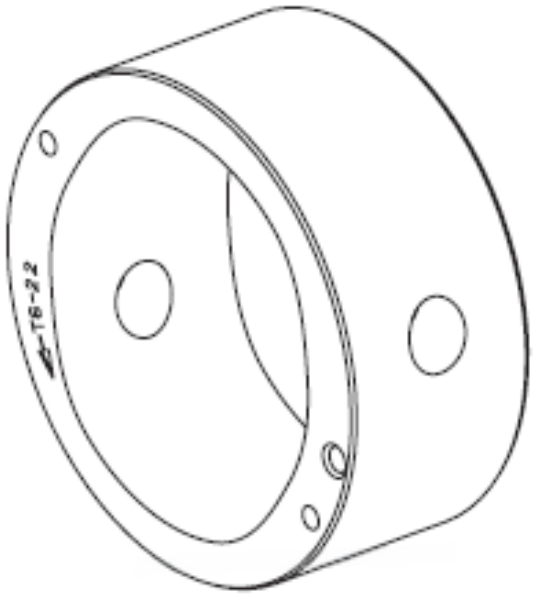
LIFCO HYDRAULICS INC

TECHNICAL ARTICLE
TA-LIF-009

CAM RING FAILURE ANALYSIS

PARKER DENISON VANE PUMP



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Product: Denison Vane Pump
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Department: Engineering

1) Pressure failures:

Instant Pressure Overshoots and Cycled Overpressurization are the 2 most common reasons for the Cam Ring and other internal parts to be damaged and eventually fail.



Instant Pressure Overshoots
High pressure peaks that can exceed the mechanical strength of the material.

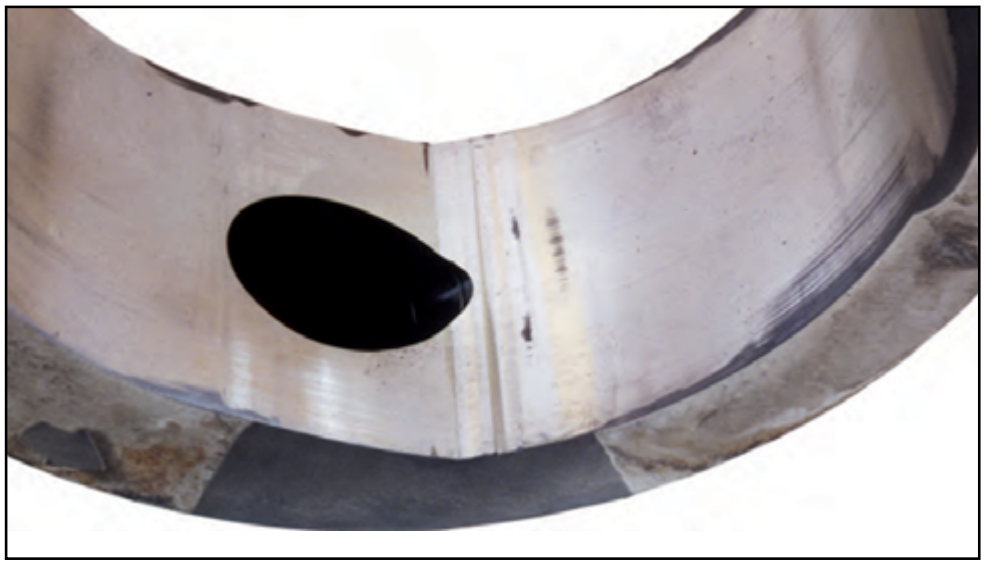
Cycled Overpressurization
System pressure is just over the allowed pressure, causing fatigue in the material for a long term failure.



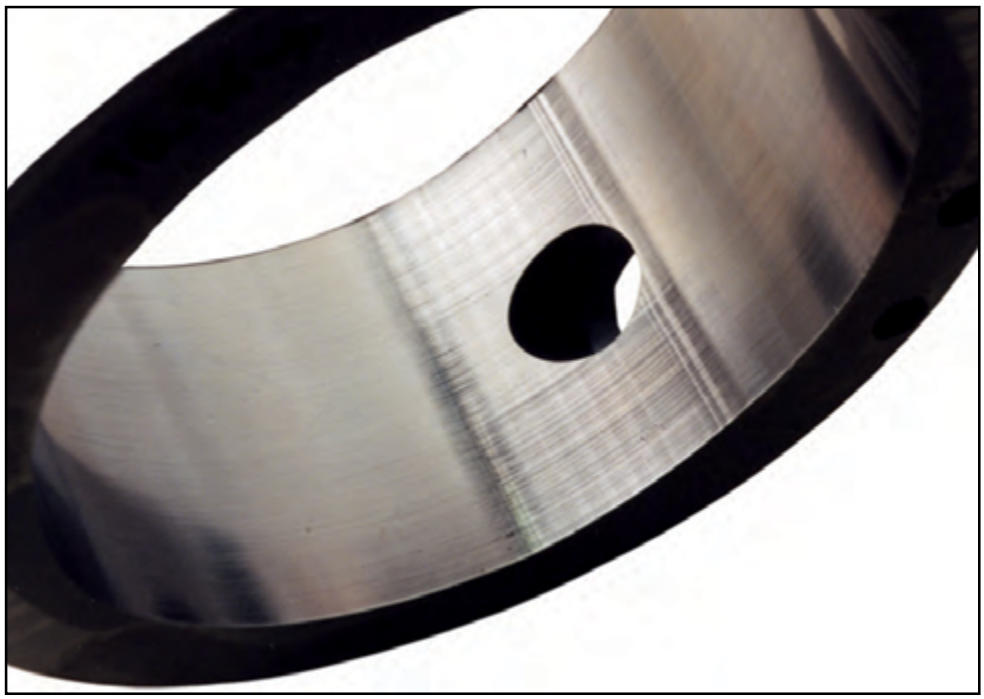
2) Physical, Chemical or Hydraulics failures:

Air contamination (Chemical): Air can implode due to the ignition created by the high pressure and the combustion of these gases can reach temperatures up to 1300C.

Aeration
Poor inlet conditions can cause air getting into the hydrualic system and deterioration of the shaft seal. This can happen when the lubricant oil link breaks causing the vanes hardened metal to wear the cam ring. Damage can vary based on the amount of air in the system.



Contamination
Particles in the system, with a diameter over 25µm, can cause a fine wear to a rapid wear or destruction of the pump.



Cavitation-Deaeration
These are small air bubbles in the oil that can implode at high pressure, creating erosion in the shape of craters. Contamination (solid particles) can be produced at a medium term and seizure between moving parts.



APPENDIX A
Related Resources



Spot a Worn-Out Pump: Cracks & Damage on Vane Pump