

Understanding Multi-Layer Steel (MLS) Gaskets



Multi-Layer Steel
(MLS) Design

What are Multi-Layer Steel (MLS) Head Gaskets?

The latest development in head gasket technology is the multi-layer steel (MLS) design. At first glance, these gaskets look like the old-style embossed steel shim gaskets, but they are radically different. A thin rubber coating is bonded to the stainless steel shim and, as required, multiple layers (up to five) of this rubber-coated steel shim are assembled into a single gasket. The high-temperature rubber coating provides excellent fluid sealability across the outer faces and in between the individual layers, while also sealing minor head and block surface imperfections. MLS head gaskets provide the ultimate in torque retention and supply extra strength to support current lightweight aluminum casting designs. They are specified on most current domestic and imported engines in production.

Why is the Fel-Pro® PermaTorqueMLS® Design Better than the OEM Gaskets?

Traditional original equipment manufacturer (OEM) type MLS head gaskets don't easily conform to surface irregularities, and require an incredibly smooth surface finish to provide a satisfactory seal. When the castings are new and the finish is fresh, OEM-style MLS gaskets work quite well. But when the castings are old or resurfaced with a less than perfect finish, leaks result. To seal under these adverse conditions, Fel-Pro engineers have developed the exclusive PermaTorqueMLS® design, engineered for the aftermarket repair environment. These newly redesigned MLS gaskets have many unique features that allow them to seal better than other MLS gaskets on the market today.

Exclusively Designed for the Aftermarket

PermaTorqueMLS head gaskets utilize another feature that cannot be found in an OE-dealer-supplied MLS gasket: a proprietary coating that allows engine builders to install PermaTorqueMLS gaskets in the not-so-perfect aftermarket repair environment. This coating fills in minor surface imperfections in the block and head for enhanced sealability. Most MLS gaskets require a surface smoother than 40 Ra (240 Rz), but Fel-Pro PermaTorqueMLS head gaskets will seal a surface finish as rough as 60 Ra (360 Rz). Regardless of the brand of MLS gasket chosen, for the gasket to seal properly, the finish on the head and block must be flatter and smoother than what has traditionally been required for composite gaskets.

The Correct Coverage for MLS-Equipped Vehicles

Unlike some competitors, Fel-Pro offers the correct coverage for all MLS applications. That means if the vehicle engine was equipped with an MLS gasket from the factory, the Fel-Pro replacement will be a PermaTorqueMLS gasket. Some competitors try to substitute a composite or graphite gasket, but this type of gasket design may not hold up over time in an engine that was designed to use an MLS gasket. The shearing action created by the lateral head motion in many smaller, more powerful late-model engines can destroy the core and facing of a non-MLS gasket. In addition, the head's vertical motion, which occurs every time the cylinder fires, pounds the surface of a conventional gasket, creating localized escape paths for oil, water or combustion gases.

The Three Rules of MLS:

1. If the OE gasket featured MLS technology, the replacement gasket **MUST** be MLS.
2. If Fel-Pro offers a PermaTorqueMLS head gasket for an application – always use Fel-Pro's recommended design.
3. Not all aftermarket MLS gaskets are created equal. There are huge material and design differences that make Fel-Pro PermaTorqueMLS gaskets the right choice.

PermaTorqueMLS Gasket

