UK Marine Parts Ltd

Manufacturing and supplying marine parts worldwide

www.ukmarineparts.co.uk

Tel: +44 (0)20 8440 6514 Fax: +44 (0)20 8440 7760
Email: info@ukmarineparts.co.uk

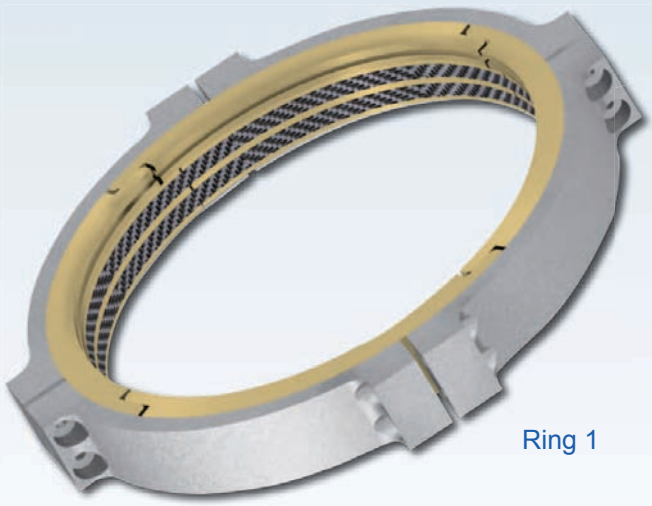
2-Stroke Crosshead Diesel Engines

Save up to 70% of system oil

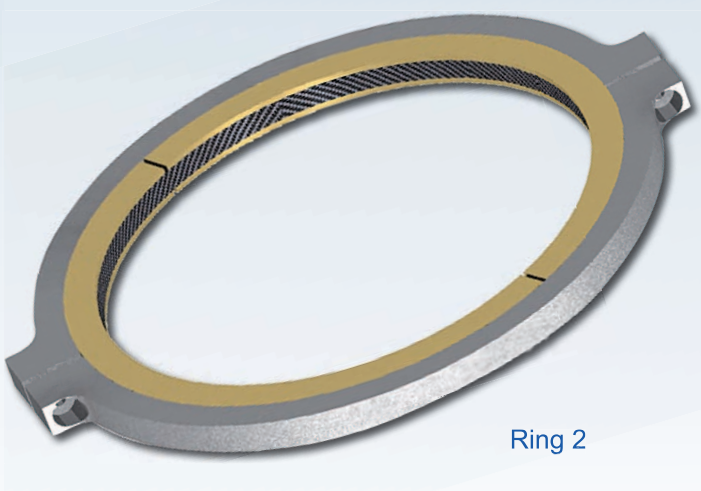
Retro-Fit Piston Rod Seal System RPDS αlpha

PATENTS GRANTED

2-stroke piston rod seal technology



Ring 1

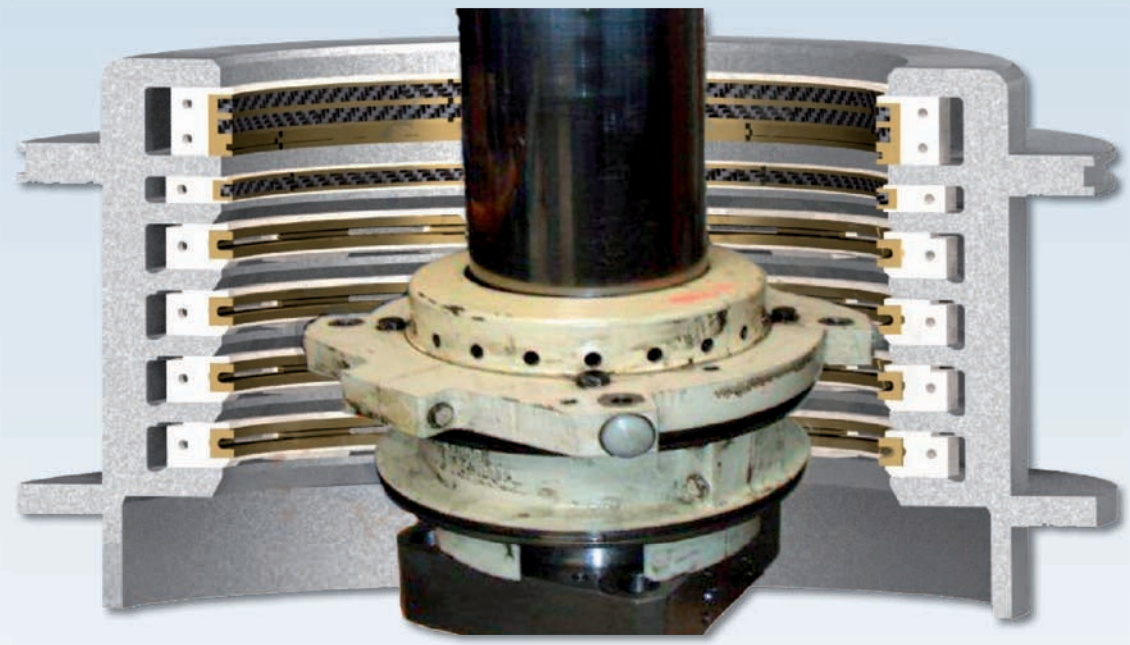


Ring 2

With RPDS αlpha, the use of standard OEM materials such as Phosphor Bronze and Cast Steel, carrier rings ensure that any scavenge flashover or overheating during operation will not cause material damage. The exfoliated graphite, which is used in the bronze holders, creates a complete seal and also acts as a thermal barrier. Its temperature limit is in excess of 600°C with a pH level of 0 to 14 which prevents degradation when acids are present in the 'well area' caused by low temperatures and the presence of sulphur in fuel oil.

The segments of the reusable carrier rings are held using a Belleville CAP, part of the RPDS αlpha patent to allow take-up during operational wear. Unlike periphery tension springs, these units are preset and can't be overloaded as with conventional springs which, at times, can be overloaded causing wear to the piston rods.

System oil loss increases operating costs



- Conventional materials with known parameters
- No springs blocking drain slots or holes in design
- Designed compression system for carrier ring segments
- Maintain positive barrier between the engine sump and scavenge space
- Prevents cross contamination with under piston detritus
- Prevents system oil entering the under piston area
- Maintain design emissions to atmosphere
- Extend engine component's life by maintaining clean system oil
- Designed for purpose-sealing system
- Manufactured to ship's supplied technical information
- Overhaul unit replaces only worn components
- Made to Retro-Fit any 2-stroke, crosshead, diesel engine

Loss/cyl 24hr litres	7 cylinder engine	Cost per day @ US$1.65/ltr	290 days operation US$	Current cost/ltr for SAE30 type oil on contract is US$1.92/ltr (Dec 2011)	
3	21	34.65	10,048.50	US$40.32/day	US$11,692.80/year
5	35	57.75	16,747.50	US$67.20/day	US$19,488/year
7	49	80.85	23,446.50	US$94.08/day	US$27,283/year
10 Average loss	70	115.50	33,495	US$134.40/day	US$38,796/year
12	84	138.60	40,195	US$161.28/day	US$146,771/year
15	105	173.25	50,242.50	US$201.60/day	US$58,464/year
20	140	231	66,990	New fig: US$77,952/year	
25	175	288.75	83,737.50	US$336/day	US$97,440/year
30	210	346.50	100,485	US$403.20/day	US$116,298/year

The table above shows the difference in cost of lost oil from engine information received from vessels using two stroke, crosshead, diesel engines. In less than three years, costs have risen to a point where remedial action is required. Engineers state that not all losses are down to piston rod stuffing box, however that is believed to be the main area of greatest loss on voyage.

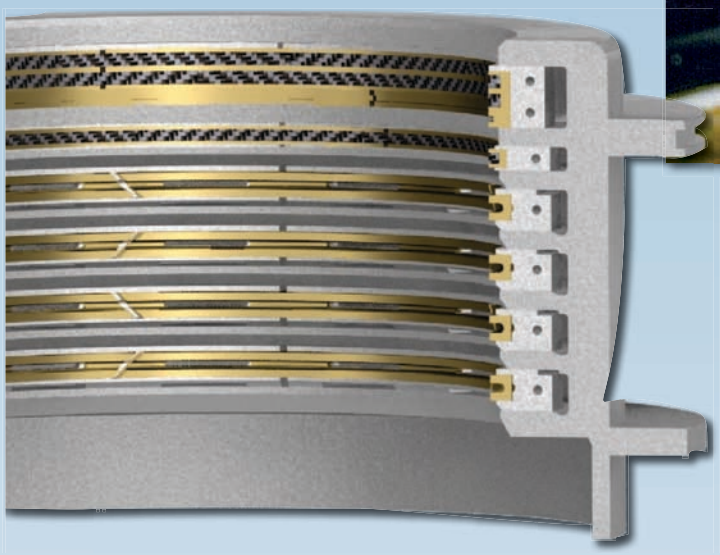
RPDS αlpha uses a designed-for-purpose compression system that does away with periphery springs, currently used by all OEM builder for sealing piston rods on 2-stroke crosshead diesel engines.

"Modern 2-stroke engines use less make-up oil in the system now, however, there appears to be more contamination of the system oil."

Recent comment from a fleet superintendent

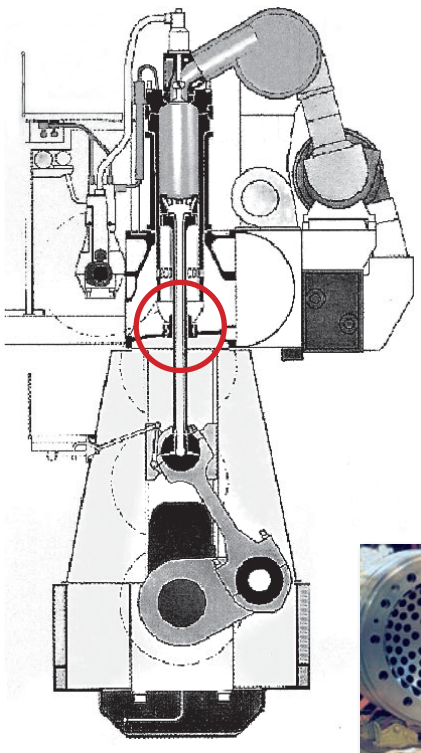
Conventional system

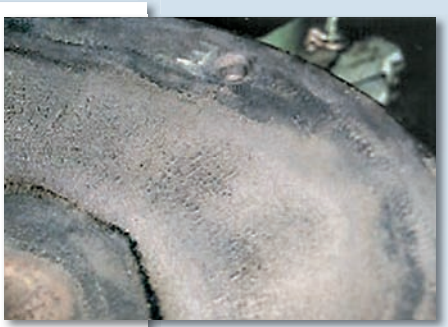
RPDS αlpha

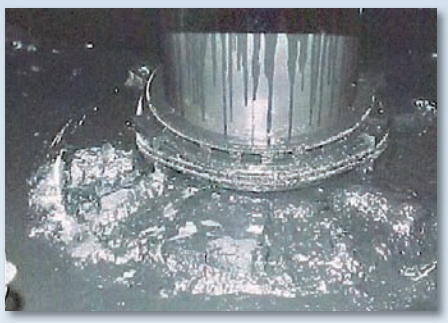


The CAP system is a component part of the RPDS αlpha patent

System oil loss increases operating costs







The *stuffing box* is the main suspect area of oil loss and system oil contamination.