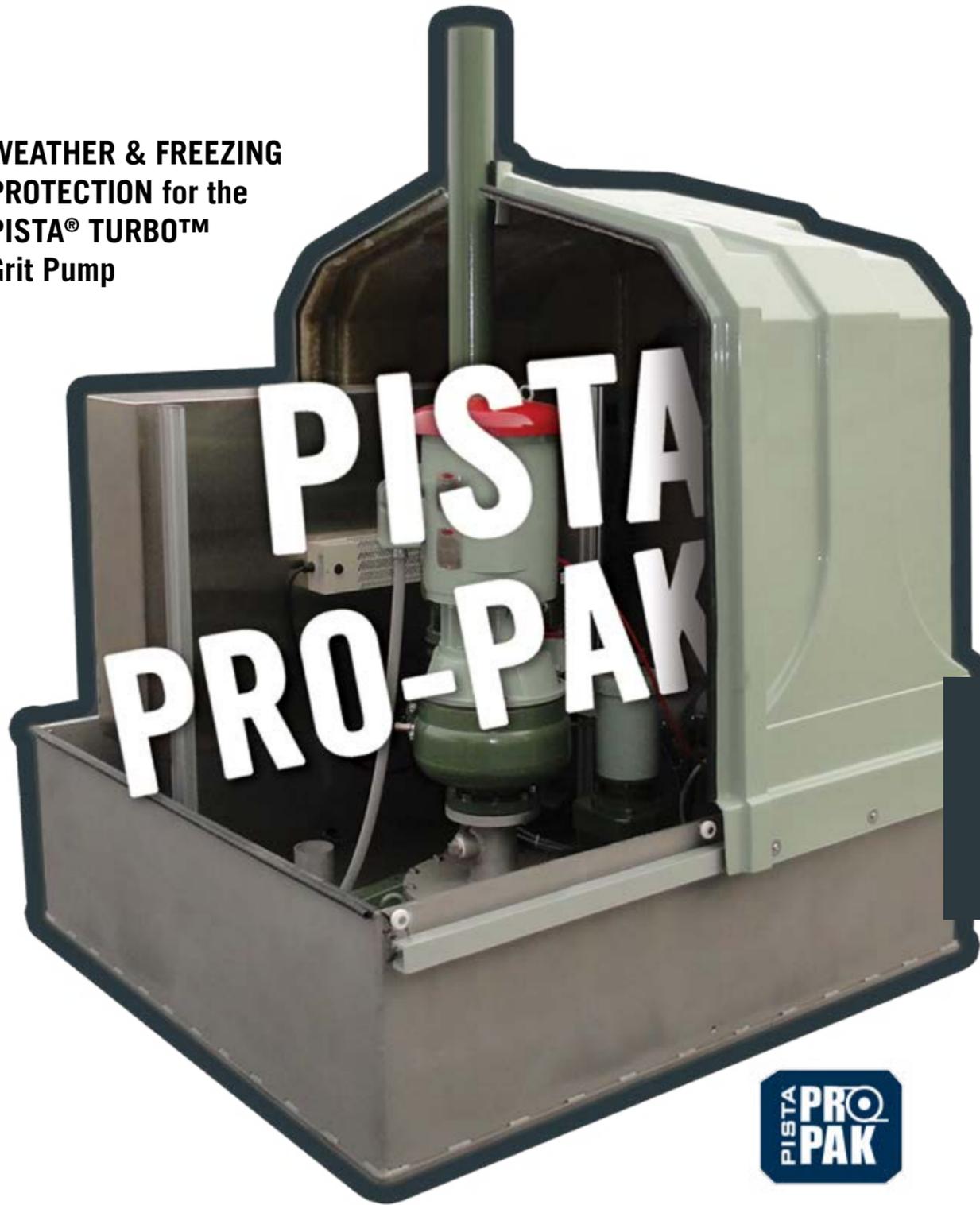
**Smith & Loveless Inc.**

**BUILT TO LAST.  
UPGRADEABLE.  
REPAIRABLE.**



Issue #04-06-807

## WEATHER & FREEZING PROTECTION for the PISTA® TURBO™ Grit Pump



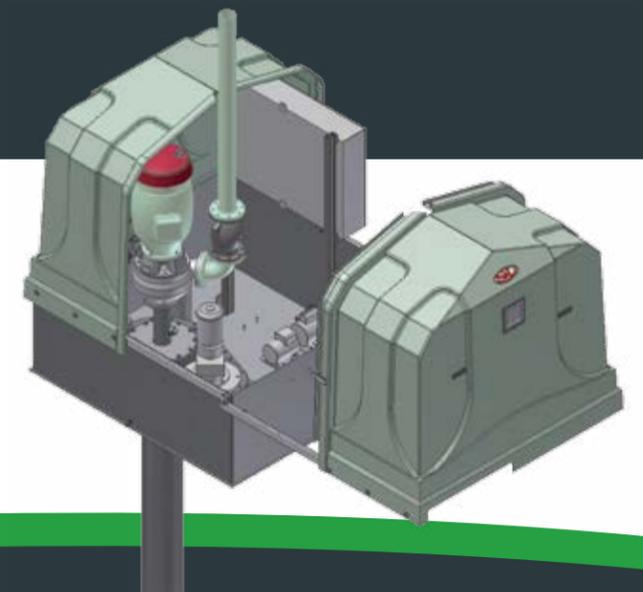
## PISTA® PRO-PAK™ Advantages

- Weather protection for top-mounted PISTA® TURBO™ Grit Pump
- Alternative to building a housing structure, at a fraction of the total cost
- Above grade components are factory-assembled & mounted to base
- NFPA 820 compliant
- Easier to maintain than typical installations (no heat tracing required)
- Optional heater offers protection for even the harshest environments
- Four material finishes available, including DURO-LAST® corrosion-resistant stainless steel (with 25-year warranty)
- Available for use on existing grit systems.

Further enhancing the world's best grit removal scheme in a weather-protected, factory-assembled package, Smith & Loveless introduces the PISTA® PRO-PAK™. The custom-engineered PISTA® PRO-PAK™ features a factory-assembled PISTA® drive assembly, vacuum priming system and controls mounted to a steel base and housed within a retractable fiberglass enclosure. The drive motor, pump and related components are factory pre-wired and mounted to the base, all to minimize and expedite field installation.

The PISTA® PRO-PAK™ is a cost-saving alternative to a building, while still offering weather and freeze protection. As with all Smith & Loveless products, the patent pending PISTA® PRO-PAK™ delivers the lowest life-cycle costs, is made in the USA, and all the equipment comes housed in an enclosure to provide you with years of dependable service.

- Economical alternative to building a housing structure
- Weather Protection for PISTA® TURBO™ Grit Pump
- Factory-assembled & internally factory wired



# DITCH THE DEBRIS. PRESERVE YOUR PLANT.



Complete with PLC controls and a color HMI screen, the new Smith & Loveless **OBEX™** Spiral Fine Screen system is a high-performance system which protects equipment and enhances plant operations by removing trash items and debris from treatment processes. With its robust stainless steel construction and high capture rate, the **OBEX™** Spiral Fine Screen will leave you wondering why you ever considered anything else.

**Kiss maintenance hassles goodbye.**



**Smith & Loveless, Inc.**  
Protecting Water. Protecting People.

## Case Study

### Environmental Endeavors

As the population grows, so does the need for wastewater treatment. To meet this growing need, wastewater infrastructure continually undergoes construction and renovations, often in the face of substantial budget cuts.



### Odor Reduction in the City of Missoula, MT

Odor wasn't a concern when Missoula's wastewater treatment plant was built over 50 years ago. Originally constructed in the country, the plant now neighbors residential and commercial districts.

"The nature of wastewater treatment is that there are odors," said Treatment Supervisor Gene Connell (*pictured with Missoula's PISTA® TURBO™ Grit Washer*) "We got some pretty severe complaints from the public, and so part of our response was odor control with the headworks."

The **PISTA®** in Missoula has been operating for over 2 years. "We're getting noticeably better grit removal out of the system," "With the [**PISTA® TURBO™ Grit Washer**] washing action, we are getting fewer organics and the grit is clean and dry."

### Retrofit Rehabilitation

You can save both time and money by rehabilitating your aging grit removal system, and the Smith & Loveless Retrofit team is here to help! Smith & Loveless engineers have created environmentally conscious grit removal solutions, and our team is trained to help the wastewater industry lengthen the life cycle of their existing equipment and, when required, improve grit removal levels to meet new limits or increased capacity.

Whatever your need, the Smith & Loveless Retrofit Team is trained to help!

## HYDRO-FLUSHING



## AIR INFUSION



## GRIT AGITATION



The **PISTA® TURBO™** Grit Washer featuring **TRI-CLEANSE TECHNOLOGY™** for retrofit applications can either be specified with or without the **PISTA®** Grit Concentrator, depending upon whether an existing **PISTA®** Grit Concentrator will be reused on the new **PISTA® TURBO™** Grit Washer. If a treatment plant already has the 500 GPM Ni-Hard **PISTA®** Grit Concentrator (as shown above) and one of the Smith & Loveless dewatering units (screen or **PISTA®** Grit Screw Conveyor), they can save money by reusing their existing **PISTA®** Grit Concentrator. Some piping changes will be required.

Get the most from your grit removal system by upgrading to the Smith & Loveless **PISTA® TURBO™ Grit Washer**, the newest addition to the **PISTA®** Grit Removal System family of products. By upgrading, you'll have drier, cleaner grit with less

putrescible organic material, less odor, and even better fine particle retention. The **TRI-CLEANSE TECHNOLOGY™** uses intense hydro-flushing, air infusion and grit agitation to produce some of the cleanest, low-odor grit around.

Whether your treatment plant already has a **PISTA®** Grit Dewatering System or another manufacturer's grit classifier, you can now upgrade to grit washer technology with one of our three material selections: 316 Stainless Steel, 304 Stainless, or Painted Carbon Steel. Our painted carbon steel model is priced well below our stainless steel models as well as every other grit washer on the market today, making the leap to grit washer technology more affordable for your treatment plant.



The dewatering **PISTA**® Grit Screw Conveyor is designed to work in concert with the complete **PISTA**® Grit Removal System, providing superb dewatering and high retention of fine grit without the burden of high maintenance. The **PISTA**® Grit Screw Conveyor boasts a sleek, compact design with a similar sleek footprint to S&L's **PISTA**® product line.

The lamella plate design aids in the retention of fine grit while reducing turbulence and overflow.

The **PISTA**® Grit Screw Conveyor is available in 2 sizes

Model	Concentrator	Screw Diameter	Conveyor Length
Model 15 <b>PISTA</b> ® Grit Screw Conveyor	250 GPM / 16 LPS	9" / 230 MM	15' / 4.6 M
Model 17 <b>PISTA</b> ® Grit Screw Conveyor	500 GPM / 32 LPS	14" / 355 MM	17' / 5.2 M

Dewatered grit discharges into attached container for disposal while the flow and residual organics\* are returned to the inlet channel prior to the grit chamber. By returning organics, Smith & Loveless's design keeps odor concerns to a minimum.

*\*Typically 93% of the flow and 95% of the organics.*



## The **PISTA**® Grit Concentrator™ 250 GPM Ni-Hard

The robust Smith & Loveless **PISTA**® Grit Concentrator combines uncompromising strength and durability for superior grit concentrator performance. Specially designed for small-flow applications, the **PISTA**® Grit Concentrator effectively washes collected grit while delivering extended service life beyond standard concentrator designs. Constructed of Ni-Hard, with a minimum thickness of 1.25" in high wear areas, it features a large discharge orifice (3.5") to minimize clogging.

Working in concert with the **PISTA**® Grit Screw Conveyor or the **PISTA**® **TURBO**™ Grit Washer, the ni-hard **PISTA**® Grit Concentrator sits snugly above the grit hopper. The **PISTA**®

Grit Concentrator functions as a primary grit washing and dewatering device, separating the pumped flow into its basic components--water, organics, and grit, to achieve an overall performance greater than 95 percent removal of the residual organic material.



### 250 GPM Ni-Hard **PISTA**® Grit Concentrator Features

- Large diameter discharge orifice minimizes clogging
- Specifically designed for small flow applications
- No wearing parts or liners makes maintenance easy
- Longer lasting, minimizing downtime

## PISTA 360™ WITH V-FORCE BAFFLE™



Upgrade your **PISTA® 360™** Grit Chamber with the **V-FORCE BAFFLE™**, which is an integral flow control baffle for both the inlet and outlet of the main chamber. The **V-FORCE BAFFLE™** is designed to direct the inlet flow into the chamber in a manner ensuring the proper vortex flow and to prevent short-circuiting, allowing for a full 360° rotation through the inlet and outlet, providing maximum grit removal.

The **V-FORCE BAFFLE™** on the outlet directs the flow out of the unit and acts as a “slice weir” to control the water level in the main chamber and in the inlet channel. No additional downstream flow control device is required to keep the velocity between 3.5 f/s (1.1 m/s) at peak flow and 1.6 f/s (.5 m/s) at minimum flow with a 10:1 turn down.

This most recent innovation further enhances the world’s best grit removal scheme, providing many engineering and cost saving considerations. By increasing chamber velocity during low flow periods, the

# PISTA® 360™ Grit Chamber



## Features & Benefits

- 95% grit removal efficiency down to 140 mesh particle size (105 microns)
- Construction cost savings due to decreased overall grit system footprint requirements
- Increases grit chamber velocity during low-flow periods
- Full 360° rotation in the chamber, lengthening grit extraction path
- Eliminates the need for downstream level control devices
- Designed to handle wide range of flows

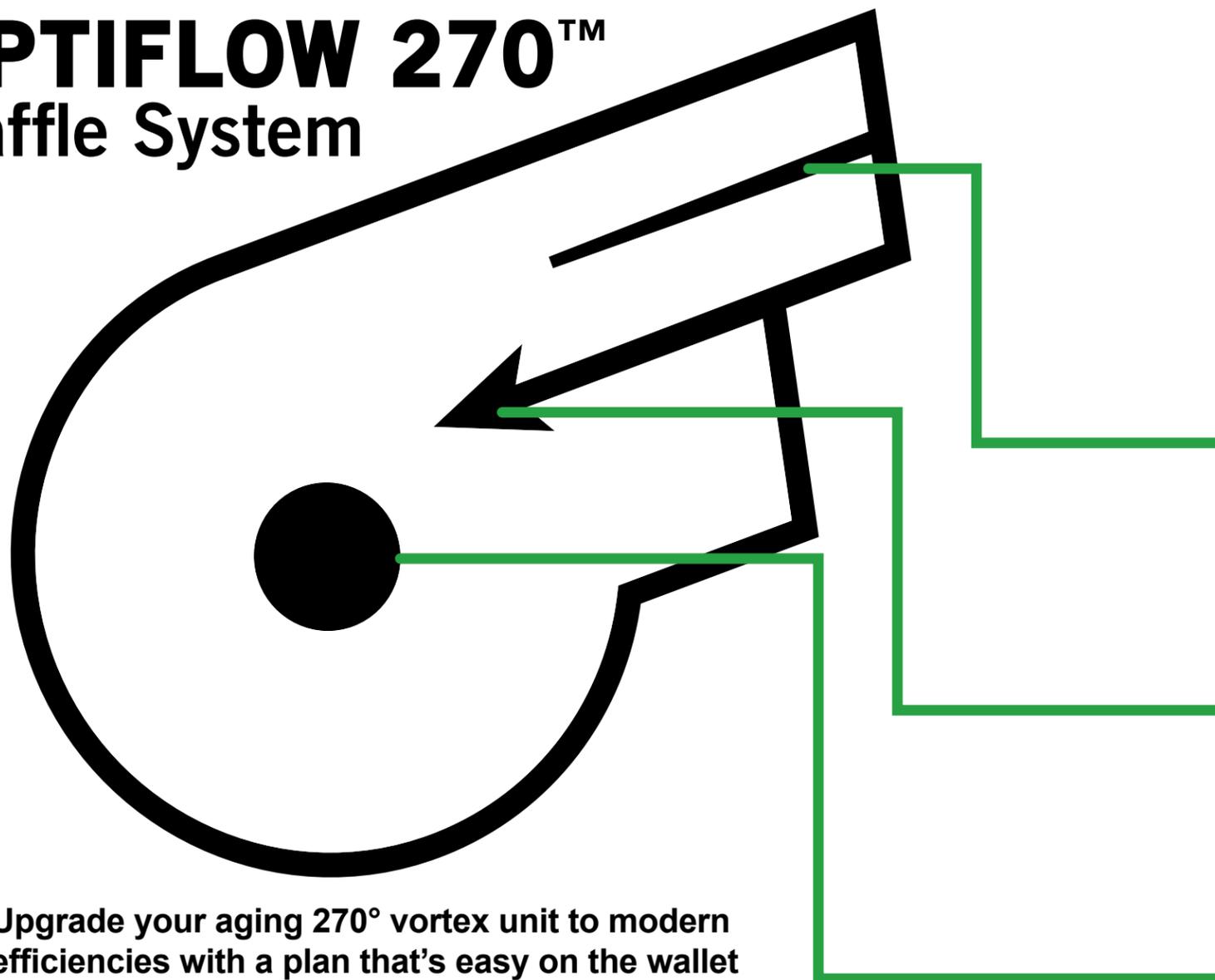
baffle extends the grit extraction path within the vortexing grit chamber. This is key because a longer grit path within in the flow pattern increases the effectiveness of grit being captured on the chamber's flat-floor.

Beyond this, the **PISTA® 360™** with **V-FORCE BAFFLE™** also permits design flexibility so that water elevations can be controlled. Water level control is important because it maintains the proper velocities approaching the grit chamber. Previously, the most common way to accomplish water level control was to back up the flow with a downstream, submerged weir.

The **PISTA® 360™** with **V-FORCE BAFFLE™** with its preset inlet and outlet openings supplants the need for the submerged weir. By integrating the water elevation settings with the baffle, the overall outlet footprint requirements decrease as much as half the typical distance. The resulting smaller footprint provides significant construction cost savings.



# OPTIFLOW 270™ Baffle System



**Upgrade your aging 270° vortex unit to modern efficiencies with a plan that's easy on the wallet and saves you money!**

The **OPTIFLOW 270™** Baffle System brings previously unachieved grit removal efficiencies to any 270° Grit Vortex system during peak and low flows alike. The **OPTIFLOW 270™** Baffle system is the only system that adapts both high and low flows into the ideal influent range of 2 to 3.5 ft/second and minimizing grit slugs frequently seen with large variability in flow. This baffle system fits within existing concrete structure to improve performance while avoiding the high costs of a full concrete structure replacement.

	Grit Removal Efficiency		
	50 mesh grit (300 micron)	70 mesh Grit (210 micron)	100 mesh grit (150 micron)
<b>PISTA® 270™</b>	<b>95%</b>	<b>85%</b>	<b>65%</b>
Existing <b>PISTA® 270™</b> units with <b>OPTIFLOW 270™</b> Baffle System	<b>95%</b>		
270° units by others with <b>OPTIFLOW 270™</b> Baffle System	<b>95%</b>		



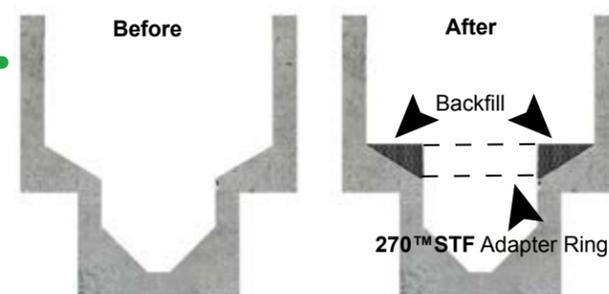
## 270™ LFB

The **270™ LFB** Low Flow Baffle is installed on most units. Each baffle is custom engineered based on flow rate to achieve 95% of 100 mesh (150 micron). Bisecting the influent channel, this baffle makes it possible for your existing unit to handle a wide range of flows while maintaining optimum channel velocity of 2 to 3.5 ft/sec for grit transport with minimum turbulence, and to provide the proper entry velocity into the main 270° grit chamber.



## 270™ B

The **270™ B** Exit Baffle is the essential component to every **OPTIFLOW 270™**. It increases grit removal efficiency to 95% down to 100 mesh (150 micron) on 270 degree grit chambers from any manufacturer. Each baffle is custom engineered based on flow rate to achieve 95% of 100 mesh (150 micron). Installed within the chamber at the exit, the **270™ B** directs the flow toward the hopper for an additional pass along the flat-bottomed chamber floor for additional grit removal.



## 270™ STF

The **270™ STF** Slope To Flat Chamber Floor Conversion is necessary only for non-**PISTA®** vortex grit chambers constructed with a sloping chamber floor.

To ensure the efficient transport of grit and simultaneous lifting and discharge of organic material, the bottom of the chamber must be at a constant flat elevation. An **OPTIFLOW 270™ STF** adapter baffle ring will be added, and the chamber floor will go from Sloped To Flat to enhance the toroidal flow path within the chamber.

# PISTA® 270™ Grit Chamber



ground with concrete, carbon steel, or stainless steel tankage. Individual units can handle waste streams less than 0.5 MGD (1900 m3/d) all the way to 100 MGD (378,500 m3/d). In large treatment works, multiple units arrange to efficiently remove grit from hundreds of millions of gallons of flow a day.

**Upgrade to 95%  
with the  
OPTIFLOW 270™  
Baffle System!**

## PISTA® 270™

High removal efficiencies originate from the PISTA® Grit Chamber's unparalleled hydraulic design, including its flat chamber floor, patented and low-energy axial-flow propeller. The combination creates a true vortex that effectively separates grit from organics and the waste stream. Forced vortex action distinguishes the PISTA® Grit Chamber from all other so-called "vortex"

grit chambers because it does not rely on less efficient particle settling or gravity.

PISTA® offers flexible application whether from domestic sewage in a municipal headworks or industrial process streams in a commercial production facility. The PISTA® grit chamber can be installed above-grade or below

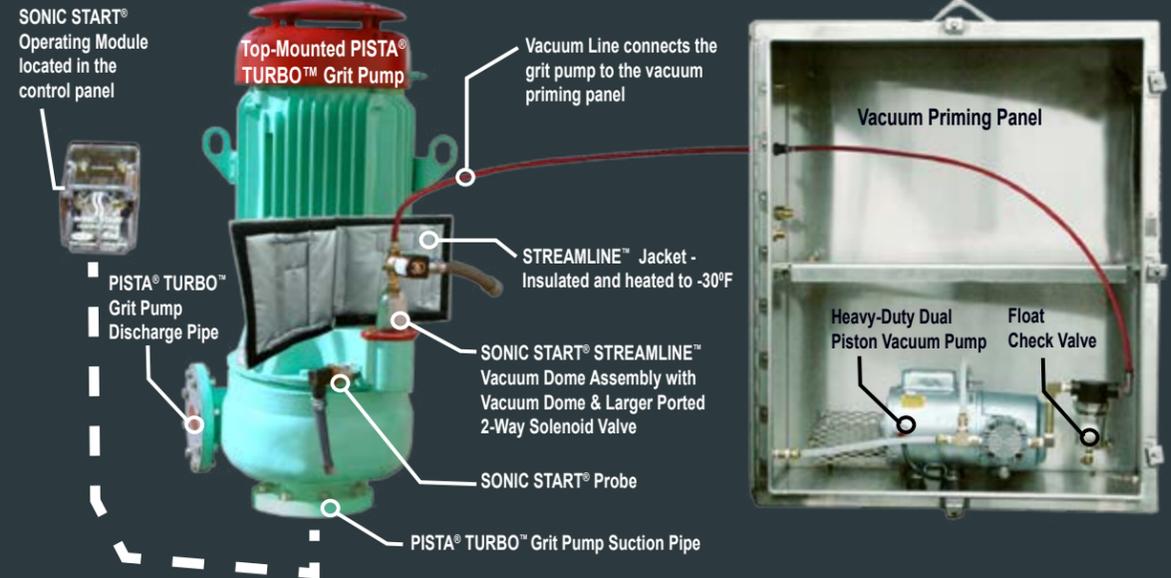


# SONIC START® STREAMLINE™ LINE™ for PISTA® Systems

**OUTDOOR**  
DOWN TO -30°F



**INDOOR**  
EXPLOSION-PROOF



The Top-Mounted PISTA® TURBO™ Grit Pump now features the SONIC START® STREAMLINE™ Prime Sensing System. For outdoor locations, the insulated and heated STREAMLINE™ Jacket keeps the dome assembly warm down to -30°F. For indoor locations, the explosion-proof solenoid and prime sensing probe meet your Class 1, Division 1, Group D requirements.

Shown above is the Top-Mounted PISTA® TURBO™ Grit Pump SONIC START® STREAMLINE™ Vacuum Priming System component diagram.

The SONIC START® STREAMLINE™ is now available for the PISTA® in Outdoor or Indoor models. Clean and simplified, the SONIC START® STREAMLINE™ Prime Sensing System has relocated the solenoid valve and eliminated 50% of the original fitting connection points for a less complicated and more efficient priming system.

STREAMLINE™ Jacket is both insulated and heated to keep the system warm down to -30°F. The indoor model features the explosion-proof SONIC START® Probe and explosion-proof SONIC START® STREAMLINE™ Solenoid Valve to meet all Class I, Division I, Group D requirements.

Proven on numerous PISTA® installations, the SONIC START® STREAMLINE™ builds from SONIC START® Prime Sensing Technology by utilizing the SONIC START® probe and operating module, flawlessly integrating operation of the entire priming system.

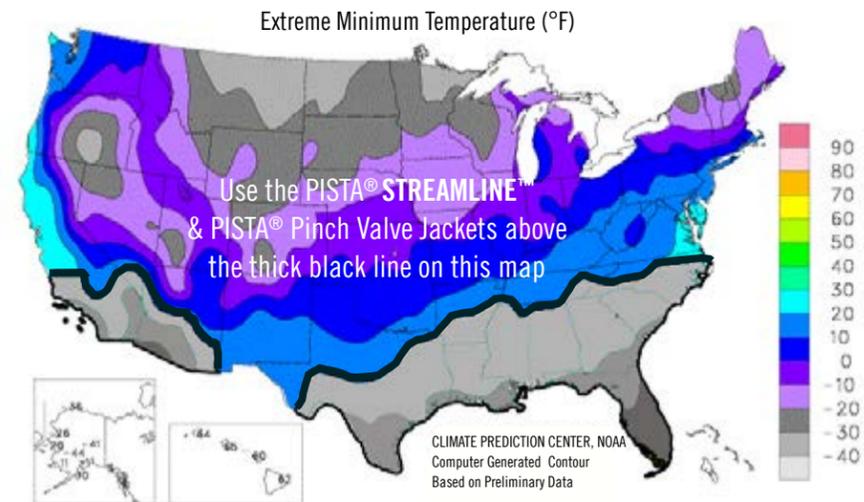
Smith & Loveless has developed two models to service either outdoor or indoor Top Mounted PISTA® TURBO™ Grit Pump installations. The outdoor model features the SONIC START® Probe, SONIC START® STREAMLINE™ Dome Assembly, and the STREAMLINE™ Jacket. The easy to remove

*"I haven't had a single problem (with the SONIC START® STREAMLINE™), and there's no need to clean the probe. I've looked at it once since it's been installed so there's less maintenance. I'm happy with how it's working."*

**DENNIS DAVEY**  
PLANT OPERATOR  
CITY OF OSAWATOMIE, KS

## Jacket Utilization Map

We match engineering expertise with product ingenuity to maximize your investment.



## Benefits

- 50% fewer fitting connections
- Takes grit pump pressure off of vacuum tubing & tubing fittings
- Solenoid mounted on top of vacuum dome for improved priming
- Minimizes H<sub>2</sub>O & debris from reaching the vacuum tubing
- Two models: Outdoor & Indoor



[www.GritTheFacts.com](http://www.GritTheFacts.com)



Grit removal success begins with understanding grit removal efficiency. With four decades of grit science experience drawn from more than 2,500 installations, Smith & Loveless knows grit removal.

We also know “long term” is the only way to think about it. Purchase price, installation cost, energy use, and utility cost will all affect the value of a grit system investment. These factors must be considered when making grit removal decisions, and American-made **PISTA**® Grit Removal

Systems from Smith & Loveless are the standard of excellence.

Innovative new products such as the **PISTA**® 360™ with **V-FORCE BAFFLE**™ and **PISTA**® TURBO™ Grit Washer prove once again that at Smith & Loveless, we do more than strive for industry firsts. We build industry bests.

## Carbon Steel to Stainless Steel Conversions

Coated with Smith & Loveless made **VERSAPOX**®, the toughest two-part epoxy in the industry, you will be amazed at how the wetted carbon steel components of the **PISTA**® Grit Chamber last through year after year of 24/7 submurgence. Given enough time, however, salt water in costal areas can penetrate even this tough epoxy. That’s why Smith & Loveless offers those **PISTA**® components that come in contact with water in both 304 or 316L stainless steel. If you live in a coastal region, upgrading wetted parts from carbon steel to stainless steel is a must.

### Materials of Construction

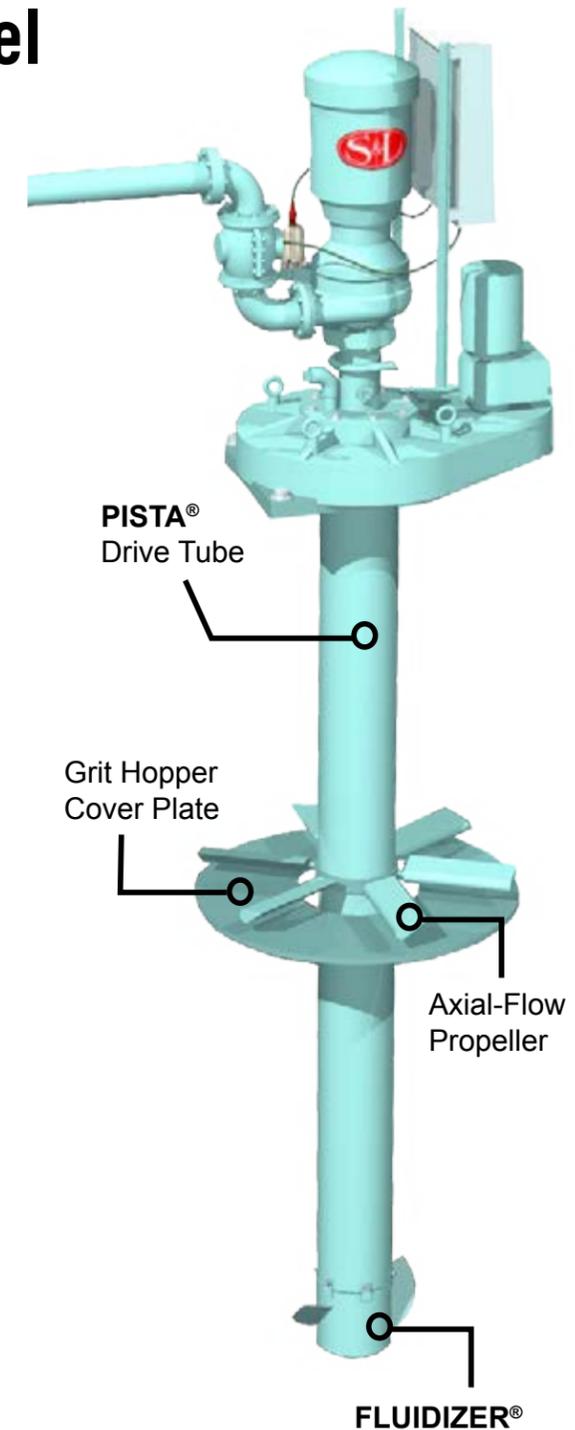
With 24/7 operation, even the best maintained systems will wear. When it is time to replace worn components inside your **PISTA**® Grit Chamber, Smith & Loveless offers three material options:

#### Materials of Construction Options

	Carbon	304	316L
Flow Control Baffle	X	X	X
Axial-Flow Propeller	X	X	X
<b>PISTA</b> ® Drive Tube	X	X	X
Suction Lift Weld Assembly	X	X	X
Hopper Cover Plate	X	X	X
<b>FLUIDIZER</b> ®	X	X	X

The most convenient time to upgrade your system might be while it is drained it down for replacement of these wearing components. When you’re ordering parts, inquire about adding a **FLUIDIZER**® or the new patented flow control baffles.

The flow control baffles can be installed in any 360 degree or Model **PISTA**® Grit Chamber. They are especially beneficial if you experience consistently low flows in relation to your peak flow. The **V-FORCE BAFFLES**™ and **Optiflow 270**™ Baffles keep the velocities at 2 - 3.5 at the inlet of the **PISTA**® Grit Chamber. The **FLUIDIZER**® works especially well with the Top-Mounted **PISTA**® TURBO™ Grit Pump, keeping the grit from compacting as it continuously agitates the grit.



## PISTA® DURALYTE® Grit Concentrator

The Smith & Loveless **PISTA® DURALYTE®** Grit Concentrator combines uncompromising strength and acclaim for superior grit concentrator performance. Specially-designed for large flow applications, the **PISTA® DURALYTE®** effectively washes collected grit while delivering extended service life beyond standard concentrator designs. The top section is constructed of Ni-Hard, with a minimum thickness of 3/4" (1.9 cm) in high wear areas. The bottom section features a minimum of 3/4" (1.9 cm) thickness of a proprietary polyurethane blend molded with a proprietary blend of silicon carbide (minimum of 1/2" (1.3 cm) thickness) in the high wear area of the bottom portion of the cone. Additionally, a large underflow opening of 3.75" (9.5 cm) minimizes clogging. The inlet connection is 4-1/2" (11.4 cm) outside diameter. This 2-piece material combination is designed to better withstand the abrasive action common with high grit loads. More durable than hard iron designs and longer lasting than models with wearing liners, the **PISTA® DURALYTE®** makes cone handling simple because of the lightweight material.



PISTA  
VIO™



## FLEXIBLE, SO YOU DON'T HAVE TO BE.

The PISTA® VIO™ Grit Removal System provides unprecedented application flexibility and superior grit removal efficiencies with a design that allows for full variability of the inlet and outlet channels.

PISTA® VIO™ features a hydraulic vortex grit chamber design that utilizes a new baffle system.

This type of grit removal system —one of the first of

its kind in the industry—provides the ability to design the inlet and outlet channels at any variable angle up to the full 360° of the chamber. Designers can flexibly arrange the system to fit existing sites, or maximize space during construction on new sites.

This new baffle system, in addition to providing application flexibility, also offers superior grit removal efficiencies.

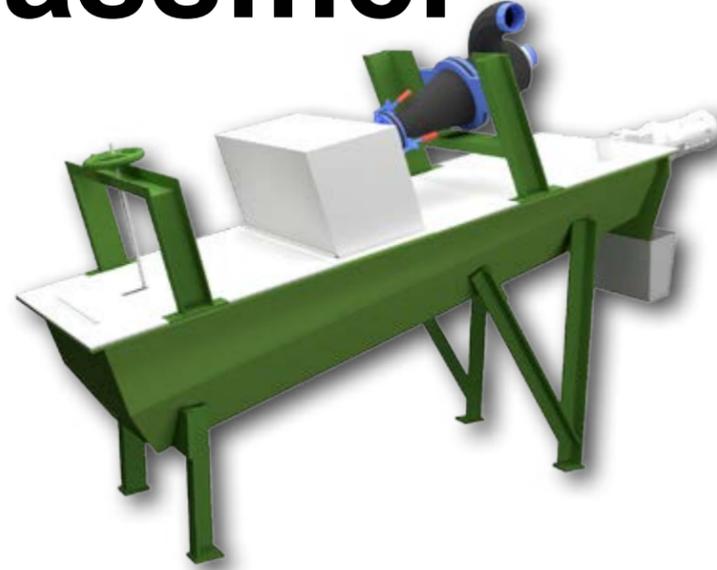


**Smith & Loveless Inc.**

## Schloss Classifier

by Smith & Loveless, Inc.

The successful engineering behind S&L **SCHLOSS™** Grit Classifiers emanates from decades of S&L **SCHLOSS™** experience in the bulk handling and mining industries. Our rugged design takes special care for all aspects of classifier construction in order to maximize service life and performance over time. Systems are tailored to meet each application with various unit sizes and materials optionally available as desired. Our staff can assist during design.



### FEATURES

- Shaft sizes include 6" (152.4 mm), 9" (228.6 mm), 12" (304.8 mm), 18" (457.2 mm), 24" (609.6 mm) or 30" (762 mm)
- Optional long-lasting Hydrocyclone(s) allow for smaller classifiers
- Backed by decades of engineering experience in bulk handling
- Wear shoes option

**S&L Schloss™** Classifiers come with Krebs Heavy Media cyclones, designed specifically to clean coal and minerals. A gravimetric separation takes place due to the buoyancy effect of the media forcing the lighter solids to the center of the cyclone where they are transported upward and through the vortex finder. The dense mineral matter spirals toward the apex and exits through that orifice.



**S&L SCHLOSS™ Mark VIII-A™**  
COARSE SCREEN UP TO 13 MGD



## Provides Screenings for Small to Large Plants

Designed for small to very large plants the **Schloss Mark VIII-A™** Bar Screens are particularly well suited where larger materials may be present such as hospitals, prisons and similar applications. A fully enclosed **Mark VIII-A™** has electrical heating and insulation for colder climates. The screen can also provide weather protection for the screening container which is located behind a door and inside the housing unit. Full enclosures are also available for odor and vector control without the heating and insulation.

Smith and Loveless can also provide single or double arm rotary raked bar screens for the most economical screening solutions.

### Features & Benefits

- Vertical Back Cleaned Screening System
- Low Maintenance
- No chains, sprockets or bearings
- Fully Enclosed has electrical heating and insulation Option
- Full enclosures are also available for odor and weather protection

### Application Data

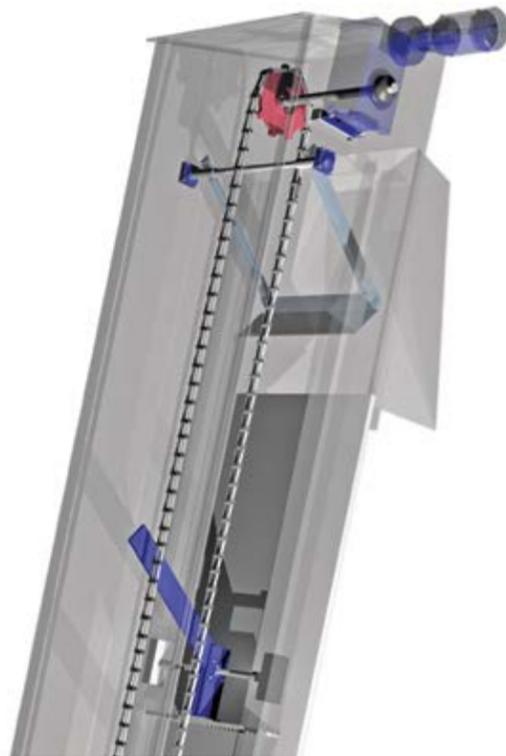
Flow Ranges:	up to 13 mgd / 570 lps
Sizing:	Standard or Custom
Channel Widths:	Min. 3' & larger / 0.91m
Angle:	90° Vertical
Clear Openings:	1/4" and larger openings (6.35mm)
Construction:	SST or CS & Other Alloys

## SCREENS DRESSED TO THE NINES.

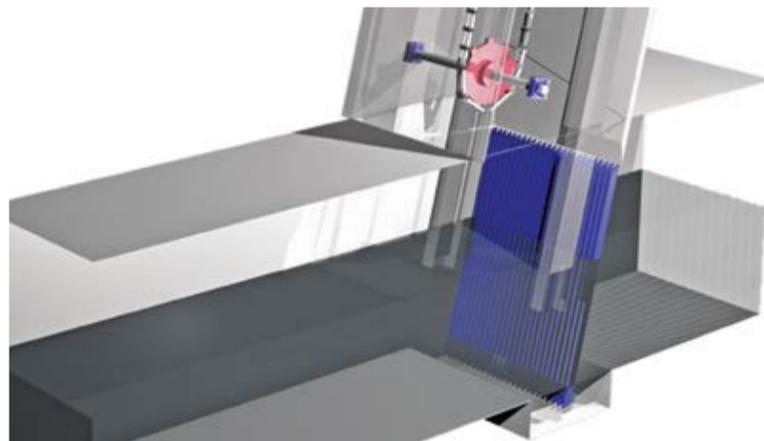
Depicted to the right is the popular **Mark IX-A™** model, designed for small and medium plants (up to 15 mgd/ 657 lps) and featuring extremely dutiful service combined with low maintenance requirements because of the unique **SCHLOSS™** single chain design. For larger sizes, use the **Mark IX™** model.

### Application Data

<b>Flow Ranges:</b>	<b>1 - 100+ MGD (44 - 4380+ lps)</b> <small>Single-Chain Mark IX-A™ (Up to 15 MGD / 657 lps)</small>
<b>Sizing:</b>	<b>Custom for Application</b>
<b>Channel Widths:</b>	<b>Min. 2' (610 mm) &amp; larger</b>
<b>Angle:</b>	<b>Normally 75°, 80°, 84°, 90° avail.</b>
<b>Clear Openings:</b>	<b>1/4" &amp; larger openings (6.4 mm)</b>
<b>Construction:</b>	<b>SST or CS &amp; other Alloys</b>



**MARK IX-A™ COARSE BAR SCREEN**  
COARSE SCREEN UP TO 15 MGD



**S&L SCHLOSS™ Mark IX™**  
COARSE SCREEN UP TO 100+ MGD



The **Mark IX™** and **Mark IX-A™** are designed for small and very large-sized wastewater treatment facilities up to 100+ MGD. The distinctive **S&L SCHLOSS™ Mark IX™** coarse bar screen delivers remarkably reliable screening performance with minimal maintenance. These front-cleaned, front-returned reacher screens incline to angles of 75° through 90° and can be pivoted to incorporate in plants with no bypass channel.

Numerous **S&L SCHLOSS™ Mark IX™** screens have been installed at municipal and industrial facilities, including military bases throughout the United States.

### Features & Benefits

- Robust S&L Schloss™ engineering & assembly
- Uniquely designed for low maintenance / manpower
- Delivers incredibly reliable, dutiful performance
- No submerged chains, sprockets or bearings
- Pivoting option allows for simple inspection / O&M
- Standard & custom design options
- Complete array of enclosure options available
- Heated & Insulated available

# Coarse Screen



## MARK CT™ CATENARY BAR SCREEN

COARSE SCREEN UP TO 75 MGD



## MARK CI™ PIN RACK SCREEN

COARSE SCREEN UP TO 100+ MGD



### Advancing Catenary Screening Through Superior Engineering

Catenary screen technology offers proven performance for small to large flow applications with large, bulky material. What separates the **S&L SCHLOSS™ Mark CT™** Catenary Bar Screen originates from our detailed engineering in the critical elements: exclusive chain design, superior component materials of construction, and rakes that combat problem flushables and large material.

By definition, the catenary style features less wearing parts than other kinds of bar screens because there are no lower sprockets and bearings. Combined with other **S&L SCHLOSS™** design features, the **Mark CT™** proves to be the industry's most durable.

#### Features & Benefits

- Precision **S&L SCHLOSS™** engineering & assembly
- Catenary design eliminates need for lower sprockets & bearings
- Patent-pending chain limits articulation linearly
- Heavy-Duty design provides superior durability
- Special rake designs for flushable wipes
- Maintenance easily performed at floor level
- Multiple options for enclosures & screenings

Multiple rake arm selection, precision pin rack assembly design, and customized system options make the **S&L SCHLOSS™ Mark CI™** Pin Rack Screen the cost-effective choice for efficient coarse screening for mid-size to large treatment plants and industrial applications with bulky material. An optional, patented telescopic arm ensures performance against large clogging objects. Multiple housing options ensure operator safety and protect against freezing.

#### Application Data

Flow Ranges:	1 - 100+ MGD (44 - 4380+ lps)
Sizing:	Three Sizes / Custom for Application
Channel Widths:	Min. 2' (610mm) & larger
Angle:	80°, 84°, or 90°
Clear Openings:	1/4" & larger / 6.35 mm
Construction:	SST or CS & Other Alloys

#### Features & Benefits

- Precision **S&L SCHLOSS™** engineering & assembly
- Heavy-duty design yields robust performance for large flows
- Standard & custom designs available
- Single & double rake arms
- Rigid, telescopic (patented) & articulated arms
- Submersible motor enclosure option

# Fine Screen



**S&L SCHLOSS™ Mark XV-A™**  
FINE SCREEN UP TO 13 MGD



Designed for smaller in-channel flows, the **S&L SCHLOSS™ Mark XV-A™** cost-effectively achieves superior fine screening. Its robust design combines an inclined, stationary screen basket with a conveying screw featuring an outer spiral brush for cleaning. The screen basket incorporates perforated sheet (recommended) or wedge wire screening, while the higher efficiency shafted screw design provides increased durability and service life when compared to imported, shaftless designs. Screenings are washed and dewatered uniquely in a trouble-free plug-type compaction zone.

Built in the USA, the **S&L SCHLOSS™** way of design emphasizes the optimal materials of construction to reduce stress cycling and fatigue while guarding against jamming.

## FEATURES

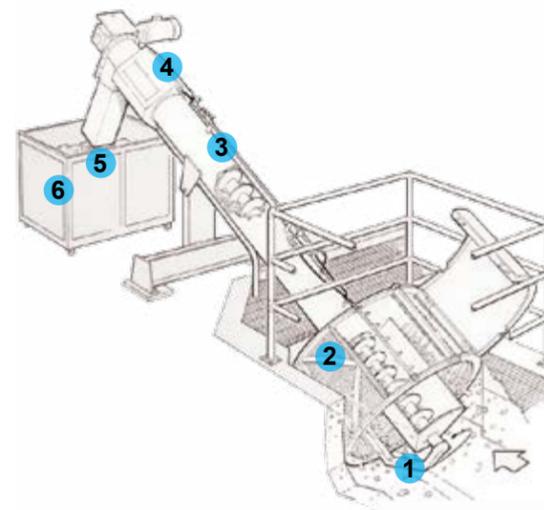
- Fine screening system designed for flows up to 12 mgd (525 lps), depending on openings
- Perforated screen basket design for high capture
- Inclined 35° to maximize screening area while minimizing head loss through the system
- Screen basket cleaning provided by reliable brush design
- Durable material options, including stainless steel, carbon steel, and other alloy material options



**S&L SCHLOSS™ Mark XV-C™**  
FINE SCREEN UP TO 25 MGD



Reduce solids, scum and waste disposal costs with the **S&L SCHLOSS™ Mark XV-C™** Fine Screw Screen system. Designed for larger in-channel flows, the **Mark XV-C™** cost-effectively achieves fine screening through a robust design that combines a cylindrical screen basket with internal rotating rake arm, brush cleaning, and shafted screw conveyor. The unique **S&L SCHLOSS™** screen basket design eliminates the potential for bar breakage from problem solids like broken glass and gravel.



- 1) Rotating Rake Arm**  
Moves fine solids built up in the openings of the screening basket to screw.
- 2) Screening Basket**  
Wedge-wire basket design with reliable, trouble-free brush cleaning.
- 3) Shafted Screw**  
Transports the removed fine solids for washing, dewatering and disposal.
- 4) Washing / Dewatering**  
Solids material washed and dewatered to reduce odors and water content.
- 5) Compactor (optional)**  
Solids can be compacted up to 50% to reduce related disposal costs.
- 6) Bagging (optional)**  
Solids can be bagged to further reduce odor and simplify disposal
- 7) Weather Protection (optional, not pictured)**  
Weather protection is available for colder climates, including various heating and insulation options.

## Top Mounted Tune-up



The Top-Mounted **PISTA® TURBO™** Grit Pump, like any other pump, needs some maintenance. The number one thing you need to inspect is the vacuum priming system. The system works day in and day out, requiring a few hours of maintenance annually.

First, install a PSI gauge in the 1/4" NPT gauge port on the pinch valve. When set to 40-50 PSI, depending on temperature, you can monitor the system for bladder damage. Adjust the set point by loosening the lock nut on the adjusting thumb wheel. To increase pressure, turn the knob clockwise in small increments. To decrease pressure, turn the knob counterclockwise. Adjust until designed pressure is achieved. Remember never to exceed 55 PSI. Next, install a compound gauge on the vacuum system. Some fittings may have to be obtained at the hardware store. With these two gauges, your problem can be easily resolved, if and when it occurs. Remember you can convert from either Flooded-Suction or airlift to a Top-Mounted design.



# SO STRONG, YOU'D THINK IT WOULD BE HEAVIER.



Resistant to abrasions. Ready for action. The new Smith & Loveless **PISTA® DURALYTE®** Grit Concentrator combines uncompromising strength and acclaim for superior grit concentrator performance. Extremely durable and lightweight, the **PISTA® DURALYTE®** effectively washes collected grit while delivering extended service life beyond standard concentrator designs.

**Superior Grit Quality.**



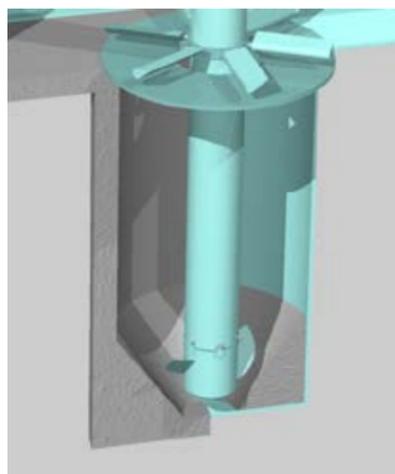
**Smith & Loveless, Inc.**  
Protecting Water. Protecting People.

## PISTA® Annual Maintenance

- Check complete drive for oil leaks and ensure all parts are lubricated as needed
- Drain your **PISTA®** Grit Removal System at least once a year to inspect the wet items
- Verify there are no flow obstructions
- Listen for unusual sounds in mechanical binding, drive, and pump
- Make certain all moving parts are clear of blockages and are moving freely
- Inspect baffles, straightening vanes, and hardware in the **PISTA®** Grit Chamber
- Verify the hopper plates are in place and in good condition
- Replace parts as needed
- Check Influent flume for grit sediment to ensure all grit is making it into the chamber
- Refer to O&M manual for complete instructions



At start up, before you fill it with oil, drain the **PISTA®** Bullgear Drive to ensure no condensation has collected in it during installation. Bullgear Drive Oil should be changed in the spring and fall. Use ISO 68 EP oil (similar to Mobil 626). Change this at least twice a year. Just like your car engine, changing the oil is the simplest and most important maintenance you can do to preserve your **PISTA®**.



### PISTA® GRIT FLUIDIZER®

*Storage hopper in which removed grit is continually fluidized until pumped to the **PISTA®** Grit Concentrator and the **PISTA® TURBO™** Grit Washer.*

The **PISTA® GRIT FLUIDIZER®** is the ideal grit agitation device for the **PISTA®** Grit Chamber's storage hopper. Its patented design is simple, attaching propeller vanes to the same shaft as the chamber's rotating paddles. These **PISTA® GRIT FLUIDIZER®** Vanes continually stir the collected grit slurry without any additional energy or controls.

# ANNIHILATE ORGANICS. ELIMINATE THE STINK.



The **PISTA® TURBO™** Grit Washer uses **TRI-CLEANSE TECHNOLOGY™** to produce clean grit while minimizing the odor caused by putrescible organics and the costs associated with growing landfill restrictions. Smith & Loveless, Inc.®' **PISTA® TURBO™** Grit Washer separates heavier inorganics from lighter organics, while dewatering grit. **Superior Grit Quality.**



**Smith & Loveless, Inc.**  
Protecting Water. Protecting People.

# Grit Pumping



## PISTA® TURBO™ Grit Pump for Maximum Grit Pumping Efficiency

The **PISTA® TURBO™** Grit Pump's heavy-duty design provides maximum grit pumping efficiency of the grit hopper of the Smith & Loveless **PISTA®** Grit Chamber. Designed specially for pumping grit slurry, the **PISTA® TURBO™** Grit Pump comes equipped with a Ni-Hard volute and Ni-Hard recessed impeller (located away from the abrasive flow path) as well as the famous staples of S&L pump design: an oversized, stainless steel shaft and oversized bearings. This powerful combination yields reliable grit pumping and the velocity required for effective grit washing and dewatering devices, day-in and day-out year after year.

### Benefits:

#### Flexible Application

**PISTA® TURBO™** Grit Pumps can be Top-Mounted Vacuum-Primed (with **SONIC START® STREAMLINE™** prime sensing) or Remote-Mounted Flooded Suction. Top-Mounted units eliminate the need for expensive piping while lowering the head and horsepower requirements, thereby lowering operational costs.

#### Ideal Upgrade for Airlifts

Older systems may employ airlifts, which are inefficient and require blowers to remove collected grit. The **PISTA® TURBO™** Grit Pump delivers more flow at a higher head, and outperforms airlifts at higher elevations.

#### How it Works

As the hopper fills, the pump is triggered, bringing an end to continuous pumping.



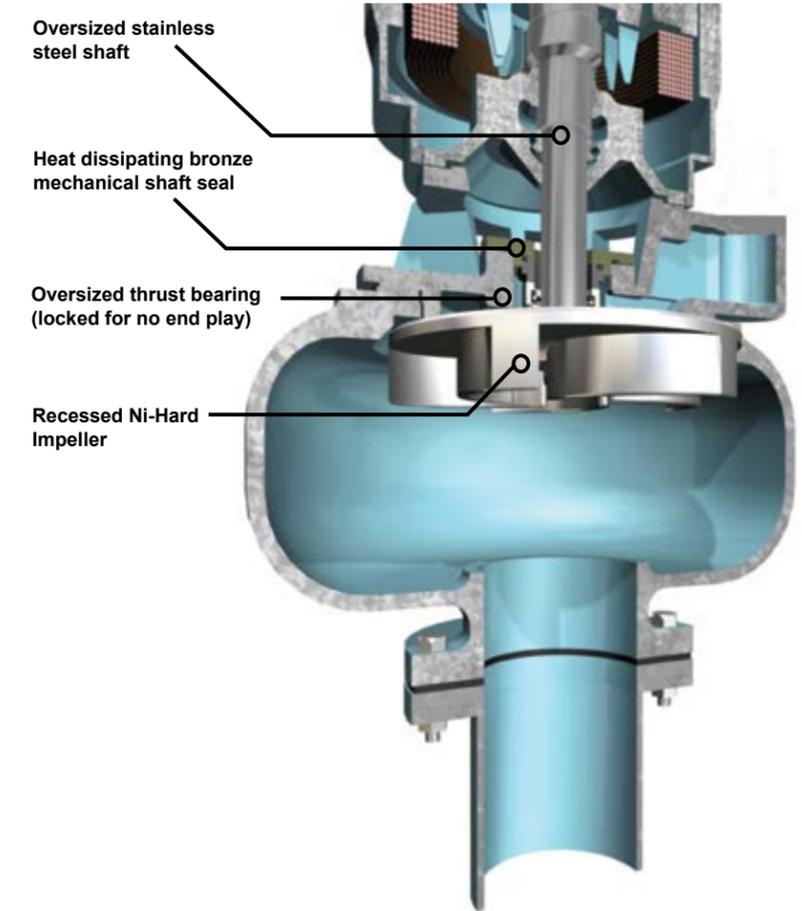
*PISTA® TURBO™ Grit Pumps can be configured in a Remote-Mounted Flooded Suction Arrangement (left) and a Top-Mounted Vacuum Primed Arrangement (right).*

### PISTA® TURBO™ Grit Pump Data

<b>Capacity:</b>	Up to 500 GPM
<b>Sizing:</b>	4" and 6"
<b>Type:</b>	Top-Mounted Vacuum Prime or Remote-Mounted Flooded Suction
<b>Materials:</b>	Ni-Hard Impeller & Volute

### Advantages

- Space efficient, vertical, direct coupled construction eliminates v-belt maintenance and grit slurry spills that are characteristic of horizontal designs.
- S&L design is driven by an oversized, solid, stainless steel shaft and doesn't require wear plates.
- Ni-Hard construction is more durable than typical cast iron self-priming pumps
- For maximum grit pumping efficiency, the hopper fills before the pump is triggered, bringing an end to continuous pumping.



### Disadvantages of Self-Priming Pumps

- Self-Priming Pumps are slow acting because they pump and prime at the same time. To prime, these pumps require internal recirculation which decreases efficiency.
- With double the parts, the Self-Priming Pumps require more maintenance. Belts need to be tightened or replaced and there are more bearings to maintain. Belts also quickly burn out when hit by a grit slug, making them unable to pump.
- When removing the cover plate to unclog a self-priming pump, it's nearly impossible to avoid spilling some sewage onto the floor. The S&L volute is drained of sewage prior to maintenance, providing a safer operating environment.
- Horizontal pump designs have much larger footprints, decreasing access room for maintenance.

## State-of-the-Art Touchscreen for PISTA® Controls

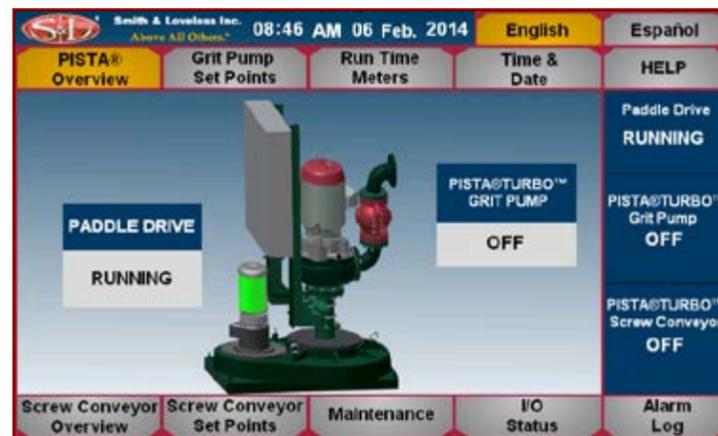


### Main Features

- PLC Station Control
- Alarm Management
- Wet Well Level Simulation
- Prime Mode Selection
- Help / Troubleshooting Info
- Graphical Pump Notifications
- English / Spanish Languages

### Improved Navigation

Delivering simplified operation yet powerful pump station control, **QUICKSMART™** Station Controls provide unparalleled ability to monitor and adjust all of your pump station functions. A new layout makes control modifications, screen navigation and viewing of pump station status easier than ever, with screen function buttons and a status bar accessible from each screen.



### Increased Functionality

Added features take station controller functionality to new levels. A new maintenance log feature displays periodic recommended operation and maintenance instructions including lubrication suggestions based on actual pump run times. Troubleshooting / help support has also been improved and a new I/O Status screen displays controller digital and analog I/O status.

### Improved Graphics

7" (17.7cm) 65K-Color TFT LCD Touch Screen HMI



Are the sun's harmful rays making it impossible to do your job? Block them out with the **SHADE AIDE™** by **Smith & Loveless, Inc.®**.

Color touch screens and black & white screens can be hard to see when the sun is beating down on them. Over time, the sun's harmful rays can damage your HMI / MMI screens. The Patent Pending **SHADE AIDE™** by **Smith & Loveless, Inc.®** blocks these harmful rays, allowing you to view your HMI screen in any weather condition.

The **SHADE AIDE™** comes completely assembled. Simply match drill on the front of the control panel to the **SHADE AIDE™**'s installation template, install the gas tight sealing washers and sealing gasket when you install the screws and nuts. The **SHADE AIDE™** collapses when not in use and is fully lockable. It also protects your display from the harmful effects of constant UV ray exposure. Start viewing your display - no matter how bright the sun!

The **SHADE AIDE™** works with other company's HMI displays too!

Smith & Loveless, Inc.  
14040 Santa Fe Trail Drive  
Lenexa, KS 66215

# PISTA<sup>®</sup>

GRIT REMOVAL SYSTEM

UPGRADE TO 95%

