CM 10-1000

Technical Bulletin

OPEN COOLING DESIGN OUTPERFORMS CLOSED GALLERY

Today's diesel engines burn fuel more completely and efficiently. That means they're running hotter. And that requires an advanced design to keep pistons cool.

The new FP Diesel® replacement piston for the Cummins® M11 engine features a breakthrough "open gallery" design that circulates fresh oil, nonstop, to the piston crown.

The FP Diesel open cooling gallery replacement solution gives you several advantages over the "closed gallery" design:

THE NEW "OPEN GALLERY" DESIGN – ONLY FROM FP DIESEL.

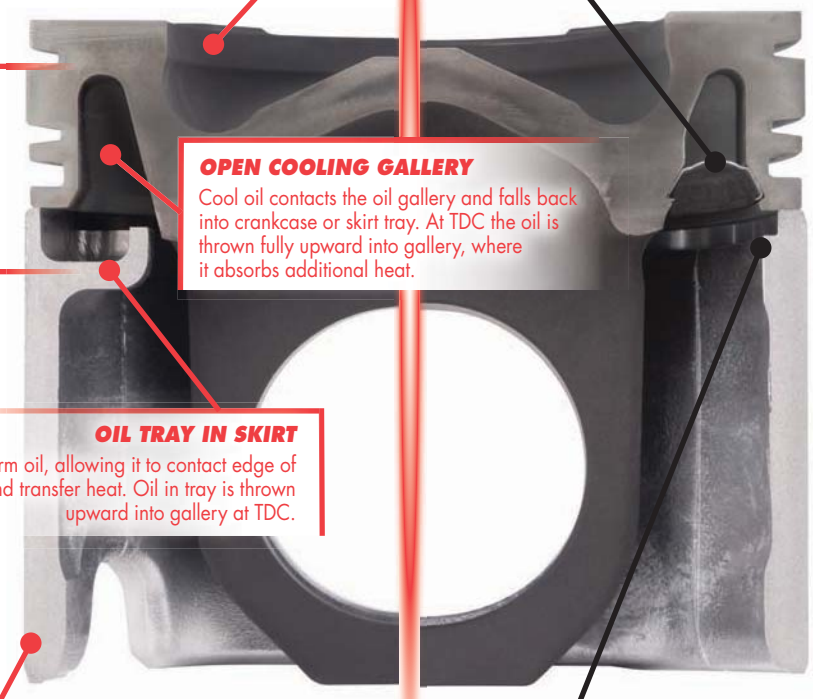
FP DIESEL® DESIGN | **CLOSED GALLERY DESIGN**

PROPRIETARY CROWN MATERIAL & MANGANESE PHOSPHATE COATING

High-strength forging combined with an exclusive coating improves break-in performance, reduces pin bore scuffing and enhances service life.

COVER PLATE

Keeps oil inside gallery until it drains out through metered holes. Oil stays in gallery longer and becomes hotter in a "closed gallery" design. Cover plate can also dislodge over time.



OPEN COOLING GALLERY

Cool oil contacts the oil gallery and falls back into crankcase or skirt tray. At TDC the oil is thrown fully upward into gallery, where it absorbs additional heat.

OIL TRAY IN SKIRT

Holds warm oil, allowing it to contact edge of gallery and transfer heat. Oil in tray is thrown upward into gallery at TDC.

PROPRIETARY SKIRT MATERIAL

Stronger than the industry standard.

NO OIL TRAY IN SKIRT

Oil is lifted into the gallery via pressure. This is less efficient than the oil tray design.

EXCLUSIVE DESIGN OFFERS:

No cover plate to fall off and cause engine failure | Smooth surfaces resulting in better stress distribution | More robust to oil cooling jet alignment/wear

This innovative FP Diesel design is proven to be a better and more efficient replacement piston in today's hardest working engines.

FP DIESEL®

FLEETS RETHINK REPLACEMENT

More and more fleets are rethinking their engine and equipment replacement cycles as new engines become increasingly expensive. In a challenging business environment, rebuilding a commercial engine is a smart choice – if you have the right replacement technologies.

The FP Diesel approach isn't just to return the engine to service, but to increase power and performance.

To that end, our dedicated FP Diesel engineers reviewed the closed gallery articulated piston design and developed a better, more efficient solution.

FP Diesel eliminates the oil gallery cover plates and adds an oil tray to the skirt. This design creates an open cooling gallery on the underside of the piston crown – providing cooling of the piston crown and heat transfer capabilities.

In addition, fleet operators tell us the cover plates may fall out during operation. This can lead to failure of internal engine components and, ultimately, engine failure. This problem is eliminated with the FP Diesel M11 replacement piston, since it has no cover plate.

Dynamometer test results prove the FP Diesel replacement piston design removes significant amounts of heat from the piston crown, providing improved durability without sacrificing engine performance.

All FP Diesel pistons are designed using the latest in computer-aided design (CAD) and computer-aided engineering (CAE) technology, and are thoroughly researched to ensure the proper dimensional and metallurgical requirements. When installed with FP Diesel cylinder liners and piston rings, these components develop optimum performance as part of the "power-cylinder" system.

FEDERAL MOGUL