

SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. 0091

Revision 2

DATE: February 18, 2025

1. SUBJECT: Lower Swashplate Assembly Inspection
2. MODEL: F-28A, F-28C, F-28C-2, F-28C-2R, 280, and 280C
3. EFFECTIVITY: All Serial Numbers
4. BACKGROUND:

Enstrom had received several excessively worn universal shafts and tie rods from operators in 1999. These assemblies reportedly wore in a very short period of time (e.g., less than 100 hours of flight time). Subsequent inspection did not reveal any obvious cause for the excessive wear.

Three designs of the lower swashplate assembly were previously used. The first two, P/N 28-16101-905 and 28-16101-910/924, have been in service the longest. These two assemblies use the DU washers as part of the stack-up for setting the preload of the swashplate and for proper torque up of the tie rod and universal shaft joint. The difference between the assemblies is that the "-910/924" assembly incorporates a grease fitting for the cyclic bearing. The third design, P/N 28-16101-927, is similar to the design used on the TH-28/480 model. This design was supplied on recent new production F-28F (S/N 791 and subsequent) and 280FX (S/N 2078 and subsequent) aircraft. It was also available as an exchange unit for all F-28/280 series aircraft, and a kit (28-01053-3) was available to upgrade older swashplates to the "-927" configuration. This kit has since been replaced as described in the following paragraph.

Enstrom had subsequently reviewed the design of the lower swashplate assembly, P/N 28-16101-927, and had incorporated several improvements. As a result, the lower swashplate assembly was re-identified as P/N 28-16101-939 (as previously published in Revision 1 of this Service Directive Bulletin). Currently, the lower swashplate assembly is identified as P/N 28-16101-101. Lower swashplate assembly P/N 28-16101-101 is eligible for installation on all models of the F-28/280 series aircraft and is available as an exchange unit. A modification kit (Lower Swashplate Modification Kit, P/N 28-01053-5) remains available to upgrade older configurations as an option.

Additionally, Revision 2 of this Service Directive Bulletin adds the F-28C variants, removes the F-28F, 280F, and 280FX models (information has been incorporated into the F-28F/280F Series Maintenance Manual), and provides updated procedures and part number information.

NOTE: Enstrom will no longer supply spare/repair parts for lower swashplate assemblies other than P/N 28-16101-939 or P/N 28-16101-101. Unserviceable lower swashplate assemblies must be upgraded to “-101” configuration. Refer to Service Information Letter No. 0150, latest revision, for maintenance instructions and parts information.

This Service Directive Bulletin mandates one time and repetitive 100 hour inspections of the lower swashplate assemblies to insure that any and all unacceptable wear characteristics are discovered before they develop into safety of flight problems.

5. COMPLIANCE:

- a. For a lower swashplate assembly with less than 100 hours total time in service (i.e. new aircraft or exchange swashplate assemblies purchased from Enstrom), inspect the lower swashplate assembly in accordance with paragraph 5.1 at or before the next 100 hour/annual inspection.
- b. For a lower swashplate assembly with more than 100 hours total time in service regardless of overhauls and/or have not complied with previous Revision 1 issue of this Service Directive Bulletin, inspect the lower swashplate assembly in accordance with paragraph 5.1 within the next 10 hours of operation.

5.1. INSPECTION:

NOTE: Perform all maintenance procedures in accordance with the applicable aircraft maintenance manual. Contact Enstrom Customer Service for clarifications to maintenance procedures as required.

- a. Remove both side panel cowls.
- b. Disconnect the pitch change bellcranks located on the main rotor hub from the main rotor control rods located in the mast and from the pivot brackets.
- c. With the aid of an assistant, remove the collective friction and move the collective up and down throughout the range and wiggle the cyclic stick (movement of the collective and cyclic stick does not have to occur simultaneously). Observe and carefully feel the lower swashplate assembly for any looseness (e.g. vertical play at the universal joint or end play along the universal shaft and tie rod axes). Any looseness is most noticeable with a collective control reversal and/or reversal of the cyclic controls.

NOTE: Vertical looseness may also be evident at the collective stick as a sudden change in stick force or may exhibit itself as a clinking sound. Using a 9/16-inch crows foot and torque wrench set to 60 in-lb/6.8 Nm, check that the torque required to rotate the tie rod assembly at the nut on the end of the tie rod assembly is more than 60 in-lb/6.8 Nm. Do not remove the cotter pin from the nut during the check and stop the torque check if 60 in-lb/6.8 Nm is reached without the tie rod assembly rotating. Any rotation of the tie rod with less than 60 in. lbs./6.8 Nm of torque is unacceptable.

- d. If neither looseness nor loss of torque is evident, reconnect the pitch change bellcranks and return the aircraft to service.
- e. If any looseness or loss of torque is found, remove the lower swashplate assembly from the aircraft and disassemble the lower swashplate assembly and inspect the detail parts in accordance with the applicable aircraft maintenance manual. Use Service Information Letter No. 0150, latest revision, for “-927” swashplate assemblies.
- f. Upgrade the lower swashplate assembly to “-101” configuration if unserviceable parts are found. Refer to Service Information Letter No. 0150, latest revision.
- g. Reinstall the lower swashplate assembly and reconnect the pitch change bellcranks.

5.2. PARTS:

Refer to Service Information Letter No. 0150, latest revision, for upgrading to “-101” swashplate assemblies.

6. SPECIAL TOOLS:

Refer to the applicable aircraft maintenance manual or Service Information Letter No. 0150, latest revision, for special tool requirements.

7. MAN-HOURS:

1 Man-hours if it is not necessary to remove the lower swashplate. 8 Man-hours if the lower swashplate is disassembled.

8. WARRANTY: Per Enstrom Warranty Policy

9. WEIGHT CHANGE: None

10. LOG BOOK ENTRY: Enter compliance with this Service Directive Bulletin.

NOTE: Please notify Enstrom Customer Service of any unserviceable lower swashplate assemblies. (Tel: 906-863-1200; Fax: 906-863-6821; or email: customerservice@enstromhelicopter.com)

11. REPETITIVE INSPECTION:

Inspect the lower swashplate assembly at 100 hour intervals in accordance with paragraph 5.