

Repairs: Installing a multi-layer metal cylinder-head gasket

For decades, cylinder-head gaskets and gasket sets from Elring have been recognized as high-quality replacement parts for engines in the workshop. They have proven their excellent quality for the repairing of engines and transmissions as well as other assemblies.

The cylinder-head gasket is among the components in the engine that are subjected to the greatest stress. Its task is to ensure a reliable seal between the cylinder head and the engine block for combustion gases, engine oils and coolant, both from the atmosphere and from within the engine. It also acts as a power distributing element between the cylinder head and the crankcase, and as such has a considerable influence on the distribution of forces and cylinder distortions within the engine.



In recent years engines have been appearing on the market with new characteristics such as high performance (direct-injection automotive diesel engines), optimized combustion processes, weight reduction as a result of lightweight design (aluminum), while at the same time reduced fuel consumption, minimized pollution emissions and recyclable products, ensuring that the engines are as eco-friendly as possible. Instead of the existing soft material/metal cylinder-head gaskets, multi-layer metal sealing systems made of beaded, elastomer-coated spring-steel layers are now being put to use. With Metaloflex®, ElringKlinger is the world's largest manufacturer of multi-layer metal cylinder-head gaskets.

When repairing these engines, mechanics are faced ever more often with such technology.

Tips from the
**Sealing
Professionals**



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The workshop mechanic must know how to handle the multi-layer metal cylinder-head gasket properly during installation, being certain to follow the specified installation guidelines. For example:

- Clean cylinder block and cylinder head thoroughly.
- Check part surfaces for flatness (longitudinally and laterally) using a straight-edge.
- Remove any depressions (surface grinder in specialist workshop).
- Center cylinder-head gasket on the engine block (without any additional sealant, oil or grease). Ensure that the coated sealing surfaces of the gasket are not scratched or damaged through contact with any objects.
- Ensure that no residue materials (e.g. metal shavings) get onto the gasket from the cylinder head.
- Replace the cylinder-head bolts and washers with new ones. Clean threaded holes of dirt and oil. Tighten bolts as specified by the manufacturer.

The following pictures show a cylinder-head gasket that was not properly installed. The sealing surface of the cylinder head was not treated and machined as required, with the result that gas escaped and the engine failed.



The engine function and a reliable and durable seal can be ensured only if the guidelines specified above are observed. Since engines differ, the installation instructions of the engine manufacturer must of course be observed.



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