



## SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. 0105

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DATE: October 17, 2008

1. SUBJECT: Collective Bellcrank Inspection
2. MODEL: F-28A, F-28C, F-28F, 280, 280C, 280F, and 280FX
3. EFFECTIVITY:

Model	Serial Number
F-28A, F-28C, 280, 280C, 280F	All
F-28F	Prior to 819
280FX	Prior to 2120

4. BACKGROUND:

Enstrom has received four reports of failures of the P/N 28-16233-1 bellcrank that attaches the collective spring capsule to the torque tube. In 2005, Enstrom changed the design of the bellcrank to strengthen it. All of the failures were of the old design bellcrank. This Service Directive Bulletin (SDB) requires a mandatory inspection of the bellcrank and makes owner/operators aware of the redesigned bellcrank and recommends they replace the old design with the new design.

Technical aspects of this SDB have been coordinated with the FAA.

5. COMPLIANCE:

At the next 100-hour/annual inspection, inspect the bellcrank P/N 28-16233-1 in accordance with paragraph 5.1 to determine if the collective trim assembly contains the old design or new design bellcrank. If the collective trim assembly contains the old design bellcrank, the bellcrank must be inspected by dye penetrant method for cracks, and if necessary, replaced in accordance with the procedure provided in paragraph 5.2. The collective trim assembly containing the old design bellcrank must be re-inspected in accordance with paragraph 5.1 at each 300-hour inspection interval. If the collective trim assembly contains the new design bellcrank, no further action is required.

## 5.1 INSPECTION:

- A. Measure the radius between the arm and the strap of the bellcrank. See Figure 2.
- B. Visually inspect the bellcranks for toolmarks, scratches, nicks, or damage. Use a mirror and suitable light source as required. Blend and polish out any toolmarks, scratches, and nicks to a maximum 0.040" / 1.01mm in depth.
- C. If the radius measures 1.00-inch, this is the new design bellcrank and no further action is necessary.
- D. If the radius measures .25-inch, this is the old design bellcrank and the radius area must be inspected by dye penetrant. Follow steps E through G below for access to the bottom side radius. If a dye penetrant inspection reveals a crack, replace the bellcrank with an airworthy, new design bellcrank. Proceed to paragraph 5.2.

**NOTE**

**Perform all maintenance IAW the applicable F-28/280 Series Maintenance Manual.**

- E. Model F-28F, 280F, or 280FX: Disconnect the collective bellcrank from the spring capsule by following steps 1 through 9 in Section 12-5 of the F-28F/280F Series Maintenance Manual. See Figure 1
- F. Model F-28A, F-28C, 280, or 280C: Disconnect the collective bellcrank from the spring capsule by following steps a through h in Section 11 of the F-28A/F-28C or 280/280C Series Maintenance Manual (pages MM-11-4 and MM-11-5). See Figure 1.
- G. Remove the bolt through the collective bellcrank and torque tube. The collective bellcrank may now be rotated freely on the torque tube to inspect the opposite radius on the bellcrank.
- H. Report any failed or cracked bellcranks to Enstrom Customer Service.

## 5.2. REPAIR:

**NOTE**

**Perform all maintenance IAW the applicable F-28/280 Series Maintenance Manual.**

## 5.2.1. F MODELS:

- A. Disconnect the spring capsule per the applicable maintenance manual.
- B. Mark all the spacers and bellcrank with a marker to identify sleeves for installation.

**NOTE**

**Mark all fittings and the torque tube so they can be properly indexed on reassembly.**

- C. Remove the through bolts on the collective sleeves and the spring capsule bellcrank.
- D. Disconnect the co-pilot's collective bellcrank at the two links.
- E. Remove the bearing housing on the co-pilot side of the torque tube.
- F. Disconnect the throttle cable at the correlator.
- G. Disconnect the throttle bellcrank at the pivot point.
- H. Remove the floor panel at the correlator.
- I. Slide the torque tube 2 ½ to 3 inches to the pilot side to provide adequate room to remove the old bellcrank and install the new bellcrank. Install the new bellcrank with the "F" stamp facing up.

**NOTE**

**Bellcranks manufactured for customer service are stamped with the letter "F" to designate the proper orientation for installation.**

- J. Reverse the steps to reassemble.

**NOTE**

**Do not overtorque bolts through torque tube, as this will cause binding. Torque to shear nut torque.**

- K. Do not overtorque the bolts in the torque tube. Torque to shear nut torque. Use full torque on all bolts connecting the collective stick fitting to the torque tube. See Figure 1.
- L. Verify collective trim rigging IAW Section 12, Paragraph E of the F-28F/280F Series Maintenance Manual.

**5.2.2. A and C Models:**

- A. Disconnect the spring capsule per the applicable maintenance manual.
- B. Mark all the spacers and bellcrank with a marker to identify sleeves for installation.

**NOTE**

**Mark all fittings and the torque tube so they can be properly indexed on reassembly.**

- C. Remove the through bolts on the collective sleeves and the spring capsule bellcrank.
- D. Disconnect the co-pilot's collective bellcrank at the two links.

- E. Disconnect the throttle tie rod and the throttle cable.
- F. Remove the bearing housing on the co-pilot side of the torque tube.
- G. Remove the pilot's collective fitting through bolts and slide fitting off.
- H. Drill a 2 inch hole in the left side of the cabin to be able to slide the torque tube adequately enough to remove the spring capsule bellcrank and install the new bellcrank. Install the new bellcrank with the "F" stamp facing up.

**NOTE**

**Bellcranks manufactured for customer service are stamped with the letter "F" to designate the proper orientation for installation.**

- I. Reverse the steps to reassemble.

**NOTE**

**Do not overtorque bolts through torque tube, as this will cause binding. Torque to shear nut torque.**

- J. Do not overtorque the bolts in the torque tube. Torque to shear nut torque. Use full torque on all bolts connecting the collective stick fitting to the torque tube. See Figure 1.
- K. Verify collective trim rigging IAW Section 11 "Rigging", page MM-11-6, of the F-28A/F-28C/280/280C Maintenance Manual.
- L. Patch the hole in the cabin side wall per AC 43.13-1B, Chapter 3.

5.3 PARTS: Bellcrank P/N 28-16233-3, Quantity 1

6. SPECIAL TOOLS: None

7. MAN-HOURS: Visual Inspection: 0.5 Man-hours; Dye Penetrant Inspection: one (1) Man-hour; Replacement: two (2) Man-hours

8. WARRANTY: N/A

9. WEIGHT CHANGE: None

10. LOG BOOK ENTRY: As required for maintenance actions.

11. REPETITIVE ACTION:

If the old design bellcrank is installed, inspect the bellcrank in accordance with paragraph 5.1 Steps B and D through H every 300 hours.

If the new design bellcrank is installed, no repetitive action is required.

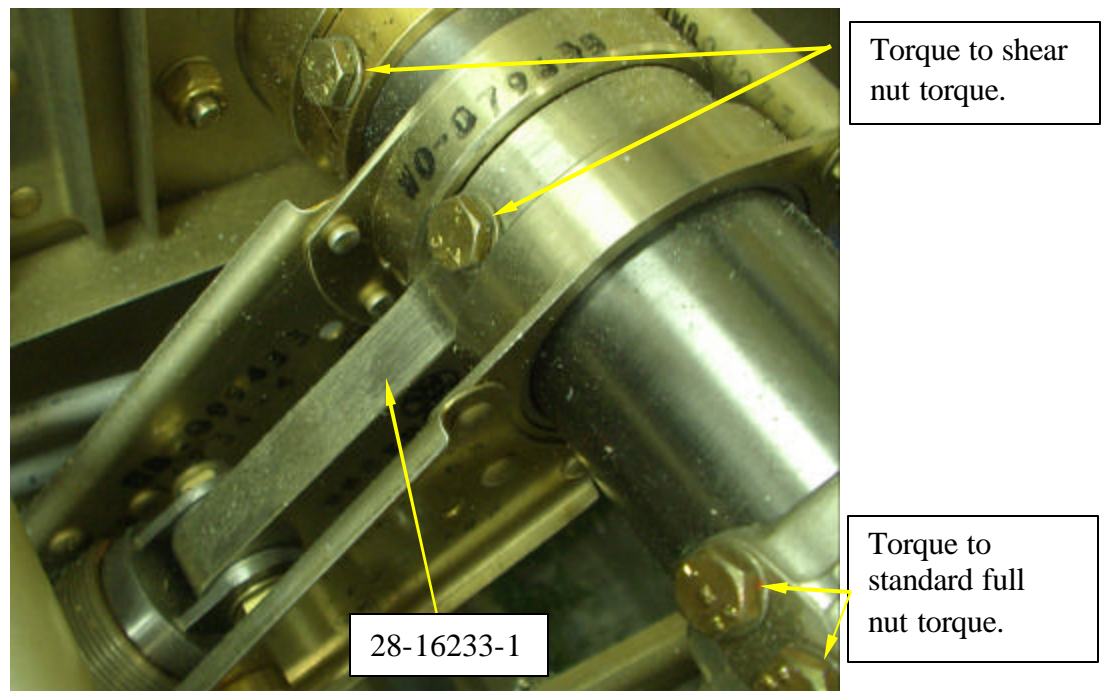


Figure 1. Collective Spring Capsule Bellcrank P/N 28-16233-1/-3

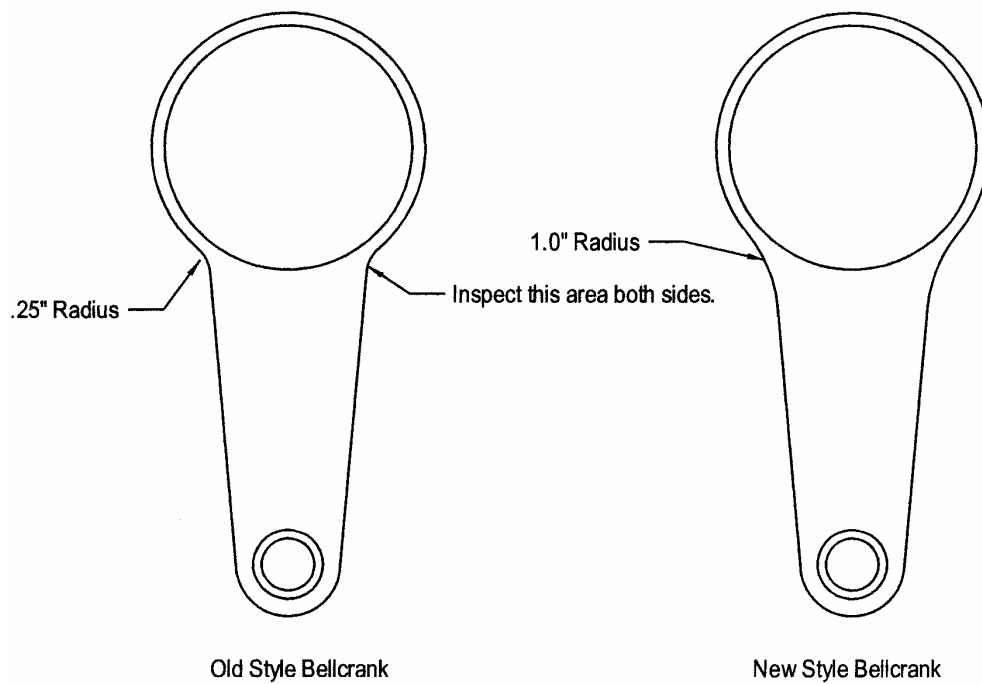


Figure 2. Radius Measurement Location for Bellcrank P/N 28-16233-1