Maintenance and Lubrication

seepex recommends using seepex joint grease type 30321 with all seepex pumps with pin joints. There is no equivalent for this grease, as stated on page 5 of the seepex Operating and Assembly Manual. Also, an operation guarantee cannot be granted if other greases are used.

Safety Precautions

- Disconnect and lock out electrical service before conducting any work to pump and/or gear motor.
- Close all valves on suction and discharge piping before conducting any work on pump.
- Ensure coupling guards and motor fan covers are in place before unlocking electrical connections.
- Take care when removing holding bands from universal joints as edges can be sharp.
- Ensure that splash ring (slinger ring) is always in proper position on plug-in shaft.
- Exercise extreme care when adjusting packing as shaft is rotating.

Lubrication Schedule

<table>
<thead>
<tr>
<th>Item</th>
<th>Action</th>
<th>Frequency</th>
<th>Type of Lubricant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear Reducer</td>
<td>Check oil level</td>
<td>Weekly</td>
<td>210cSt @ 40°C (Gulf EP Lube-S 100/equal)</td>
</tr>
<tr>
<td></td>
<td>Change Oil</td>
<td>3 years</td>
<td>210 cSt @ 40°C (Gulf EP Lube-S 100/equal)</td>
</tr>
<tr>
<td>Motor Bearing</td>
<td>Repack with grease</td>
<td>3 years</td>
<td>Gulf EP No. 2/equal</td>
</tr>
<tr>
<td>Pump Bearing</td>
<td>Repack</td>
<td>3,000 operating hours</td>
<td>Shell Alvania EP 2/equal</td>
</tr>
<tr>
<td>Pump Universal Joints</td>
<td>Repack</td>
<td>Rotor replacement or 10,000 operating hours-whichever is first</td>
<td>seepex special grease ONLY</td>
</tr>
</tbody>
</table>
## Maintenance Schedule

<table>
<thead>
<tr>
<th>Item</th>
<th>Action</th>
<th>Frequency</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing</td>
<td>Check leakage rate and tighten/loosen to allow 1-6 drops per minute</td>
<td>Weekly</td>
<td>Adjust tightening nuts only 1/2 turn per minute until stabilized</td>
</tr>
<tr>
<td>Water Flush</td>
<td>Check flow and pressure</td>
<td>Weekly</td>
<td></td>
</tr>
<tr>
<td>Pump Rate</td>
<td>Check flow at rated pressure</td>
<td>Weekly</td>
<td>Replace rotor/stator as required</td>
</tr>
<tr>
<td>Bearings</td>
<td>Check end play and temperature. Change grease.</td>
<td>Monthly (3,000 operation hours)</td>
<td>See operating manual</td>
</tr>
<tr>
<td>Universal Joints</td>
<td>Check seal integrity. Check bushing and joint wear. Replace grease.</td>
<td>Upon rotor/stator replacement</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>Check RPM/amperage. Drain. Check fan cover for obstruction/dirt.</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>Gear Reducer</td>
<td>Check temperature and oil level Exchange oil</td>
<td>Monthly 3 years</td>
<td></td>
</tr>
</tbody>
</table>
Piping inspection complete check for foreign debris

All the flanges must be checked insuring they are tight

Are seal lines connected to the pump glands?

Check couplings for connection and proper attachment

Check belts for proper tension - no appreciable deflection is permitted for initial start-up

Check guards for secure positioning and any other protective devices must be secured

Pump to be primed

Drivers supplied must be checked for oil if supplied with gearboxes

Clean all hazardous debris or equipment from area

Check electrical connections and conduit boxes on drivers

Check pump rotation - normal rotation CCW

Pipe lines open, check for liquid to pump suction

Check that all valves are open

Suction lift applications - insure liquid in pump suction

Turn on seal water flush if flush is used

If leakage is excessive at packing after 15 minutes, retighten packing periodically 1/4 turn until 1-2 drops per minute is obtained. Do not over tighten to eliminate leakage with packing.

Pump rotation is indicated on bearing frame

Unlock lockout on panel and at pump

Check amps of driver

Check pump in manual mode

Check pump in auto mode

Check for vibration, check gauges, etc.

Avoid dry run during operation

Check the pump to prevent overpressure
Pump Shutdown Procedure

☐ Disconnect power to pump driver local or as required
☐ Close discharge valves
☐ Close suction valves
☐ Shut of seal water system water supply

Equipment Shutdown Longterm

☐ Shutdown - isolate pump and electrical
☐ Rotate pump shaft once per week
☐ Remove drain plug to facilitate drying of suction housing
☐ Prevent freezing at pump, drain and protect from freezing. Fill with light oil or ethylene glycol. It must be compatible with pump elastomers. Buna, EPDM, Viton are compatible with ethylene glycol.
☐ Put grease into stuffing box. If packing is used – loosen packing.
☐ Use light oil for mechanical seal protection
☐ If pump is not installed, place blind flanges over suction and discharge flanges
☐ Store pump in cool, dry atmosphere

Grinder Start-Up Checklist

☐ Turn on seal water flush to grinder
☐ Open suction and discharge valves - starting flow of liquid
☐ Start the seerarator/grinder
☐ Start the pump used with the seerarator/grinder

Grinder Shutdown Peocedures

☐ Stop the pump associated with the grinder
☐ Stop the grinder
☐ Close suction and discharge valves
☐ Shutdown seal water system
Stator Retensioning Procedures

- The pump must be calibrated when new, and recalibration can be based upon either fluid flow or motor amperage.
- Record the following data upon installation and start-up of the new pump.

  Calibration fluid ______________________ ____________ cPs viscosity
  ____________ RPM ____________ PSIG (discharge) ____________ PSIG (inlet)
  ____________ °F temperature ____________ % solids ____________ motor amperes
  or/ ____________ GPM ____________ particle size

- Ensure all operating parameters, except motor amperage or flow rate, are as originally calibrated ... including fluid levels on the suction and discharge side of the pump, piping conditions, fluid viscosity or solids contents and temperature ... before testing for stator wear.

- DO NOT calibrate pump and test for stator wear on two different fluids.
- DO NOT adjust stator unless pump is tested against calibration performance.
- DO NOT adjust stator unless its tested performance at its calibrated conditions show a 40% or greater drop in flow or amperage.
- NOTE: On applications with viscous materials and long pipe lengths, it may not be possible to record test pressure readings identical to the calibration readings due to the high frictional component of total system pressure.
- Ensure that suction and discharge static head conditions and piping arrangements have not been changed since the last calibration procedure.

- Every time any change is made to either the suction or discharge piping or every time the pumped fluid is changed, the pump must be recalibrated.
- Once the above conditions are verified, tighten the nuts on the stator retensioning device **one-half turn each**, starting on the discharge side of the pump and alternating left to right sides.
- DO NOT tighten all the nuts on one side and then tighten the nuts on the other side.
- Check test performance. If tested performance is less than 90% of calibrated performance, retighten nuts following procedures described previously.
- DO NOT tighten nuts to achieve more than 90% of calibrated performance. Wear has occurred on the pumping elements and the formed cavity is slightly smaller. Increased performance above 90% of calibrated levels can only be achieved by increasing the pump speed. Over tightening will cause premature wear and component failure.
- DO NOT use discharge pressure as an indicator of pump performance. Pressure indicates piping and fluid conditions and is not a valid indicator of performance for a positive displacement pump. If pressures are significantly different from those recorded during calibration, check for changes to the piping and fluid consistency.
- When the stator can no longer be tightened, it should be replaced. Once the stator is removed, carefully inspect and measure the rotor for wear. Call seepex to obtain the proper dimensions and procedures to check for rotor wear. Rotor wear should not exceed 0.012" it should be replaced.
Note: Pumps with the stator retensioning device often require both the rotor and stator to be changed at the same time.

- Replacement stators for pumps with the stator retensioning device usually do not need to be adjusted when installed. This is especially true when a new rotor has also been installed. Always check for rotor wear before installing a new stator.

- Test the new stator performance using the same test procedures used to test a worn stator. If the performance needs to be improved, follow the tightening procedures outlined above. Again, as a precaution, do not tighten to achieve more than 90% of the calibrated performance, in an effort to avoid over tightening and premature wear.