

■ HOW AN OIL SEAL FUNCTIONS

When developing a new design or troubleshooting an existing assembly, it is essential to consider how the three parts of an assembly—the housing, the shaft, and the seal itself—interact with one another.

In a working assembly, the shaft either rotates or oscillates inside its housing. To allow for this motion, a certain amount of space or clearance must exist between the two. The seal's function is to prevent fluid inside the assembly from exiting through the clearance gap, and to prevent contaminants outside the assembly from entering. To do so without hindering the relative motion between shaft and housing it must perform two types of sealing: dynamic and static.

Dynamic sealing is that which takes place between the moving shaft and the seal. It is achieved by the use of a flexible lip made of elastomeric material.

The sealing action of the lip's elastomeric memory may also be supplemented with a garter spring. With few exceptions, the assembly is designed so that dynamic sealing takes place between the shaft and the seal's inside diameter rather than its outside diameter. This is because the distance and speed of relative movement between the two components is less around the inside diameter's smaller circumference.

4 Static sealing is that which takes place between the housing and the seal's outside diameter. The outside diameter is slightly larger than the bore into which it is pressed. The resulting press fit between the two achieves a tight, static seal.

For more information on shaft and bore requirements, refer to pages 31-35.

