

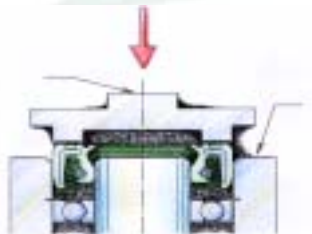
## Chapter 7 Installation Method



The installation methods play an important role in the function of oil seals. A good oil seal design without proper installation method still leak. It is necessary to use the correct installation tools and follow the right sequence.

### 7.1 Oil seal installation

1. Supplying the right press force to prevent deformation: It is recommended to use hydraulic or pneumatic press automated presses to supply press force. If the installation force is provided by hand-operated arbor pressed, the strike plates must be used. Without the strike plate, hand-operated arbor will damage the seal or cause cock. (Figure 7-1)



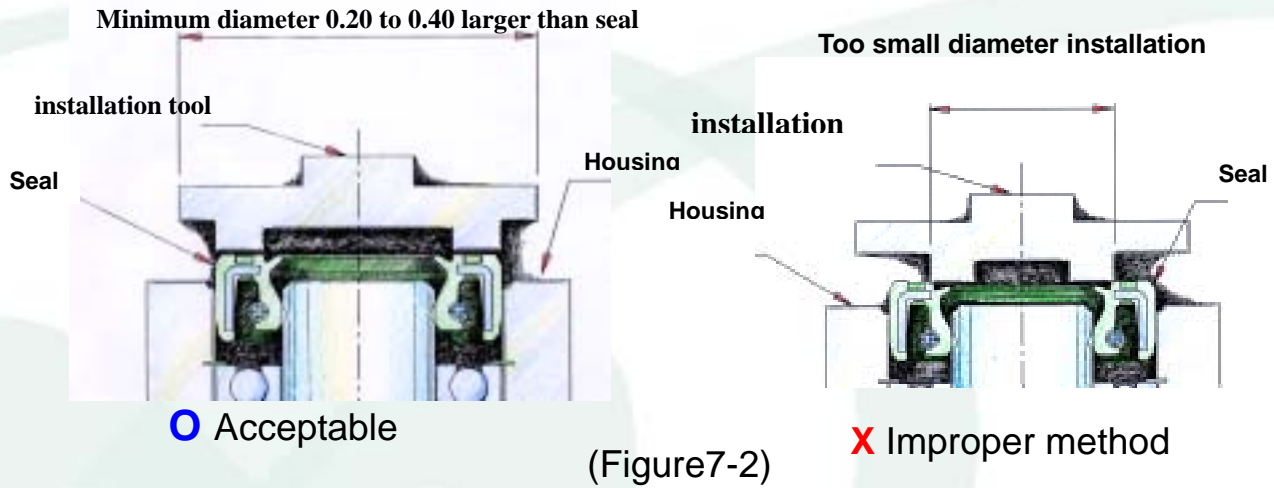
○ Acceptable method



✗ Improper method

(Figure 7-1)

2. Correct installation tool: When selecting the installation tool, it should be noted that the tool and seal contact position must have proper support (i.e. case) to prevent case deformation. (Figure 7-2)

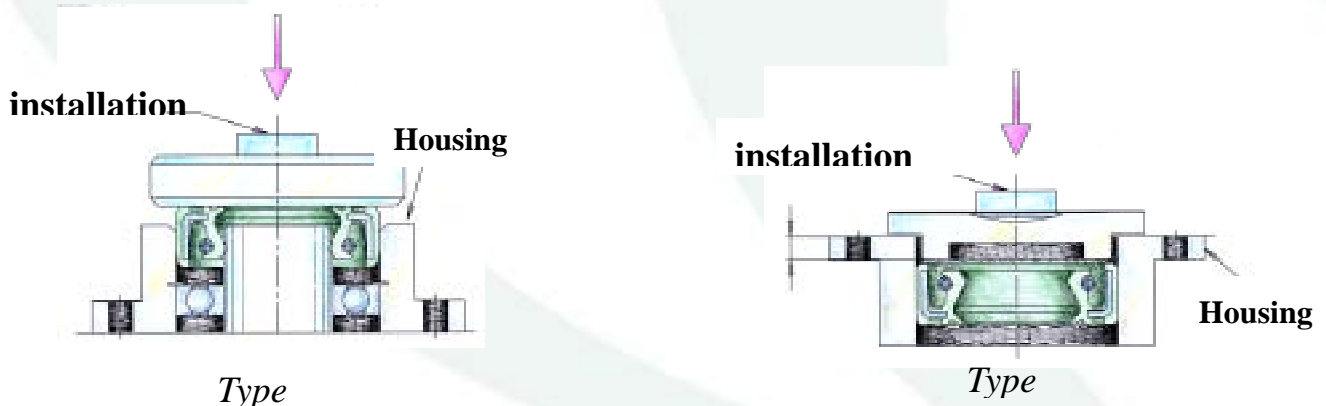


3. Different seal installation direction should choose different tool: Different seal installation direction will cause different deform-resistance strength that case support. Base on this, we should choose different tools by different seal applications. There are three common types: (Figure 7-3)

*Type* .Use a strike plate to provide press force uniformly on case.

*Type* .Use a stepped tool on case heel.

We can conclude that the principles of choosing an installation tool are: (A) Press force can distribute uniformly on contact area. (B) The tool installation position should be located on the place where the seal is most resistant to deformation.



(Figure 7-3) Different seal installation direction should choose different tool

4. Different tools that control installation position: We can install the seal to the right position by different kind of tools.

*Type* .Use the tool that designed to bottom out on the housing face.

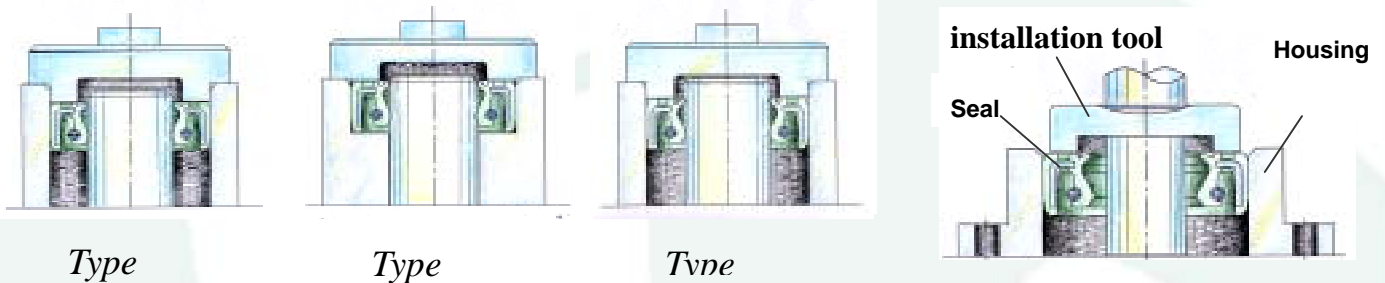
*Type* .Use the tool that designed to bottom the seal in a stepped housing.

*Type* .Use the tool that designed to bottom out on the shaft face.

*Type* .Use the location-rod tool to stops against support surface.

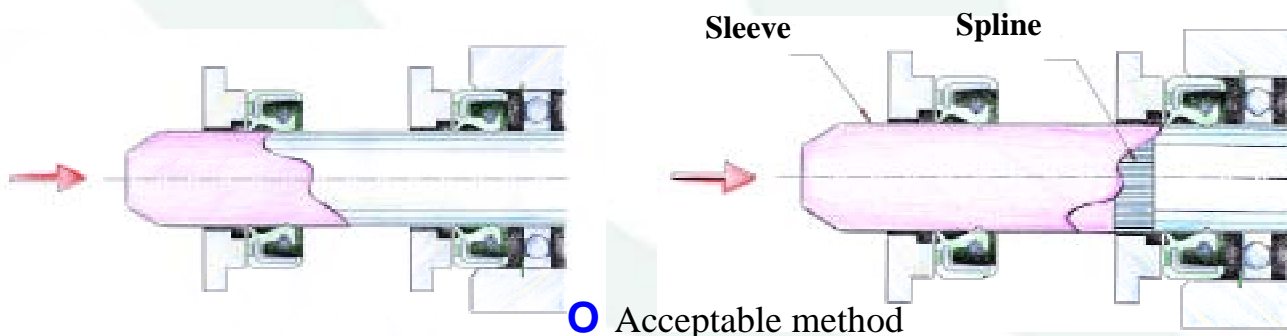
(Figure 7-4)

### Tools that control installation position



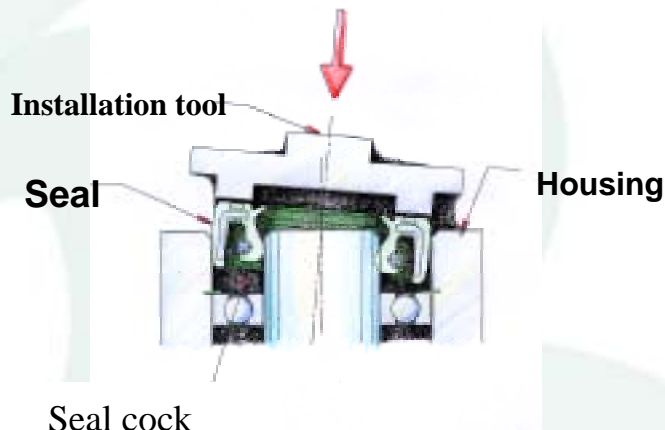
(Figure 7-4) Different tools that control installation position

5. Use a sleeve to when installation: If the shaft may damage the sealing lip during installation, a sleeve should be used. It can prevent the lip from damaged and affect the sealing function.( Figure 7-5)

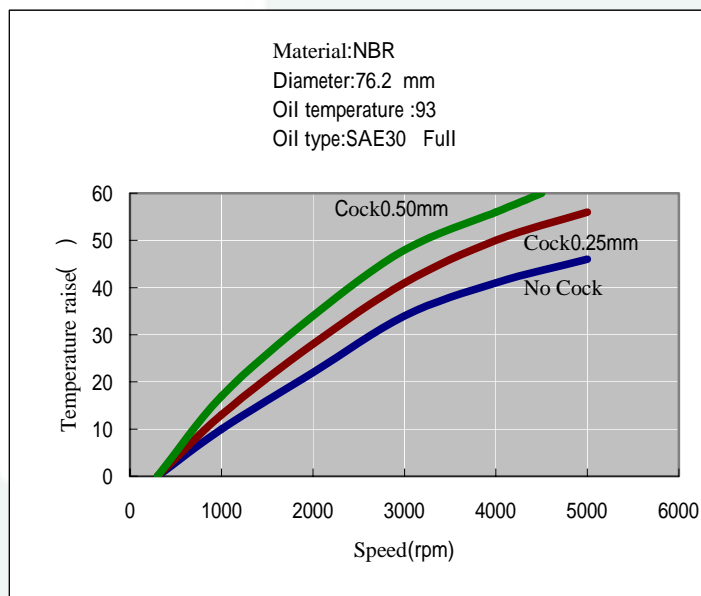


○ Acceptable method

6. Prevent cock problem: Improper installation may cause seal cock. Slight cock may increase friction, which may cause lip wear and raise the lip temperature that cause rubber aging. Serious cock will loose the sealing function immediately. (Figures 7-6 and 7-7)



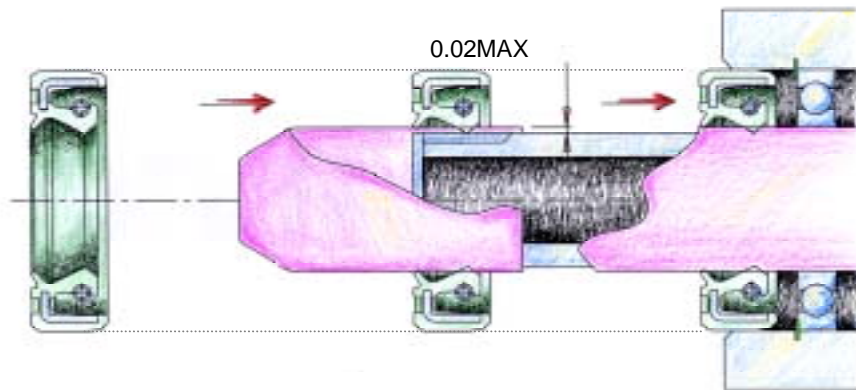
(Figure 7-6) Use a sleeve when installation



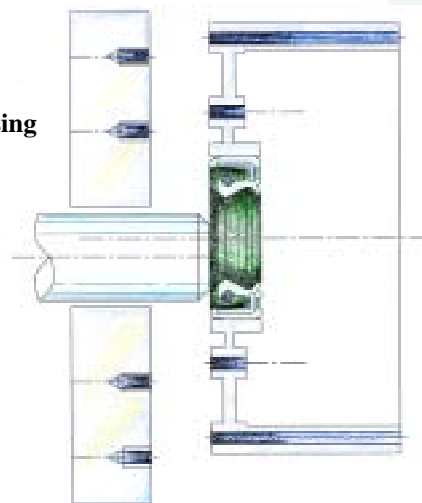
(Figure 7-7) Temperature raise versus shaft speed for various seal cock.

7. Correct shaft installation : Shaft must be installed and located on the right position; otherwise, the oil seal will lose the sealing function. (Figure 7-8)

Seal installation  
over shaft splines

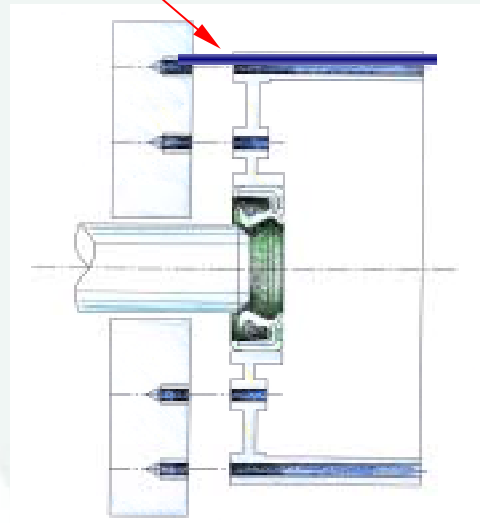


Heavy weight housing



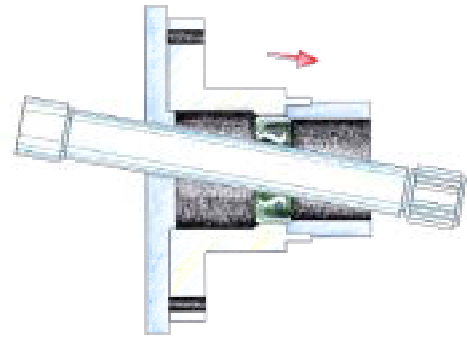
**X** Improper method

Locating pin



**O** Acceptable method

**X** Improper method



**Long shaft**

**O** Acceptable method

