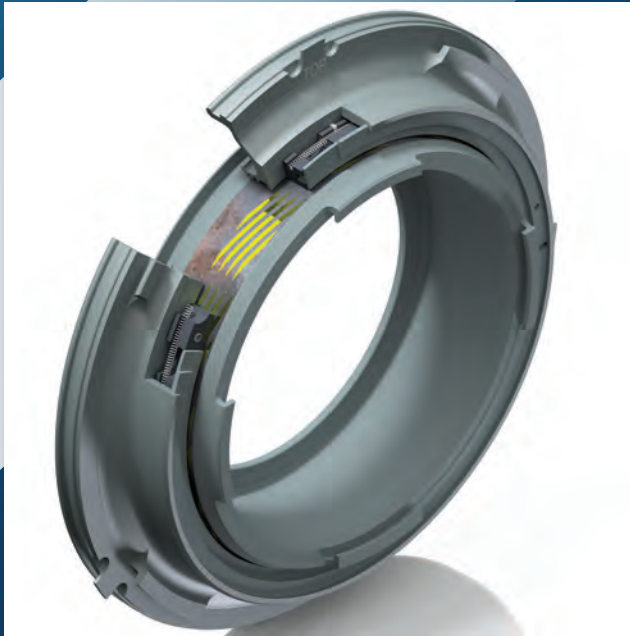




STEIN SEAL INDUSTRIAL

LIFT-OFF TECHNOLOGY



Circumferential Seal Lift-Off



Circumferential Seal Runner Lift-Off

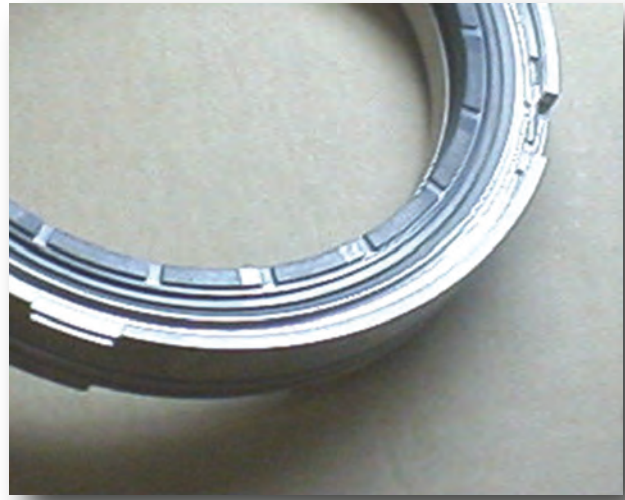
Stein Seal Hydrodynamic Lift-off Technology

Among the many innovations Stein Seal has introduced to the seal industry is our patented lift-off technology for mechanical face seals and dynamic circumferential seals. Face seals are often installed where a rotating shaft passes through a stationary housing. They are designed to inhibit the escape of process fluids and gases while preventing the intrusion of outside particles and contaminants during operation.

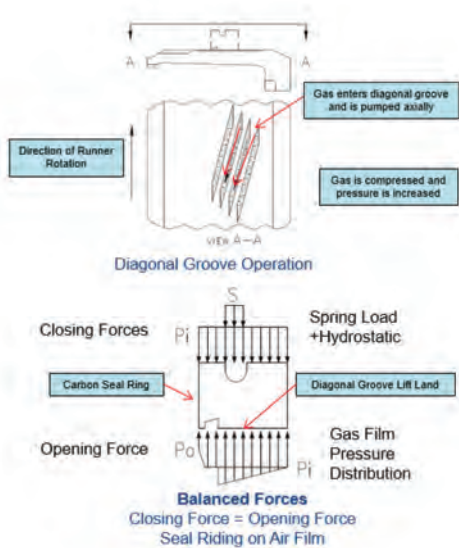
The main drawback of conventional face seals is that they are often required to operate without lubrication. This inevitably results in shortened life due to the wear caused by dry-running contact between the two sealing faces. Stein's patented seal ring eliminates this problem with proprietary geometry. Specially engineered spiral grooves are inscribed into the sealing face gap. As the seal ring rotates around the runner, a buffer fluid, or compressed gas, is forced into these grooves on the face of the runner, creating a film of gas underneath the rotating seal ring. This causes the primary sealing elements to separate or lift, preventing the sealing faces from making direct contact. The thin film of gas is held in place by the pressure differential, maintaining the integrity of the seal without generating friction along the shaft.

Stein Seal Industrial
375 East Church Road
Telford, PA 18969
U.S.A.





This patented Hydrodynamic technology is also harnessed in Stein's circumferential seals.



With Stein's carbon-based lift-off geometry, the carbon is more heavily loaded as pressure increases. The hydrodynamic film changes height as pressure and speed change. When the carbon-based geometry is coupled with diagonal groove hydrodynamic runner/sleeves, the force generated by the grooves changes as film thickness changes, and forces are always balanced.



The advantage of employing lift geometry to seals is lower heat generation, leading to lower sump temperatures. Hydrodynamic seals require less oil cooling, which leads to lower oil temperatures, a reduced carbon-wear rate, and longer seal life.

Hydrodynamic lift-off geometries and diagonal groove technologies have been employed in stationary and aerospace turbines, Industrial and heavy-industry equipment.



Stein Seal Industrial 375 East Church Road, Telford, PA 18969 U.S.A.