

service bulletin

M76-4
FAA-DER Approved

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TO: Distributors, Dealers, Aircraft Engine Overhaul Facilities, Owners
and Operators of Teledyne Continental Motors' Aircraft Engines

SUBJECT: INSTALLATION INSTRUCTIONS FOR PROPELLER SHAFT OR
CRANKSHAFT OIL SEALS

MODELS AFFECTED: ALL MODELS

Gentlemen:

The following procedures should be followed to eliminate propeller shaft or crankshaft oil seal leaks on the subject model engines:

STRETCH OVER TYPE

- A. Remove propeller and oil seal assembly.
- B. Clean surfaces thoroughly making certain that no foreign material remains on the shaft or in the seal counterbore. Wash seal area with solvent.
- C. Inspect the propeller mounting flange carefully to insure that no nicks, burrs or sharp edges are present which could damage the oil seal surface during installation.
- D. Remove any plating in the 1" area pointed out in Figure 1, by holding a piece of very fine emery cloth around the shaft and rotating the engine with the starter. This should blend the finish uniformly without leaving any lines (scratches). Top spark plugs should be removed to allow smooth, even rotation during the polishing operation.
- E. Apply helix as indicated in Figure 1 using a strip of 180 grit emery cloth approximately 1/2" wide. Do approximately 1/4 of the surface indicated in Figure 1 at a time, stroking the cloth outward toward the propeller flange in the direction of rotation (CCW towards you using maximum hand pressure) which should result in a 30° pattern similar to that illustrated in Figure 1. After doing the first portion, engage the starter just long enough so that the next portion is visible. Apply the same pattern again and continue completely around the crank or prop shaft in this manner.
- F. Repeat cleaning operation.

II. INSTALLATION

- A. Use only oil seal assembly P/N 641250 which consists of an oil seal, retainer ring and spring P/N 641306. Check the spring length. It should be 7-53/64" $\frac{+0}{-1/32}$ in length. (See Figure 2.)

- B. Remove spring and reinforcing ring from new oil seal. Unhook the spring ends using an unwinding motion. Wrap spring around shaft in seal area, turn spring ends in unwinding direction, then join and allow one end to wind into the other end.
- C. Oil propeller flange, shaft and I.D. of seal liberally with SAE 50 engine oil. The seal is to be stretched over the propeller mounting flange. **DO NOT SPLIT THE SEAL.**
- D. Squeeze oil seal until egg-shaped and start seal over bottom of propeller flange, groove side up. Work seal carefully to prevent damage to lip, upward over flange. Placing a lightly oiled plastic bag over the prop flange will help protect the seal lip. Also, a special tool for stretching the seal over the prop flange is available from Borrough's Tool and Equipment Co., 2429 North Burdick St., Kalamazoo, Michigan.
- E. Install reinforcing ring, working O.D. of seal over ring to insure snug fit. Install spring in cavity in seal.
- F. Apply a thin coat of Permatex to O.D. of seal.
- G. USING THUMB PRESSURE, force seal into counterbore.
- H. After seal is in place, wipe oil from seal and shaft.
- I. Spray exposed portion, from which plating has been removed, with aluminum primer.

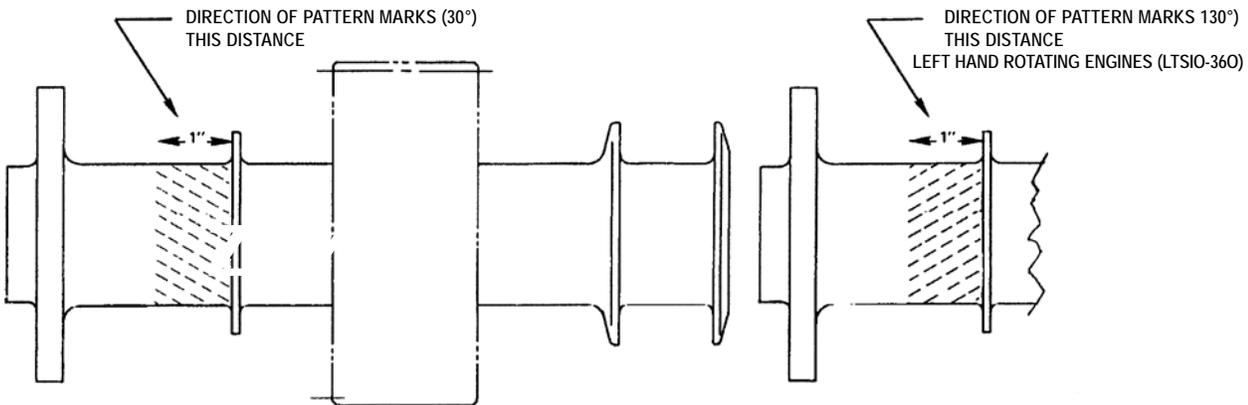


FIGURE 1

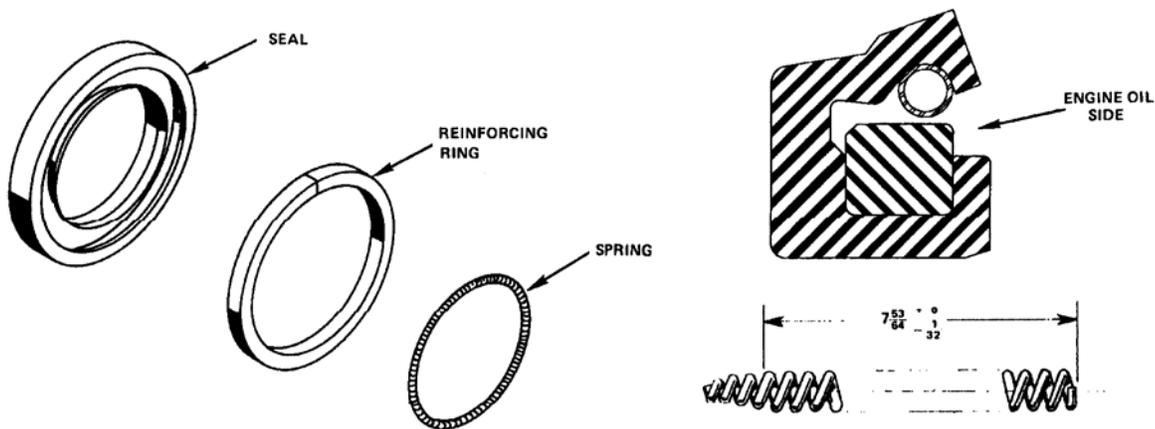


FIGURE 2

III. SPLIT TYPE OIL SEALS - INSPECTION AND INSTRUCTIONS PRIOR TO SEAL INSTALLATION

- A. Follow same procedures as listed for stretch type oil seals except it is not necessary to remove the propeller. With the propeller installed, any removal of plating or blending of the 1" area referred to in I, part D will have to be done around the shaft manually without engine rotation.

NOTE: On left hand rotating engines (LTSIO-360-E) the helix must be applied in the opposite direction as shown in Figure 1. Stroke the strip of emery cloth outward toward the flange in the direction of rotation...(CW toward you using maximum hand pressure).

IV. INSTALLATION

- A. Use applicable split type seal depending on engine model.
- B. Remove spring from oil seal assembly and unhook its ends. Coat the lip of the seal liberally with SAE 50 engine oil or a molyshield grease. Twist the seal and slide it over the crankshaft with the felt side toward the flange. (If the seal does not incorporate a felt, just place the seal on the shaft with its recessed side toward the rear). Bring the ends of the seal back together. Wrap the spring around the crankshaft in the seal areas. Turn the spring ends in an unwinding direction then join and allow one end to wind into the other end. With hooked ends opposite the seal split, lift the spring into the seal recess. Work the remainder in by moving the fingers in both directions from the starting point. Make sure the spring is in the deepest part of the recess all around.