

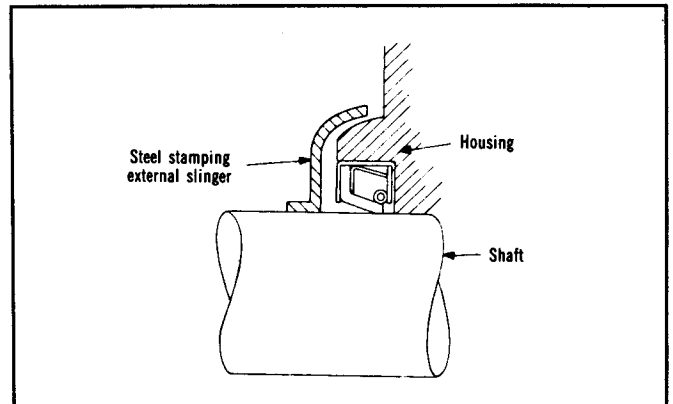
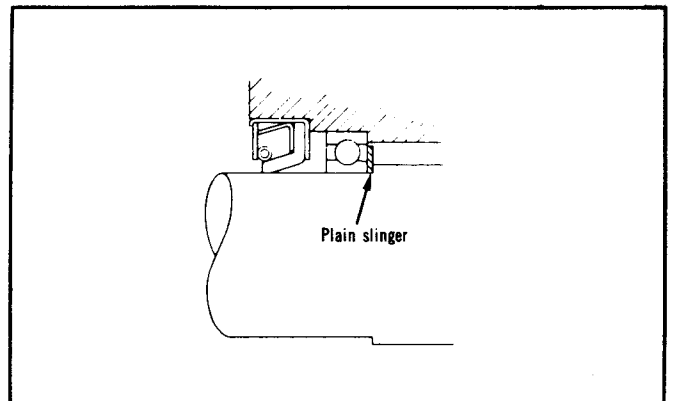
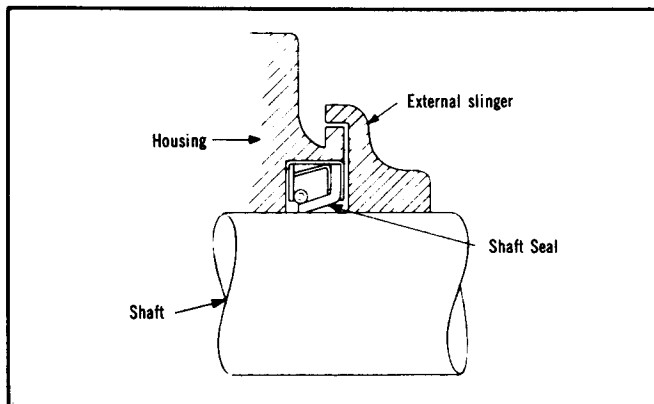
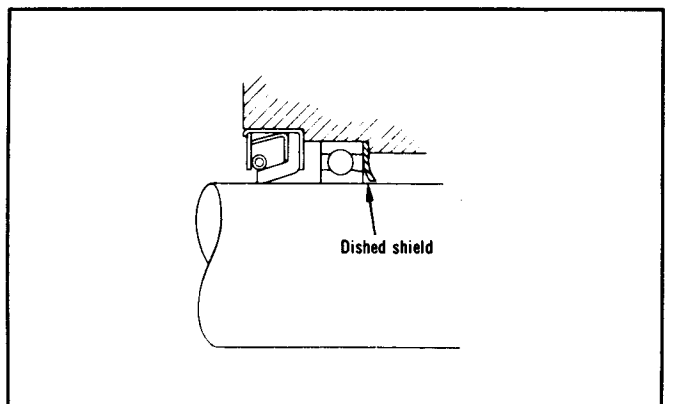
**DESIGNING FOR BETTER SEAL OPERATION**
**GENERAL**

In order to provide effective sealing in applications where dirt, dust, sand or other contaminants can reach the sealing member and drastically reduce expected seal life, it is sometimes necessary to make special provisions in the original product design. Contaminants can be kept away from the sealing member in many ways. Some of them are:

**SLINGERS AND SHIELDS**

External slingers are sometimes used to provide additional protection for the sealing unit. As indicated in the illustration below, external slingers are mounted on the shaft outside the bearing housing. The revolving action of the slingers throws water or any foreign matter away from the point of sealing. These slingers can be made of rubber or any machined part or stamping.

Internal slingers and shields may be mounted on the shaft inside the housing and next to the seal or bearing. There are various types, including plain flat, dished or machined washers, nuts, or baffle plates. They are used to protect against the entry of chips, dirt or foreign material thrown by gears, etc., or they are used to prevent the entry of water where flooded lubrication occurs. When using this type of protection, care must be taken to make sure that there is no interference or rubbing of the slinger into the housing. Clearance with adjacent parts should be  $1/32''$  or just enough to avoid rubbing, but close enough to exclude small particles.

**SLINGERS AND SHIELDS - Cont'd.**

**FIGURE 2**

**FIGURE 3**

**FIGURE 1**

**FIGURE 4**

## DESIGNING FOR BETTER SEAL OPERATION

### LABYRINTH SEALS

The labyrinth seal can sometimes be used as an excellent aid to sealing, especially in very dirty or wet applications. This type of unit consists of stationary and rotating members, so designed that an irregular channel is formed. The path, or groove, is filled with sealing grease, thus making it virtually impossible for fluid to escape or dirt to enter. The stationary member is usually fastened to the housing and the rotating member is press-fitted to the shaft.

The illustration below indicates how the labyrinth seal is designed. Note that recommended radial clearances are .005" to .010". Recommended axial clearances are 1/32" to 1/16".

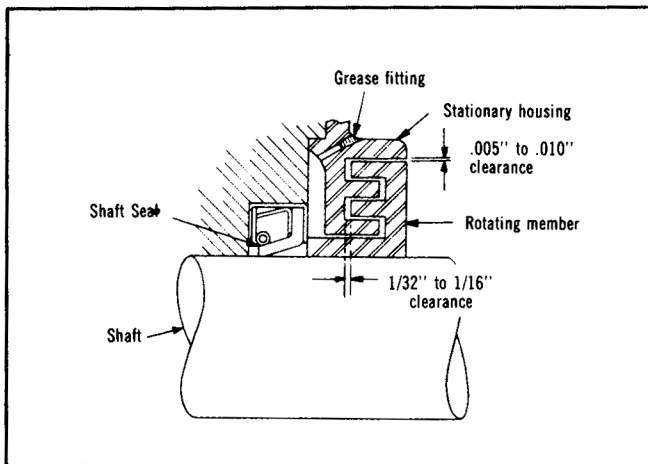


FIGURE 5

### OSCILLATING OR RECIPROCATING USE

When oil seals are required for use on oscillating (partial rotation) or reciprocating (linear shaft movement throughout) applications, the shape of the flange lip, its thickness, and spring tension are factors that must be considered in the selection of the proper seal.

For oscillating shafts, specify either leather or synthetic rubber seals as necessary. Any type that has a straight flange lip with broad contact will function satisfactorily.

In reciprocating shafts, specify a type with a wiper element and a heavy sealing member.

### DESIGN TIPS

Illustrations numbered 6, 7 and 8 show several recommended design tips for better application of Trostel Oil Seals. Note the special use of shields and grease chambers.

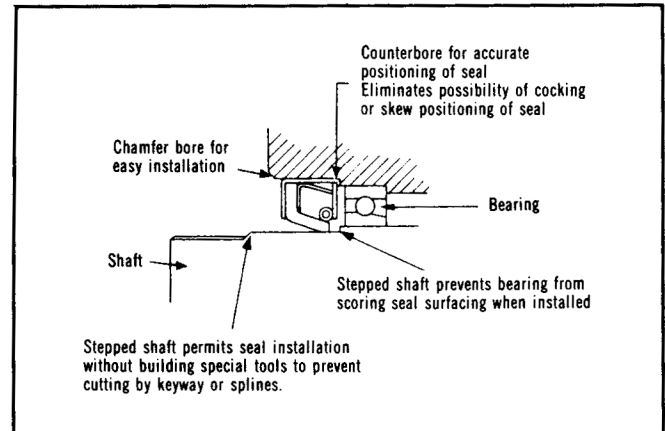


FIGURE 6

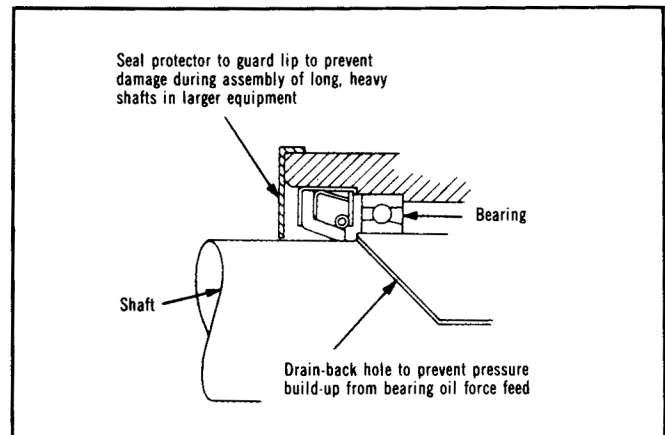


FIGURE 7

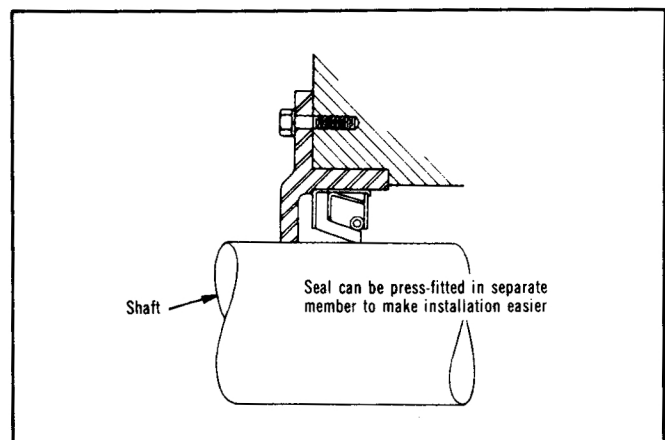


FIGURE 8