

# INSTALLATION OF SEALS, RINGS, GLANDS AND PACKING

(This EO replaces EO 05-1-2Z dated 23 Oct 56)

## FORWORD

The term seals as applicable to aircraft, aircraft engines and their accessories will cover "O" rings, glands and packings used on alcohol, fuel, hydraulic, oil and pneumatic systems and accessories.

## GENERAL

1 When installing seals the general procedures contained herein are to be followed to ensure satisfactory service. Where detailed direction is required to carry out a specific installation in any component involving seals, reference is to be made to the applicable AFEO -2 or -3 of the component concerned and if necessary to approved applicable manufacturers' overhaul instructions.

erate. If the swelling exceeds 3% of the original size or if the seal becomes soft and flabby the seal is to be rejected.

(d) Ensure that the surface of the shaft on which the seal operates is smooth and free of burrs, nicks or scratches, which may damage the sealing lip, a small scratch may result in costly leakage.

(e) If the seal is to be installed over a square end, threaded, splined or keyed portion of a shaft, the seal is to be protected by a suitable well lubricated mounting thimble, see Figures 1, 2 and 3. In an emergency and if no other means is available an alternate method is to wrap the shaft with heavy well lubricated kraft paper.

(f) Where possible the installation is to be checked by hand for freedom of movement prior to testing of the complete system.

(g) For static and reciprocating pneumatic seal installations grease 3-GP-605 is to be used as a lubricant.

(h) The seal, shaft etc., is to be lubricated with the fluid in which the system operates.

## PROCEDURE

2 For all installations of seals the following general procedures are to be observed.

(a) Ensure that correct type of seal is used for the fluid and system.

(b) Visually inspect seal for imperfections, unusual hardness or softness, nicks or cracks.

(c) Refer to AFEO 00-35-1 for age control and cure date information.

## NOTE

If any doubt exists as to identification of material, immerse the seal for at least 10 hours in the fluid in which it is to op-

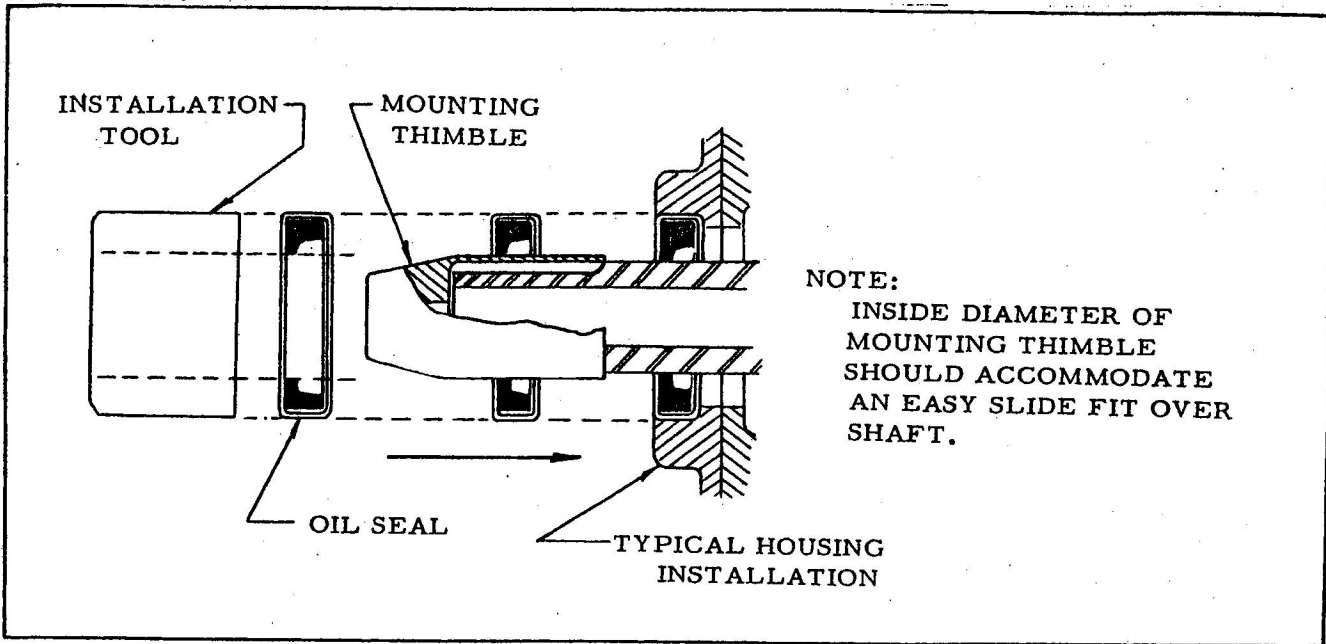


Figure 1

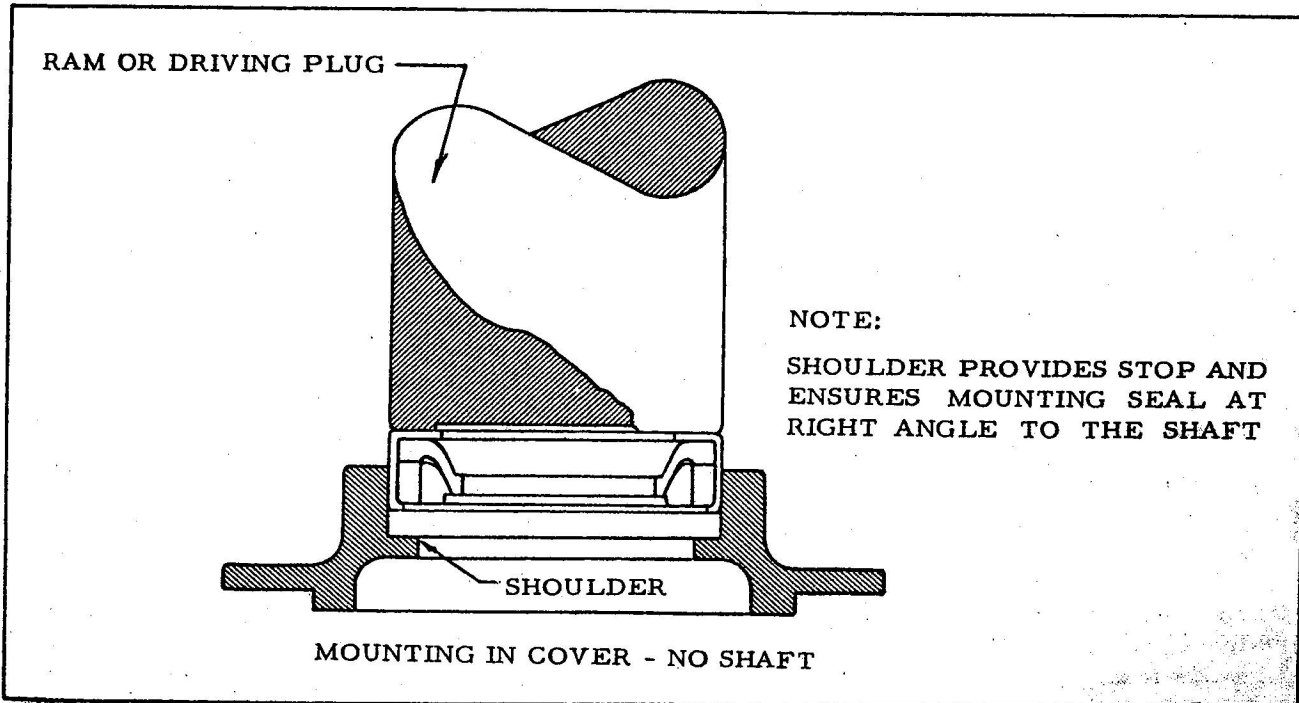


Figure 2 (Issue 1)

### METAL ENCLOSED SEAL INSTALLATION

3 When installing a metal enclosed seal it is imperative that a proper size installation tool be used to localize the pressure on the face of the metal case as closely as possible to the outside diameter. The installation tool to be not more than .010" smaller than the diameter of the bore and is to have a flat contact surface. The tool is to be placed squarely in position and tapped on the end with a mallet.

#### NOTE

Avoid direct hammer blows on the face of the seal.

4 See Figures 1, and 2 for various installations. If the tool is to be used as in Figure 1 the inside diameter is to be not less than .020" larger than the outside of the mounting thimble.

### V-RING PACKING INSTALLATION

5 V-ring packing installations are to be adequately lubricated with the system fluid and installed with the sealing lips adjacent to the fluid, making certain that the packing ring is properly seated by tapping lightly with a suitable blunt rod or similar tool. **DO NOT USE A SCREWDRIVER OR OTHER SHARP TOOL.** When sets of packing rings are installed each ring must be installed individually.

6 When installing V-ring glands in a hydraulic component with an adjustable gland nut, tighten the gland nut until the V-ring stack is compressed firmly together then loosen the gland nut to the first locking point (not to exceed one sixth of a turn). Occasionally when a set of strut glands have been installed in a heated hangar and aircraft later moved outside into low temperature, slight shrinkage of packing takes

place with the result that leakage often develops. As a preventative measure, the aircraft after removal from a warm hangar, should be left outside for approximately thirty minutes then taxied a short distance to settle the new glands. The aircraft should then be jacked up outside, air pressure released from the struts and the gland nut readjusted in accordance with instructions herein.

7 V-ring glands installed in hydraulic components and held in compression by the gland nut will take on a permanent set over an extended storage period. To minimize this condition after renewal of glands and prior to delivery or storage, back off the gland nut sufficiently to relieve any compression, yet leave sufficiently tight to retain the glands in their proper location. A tag indicating that readjustment is required prior to test or installation is to be attached to the component.

8 If no adjustable gland nut is used, metal shims of graduated thicknesses will be inserted behind the adaptors of the packing glands in such a manner that the glands will be held firmly in place. To facilitate the installation of shims they may be split and the open end brought together after insertion in the gland. Stagging of open ends is preferable.

### "O" RING INSTALLATION

9 "O" rings generally require no adjustment after installation. However, care must be taken when installing new "O" rings that they do not twist or nick, or early failure will result. After installation check to make sure that the "O" ring is of the proper size to give a "squeeze" in the installed position, see Figure 4. "O" rings may be removed easily by use of a small tool made of duralumin or brass rod, see Figure 5. Care is to be taken not to scratch or mar the groove or corners.

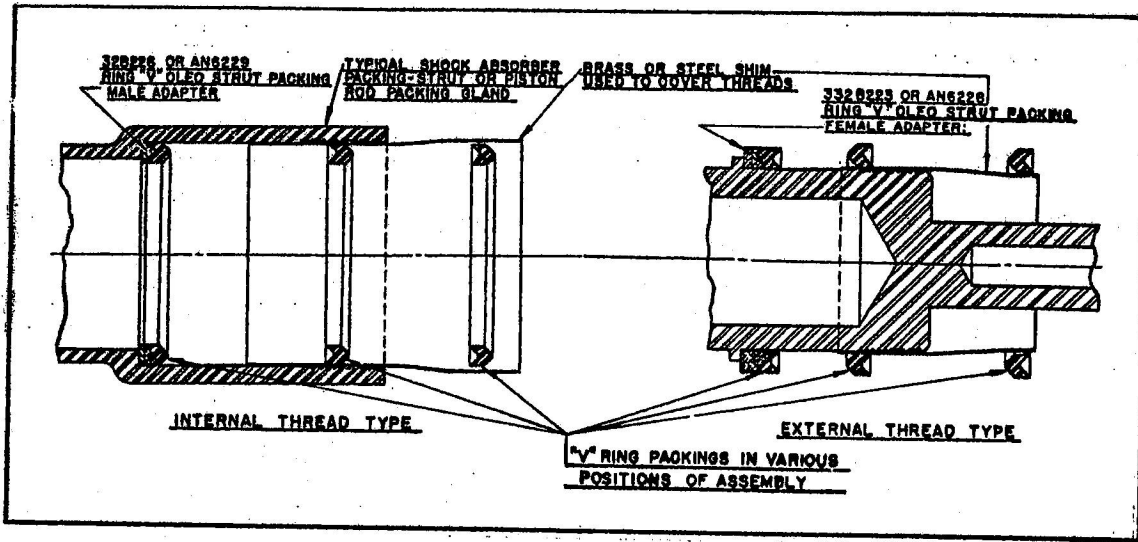


Figure 3

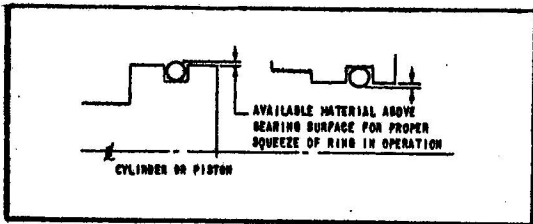


Figure 4

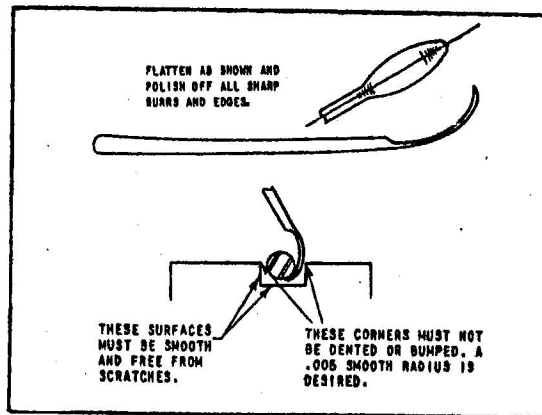


Figure 5

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