

Oil control ring, different designs

The Oil Ring's main function

The main function of an engine oil ring is to:

- remove most of the excess oil from the cylinder wall
- distribute the oil uniformly onto the cylinder wall
- Control the oil film thickness



How does it work

- The ring body has two scraping lands.
- Each land removes the excess oil from the cylinder wall
- That oil accumulates on the lower edge of the lands.
- It's very important that the oil scraped by the top land that accumulates between the two lands is removed from this area. Which is why the ring has longitudinal slots to direct the oil to the rear of the ring and drain the scraped oil, through the holes in the piston ring groove.
- The edges of both lands are chamfered for optimal contact pressure, and also chromium plated for better wear resistance and longer service life.
- The ring body applies radial contact pressure against the cylinder wall.
- However, by design the amount of contact pressure provided by the ring body (only) is low, because the ring body is flexible and designed to conform to the cylinder bore.
- The radial contact pressure of the ring body (only) is determined by the free gap, modulus of elasticity of the material, and the cross section of the ring.



- Therefore, the difference in ring body cross sectional width (3.3 mm vs 4.0 mm), will not result in a significant difference in the operational radial contact pressure, during engine operation.



- **That's because the operational radial contact pressure is actually provided by the coil spring that sits behind the ring body and presses it against the cylinder wall. The coil springs used in both ring bodies meet the same tension specifications, so independently whether a 3.3 and 4mm oil control ring is used the operational radial contact pressure will not be affected.**

Important note

- Oil consumption will be higher immediately after an engine is rebuilt. That's why we typically recommend: **DO NOT** measure oil consumption until an engine has accumulated 100 working hours, following a rebuild.
- We often see high oil consumption at the ring/liner interface, but the rings and liner are NOT the root cause.
- For example, **fuel flooding due to a leaking injector, incomplete combustion, extended idling, etc.** compromises the oil film and rapidly accelerates ring/liner wear, resulting in high oil consumption.
- Of course, any discussion on high oil consumption needs to cover to valve stem seals, valve guides, turbos, etc. ...
- In order, for the FP Diesel team, to help you track down the root cause of high oil consumption the individual ring set and liner will need to be returned each marked with their location in the concerned engine.
- A variation in size of the oil control ring will not result in a noticeable increase or decrease of the fuel consumption.

For step by step instructions on how to best leverage the new FP Diesel security enhancements, visit <https://www.drivheavydutyparts.com/technical/fp-diesel.html>

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