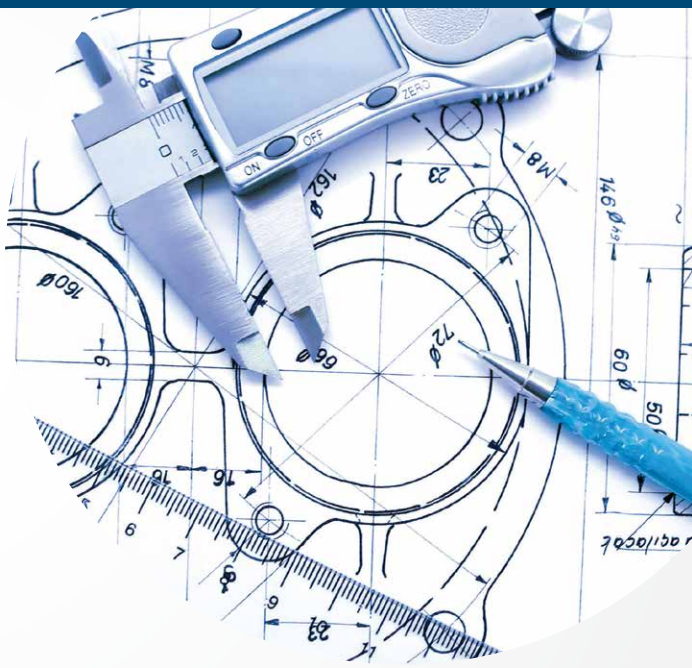
CPI® COMPRESSOR PRODUCTS INTL
an EnPro Industries company

Proven Solutions for the Global Compression Industry™



Oil Wiper Rings

To provide positive control of lubrication, oil wiper rings are essential in preventing oils from causing contamination of gases and leading to failure of other critical parts within a compressor.

CPI® oil wiper rings are designed to effectively provide positive containment of lubricants within the crankcase. CPI provides several designs including tangent cut unidirectional, tangent cut bi-directional and radial cut wiper rings.

Segmented wiper rings may have a radial or tangential cut. They are garter spring actuated. The scraper edges in contact with the piston rod are proportioned to give a bearing load sufficient to break the surface tensions of the oil film on the rod and wipe it away.

Normally two or three wipers are used in an oil seal and, as previously indicated, may be used as a part of or in conjunction with pressure packing.

CPI oil wiper rings are available in cast iron, bronze and selected CPI special polymer alloys. The unique design and operation of these rings provide extremely effective containment of lubricants in their intended area as well as long trouble free service.

CPI LIARD™ Scraper

The CPI LIARD™ scraper is designed specifically for those applications where total oil control is necessary. Most reciprocating compressors use oil control or wiper rings to prevent crankcase oil from passing into the cylinder and in some instances to prevent condensate and cylinder and packing lubrication from entering the case.

Tangent – Bidirectional Design

For many applications, this oil wiper ring design provides effective oil control. The ring is tangentially cut, allowing no direct path of leakage along the rod. Its dual scraping edges are separated for maximum stability on the rod and the annular area between the edges is vented for drainage and to prevent a build up of lubricant.

Drainage slots on both faces allow for lubricant to be removed in either direction. This ring is also particularly effective on vertical piston rods.

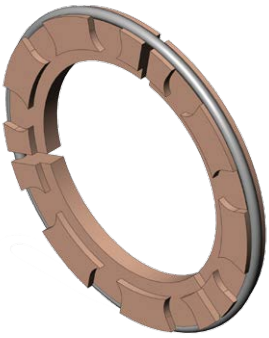
The garter ring on the OD of the ring is designed to give proper loading on the dual wiping edges and to prevent the ring from rocking the rod. The wiper ring can be used by itself or in multiple ring assemblies.

Tangent – Unidirectional Design

This unidirectional wiper ring provides all the same features as the bidirectional design except for the drainage slots, which are only on one face of the ring.

Radial Cut Design

The radial cut wiper is similar to the tangent unidirectional design in that it has double wiping edges and drainage slots on one face. The wiper rings are normally used in multiple ring assemblies with adjacent rings doweled together to prevent a direct leakage path along the rod through the radial gaps. Radially cut rings are particularly effective on small diameter piston rods due to the total lack of joint friction.



How to Install CPI Oil Wiper Rings

Oil wiper rings are most frequently installed in a case mounted on the crankcase bulkhead wall of a reciprocating compressor to minimize the migration of oil on the piston rod as it moves in and out of the crankcase.

There are a number of basic conditions that must be met to assure effective oil control:

1. The rings should fit the rod within 0.002 in (.05 mm).

2. The usual side clearance between the rings and groove walls is 0.0005 in - .001 in (.013 mm - .025 mm)per ring at operating temperature*. If there is too much clearance, the rings may cock and damage the rod. With insufficient side clearance, rings may bind in the grooves. In either case, oil may bypass rings.

3. Adequate drainage of the ring groove is essential.

4. Suitable venting must be provided to permit entry of air to displace the draining oil.

**Side clearance for wiper rings must allow for thermal expansion, i.e., 0.006 in (.15 mm) per inch of groove width per 100 degrees F (37.78 degrees C) temperature rise above ambient.*

Typical Combination Oil Wiper and Packing Ring Assemblies

Oil wipers can be used in combination with packing rings. In cases where a bulkhead packing assembly is intended to prevent gas or air from entering the crankcase, there may not be sufficient pressure to actuate the packing rings. Under such conditions, consideration must be given to side loading the packing rings.

CPI® COMPRESSOR PRODUCTS INTL
an EnPro Industries company

Proven Solutions for the Global Compression Industry™

CPI's prides itself on a unique approach to developing new compressor valve concepts and non-metallic materials used in the production of valves, piston rings, rider rings, packing and oil wipers. Our application expertise has transformed the performance and reliability of reciprocating compressors in a wide range of applications around the world.

Further information about our products and services available from CPI can be found online at **www.CPIcompression.com.**