CONTAINMENT DUTY
Metallic & Non-Metallic

Standard Duty
Metallic & Non-Metallic

FEATURES - BENEFITS

ESADS+Plus® - Performance Guaranteed - In-line Serviceable Air Valve System
Bolted Construction • Safe • Reliable • Easy Maintenance
Durable • Single-Purpose • Corrosion Resistant • Guaranteed Diaphragm Connecting Rod
Top Discharge Porting -Eliminates Entrained Air
Metallic and Non-Metallic Materials of Construction
Ball Check Valves - Light Weight - Portable
90° - 180° Manifold Connection Rotation

Containment Chamber with Leak Detection
Hydraulically Balanced/Coupled Pumping
and Driver Diaphragm Assemblies
Solids Range +1/4" (6mm) to 3/4" (18mm)
Dry Primes up to 18 Feet of Water
Free Standing Support Base

Solids Range +1/8" (3mm) to 1/2" (12.7mm)
Dry Primes up to 20 Feet of Water

www.springerpumps.com
info@springerpumps.com
**LEAK DETECTION OPERATING PRINCIPLE**

**MECHANICAL LEAK DETECTOR:** When a leak chemically attacks an internal o-ring on this detector, it actuates a plunger. This opens an air valve, which in turn activates a customer-supplied solenoid (or similar device) to trigger a signal.

**VISUAL LEAK DETECTOR:** A sight tube style leak detector is installed on each driver chamber. If a pumping diaphragm break occurs, liquid in the sight tube changes color.

**ELECTRONIC LEAK DETECTOR:** Working on the principle of conductance, this monitor can be wired for visual, audible or pump shut-down response. The electronic leak detector is an optional accessory which can be installed on all models.

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**Electronic Leak Detection**

How electronic leak detection works.

At a point the pumping diaphragm fails, pumped liquid enters the spill chamber displacing driver fluid. The leak detector, working on the principle of conductance, senses the conductivity change. This activates a warning light on the control box. The device can also be wired into the pump user’s existing system, for an audible or visual alarm, or pump shut-down response. It is important to specify an appropriate drive fluid which is both chemically compatible with the pumped fluid and displays the opposite conductance properties. Polarity of the leak detector can be set to sense conductive or non-conductive fluid. If a leak occurs, pumpage is contained in the spill chamber. The pump will continue to work, and in many cases, repairs can be done when the batch is completed. The air valve and work environment are protected.

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**Visual Leak Detection**

How visual leak detection works.

At a point the pumping diaphragm fails, pumped liquid enters the spill chamber, displacing driver fluid. The exchange of pumpage and driver fluid displays a color change in the sight tube, giving a visible signal. Driver fluid should be chemically compatible with the pumped fluid, with an obvious difference in color. In the event a leak occurs, pumpage is contained in the spill chamber. The pump will continue to work, and in many cases, repairs can be done when the batch is completed. The air valve and work environment are protected.
Containment Duty Metallic and Non-Metallic Pumps are ideal for highly corrosive and hazardous chemical fluid requirements. All CD duty pumps are exclusively designed with containment chambers, hydraulically balanced/coupled pumping diaphragm and driver diaphragm assemblies. All containment chambers are designed to accommodate visual, mechanical and low voltage leak detection devices. CD pumps are constructed of Aluminum, Cast Iron, Stainless Steel, Alloy C, Polypropylene and PVDF with TPE (thermal plastic elastomers), PTFE options in diaphragms and check valves.

Containment Duty Pumps additional FEATURES and BENEFITS

**Spill Containment**

- Safe pumping of aggressive, unpredictable, hazardous or toxic liquids.
- Chambers keep accidental spills from entering the air valve, protecting plant environment and personnel.
- Allows the pump to complete the batch or operation in progress, before repair has to be done.

**Hydraulically Balanced/Coupled Diaphragms**

- Pumping diaphragms are balanced on suction and discharge stroke.
- Evenly distributed pressure over the surface of the diaphragm gives longer flex life.

**Save Money and Downtime**

- Protects air valve parts from contamination, meaning fewer service parts and less maintenance time.
- Longer flex life of the diaphragm means less frequent routine servicing.

**Leak Detection - See page 43**

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**CONTAINMENT DUTY BALL**

<table>
<thead>
<tr>
<th>PUMP MODELS</th>
<th>ST1/ST2</th>
<th>ST1½/ST40</th>
<th>S1F</th>
<th>S15</th>
<th>S20</th>
<th>S30</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Height (in)</td>
<td>14 1/32 (366)</td>
<td>14 1/32 (366)</td>
<td>17 1/2 (445)</td>
<td>17 1/2 (445)</td>
<td>20 3/4 (527)</td>
<td>20 3/4 (527)</td>
</tr>
<tr>
<td>D Bottom of Base to Center Line of: Suction (in)</td>
<td>5 1/4 (133)</td>
<td>5 1/4 (133)</td>
<td>5 9/32 (134)</td>
<td>5 9/32 (134)</td>
<td>5 9/32 (134)</td>
<td>5 9/32 (134)</td>
</tr>
<tr>
<td>E Center Line of: Discharge (in)</td>
<td>13 (330)</td>
<td>13 (330)</td>
<td>15 15/64 (387)</td>
<td>15 15/64 (387)</td>
<td>20 3/4 (527)</td>
<td>20 3/4 (527)</td>
</tr>
<tr>
<td>Connection Style</td>
<td>1 1/4&quot; NPT/BSP</td>
<td>1 1/4&quot; NPT/BSP</td>
<td>1 1/2&quot; NPT/BSP</td>
<td>1 1/2&quot; NPT/BSP</td>
<td>1 1/2&quot; NPT/BSP</td>
<td>1 1/2&quot; NPT/BSP</td>
</tr>
<tr>
<td>Pipe Size</td>
<td>1 (25)</td>
<td>1 (25)</td>
<td>1.5 (40)</td>
<td>1.5 (40)</td>
<td>1.5 (40)</td>
<td>1.5 (40)</td>
</tr>
<tr>
<td>Displacement Per Stroke</td>
<td>.09 (.34)</td>
<td>.09 (.34)</td>
<td>.30 (1.14)</td>
<td>.30 (1.14)</td>
<td>.30 (1.14)</td>
<td>.30 (1.14)</td>
</tr>
<tr>
<td>Max Flow Per Minute</td>
<td>42 (159)</td>
<td>42 (159)</td>
<td>90 (340)</td>
<td>90 (340)</td>
<td>90 (340)</td>
<td>90 (340)</td>
</tr>
<tr>
<td>Max Solids Handling</td>
<td>.25 (6)</td>
<td>.25 (6)</td>
<td>.25 (6)</td>
<td>.25 (6)</td>
<td>.25 (6)</td>
<td>.25 (6)</td>
</tr>
<tr>
<td>Max Discharge Pressure</td>
<td>125 (8.6)</td>
<td>125 (8.6)</td>
<td>125 (8.6)</td>
<td>125 (8.6)</td>
<td>125 (8.6)</td>
<td>125 (8.6)</td>
</tr>
</tbody>
</table>

All Dimensions +/- 1/8 (3)

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**ATEX 95a Certified**

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Springer Pumps, LLC
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Hydraulically Balanced/Coupled Pumping and Driver Diaphragm Assemblies

90°-180° Manifold Connection Rotation

All Bolted Construction

Containment Chamber with Leak Detection

ESADS+Plus® (Externally Serviceable Air Distribution System) Lube Free

Durable Diaphragm Connecting Rod

All Bolted Construction

Free Standing Support Base

...WITH MORE WAYS THAN ONE
CONFIGURATION FEATURES

FEATURES:
• CONTAINMENT DUTY BALL
• ESADS+Plus®
• All Bolted Construction
• Containment Chamber with Leak Detection
• Top Discharge
• Ball Check Valves
• Light Weight - Portable
• Durable Diaphragm Connecting Rod
• 90° - 180° Manifold Connection Rotation
• Solids Range +¼” (6mm) to ¾” (18mm)
• Dry Primes up to 18 Feet of Water
• Free Standing Support Base

CHARACTERISTICS

<table>
<thead>
<tr>
<th>Fluid Characteristics</th>
<th>Containment Duty</th>
<th>Top Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metallic Non-Metallic</td>
<td></td>
</tr>
<tr>
<td>Water (base reference)</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Suspended Solids</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Non-Suspended Solids</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Line Size Solids</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sludge / Slurry</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>High Viscosity (Flowable Fluids)</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Erosion / Abrasive Fluids</td>
<td>High Moderate Low B</td>
<td>C</td>
</tr>
<tr>
<td>Corrosion</td>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

CURVES:

VARIABLE HEADS - PSI

VARIABLE FLOWS - GPM

100 PSI

CD 1
CD 1½
CD 2
CD 2½
CD 3

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CONTAINMENT DUTY BALL

ST1 Metallic Performance Curve

ST1½ Metallic Performance Curve

S1F Non-Metallic Performance Curve

...WITH MORE WAYS THAN ONE
Metallic containment duty pumps and tranquilizers installed in a chemical processing plant.
ESADS+Plus® *(Externally Serviceable Air Distribution System)*

**ON-OFF-ON... Reliability - GUARANTEED!**

*Primary system components = main directional air valve (with PATENTED cross-drilled pressure ports) & pilot valve*

**FEATURES:** Independent of the pilot valve position, the cross-drilled pressure ports in the main directional air valve spool provide a pneumatic bias of the spool at either end of travel. This is accomplished by directing (inner) chamber pressure to the end of the spool, boosting and sustaining pilot pressure until point-of-shift of the pilot valve.

**BENEFITS:** Eliminates spool from drifting due to vibration and/or unbalanced pressure or system conditions.

- Process Reliability
- Consistent restarts
- Complete IN-LINE serviceability
- Lube Free

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**GUARANTEED not to yield under:**

- Tension
- Compression
- Bending
- Pump Operation

![Durable, corrosion resistant 416 (Martensitic) and/or 316 (Austenitic) Stainless Steel diaphragm connecting rod - GUARANTEED!](image)

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**Connecting Rod Guarantee**

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All Bolted Construction

- Instant alignment
  - Ease of maintenance
- Uniform torquing of seal
  - Improved seal
- Maintains seal after repeated servicing
  - Lowers repair costs
- Withstands 4 times the pressure versus V-band clamps
  - Eliminates leakage at high pressure and deadheaded conditions

EXCLUSIVE Bottom Discharge Porting

Heavy Duty Flap
Heavy Duty Ball

Standard Duty
- broken diaphragm plates
- premature diaphragm failure resulting from non-uniform wear
- bent rods
- solids settle in bottom of water chamber

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Warren Rupp, Inc. (“Warren Rupp”) warrants to the original end-use purchaser that no product sold by Warren Rupp that bears a Warren Rupp brand shall fail under normal use and service due to a defect in material or workmanship within five years from the date of shipment from Warren Rupp’s factory. Warren Rupp brands include SANDPIPER®, MARATHON®, PortaPump®, SludgeMaster® and Tranquilizer.

- See complete warranty at www.sandpiperpump.com/About/guaranteesandwarranties.html -

Diaphragm Connecting Rod Guarantee

GUARANTEED - NOT TO YIELD UNDER:
Tension • Compression • Bending • Pump Operation

For complete Guarantee conditions, eligibility requirements and liability, visit us at www.sandpiperpump.com/About/guaranteesandwarranties.html

Non-Stalling Air Valve Performance Guarantee

If a Warren Rupp ESADS® (Externally Serviceable Air Distribution System) EVER* fails to operate or restart after shutdown due to “centering” of the main air valve or pilot valve, Warren Rupp will replace the air drive system free of charge. Having supplied this UPGRADED, FIELD PROVEN, RETROFITABLE, air drive system since 1996, the absence of any field failures related to design, gives Warren Rupp the CONFIDENCE to offer the ONLY WRITTEN AIR VALVE PERFORMANCE GUARANTEE IN THE AODD INDUSTRY!

- See complete guarantee at www.sandpiperpump.com/About/guaranteesandwarranties.html -
Repair it Once, Repair it Right

Use Complete Kits instead of Partial Repairs

- Everything you need in one place
- Reduce frequency of repairs
- Increase service life
- Increase uptime
- Save time and money

Complete Kit vs. Partial Repair

<table>
<thead>
<tr>
<th>COST OF WET END REPAIR</th>
<th>Partial Repair (1 Diaphragm)</th>
<th>Complete Repair Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts</td>
<td>$66</td>
<td>$338</td>
</tr>
<tr>
<td>Labor, Down-Time, Lost Product:</td>
<td>$1,325</td>
<td>$1,325</td>
</tr>
<tr>
<td>Estimated Cost Per Repair:</td>
<td>$1,391</td>
<td>$1,663</td>
</tr>
<tr>
<td>Annual Frequency of Repair</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Estimated Annual Cost:</td>
<td>$2,782</td>
<td>$1,663</td>
</tr>
<tr>
<td>Estimated Annual Savings:*</td>
<td>$0</td>
<td>$1,119</td>
</tr>
</tbody>
</table>

*Example Data: Repair = 1 hour • Pump model #: S20B1ABBANS000 • Buna wet-end • Repair labor rate fully burdened at $125/hour • Lost product assumes paint

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REPAIR KITS

• SAVE TIME
• SAVE MONEY

NOW AVAILABLE
• See page 75 for more details

GENUINE PARTS, REAL VALUE

WITH MORE WAYS THAN ONE... GLOBALLY!

This brochure available in the languages below

ENGLISH CHINESE RUSSIAN PORTUGUESE SPANISH GERMAN JAPANESE

GENUINE PARTS, REAL VALUE