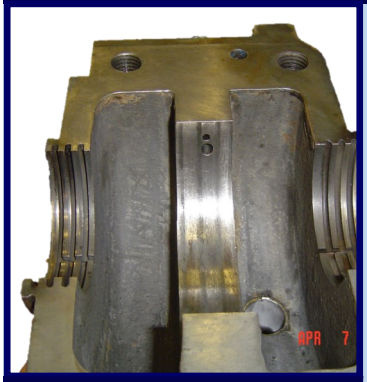
Kennedy INDUSTRIES
PUMPS | VALVES | REPAIRS | CONTROLS

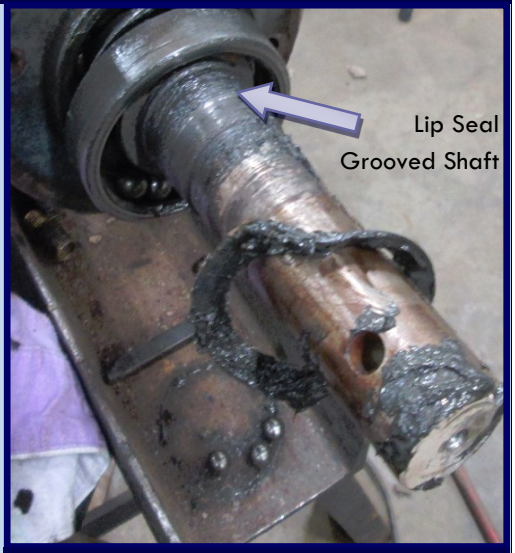
TECHNICAL PAPER
July 2017

Upgrades by Kennedy Industries: Bearing Isolators

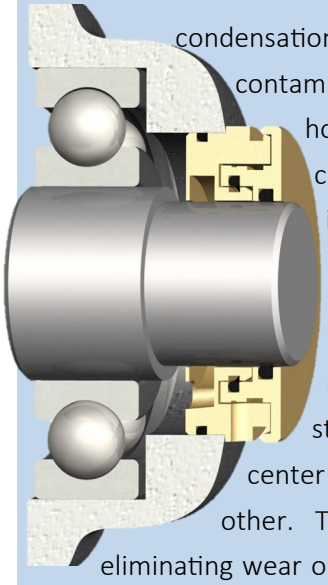


Old Labyrinth Seal Design

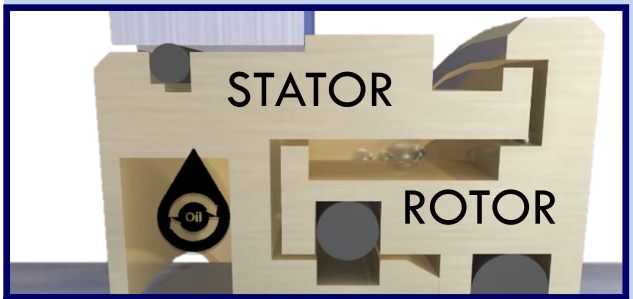
Problem: The original design of most Horizontal Multi-Stage pumps used what is know as a labyrinth seal. A labyrinth seal is a type of seal that provides a tortuous path to prevent leakage of the lubricating oil out of the bearing housing, and a deflector covering the opening to prevent direct path of water from the packing or mechanical seal. This design did slow the oil from leaking out but it lacked a seal to prevent contaminants and condensation from entering the bearing housing and contaminating the oil. Another inferior design in bearing housings is the use of lip or grease seals. Lip seals create direct contact with the shaft, contaminants in the oil will become embedded in the lip and groove the shaft, ultimately causing a leak.



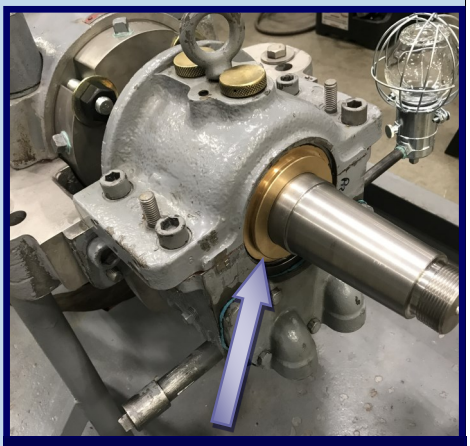
Contamination Failure



Solution: Kennedy Industries analyzed the problem and re-engineered the bearing housings to replace the labyrinth seals with the improved bearing isolators. Isolators have a two part dynamic seal consisting of a stator and a rotor. While at rest the center O-ring rests on the stator sealing contaminates out. When the pump rotates the centrifugal force pushes the center O-ring out so the stator and rotor don't wear on each other. The Rotor O-ring rotates with the shaft therefor eliminating wear on the shaft. Bearing Isolators have an engineered leak off system that allows the oil that is splashed onto the isolator to drain back into the bearing housing. The collected debris and condensation is trapped and drained on the outside through a weep hole. This provides a sealed chamber for the bearing housing oil.



New Isolator Design keeps oil in and contaminates out!



Isolator Installed in Split Bearing Housing

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