THE WARNER AIRCRAFT CORPORATION
20263 HOOVER AVENUE
DETROIT, MICH.

June 18, 1940

SERVICE LETTER NO. A-9

Subject: Replacement of Link Rod Bolts.

To: All Owners of Super Scarab Series '40 Engines.
All Owners of Super Scarab Series '50 Engines up to and including SS-732E.
All Owners of Super Scarab Model 165 Engines up to and including SS-2023.
All Authorized Warner Aircraft Service Representatives.

We have found it advisable to bring out a new link rod bolt--part No. 7072-B. This bolt is considerably stronger than the old bolts and, in addition, the section locking the wrist pin is surface-hardened so as to eliminate wear. It can be distinguished from the older bolts by the length of the undercuts and of the center section as shown on Figure 1 below. The following engines were equipped at the factory with 7072-B bolts and are not affected by this Service Letter: 145 H.P. Super Scarab engine No. SS-733 and up and 165 H.P. Super Scarab engine No. SS-2024 and up.

Most of the engines are equipped with bolt No. 7072 which does not have the second undercut next to the thread. We wish to advise all owners of these Super Scarab engines that at the first opportunity this part should be changed in accordance with instructions given below. These bolts can readily be changed during a top overhaul, while the cylinders are removed, without disassembling the crankcase.

Some recent engines are equipped with bolt No. 7072-A which can be recognized by the 1/4" long undercuts next to the head and next to the thread and by the center section being approximately 29/64" long. These bolts do not have the center section hardened and are installed in 145 H.P. Super Scarab engines No. SS-708E and SS-717E to SS-732E. They are not installed in any Model 165 engine. These bolts need only be changed if they show wear on the center section.

If the replacement is done while the engine is torn down during a complete overhaul, the fit of the wrist pins in the link rods should be carefully checked. It is very important that the pin be a tight fit in the link rod and that it cannot be turned easily when testing it with tool FA-63 or another suitable tool engaging the slots in one end of the wrist pin. If the pin is found to be looser than desired, it may be replaced by ordering a suitable pin from the table below after first measuring the diameter of the loose pin:

Part No.	Diameter
7054-01	.8745 - .8748
7054-02	.8750 - .8753
7054-03	.8755 - .8758

If one of the larger diameter pins is installed, the bushings in the master rod may possibly have to be reamed out to obtain the proper fit - .0007" to .0015" loose.

When installing a 7072-B link rod bolt, proceed as follows:

1. Be sure to use the nut which is furnished with the bolt since this is a nut especially inspected for close tolerances of the squareness of the

1. Continued.
face in contact with the link rod.

2. Install all link rod bolts with the threaded end towards cylinder No. 1 as shown on Figure 2 below and with the cotter pin hole in the position shown in Figure 3, especially when installing during a top overhaul, in order to facilitate the insertion of the cotter pin.

3. Tighten the nut snuggly with a wrench in order to draw the head of the bolt against the link rod.

4. Loosen the nut and tighten with the fingers.

5. Observe the relation between the cotter pin hole in the bolt and a castellation in the nut.

6. Tighten the nut from approximately 3/8 of a castellation (approximately 16-1/2 degrees) to a maximum of 1-1/4 castellations (approximately 75 degrees) as shown in Figure 3 below. (This method of tightening has been found more satisfactory than using a torque wrench which is influenced by the amount of lubrication and the fit between the nut and bolt).

7. Install cotter pin as shown below in Figure 4. Be sure to bend both ends of cotter pin as indicated and do not bend one of them over the end of the bolt since, otherwise, the adjacent link rod may strike it.

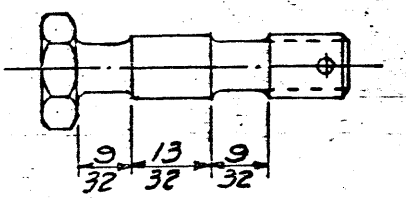


FIG. 1 FULL SIZE

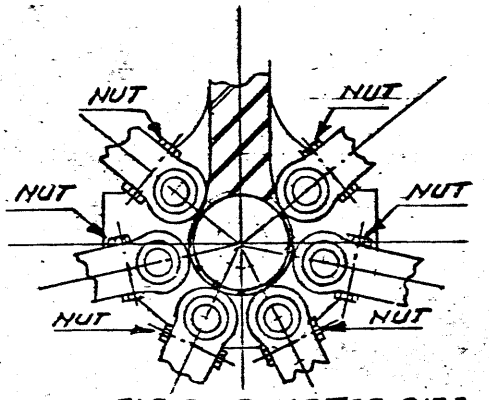
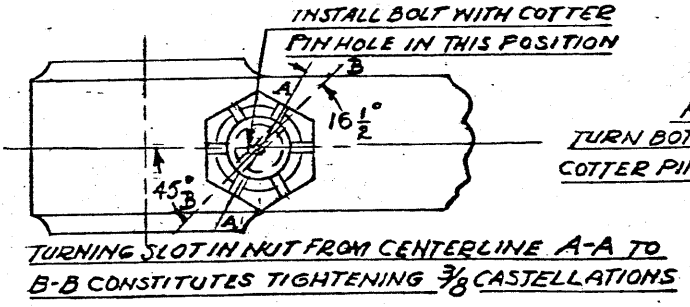


FIG. 2 QUARTER SIZE



TURNING SLOT IN NUT FROM CENTERLINE A-A TO B-B CONSTITUTES TIGHTENING 3/8 CASTELLATIONS

FIG. 3 FULL SIZE

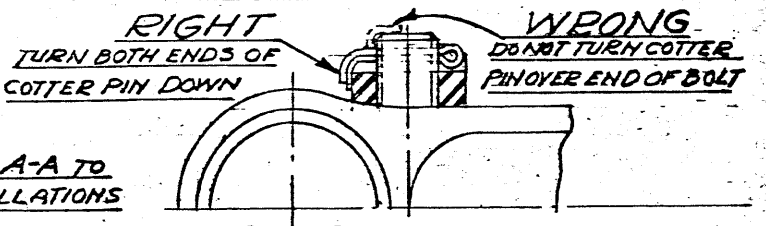


FIG. 4 FULL SIZE

THE WARNER AIRCRAFT CORPORATION

Ludwig A. Majneri

L. A. Majneri, Vice Pres. & Chief Eng.

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