



## SLOTTED HEEL SNAP-IN WIPER RINGS

Recently, the new snap-in type of wiper ring has been introduced to the industry. This new design is generally called a "slotted" heel wiper. Features include several axial slots arranged around the circumference of the wiper at the ID of the heel and is now offered in some form by all seal manufactures.

These slots were designed into the snap in wipers to help avoid "wiper extrusion" caused by a build-up of an excess of hydraulic fluid between the rod seal and wiper ring. The fluid build-up is created due to the heel of the rod wiper fitting too closely to the rod, essentially creating a partial seal condition. When an excessive amount of fluid builds up in this "cavity" (between the rod seal and wiper), it creates pressure and eventually causes the wiper ring to extrude out of the wiper ring groove.

This is most likely to occur during "cold start up" conditions when the hydraulic fluid may be thicker, the rod seal material is less flexible / less responsive to pressure changes and allows relatively large amounts of fluid to "leak" past the rod seal. This fluid then becomes "trapped" in the cavity between the wiper and rod seal and causes the wiper to extrude.

As the hydraulic component is operated and heat is generated in the hydraulic system, the heat softens the rod seal material which becomes more reactive to pressure changes and no longer allows the fluid to by-pass in the larger amounts which caused the wiper to extrude.

However, by the time this occurs the wiper may have already extruded causing the cylinder to be removed from the equipment for repair causing down-time.

By designing the wiper ring with the slots, excess fluid which may by-pass the rod seal on initial start-up is allowed to leak past the wiper ring temporarily preventing a build-up of pressure which may cause the wiper ring to extrude.

Any amount of fluid leakage should be avoided if possible. But the amount of leakage allowed by the slotted heel wipers prior to the rod seal regaining effective sealing is very minimal and may be a preferred option to having to immediately shut down the machine to have the cylinder repaired and losing productive time.

When selecting snap in wiper rings, I would suggest always select the slotted heel type of wiper ring when it is available.

