

## 23.0 Pump Trouble Shooting Guide

Problem	Probable Cause	Corrective Actions
Pump does not rotate (No flow from pump)	Prime mover fault	Check prime mover faults (lock out / reset all shutdown parameters)
	Transmission / Coupling Defective	Check/inspect coupling – Disconnect power supply
	Incompressible / large solid(s) between rotor & pump housing	Drain pump and fittings. Remove back cover and inspect lobes
Pump shuts down immediately after start-up	Pump shutdown Shutdown controls	Check pump settings of tripping/shutdown parameters and values
	Loss of prime mover power – engine	Check/reset all engine shutdown parameters
	Loss of prime mover power – AC motor	Check/reset all AC motor/VFD control shutdown parameters
	Motor is underpowered	Replace motor with a new motor with sufficient horsepower for application
	Excessive TDF or pressure in the pump	Check pipe for restrictions and check RPM settings
Pump Housing overheat (heats very fast)	Prolonged dry running	Check & maintain pump flow. If pump speed control is a function of flow, check control instruments and cable control settings. Adjust/lower pump speed.
	Higher than normal pumped fluid temperature	Check proper temperature application. If pump is temperature controlled, check temperature settings, cables, and instruments
	High than normal discharge pressure	Check if over pressure protection is defective Discharge piping partly blocked.
Pump is noisy	Excessive vibration	Lower the pump speed. Check if solids content moving through pump is higher than allowed. Tighten the pump mounting bolts, pump fittings, piping, and base supports. Check alignment of the pump and prime mover or drive. Check for ragging if used in waste water application. Check condition of grout pad/or anchor bolts.
	Cavitation	Adjust pump speed. Check for pump flow. Adjust vacuum pressure in the suction side of the pump. Control pump discharge flow. Check if correct piping size is used. Shutdown pump and perform a thorough inspection.
	Pump cover / wear plate assembly loose	Tighten the cover nuts to correct torque. Secure wear plate to end cover.
	Strain bolt failure	Stop the pump, tag & lock out control and remove pump cover for quick inspection. If bolt appears to have loosened, replace it and tighten the bolt to the specified torque for the pump model. See Table 15.9.1.
Gear housing oil contamination	Shaft oring seal leak	Consult LARS Mechanical Seal Troubleshooting Guide and order necessary replacement kit.
	Moisture ingress	Check tightness of plugs/sight glasses, drive shaft lip seal, and bolts. Change gearbox oil.
Losing oil in the gear housing	Cartridge seal fluid separating lip seals	Replace cartridge seal lip seals.
	Drain hose assembly defective	Check of replace drain hose. Tighten fittings and drain plugs
	Cartridge seal quench & gear housing partition oring leak	Shaft oring is defective or compromised. Remove cartridge seal and replace orings. Consult LARS Troubleshooting Guide
Gear housing oil foaming	Gear housing oil level too high	Drain extra oil until oil is at correct level.
	Gear oil used is incorrect	Use recommended oil.
	Possible contamination / dirty oil used	Drain/clean/flush oil and use LobeProp recommended oil. Contact LobePro for more information.

Gear housing temperature high	Gear housing oil too low	Fill oil to correct level at sight glass
	Pump is running dry for too long	Stop the pump. Check for flow problems and maintain pump flow.
	Gear housing oil is contaminated	Drain gearbox and quench oil. Flush, and replace seals.
Quench chamber oil low (losing oil in the chamber)	Insufficient oil in the chamber	Fill oil to correct level at sight glass
	Drain hose assembly defective	Check/replace drain hose. Tighten fittings and drain plugs.
	Cartridge seals defective	Replace cartridge seals/axial face seals.
	Pump discharge flow carry-over	Drain gearbox and quench oil. Flush, and replace seals.
	Pump periphery oil leak	Inspect loose bolts, plugs, drain assembly
Quench chamber oil foaming	Oil is contaminated / seals defective	Drain gearbox and quench oil. Flush, and replace seals. Consult LARS Troubleshooting Guide.
	Incorrect oil used	Drain and use LobePro recommended oil type.
	Dirty oil/chamber	Drain/flush/fill chamber and use recommended oil.
Quench chamber temperature high	Insufficient oil in chamber	Fill oil to correct level at sight glass
	Contamination in the oil	Drain gearbox and quench oil. Flush, and replace seals. Consult
	Pump running dry too long	Stop the pump. Check for flow problems and maintain pump flow.
	Incorrect oil used	Drain and use LobePro recommended oil type.
Quench chamber oil level overflow / excessive increase in level	Axial face seals defective	Consult LARS Troubleshooting Guide and order necessary replacement kit.
	Secondary seals defective	
	Cartridge seals separating lip seal leak	
	Filled gear oil too much	Drain excess gear oil. Maintain correct oil level.
	Entrapped air in the quench chamber	Remove top quench plug and vent/open side plugs.
Pressure in discharge too low (not getting correct pressure)	Pump is not running	Check and run the pump
	Pump speed too low	Check proper operating speed. Contact LobePro for assistance.
	Leak in the discharge piping	Inspect piping system for leaks.
	Pressure relief valve defective	Inspect the relief valve for clogs, defects. Replace if necessary.
	Pressure gauge/instrument defective	Replace the gauge
	Loss of vacuum pressure in suction	Check the piping system for leaks in suction side
	Pump running dry	Maintain pump flow. Stop the pump if necessary.
	Rotor to housing gap / excessive wear	Adjust the pump housings. Replace rotors. Replace housings.

# LARS\* Mechanical Seal Troubleshooting Guide

Section 45.5  
8 July 2016



See Parts List  
Section 45.10

\*LARS (LobePro Affordable Rebuildable Seal - Patent No. US 9,341,175 B2 May 17, 2016)

Problem	Mostly Likely Reason and Root Cause	Corrective Actions
<b>Gear Oil Contaminated</b>	<p><b>Shaft Oring Seal Failed (2 qty, item 2)</b></p> <ul style="list-style-type: none"> <li>Oring damaged by abrasive in process fluid</li> <li>Improperly installed/missing oring</li> <li>Materially incompatible with pumped product</li> <li>Pump excessive vibration</li> </ul> <p>Other Possible Reasons</p> <ul style="list-style-type: none"> <li>Seepage into gearbox and quench oring seal</li> <li>Gearbox fill port, sight glass/vent plug open to atmosphere</li> <li>Pump drive shaft seal defective/moisture seepage from atmosphere</li> <li>Strain Bolt failed causing excessive vibration</li> <li>Washer missing</li> </ul>	<p><b>Replace Pump Shaft Oring (order LARS.Kit1 for your frame size)</b></p> <p>Also check:</p> <ul style="list-style-type: none"> <li>Check strain bolt/gearbox mounting bolt tightness</li> <li>Check sight glass/drive shaft seal/fill port plug tightness</li> <li>Check recommended pump pipe sizes (located on pump specification sheet)</li> </ul>
<b>Quench Chamber Oil Contaminated</b>	<p><b>Mechanical Seal Failure</b></p> <ul style="list-style-type: none"> <li>Mechanical seal orings failed, damaged (items 4 and 4a)</li> <li>Secondary seal holder orings defective (item 6)</li> <li>Mechanical seal faces damaged (items 5 and 5a)</li> </ul> <p>Root Cause of Failure</p> <ul style="list-style-type: none"> <li>Mechanical seals/orings material incompatible with pumped process</li> <li>Pressure in the pump casing over the operating limit</li> <li>Excessive pump vibration</li> <li>Excessive vacuum pressure at intake</li> <li>Excessive heat (look for cracking orings)</li> </ul>	<p><b>Replace Seal Orings and Mechanical Seal Faces (order LARS.Kit2 for your frame size)</b></p> <p>Check:</p> <ul style="list-style-type: none"> <li>Remove Dynamic Seal Holder (item 3) to check seal orings and mechanical seal faces</li> <li>Check to see if mechanical seal faces are damaged</li> <li>Check orings and mechanical seal faces are chemically compatible with the pumped fluid</li> <li>After checking or replacing Inner Seal holder components, please reinstall and replace shaft orings.</li> </ul> <p>Other Possible Corrective Actions:</p> <ul style="list-style-type: none"> <li>Install pressure switch shutdown in the pump system</li> <li>Install temperature switch shutdown</li> </ul>
<b>Quench Chamber and Gear Oil Mixing. Oil Not Contaminated.</b>	<p><b>Double Lip Seal (item 8) Separating Gear and Seal Oil Defective/Failure</b></p> <p><b>Seal Holder Secondary Orings (item 6) failure</b></p> <p>Root Cause of Failure</p> <ul style="list-style-type: none"> <li>Chemical incompatibility or overheat</li> <li>Operating pressure over the limit</li> <li>Non-recommended gear/quench oil was used</li> <li>Quench chamber worn or recent install done improperly</li> </ul>	<p><b>Replace Seal Orings and Double Lip Seal (order LARS.Kit3 for your frame size)</b></p> <p>Check:</p> <ul style="list-style-type: none"> <li>Remove Seal Holders (item 3 &amp; 7) to check and/or replace double lip seal and seal holder secondary orings</li> <li>After checking or replacing lip seal components, please reinstall and replace shaft orings (item 2).</li> </ul> <p>Other Possible Corrective Actions:</p> <ul style="list-style-type: none"> <li>Install pressure switch shutdown in the pump system</li> <li>Check operating temperature of process product. Install temperature switch if necessary</li> </ul>
<b>General Maintenance: Oring Replacement Kit</b>	<b>Oring Replacement Kit</b>	<b>Replace all Seal Orings (order LARS.Kit4 for your frame size.)</b>
<b>General Maintenance: Complete Rebuild Kit</b>	<b>Mechanical Seal Rebuild</b> To complete rebuild the seal internal parts, orings, seal faces and lip seal.	<b>Replace Seal Orings, Mechanical Seal Faces and Double Lip Seal (order LARS.Kit5 for your frame size.)</b>



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