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.
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.

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.

Now in 250gpm & 500gpm!

ORDER LOCALLY FROM YOUR Smith & Loveless Representative
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

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.

- 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.

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.

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

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.
Dewatering

The robust Smith & Loveless 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.

PISTA® Grit Concentrator™ 250 GPM Ni-Hard

- 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 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 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 PISTA® Grit Screw Conveyor is available in 2 sizes

<table>
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<tr>
<th>Model</th>
<th>Concentrator</th>
<th>Screw Diameter</th>
<th>Conveyor Length</th>
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<tbody>
<tr>
<td>Model 15 PISTA® Grit Screw Conveyor</td>
<td>250 GPM / 16 LPS</td>
<td>9” / 230 MM</td>
<td>15’ / 4.6 M</td>
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<tr>
<td>Model 17 PISTA® Grit Screw Conveyor</td>
<td>500 GPM / 32 LPS</td>
<td>14” / 355 MM</td>
<td>17’ / 5.2 M</td>
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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 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.

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

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® 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 supplanted 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 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
UPGRADE TO 95% 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

<table>
<thead>
<tr>
<th></th>
<th>50 mesh grit (300 micron)</th>
<th>70 mesh Grit (210 micron)</th>
<th>100 mesh grit (150 micron)</th>
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<tbody>
<tr>
<td>PISTA® 270™</td>
<td>95%</td>
<td>85%</td>
<td>65%</td>
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<tr>
<td>Existing PISTA® 270™ units with OPTIFLOW 270™ Baffle System</td>
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<tr>
<td>270° units by others with OPTIFLOW 270™ Baffle System</td>
<td>95%</td>
<td></td>
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</tr>
</tbody>
</table>

#### 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

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 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!

ORDER LOCALLY FROM YOUR Smith & Loveless Representative
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 I, Division 1, Group D requirements.

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.

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 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 1, Group D requirements.

Not part of the SONIC START® STREAMLINE™, 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, found on page 45 of this catalog.

“ 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 H₂O & debris from reaching the vacuum tubing
• Two models: Outdoor & Indoor

ORDER LOCALLY FROM YOUR Smith & Loveless Representative 21
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:

**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 submersion.** Given enough time, however, salt water in coastal 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.

**Carbon Steel to Stainless Steel Conversions**

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**Materials of Construction**

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**Materials of Construction Options**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
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<td>EA</td>
<td>6L178A</td>
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</table>

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.

ORDER LOCALLY FROM YOUR Smith & Loveless Representative
GET ALL THE PARTS YOU NEED FOR ANY SCHLOSS PRODUCT

Call Parts: 800-922-9048

Screen Parts

Dewatering

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.
Provides Screenings for Small to Large Plants

Designed for small to very large plants, the Schloss Mark VIII™ Bar Screens are particularly well-suited where larger materials may be present such as hospitals, prisons and similar applications. A fully enclosed Mark VIII™ 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” & larger openings (6.35mm)
Construction: SST or CS & Other Alloys

Coarse Screen

Depicted to the right is the popular Mark IX™ 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
Flow Ranges: 1 - 100+ MGD (44 - 4380+ lps)
Sizing: Custom for Application
Channel Widths: Min. 2’ (610 mm) & larger
Angle: Normally 75º, 80º, 84º, 90º avail.
Clear Openings: 1/4” & larger openings (6.4 mm)
Construction: SST or CS & other Alloys

MARK IX™ COARSE BAR SCREEN
COARSE SCREEN UP TO 15 MGD
The Mark IX™ is 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

S&L SCHLOSS™ Mark IX™
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.

MARK CT™ CATEenary BAR SCREEN
COARSE SCREEN UP TO 75 MGD

COARSE Screen
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.

**MARK CI™ PIN RACK SCREEN**

**COARSE SCREEN UP TO 100+ MGD**

---

**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

---

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

---

**Fine Screen**

**S&L SCHLOSS™ Mark XV™**

**FINE SCREEN UP TO 13 MGD**

Designed for smaller in-channel flows, the S&L SCHLOSS™ Mark XV™ 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 35º 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™ Fine Screw Screen system. Designed for larger in-channel flows, the Mark XV™ 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.

PISTA® Drive Oil Remover Kit

The new H67A326 Smith & Loveless PISTA® Drive Oil Remover Kit contains all the parts you will require to drain the oil from your PISTA® Bullgear Drive. Complete with fittings and adapters, one heavy duty hose, a waste oil storage container, and a time-saving maintenance pump, this kit can effectively drain your PISTA® Bullgear Drive in under 5 minutes!

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8L116A</td>
<td>Maintenance Pump</td>
</tr>
<tr>
<td>67A325</td>
<td>Oil Container</td>
</tr>
</tbody>
</table>

PISTA® Drive Oil Level Indicator Kit

Check your PISTA® Drive oil level at a glance with the new H67A327 Smith & Loveless PISTA® Drive Oil Level Indicator Kit. This kit contains all required parts to add oil level indication to the PISTA® Bullgear Drive so that the level plug no longer has to be manually unscrewed to check the oil levels.

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>H67A326</td>
<td>PISTA® Drive Oil Remover Kit</td>
</tr>
</tbody>
</table>

H67A326 Spare Parts

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>12L437A</td>
<td>Level Sticker</td>
</tr>
<tr>
<td>67A324</td>
<td>Sightglass Assembly</td>
</tr>
</tbody>
</table>

PISTA® Drive Oil Level Indicator Kit

Order locally from your Smith & Loveless Representative.
Float Check Valve Assembly

In 1999, Smith & Loveless released the new 1L443H Float Check Valve, completely changing the diameter and length for better overall performance. The Float Check Valve is used on all Smith & Loveless Top Mounted PISTA® TURBO™ Grit Pumps.

Complete Float Check Valve Assembly

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L443H</td>
<td>Float Check Valve Assembly</td>
</tr>
</tbody>
</table>

1L443H Spare Parts
Smith & Loveless carries a full line of spare parts for the 1L443H Float Check Valve, put into use in 1999.

1L443H Float Check Valve Spare Parts

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L443HD</td>
<td>Body</td>
</tr>
<tr>
<td>1L443HA</td>
<td>Ball Seat</td>
</tr>
<tr>
<td>1L443B</td>
<td>1-1/2” Diameter Float Ball</td>
</tr>
<tr>
<td>1L443HC</td>
<td>O-Ring</td>
</tr>
<tr>
<td>1L443H</td>
<td>Bowl Assembly</td>
</tr>
<tr>
<td>1L333</td>
<td>Check Valve (Install with arrow pointing down)</td>
</tr>
</tbody>
</table>

1L443G Spare Parts
Even though this Float Check Valve assembly was used only from 1997 to 1999, Smith & Loveless still carries a full line of spare parts for it.

1L443 Float Check Valve Spare Parts

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L443A</td>
<td>Ball Seat</td>
</tr>
<tr>
<td>1L443B</td>
<td>1-1/2” Diameter Float Ball</td>
</tr>
<tr>
<td>1L443E</td>
<td>O-Ring (Goes around inside lip of the bowl)</td>
</tr>
<tr>
<td>1L443F</td>
<td>Bowl Assembly</td>
</tr>
<tr>
<td>1L333</td>
<td>Check Valve (Install with arrow pointing down)</td>
</tr>
</tbody>
</table>

87A76 Spare Parts
Used from 1970 to 1995, Smith & Loveless Float Check Valve 87A76 still has some spare parts available for purchase.

87A76 Float Check Valve Spare Parts

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L443B</td>
<td>1-1/2” Diameter Float Ball</td>
</tr>
<tr>
<td>1L410C</td>
<td>O-Ring (Goes inside lip of the bowl)</td>
</tr>
<tr>
<td>1L410D</td>
<td>Bowl (Not Shown)</td>
</tr>
<tr>
<td>1L410H</td>
<td>Bowl Insert</td>
</tr>
<tr>
<td>1L333</td>
<td>Check Valve (Install with arrow pointing down)</td>
</tr>
</tbody>
</table>

Tech Tip

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.
The Vacuum Priming System

Smith & Loveless has been offering the state-of-the-art SONIC START® Prime Sensing System since 2005. It uses a patented frequency differential prime sensing system to determine whether the pump is primed, virtually eliminating routine maintenance. In this section, we'll review the Vacuum Prime Sensing System and detail how you can upgrade to the latest technology.

Electrode and Vacuum Dome Evolution

Over the years, the Smith & Loveless Vacuum Dome arrangement has changed. The arrangement you currently have installed will determine which replacement parts you require.

**VERSION 2**

1-Hole Vacuum Dome
Hollow Electrode

Obsolete. Only certain components are still available. 1-hole Vacuum Dome with hollow stainless steel electrode. Convert to solid stainless steel electrode with PN: 87B309B and 87B309C.

**VERSION 3**

1-Hole Vacuum Dome
Solid Electrode

Fully supported in Parts. 1-hole Vacuum Dome with solid stainless steel electrode.
PN: 87B309B - 5-1/4" Long Electrode
PN: 87B309C - 6" Long Electrode

**VERSION 4**

1-Hole Vacuum Dome
SONIC START® Probe

Full supported in Parts. 1-hole Vacuum Dome with no electrode.
Uses SONIC START® Probe.
PN: 87B452A (Dome Assembly)

**NEWEST VERSION 5 - SONIC START® STREAMLINE™**

1-Hole Vacuum Dome, SONIC START® Probe & 2-Way Solenoid Valve

Current Version for all PISTA® New Equipment. 1-hole Vacuum Dome with no electrode. Uses SONIC START® Probe and relocates larger ported 5/16" diameter orifice 2-way solenoid valve to above vacuum dome.
PN: 87B728A, 87B728B (Vacuum Dome Assembly with Solenoid Valve)

The 8L29, is the top end Smith & Loveless Vacuum Pump with single piston function for use with PISTA®’s that have 4" piping. PISTA’;s with 6" piping work best with the rugged dual piston 8L32 S&L Vacuum Pump.

**Save Time and Money. 8L29, 8L44 & 8L32 Repair Parts**

Smith & Loveless carries a repair kit for the 8L29 & 8L32 Vacuum Pumps as well as a large array of repair parts for the 8L44 that can be ordered. See part numbers and descriptions below.

**Vacuum Pumps**

*Compare Smith & Loveless’ Vacuum Pump price to Grainger’s price*

**8L29 - Top End Single Piston Model**

Vacuum Pump Single & Dual Piston

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8L29</td>
<td>4&quot; Top End, Single Piston</td>
</tr>
<tr>
<td>8L32</td>
<td>6&quot; Rugged, Dual Piston</td>
</tr>
</tbody>
</table>

**8L32 - Rugged Dual Piston Model**

**8L44 Single Piston Vacuum Pump Repair Parts**

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8L44-15</td>
<td>O-Ring</td>
</tr>
<tr>
<td>8L44-27</td>
<td>O-Ring Gasket</td>
</tr>
<tr>
<td>8L25-13</td>
<td>Inlet &amp; Exhaust Valve Flapper</td>
</tr>
<tr>
<td>8L44-36</td>
<td>Screw for the Flapper Valve</td>
</tr>
<tr>
<td>8L44-45</td>
<td>Muffler Assembly</td>
</tr>
</tbody>
</table>

**8L32 Dual Piston Vacuum Pump Repair Kit**

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8L32-1</td>
<td>Repair Kit</td>
</tr>
</tbody>
</table>

*Save Time and Money.*
Maintenance

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

Techn Tip

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®

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™ Grit Pump. Whether you have one PISTA® TURBO™ Pump or many, these spare parts are good insurance to minimize down time in a crisis.

- Control Relay – 4L107A
- Electrode Relay – 4L408H
- Mechanical Seal – H87A28
- Solenoid Valve – 1L406E
- 12-pack of Ferrules – 1L366C
- Air Compressor – 9L34
- Vacuum Pump – 8L29
- Pinch Valve Bladder – 2L159AA
- Bladder/Sleeve Gasket – 2L159AB
- Air Relief Valve – 1L447

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.

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.

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-Primeing 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 unplug 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.
Remote Mounted

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 Pump Data

Capacity: Up to 500 GPM
Sizing: 4” and 6”
Type: Top-Mounted Vacuum Prime or Remote-Mounted Flooded Suction
Materials: Ni-Hard Impeller & Volute
The pinch valve is a vital part of the vacuum primed PISTA® Grit Removal System. Smith & Loveless’ Customer Service Team recommends having a spare Sleeve (Bladder) and Side Gasket or a complete spare PISTA® Pinch Valve on hand.

Some facilities replace the Sleeve (bladder) when 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 a 0-60 PSI Pressure Gauge P/N 1L84E or 1L84H. Start the setting at 36 PSI and monitor the vacuum priming operation. Some bladders will require more PSI and some less. To ensure longevity, set the pressure on the PISTA® Pinch Valve at the lowest setting possible at which your PISTA® TURBO™ Grit Pump will prime. Then increase this pressure by 5 PSI. The 0-60 PSI Pressure Gauge is an effective diagnostic tool.

Reminder: In the winter, it may take more PSI to seal the valve to allow the PISTA® Grit Pump to prime.

### Seal Housing Gasket & Quad Ring

Each time the mechanical seal is replaced, Smith & Loveless recommends the Seal Housing Gasket or Quad Ring also be replaced.

**PARTS TIP:** 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 Quad Ring.

<table>
<thead>
<tr>
<th>GASKET</th>
<th>QUAD RING</th>
<th>SHAFT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>60A11</td>
<td>60A110</td>
<td>B-Shaft: 1-7/8”</td>
</tr>
<tr>
<td>60A17</td>
<td>60A111</td>
<td>C-Shaft: 2-1/8”</td>
</tr>
<tr>
<td>60A84</td>
<td>60A112</td>
<td>D-Shaft: 3”</td>
</tr>
</tbody>
</table>

### Impeller Bolts

Smith & Loveless’s Impeller Bolts feature embedded Nylock. Each time you remove the impeller, replace the Impeller Bolt. Remember to torque impeller bolts to 100 ft/lbs.

<table>
<thead>
<tr>
<th>PART #</th>
<th>SHAFT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>60A12</td>
<td>B-Shaft: 1-7/8”</td>
</tr>
<tr>
<td>60A12</td>
<td>C-Shaft: 2-1/8”</td>
</tr>
<tr>
<td>60A87</td>
<td>D-Shaft: 3”</td>
</tr>
</tbody>
</table>

### Single Mechanical Seal Replacement Parts Kit

Specifically designed by Smith & Loveless for the Smith & Loveless pump, the Single Mechanical Seal is designed to last more than 7 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. (pictured above)

<table>
<thead>
<tr>
<th>PART #</th>
<th>SHAFT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>H87A28</td>
<td>B-Shaft: 1-7/8”</td>
</tr>
<tr>
<td>H87A97</td>
<td>C-Shaft: 2-1/8”</td>
</tr>
<tr>
<td>H87A182</td>
<td>D-Shaft: 3”</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>PART #</th>
<th>PUMP SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>60A26</td>
<td>4B2C, 4B2H, 4B2J</td>
</tr>
<tr>
<td>60A26</td>
<td>6B3H, 6B3H, 6C3H, 6D3H, 6B3J, 6C3J, 6D3J</td>
</tr>
</tbody>
</table>

### New Glycerin-Filled Gauges

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L780B</td>
<td>Glycerin-filled Compound Vacuum Gauge Handles Up To 65 TDH (0-30’’ HG; 0-30 PSI)</td>
</tr>
<tr>
<td>1L780C</td>
<td>Glycerin-filled Compound Vacuum Gauge Handles Up To 135 TDH (0-30’’ HG; 0-60 PSI)</td>
</tr>
<tr>
<td>1L780D</td>
<td>Glycerin-filled Compound Vacuum Gauge Handles Up To 230 TDH (0-30’’ HG; 0-100 PSI)</td>
</tr>
</tbody>
</table>

### Gaskets & Pressure Gauges

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2L159AA</td>
<td>4” PISTA® Side Gasket</td>
</tr>
<tr>
<td>1L84E</td>
<td>3-1/2” Diameter Pressure Gauge (for pinch valve)</td>
</tr>
<tr>
<td>1L84H</td>
<td>4-1/2” Diameter Pressure Gauge (for pinch valve)</td>
</tr>
</tbody>
</table>
Controls

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!
PISTA®
Grit Removal System
UPGRADE TO 95%