FED.DIYGASK

Hints & Tips

REPLACING THE GASKETS

What will I need to... Replace a Gasket

- A quality gasket set and/or loose gaskets
- Suitable spanners, sockets and allen keys
- Screwdrivers
- A torque wrench
- Cleaning solvent
- Hand cleaner
- Mutton cloth

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Replacing the Gaskets

Gaskets are designed to seal any two surfaces from liquids and gasses in the engine. Gaskets can be used to seal cast iron to cast iron or aluminium to cast iron. Gasket composition is directly related to the required design and characteristics of the joint faces to be sealed. Gaskets can be composed of paper, rubber, cork, steel and graphite. Gaskets should be resistant to deterioration caused by liquids and elevated temperatures during normal engine operation. The most popular gaskets these days are steel laminated gaskets.

STEEL LAMINATED GASKETS

Steel laminated gaskets are becoming a more prominent method of sealing cylinder heads and blocks. A steel laminated gasket gives better control of combustion, and once compressed the thickness remains constant. Due to the superior sealing, the combustion space and piston position will ensure better control over combustion and engine emission. The cylinder head gasket also provides additional stress support during normal engine operation and fluctuating thermal operating conditions. The stretch bolts assist in sealing the cylinder head and block effectively and making them as one piece. This prevents flexing and possible cracking of the relevant components, which will be subjected to the internal stresses of the engine.

When fitting gaskets to the cylinder heads and blocks, always ensure that the surface finishes conform to the required surface finishes stipulated by the original manufacturers. Never apply any form of sealant or silicone to the cylinder head gasket faces, as they are normally coated with a silicone / Teflon type lacquer. This lacquer assists with sealing the cylinder head and block. Torque and re-torque the cylinder head bolts as required according to the correct sequence and specifications as stipulated by the original manufacturers.

The cylinder head bolts should always be replaced when an engine or cylinder head has been reworked in a bi-metal engine (cast iron block and aluminium cylinder head). Since the thermal expansion rate of aluminium is far greater than cast iron, it makes the cylinder head bolts critical in maintaining correct clamping pressures on the cylinder head gasket.

Guidelines to cylinder head gasket installation:

- Always ensure that both the cylinder head and block faces are thoroughly cleaned and degreased
- Cylinder head and block faces should be checked for straightness using a straight edge. The longitudinal and transverse directions should not have more than 0.051mm clearance between the straight edge and the surface
- Ensure that bolts, threads, washers and nuts are cleaned and undamaged.
- Torque the cylinder head according to the correct sequence and specification as stipulated by the original manufacturer.

OIL SEALS

The oil seals prevent external oil leaks while still maintaining sufficient lubrication of the bearing or bush assembly. The modern oil seals consist of moulded synthetic rubber. This allows the seals to operate at high temperatures and increased shaft speeds. Before installing the oil seals, check that the shaft and housing are thoroughly cleaned and free of debris. Check that the sealing lip is not damaged, and that the garter spring is in place. The oil seal should be installed by using an appropriate tool which will install the oil seal concentric into the housing. When possible, a slow rotary pressure movement will also assist with the installation of the oil seal. The garter spring inside the oil seal creates a higher sealing load on the shaft, which enables increased shaft speeds and the sealing of low viscosity lubricants.

Always take the following into consideration when selecting a suitable oil seal:

- The diameter of the housing bore
- The housing bore depth
- The shaft diameter
- The maximum shaft speed
- Whether the application is uni-directional or bi-directional
- The maximum temperature at the point of sealing
- The fluid that is to be sealed
- Any special conditions of operation

USEFUL TIP: The cylinder head bolt holes should be cleaned with a suitable thread tap to ensure that the bolt holes are clean and free of any debris. The cylinder head bolt threads should be free of any oil unless the original manufacturer's manual specifies that oil be applied. Always apply a small amount of oil to the bolt head, under the radius.