

GASKET TECHNOLOGY DEMANDS ATTENTION TO DETAIL

Most countries have banned asbestos from gaskets, so the automotive industry is now using a number of substitutes. Some gaskets are now made from layers of expanded graphite bonded to a perforated steel core. Others are made of composite materials clinched to a perforated steel core and coated with an anti-stick material such as Teflon®. The Victor 2000 gasket, for example, has a perforated core with a Teflon coating. (Figure 1) Other applications require the addition of elastomeric beads to form a seal.

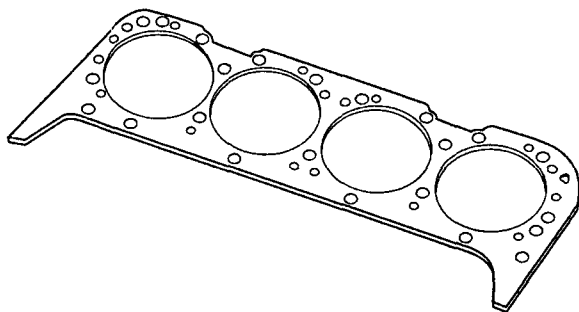


Figure 1 Victor 2000 Head Gasket

Laminated steel gaskets are becoming common on Japanese imports, and they are also under consideration for some new domestic engines like the Ford 4.6L V8. When working with steel gaskets, remember that these gaskets require a near-perfect surface finish—approximately 27 Ra—or the gasket won't seal.

Many bimetal engines are using graphite or Teflon to hold a seal as the aluminum head heats up and cools at a different rate than the cast iron block. Typically, these gaskets are designed to be installed dry, without gasket dressing.

Service Tip:

- Both the head and the block expand and contract at different rates if they are different metals. Putting a gasket dressing on this type of head gasket can cause sealing problems.

- The gasket needs to move a little, as the head expands and contracts, to provide a good seal. A Teflon coating allows for this movement. Sealant will only prevent this necessary movement.

Surface finish is also important. If the surface is too rough, the expansion and contraction of the head will rip up the gasket; a surface that's too smooth may allow too much gasket motion and actually push the gasket out the side. A 54 Ra finish is normally recommended for aluminum heads.

Some hard and soft gasket designs also have elastomeric beads printed onto key parts of the gasket. The raised area creates additional load in critical areas and helps seal problem areas.

Cost of Change

Changes in gasket materials mean improved sealing capabilities, but it also means higher costs. Many pan gaskets, valve cover gaskets, and others now use heat-resistant synthetic rubber instead of cork. Rear main seals and valve stem seals are often made of expensive materials such as Viton.

Other gaskets use a metal or composite carrier with molded rubber. The hard carrier provides a load stop, while the rubber does the actual sealing.

Service Tip:

- On engines with low-mileage, the sealing surfaces and rubber beads may appear to be in good condition. However, the rubber often absorbs the fluids and cannot be reused regardless of the gasket appearance.

Application Ideas

In addition to graphite and Teflon® coated gaskets, NAPA Gaskets also offers a multipiece cork-rubber gasket for 4.3, 5.0, and 5.7 liter Chevys. It consists of Tuff-Cork side rails and silicone rubber end seals to replace the OE one-piece molded rubber gasket. (Figure 2)