# PISTA SOLUTIONS

Your #1 Grit Removal Partner

Check page 23 for clog-minimizing technology in our Remote Mounted PISTA<sup>®</sup> TURBO GRIT PUMP<sup>®</sup>.

Grit removal that withstands severe weather featured on page 24.



Start saving on construction costs with the **PISTA**<sup>°</sup> **360**<sup>°°</sup> Grit Chamber discussed on page 16.





Smith & Loveless Inc.

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degree grit chambers by any manufacturer.



**Smith & Loveless** now offers the full range of **SCHLOSS®** products in a classifier and many screens to fit every application.

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screens to fit every applicat

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## **PISTA<sup>®</sup> PRO-PAK<sup>™</sup>** *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 and 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. The customengineered **PISTA® PRO-PAK**<sup>™</sup> features a factory-assembled **PISTA®** drive assembly, vacuum priming system and controls. The system is 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 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 is stored in an enclosure to provide you with years of dependable service.



- Economical alternative to building a housing structure
- Weather protection for PISTA<sup>®</sup> TURBO GRIT PUMP<sup>™</sup>
- Factory-assembled and internally wired



TO ORDER, CALL 1-800-922-9048

# **CONVEY** ATERIN SCREW RIT (h



The dewatering **PISTA® GRIT SCREW CONVEYOR™** is designed to work in concert with the complete **PISTA<sup>®</sup> GRIT REMOVAL SYSTEM<sup>™</sup>**. The system provides superb dewatering and high retention of fine grit, without the burden of high maintenance. The **PISTA<sup>®</sup> GRIT SCREW CONVEYOR<sup>™</sup>** promotes 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. Dewatered grit discharges into the adjacent 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' design keeps odor concerns to a minimum.

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

### THE PISTA<sup>®</sup> GRIT SCREW CONVEYOR<sup>™</sup> IS AVAILABLE IN TWO SIZES

MODEL	CONCENTRATOR	SCREW DIAMETER	CONVEYOR Length	DIRECT DRIVE	MATERIAL Options
Model 15 <b>PISTA®</b>	250 GPM/	9"/	15'/	Standard with	Carbon Steel or
GRIT SCREW CONVEYOR™	16 LPS	230 MM	4.6 M	Belt Drive Option	Stainless Steel
Model 17 PISTA®	500 GPM/	14"/	17'/	Standard with	Carbon Steel or
GRIT SCREW CONVEYOR™	32 LPS	355 MM	5.2 M	Belt Drive Option	Stainless Steel

TO ORDER, CALL 1-800-922-9048

Consult S&L for replacement Model 10 and Model 12 conveyors.



### THE PISTA<sup>®</sup> GRIT CONCENTRATOR<sup>®</sup> **250 GPM NI-HARD**

The robust Smith & Loveless PISTA® **GRIT CONCENTRATOR**<sup>™</sup> combines uncompromising strength and durability for superior grit concentrator performance. Specially designed for small-flow applications, the **PISTA® GRIT CONCENTRATOR**<sup>™</sup> 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<sup>™</sup> or the PISTA® TURBO<sup>™</sup> Grit Washer, the Ni-Hard PISTA<sup>®</sup> **GRIT CONCENTRATOR™** sits snugly above the grit hopper. The PISTA® GRIT **CONCENTRATOR**<sup>™</sup> 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% removal of the residual organic material.

### 250 GPM Ni-Hard PISTA® GRIT **CONCENTRATOR<sup>™</sup>** 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



### The Durable PISTA® **GRIT CONCENTRATOR™** (250 GPM/16 LPS and 500 GPM/32 LPS)

Smith & Loveless' two-Piece PISTA® DURALYTE® Grit Concentrators offer durable and efficient grit concentrator performance with minimal O&M and quicker installation/removal than the competition. The standard two-Piece **PISTA® DURALYTE®** Grit Concentrator with Ni-Hard bottom cone (starting at 61 lbs/28 kg) effectively washes collected grit while providing added durability for harsh conditions and heavy grit, like applications with combined sewer systems or high infiltration and inflow (I and I).

### Why Concentrate?

TO ORDER, CALL 1-800-922-9048

**PISTA® DURALYTE®** Grit Concentrators effectively function as a primary grit washing and dewatering device, separating the pumped flow into basic components of water, organics and grit. Working in concert with the standard **PISTA® GRIT SCREW CONVEYOR**<sup>™</sup> or premium **PISTA**<sup>®</sup> **TURBO**<sup>™</sup> Grit Washer, which the concentrator snugly positions above and discharges into, **PISTA® DURALYTE®** Grit Concentrators overall performance achieves greater than 95% removal of the residual organic material.

### **PRODUCT FEATURES**

Ni-Hard Cast Construction Increased Thickness in High Wear Area
Fabricated and Cast Carbon Steel Housing
Effective in Harsh Conditions (CSOs, High I and I and Heavy Grit Loa
Involuted Feed Entry
Large Diameter Discharge Orifice to Minimize Clogging
Longer Lasting, Minimizing Downtime
Wearing Liners, Requiring Routine Replacement
250+ GPM (15.8 LPS) Capacity
Two-Piece Design for Easy Maintenance









### **DURALYTE® W/ NI-HARD** BOTTOM CONE

**PISTA® GRIT** CONCENTRATOR **ALL OTHERS** 

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A	PPL	ICAT	<b>ION</b>	DAT

Flow Capacity:	40-600 gpm/2-38 lps and larger
Screw Sizing (US in.):	6, 9, 12, 18, 24 and 30
Screw Sizing (Metric mm):	150, 230, 300, 450, 600 and 760
Cyclone Sizing (US in.):	6, 10 and 15
Cyclone Sizing (Metric mm):	150, 250 and 380
Tank Construction:	Stainless Steel or Carbon Steel



### **GRIT CLASSIFIERS** Gets the Job Done for the Small to Large Plant

The successful engineering behind S&L **SCHLOSS**<sup>®</sup> Grit Classifiers emanates from decades of S&L **SCHLOSS**<sup>®</sup> experience in the bulk handling and mining industries. This results in a rugged grit classifier that achieves 95% of grit down to 100 micron in particle size. Our 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. We are available to collaborate with you during the design process.



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### **FEATURES & BENEFITS**

- Achieves fine grit removal: 95% down to 100 micron in particle size
- Screw sizes range from 6"-30" / 150-760 mm
- Optional long-lasting hydrocyclone(s) allow for smaller classifiers
- Backed by decades of engineering experience in bulk material handling
- Various wear shoe options available
- Grit concentrator options
- Small footprint



# $PISTA^{e}Z70^{m}$

### THE ORIGINAL **PISTA®** DESIGN

After over 40 years, the proven performance of the **PISTA®** 270<sup>™</sup> maintains it as one of the most specified grit removal systems on the market today.

Build upon the performance of the **PISTA<sup>®</sup> 270<sup>™</sup>** with the **OPTIFLOW** 270<sup>®</sup> baffle units seen in this catalog. Then, reach the best performance in the industry today with 95% grit removal.

## **UPGRADE TO 95%**

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

The **OPTIFLOW 270**<sup>®</sup> Baffle System brings previously unachieved grit removal efficiencies to any 270 degree 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 minimizes grit slugs frequently seen with large variability in flow. This baffle system fits within the existing concrete structure to improve performance while avoiding the high costs of a full concrete structure replacement.

### **GRIT REMOVAL EFFICIENCY**



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With more than 2,500 PISTA<sup>®</sup> GRIT CHAMBER™ installations worldwide, Smith & Loveless continues to advance the science of grit removal with the patent pending OPTIFLOW 270<sup>®</sup> Baffle System for the **PISTA® 270<sup>™</sup>**. The **OPTIFLOW 270<sup>®</sup>** Baffle System brings previously unachieved grit removal efficiencies to new PISTA® 270<sup>™</sup> GRIT **CHAMBERS**<sup>™</sup>, improving grit removal from 65% 150 micron grit and 85% of 210 micron to 95% of 150 micron during low and high volume flows.

## 95% GRIT REMOVAL

## **OPTIFLOW 270®** BAFFLES

LFB

### **OPTIFLOW 270®**

The 270 Low Flow Baffle (LFB) is installed on most units. Each baffle is custom engineered based on flow rate to achieve 95% removal of 150 micron grit. 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/second for grit transport with minimum turbulence. Concurrently, it provides the proper entry velocity into the main 270 degree grit chamber.

B

### **OPTIFLOW 270®**

The 270 Exit Baffle (B) is the essential component to every **OPTIFLOW 270**<sup>®</sup>. It increases grit removal efficiency to 95% down to 150 micron on 270 degrees grit chambers from most manufacturers. Each baffle is custom engineered based on flow rate to achieve 95% removal of 150 micron grit. Installed within the chamber at the exit, the 270 B directs the flow toward the hopper, adding another pass along the flat-bottomed chamber floor for additional grit removal.

## STF

### **OPTIFLOW 270®**

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

To ensure the efficient transportation of grit, as well as simultaneous lifting and discharge of organic material, the bottom of the chamber must be set at a constant level elevation (A). An OPTIFLOW 270® STF adapter baffle ring (B) will be added, and the chamber floor will go from a sloped surface to a flat surface to enhance the toroidal flow path within the chamber.



BEFORE



AFTER

## $PISTA^{\circ} 360^{\circ}$ - WITH V-FORCE BAFFLETM

### **GRIT HAPPENS Upgrade Your System Performance to 95% Grit Removal Efficiency Down to 105 Microns**

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

The V-FORCE BAFFLE<sup>™</sup> 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 ft/second (1.1 m/second) at peak flow and 1.6 ft/ second (.5 m/second) at minimum flow with a 10:1 turn down.



ORDER LOCALLY FROM YOUR Smith & Loveless Representative

### PISTA® 360 GRIT CHAMBER



The V-FORCE BAFFLE<sup>™</sup> baffle extends the grit extraction path within the vortexing grit chamber. This is key because a longer grit path within the flow pattern increases the effectiveness of grit being captured on the chamber's flat floor.

Beyond this, the **PISTA<sup>®</sup> 360<sup>™</sup>** with **V-FORCE BAFFLE<sup>™</sup>** 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<sup>®</sup> 360<sup>™</sup>** with **V-FORCE BAFFLE<sup>™</sup>**, 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.

### **Features & Benefits**

- 95% grit removal efficiency down to 150 microns particle size
- Construction cost savings due to decreased overall grit system footprint requirements
- Increases grit chamber velocity during low-flow periods
- Full 360 degree rotation in the chamber, lengthening grit extraction path
- Eliminates the need for downstream level control devices
- Designed to handle wide range of flows



## **COMPONENTS**



ltem	Qty.	υм	Part Number	Description
1	1	EA	Contact Factory	HOUSING COVER
2	1	EA	Contact Factory	HOUSING BASE
3	1	EA	11L232	DRIVE GEAR
4	1	EA	67C130A	PINION GEAR
5	2	EA	67A138	DOWEL PIN
6	1	EA	67A139/67B744	O-RING/GASKET
7	1	EA	67C129	DRIVE PLATE
8	3	EA	6L92A	EYE BOLT
9	15	EA	6L178A	SCREW, SOC. HEAD
10	12	EA	1L69A	SCREW, FLAT HEAD
11	1	EA	1L69L	PIPE PLUG
12	1	EA	1L10CC	NIPPLE, GALV. 3/8"
13	1	EA	1L22K	COUPLING, GALV.
14	1	EA	1L69D	FILL PLUG
15	4	EA	6L61L	WASHER, FLAT
16	1	EA	6L151N	SCREW CAP, NYLOCK
17	1	EA	67A118	WASHER, RETAINING
18	4	EA	6L59HE	CAPSCREW, SS
19	4	EA	6L94L	WASHER, LOCK SS
20	1	EA	Contact Factory	GEAR REDUCER
21	1	EA	Contact Factory	MOTOR
22	4	EA	6L178CA	CAPSCREW, SOCKET HEAD SS

## **CARBON STEEL TO STAINLESS STEEL CONVERSIONS**

Coated with Smith & Loveless made VERSAPOX®, the toughest twopart epoxy in the industry, you will be amazed at how the wetted carbon steel components of the PISTA<sup>®</sup> GRIT CHAMBER™ lasts year after year through 24/7 submurgence. Given enough time, however, salt water in coastal areas or other corrosive wastewater environments can penetrate even this tough epoxy. That's why Smith & Loveless offers **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
PISTA <sup>®</sup> Drive Tube	X	X	Х
Suction Lift Weld Assembly	X	X	Х
Hopper Cover Plate	Х	Х	Х
Fluidizer	X	X	X

The most convenient time to upgrade your system while it is drained down. 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 or 270 degree Model **PISTA<sup>®</sup> GRIT CHAMBER**<sup>™</sup>. They are especially beneficial if you experience consistently low flows in relation to your peak flow. The V-FORCE BAFFLE<sup>™</sup> and OPTIFLOW 270<sup>®</sup> Baffles keep the velocities at 2-3.5 ft/second at the inlet of the PISTA® GRIT **CHAMBER**<sup>™</sup>. The fluidizer works especially well with the Top-Mounted **PISTA<sup>®</sup> TURBO<sup>™</sup> GRIT PUMP<sup>™</sup>**, keeping the grit from compacting as it continuously agitates the grit.



Fluidizer



Are the sun's harmful rays making it impossible to do your jo Block them out with the SHADE AIDE® by Smith & Loveless.

Color touch screens and black and 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 blocks these harmful rays, allowing you to view your HMI screen in any weather condition.

The **SHADE AIDE**<sup>®</sup> comes completely assembled. Simply match drill on the front of the control panel to the installation template and install the gas-tight sealing washers and sealing gasket when you install the screws and nuts.



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b?	The <b>SHADE AIDE</b> <sup>®</sup> collapses when not in use and is fully
•	of constant UV ray exposure. Start viewing your display - no
е	matter how bright the sun!
r	
	The SHADE AIDE <sup>®</sup> works with other companies'
	HMI displays too!
N	
	Order yours today at
	Shauealue.com of 1-000-322-3040!

# REMOTE MOUNTED

The innovative **PISTA® TURBO GRIT PUMP**<sup>™</sup> is available in both top-mounted vacuumprimed and remote-mounted flooded suction. Special features include a Ni-Hard volute, Ni-Hard recessed impeller, stainless steel shaft, heavy-duty bearings and mechanical seal.

Email retrofit@smithandloveless.com to start your order for the **PISTA® TURBO GRIT PUMP<sup>™</sup>** with four-inch and six-inch piping arrangements based on your needs.







- 1960s The vacuum primed pump was created
- 1980s S&L creates the first grit pump
- 1980s The vacuum primed grit pump was created
- Eliminates additional excavation required for a pump room
- Drops prime after each cycle, minimizing the potential of clogging
- Options for additional redundancy (spare rotating assembly - pump motor, pump seal and impeller)





- No priming cycle required
- Allows for two pumps per chamber
- Uses flush water to fluidize suction pipe





VISA CHISCOVER

### **VACUUM PRIMING VS. FLOODED SUCTION**







### **Need redundant pumps?**

We recommend each pump has its own suction and discharge line. Opt for straight, 10-feet maximum suction pipe length that discharges all the way to the hydrocyclone.

### **OPERATION OF THE PISTA®** Flushing vs. Fluidization

### Flushing

- Injection of plant-effluent water into the suction side of a Flooded Suction Grit Pump reduces chances for clogs or slug of grit entering the pump.
- Not required for a Top Mounted Grit Pump. •

### Fluidization

- Uses agitation to prevent grit compaction in the lower chamber.
- Uses fluidizing vanes rather than fluidizing water. Fluidizing vanes are attached to • an extended drive tube and extend into the lower chamber, providing mechanical agitation.
- Fluidizing vanes eliminate the need for using constant fluidizing water. ٠

### **S&L VS. HORIZONTAL BELT DRIVEN GRIT PUMPS**

### S&L Grit Pumps

- Vertical, direct coupled pump is easier to maintain.
- No belt maintenance.
- Keep grit slurries inside the pump volute when accessing impeller or removal of the rotating assembly.
- Take up less space.
- Do not require shaft sleeves.
- Driven by a solid stainless steel shaft.

### Both



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### Horizontal Belt Driven Grit Pumps

· Grit slurry spills when split open for accessing the impeller.

Belt maintenance required.

Take up more space.

• Non-clogging, recessed impeller and torque-flow vortex type.

· Contain Ni-Hard impellers and Ni-Hard volutes per specifications.



 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 selfpriming pumps

 For maximum grit pumping efficiency, the hopper fills before the pump is triggered, bringing an end to continuous pumping.



### SEAL HOUSING GASKET **AND QUAD RING**



Each time the mechanical seal is replaced, Smith & Loveless recommends the seal housing gasket or quad ring also be replaced.

**<u>PARTS TIP</u>**: The older seal housing has a flat surface and uses the flat gasket. The newer seal housing has a groove and it can use either the flat Gasket or the guad ring.

GASKET	QUAD RING	
PART #	PART #	SHAFT SIZE
60A11	60A110	B-Shaft:1-7/8"
60A17	60A111	C-Shaft: 2-1/8"
60A84	60A112	D-Shaft: 3"

### SINGLE MECHANICAL SEAL **REPLACEMENT PARTS KIT**



Single Mechanical Seal

Replacement Parts Kit

Includes: One carbon. one ceramic, one spring and

one instruction booklet on

how to install.

Specifically designed by Smith & Loveless for our originial pump, the Single Mechanical Seal is designed to last more than seven years. It has been proven to have one of the longest life cycles of any mechanical seal in the industry. Don't be caught without a spare seal. Order one today!

### **PARTS TIP:**

We recommend replacement of the seal housing gasket or quad ring and the volute gasket whenever a rotating assembly is removed.

PART #	SHAFT SIZE
H87A28	B-Shaft: 1-7/8"
H87A97	C-Shaft: 2-1/8'
H87A182	D-Shaft: 3"

### **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. Additionally, they 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.



TO ORDER, CALL 1-800-922-9048

### **IMPELLER BOLTS**

**Embedded Nylok** 

Smith & Loveless' Impeller Bolts feature embedded Nylok. Each time you remove the impeller, replace the Impeller Bolt. Remember to torque impeller bolts to 105 ft/lbs.

SH
B-S
C-S
D-S

AFT SIZE haft: 1-7/8" Shaft: 2-1/8" Shaft: 3"

### VOLUTE GASKETS



Each time the rotating assembly is taken apart, install a new volute gasket to increase the life span of your pump.

### Vacuum Priming Pump **Volute Gaskets**

PART #	PUMP SIZE
60A26	4B2C, 4B2H and 4B2J
60A28	6B3H, 6B3H, 6C3H,
	6D3H,6B3J, 6C3J
	and 6D3J



The Top-Mounted **PISTA® TURBO™ GRIT PUMP**<sup>™</sup>, like any other pump, needs some preventative 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 <sup>1</sup>/<sub>4</sub>" 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.



## **PINCH VALVES AND SLEEVES**

The pinch valve is a vital part of the vacuum a 0-60 PSI Pressure Gauge PN: 1L84E or 1L84H. primed PISTA<sup>®</sup> GRIT REMOVAL SYSTEM<sup>™</sup>. Start the setting at 36 PSI and monitor the vacuum Smith & Loveless' Customer Service Team priming operation. Some bladders will require more PSI than others. To ensure longevity, set the recommends having a spare sleeve (bladder) and pressure on the **PISTA®** Pinch Valve at the lowest side gasket or a complete spare **PISTA®** Pinch setting possible at which your **PISTA<sup>®</sup> TURBO**<sup>™</sup> Valve on hand. **GRIT PUMP**<sup>™</sup> will prime. Then increase this Some facilities replace the sleeve (bladder) when pressure by 5 PSI. The 0-60 PSI Pressure Gauge is an effective diagnostic tool.

needed. Other facilities keep a complete spare **PISTA®** Pinch Valve on hand. Whichever option you choose, it is always good to have a spare.

S&L's Customer Service Team also advises checking your **PISTA®** Pinch Valve operation with



PART #	DESCRIPTION
2L159A	4" <b>PISTA<sup>®</sup> Pinch Valve</b>
2L159B	6" <b>PISTA</b> <sup>®</sup> Pinch Valve

NEW!	GLYCERIN-FILLED GAUGES	
PART	# DESCRIPTION	

1L780B	Glycerin-Filled Compound Vacuum Gauge
	Handles Up to 65 TDH (0-30" HG: 0-30 PSI)
1L780C	Glycerin-Filled Compound Vacuum Gauge
	Handles Up to 135 TDH (0-30" HG: 0-60 PSI)
1L780D	Glycerin-Filled Compound Vacuum Gauge
	Handles Up to 230 TDH (0-30" HG: 0-100 PSI

**REMINDER:** In the winter, it may take more PSI to seal the valve to allow the **PISTA® TURBO**<sup>™</sup> **GRIT PUMP**<sup>™</sup> to prime.



PART #	DESCRIPTION
2L159AA	4" <b>PISTA</b> <sup>®</sup> Sleeve (Bladder)
2L159BB	6" <b>PISTA</b> <sup>®</sup> Sleeve (Bladder)

GASKETS AND PRESSURE GAUGES
-----------------------------

PART #	DESCRIPTION
2L159AB	4" <b>PISTA</b> <sup>®</sup> Side Gasket
2L159BA	6" <b>PISTA</b> <sup>®</sup> Side Gasket
1L84E	3-1/2" Diameter Pressure Gauge (for Pinch Valve)
1L84H	4-1/2" Diameter Pressure Gauge (for Pinch Valve)



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 degrees Fahrenheit. For indoor locations, the explosion-proof solenoid and prime sensing probe meet your Class 1, Division 1 and Group D requirements.

The **SONIC START<sup>®</sup> STREAMLINE<sup>™</sup>** is now available for the **PISTA**<sup>®</sup> in outdoor or indoor models. Clean and simplified, the SONIC START<sup>®</sup> STREAMLINE<sup>™</sup> 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.

Proven on numerous **PISTA®** installations, the **SONIC** START<sup>®</sup> STREAMLINE<sup>™</sup> builds from SONIC START<sup>®</sup> Prime Sensing Technology by utilizing the **SONIC START**<sup>®</sup> 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<sup>™</sup> GRIT PUMP<sup>™</sup>** installations. The outdoor model features the SONIC START® Probe, SONIC **START<sup>®</sup> STREAMLINE<sup>™</sup>** Dome Assembly and the Streamline Jacket. The easy-to-remove Streamline Jacket is both insulated and heated to keep the system warm down to -30 degrees Fahrenheit.

The indoor model features the explosion-proof SONIC START<sup>®</sup> Probe and explosion-proof SONIC START<sup>®</sup> **STREAMLINE**<sup>™</sup> Solenoid Valve to meet all Class I, Division I and Group D requirements.

Not part of the **SONIC START<sup>®</sup> STREAMLINE**<sup>™</sup>, but offered along with the Streamline Jacket, is the new **PISTA®** Pinch Valve Jacket. It insulates and heat traces the pinch valve with PN: H67A266.

### **Benefits**

- 50% fewer fitting connections
- Takes grit pump pressure off of vacuum tubing and tubing fittings
- Solenoid mounted on top of vacuum dome for improved priming
- Minimizes water and debris from reaching the vacuum tubing
- Two models: outdoor and indoor









### Your kit contains the following parts:

ITEM	QTY	PN	D
1	1	See table below	Ρ
2	1	5L57C	С
3	1	67P15	In

### The PN of your kit depends on the model of your PISTA<sup>®</sup> Pinch value:

### MODEL

PISTA® Jacket for 4" Pinch Valve 120V 50/60 HZ UL/CSA PISTA® Jacket for 6" Pinch Valve 120V 50/60 HZ UL/CSA PISTA® Jacket for 4" Pinch Valve 120V 50/60 HZ UL/CSA ( PISTA® Jacket for 6" Pinch Valve 120V 50/60 HZ UL/CSA ( PISTA® Jacket for 4" Pinch Valve 220V 50/60 HZ UL/CSA PISTA® Jacket for 6" Pinch Valve 220V 50/60 HZ UL/CSA PISTA® Jacket for 4" Pinch Valve 220V 50/60 HZ UL/CSA ( PISTA® Jacket for 6" Pinch Valve 220V 50/60 HZ UL/CSA (



### JACKET UTILIZATION MAP We match engineering expertise with product ingenuity to maximize your investment. Extreme Minimum Temperature (Degrees Fahrenheit) 90 80 70 60 50 40 30 20 10 0 -10 -20 - 30 CLIMATE PREDICTION CENTER, NOA Computer Generated Contour Based on Preliminary Data 40

**PISTA®** Pinch Valve Jacket PN: H67A266

### ESCRIPTION

- **PISTA®** Pinch Valve Jacket Assembly
- Cord Grip
- nstallation Instructions (Not Shown)

	Kit PN	Item PN
	H67A381A	67B840A
	H67A381B	67B840B
CL 1 DIV 2	H67A381C	67B840C
CL 1 DIV 2	H67A381D	67B840D
	H67A381E	67B840E
	H67A381F	67B840F
CL 1 DIV 2	H67A381G	67B840G
CL 1 DIV 2	H67A381H	67B840H

## **PISTA<sup>®</sup> ANNUAL MAINTENANCE**

are lubricated as needed

- Drain your **PISTA**<sup>®</sup> 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
- Check complete drive for oil leaks and ensure all parts 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) and change 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®.** 

### **DON'T BE CAUGHT UNPREPARED**

### Emergency Spare Parts List for the PISTA® TURBO GRIT PUMP™

When your equipment needs maintenance right away, time spent getting ahold of replacement parts can turn an inconvenience into an emergency. Smith & Loveless' Customer Service Team recommends stocking the following items which will prepare

you to tackle 95% of what you may encounter with your **PISTA® TURBO**<sup>™</sup> Grit Pump. Whether you have one **PISTA® TURBO GRIT PUMP**<sup>™</sup> or many, these spare parts are good insurance to minimize down time in a crisis.

Control Relav	PN: 4L107A
Electrode Relay	PN: 4L408H
Mechanical Seal	PN: H87A28
Solenoid Valve	PN: 1L406K
12-pack of Ferrules	PN: 1L366C
Air Compressor	PN: 9L34
Vacuum Pump	PN: 8L29
Pinch Valve Bladder	PN: 2L159AA
Bladder/Sleeve Gasket	PN: 2L159AB
Air Relief Valve	PN: 1L447



Storage hopper in which removed grit is continually fluidized until pumped to the PISTA<sup>®</sup> GRIT CONCENTRATOR<sup>™</sup> and the **PISTA® TURBO**<sup>™</sup> Grit Washer.

The **PISTA®** Grit Fluidizer is the ideal grit agitation device for the storage hopper of the **PISTA<sup>®</sup> GRIT CHAMBER**<sup>™</sup>. Its patented design is simple, attaching propeller vanes to the same shaft as the chamber's rotating paddles. These **PISTA®** Grit Fluidizer veins continually stir the collected grit slurry without any additional energy or controls.







### **Main Features**

- PLC System Control
- Alarm Management
- Grit Pump Configuration
- Grit Washer Configuration
- Help/Troubleshooting Info
- Graphical System Notifications
- English/Spanish Languages

### **C** Improved Navigation

7" (17.7cm) 65K-Color TFT LCD Touch Screen HMI Delivering simplified operation, yet powerful headwork system control, **QUICKSMART**<sup>™</sup> System Controls provide unparalleled ability to monitor and adjust all of your headworks systems functions. A new layout makes control modifications, screen navigation and viewing of system status easier than ever, with screen function buttons and a status bar accessible from each screen.



### **Grit Washer Overview**



### Maintenance Log



### I/O Status Overview



### **Morning Schedule**



## STATE-OF-THE-ART ADWORKS SYSTEMS

### **C** Increased Functionality

Added features take headwork system controller functionality to new levels. A new maintenance log feature displays periodic recommended operation and maintenance instructions including lubrication suggestions based on actual run times. Furthermore, troubleshooting/help support is improved and a new I/O status screen displays controller digital and analog I/O status.

### **C** Improved Graphics



# SCREEN COARSE

The MARK IX<sup>™</sup> was designed for small and large wastewater treatment facilities. The distinctive S&L **SCHLOSS<sup>®</sup> MARK IX<sup>™</sup>** coarse bar screen delivers remarkably reliable screening performance with minimal maintenance for flows up to 100+ MGD. These screens can be pivoted to incorporate in plants with no bypass channel.

On the small and medium plants (up to 15 mgd/657 lps) the **MARK** IX<sup>™</sup> features extremely dutiful service combined with low maintenance requirements because of the unique SCHLOSS® single-chain design.

ORDER LOCALLY FROM YOUR Smith & Loveless Representative





### **COARSE BAR SCREEN**

### **Application Data**

Flow Ranges:	1 - 100+ MGD (44 - 4380+ lps) Dual-Chain Mark IX-A <sup>™</sup> (Up to 15 MGD/657 lps)
Sizing:	Custom for application
Channel Widths:	: Minimum 2' (610 mm) and larger
Angle:	Normally 75 degrees, 80 degrees, 84 degrees and 90 degrees available
Clear Openings:	1/4" and larger openings (6.4 mm)
Construction:	SST or CS and other alloys

TTTTTT

# COARSE SCREEN

### **Application Data**

Flow Ranges:	1-100+ MGD (44-4380+ lps)
Sizing:	Three sizes/custom for application
Channel Widths:	Minimum 2' (610mm) and larger
Angle:	80 degrees, 84 degrees or 90 degrees
Clear Openings:	1/4" and larger/6.35 mm
Construction:	SST or CS and other alloys



Catenary screen technology offers proven performance for small to large flow applications with large, bulky material. The S&L SCHLOSS® MARK-**CT**<sup>™</sup> Catenary Bar Screen features less wearing parts than other kinds of bar





Multiple rake arm selection, precision pin rack assembly design and customized system options make the S&L SCHLOSS® MARK-CI<sup>™</sup> Pin Rack Screen the cost-effective choice for efficient coarse screening for mid-size to large treatment plants and industrial applications with bulky material.

### MARK-CT<sup>™</sup> CATENARY BAR SCREEN

screens because there are no lower sprockets and bearings. Combined with other S&L SCHLOSS® design features, the **MARK-CT**<sup>™</sup> proves to be the industry's most durable.

COARSE SCREEN



Designed for smaller in-channel flows, the S&L SCHLOSS<sup>®</sup> Mark XV<sup>™</sup> 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 a recommended perforated sheet 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.



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 removes 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.

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

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