

The CASCO™ cassette seal

Diesel engine crankshaft unitized seal

CASCO™ cassette seals demonstrate a distinct advantage over conventional diesel crankshaft seals

■ **CASCO provides up to 70% greater energy savings**

Compared to lip designs used in other engine seals, the CASCO cassette type seal generates a much lower friction due to the advanced design of its “axial” sealing lip.

■ **CASCO exhibits enhanced longevity with seal endurance in excess of one million miles**

CASCO seals performed and successfully passed several bench tests, reaching over 1,000,000 miles. Field tests performed directly on partner customers’ vehicles around the world confirm these excellent results.

■ **CASCO ensures reliability in the most extreme working conditions**

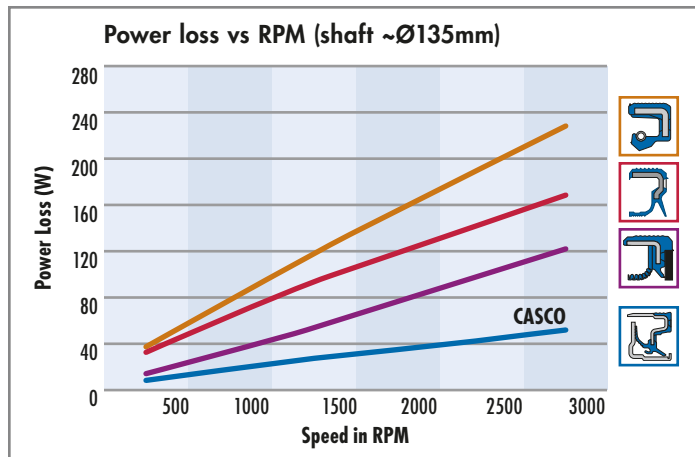
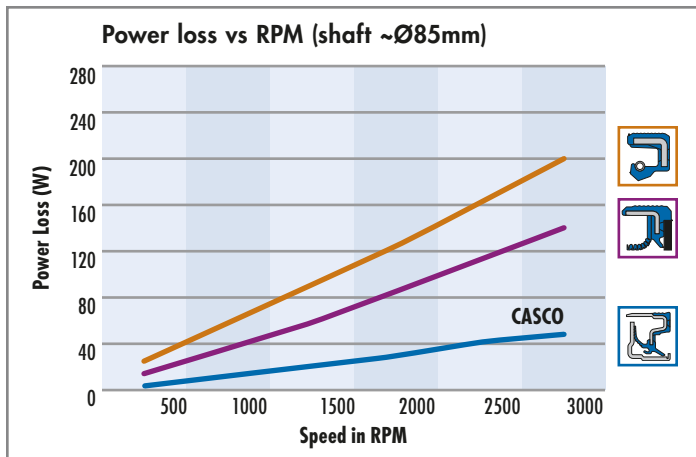
CASCO seals have successfully passed several tests with out-of-standard conditions, demonstrating great performance in even the most demanding conditions.

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Energy savings—up to 70%

The CASCO cassette seal is based on a new sealing approach: the main lip works on a surface which is perpendicular to the shaft, and, because of this specific design, friction torque is very low compared to other solutions. This results in almost no wear of

the sealing lip and working surface, a decrease in power loss, and a longer seal life. Power loss level is independent from shaft size (see charts below).



1,000,000-mile endurance

The CASCO seal was continuously bench tested for more than 25,000 hours, equal to one million miles. Considering all bench tests performed, CASCO seals reached more than 125,000 hours, enduring several cycles and conditions with no failures.

The performance is confirmed by over 30,000 hours of field tests performed by our partner customers, wherein CASCO seals reached more than 1.5 million miles without failure.

Reliability in the most extreme working conditions

CASCO was also bench tested beyond standard working conditions for engines, including extreme levels of static and dynamic run-out, shaft axial play, percentage of soot in the oil, low temperature, and cocking.

The benefits of CASCO cassette seals to our customers

- Low friction torque means high lip wear resistance, lower power loss (fuel consumption and CO₂ emission reduction), and a longer engine seal lifetime.
- CASCO seals provide for safe and easy assembly
- No need for special machining or heat treatments during the shaft preparation phase saves time and money in the cycle time operation.
- Responsibility for the sealing system rests solely on the seal manufacturer
- The CASCO seal's elements are protected during stocking/handling/assembly
- Using the CASCO cassette seal reduces service costs