



# SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. 0120

Page 1 of 5

DATE:            April 29, 2015

1.    SUBJECT:    Collective Stick Socket Inspection
2.    MODEL:       F-28A, F-28C, F-28F, 280, 280C, 280F, and 280FX
3.    EFFECTIVITY:    All S/N
4.    BACKGROUND:

Enstrom has received a report from the field of a cracked pilot-side collective stick socket, P/N 28-16186-1. The crack, discovered during inspection on the ground, was closed initially when detected and then opened easily when the collective stick was moved sideways. Metallurgical analysis determined that the crack was caused by corrosion-assisted fatigue as evidenced by surface pitting and a slight intergranular network of oxide in the microstructure. The collective stick socket was estimated to have been in service for 5,158 hours in a 37 year-old aircraft.

The collective socket connects the collective stick to the collective torque tube which actuates the rest of the collective system. The complete separation would result in the pilot not being able to control blade pitch. The effect of the collective socket breaking and the resulting blade pitch depends on when the socket breaks and how the collective spring capsule was set.

This Service Directive Bulletin (SDB) requires dye penetrant inspection for the pilot- and copilot-side collective stick sockets with 3,000 hours or more time-in-service or on aircraft 25 years or older.

The effective collective socket part numbers, listed in the following table, are manufactured from forgings. If the socket is not a forging, this SDB does not apply.

<b>Collective Stick Socket Position</b>	<b>P/N</b>	<b>Forging P/N</b>	<b>F-28A 280</b>	<b>F-28C 280C</b>	<b>F-28F 280F/280FX</b>
Pilot Side (LH)	28-16186-1	28-16185-F	X	X	N/A
Copilot Side (RH)	28-16194-1	28-16193F	X	X	X
Pilot Side (RH)	28-16377-11	28-16193F	N/A	X	X

**NOTE:** The left collective in the F-models incorporates the correlator and uses a different (non-affected) socket.

5. COMPLIANCE:

Within the next 25 hours, inspect the collective stick sockets for cracks using dye penetrant inspection method for the pilot- and copilot-side collective stick sockets with 3,000 hours or more time-in-service or on aircraft 25 years or older.

For any collective stick socket with less than 3,000 hours time-in-service or less than 25 years old, inspect the collective stick socket for cracks using dye penetrant inspection method at or before reaching 3,000 hours time-in-service or 25 years.

6. INSPECTION:

**NOTE**

**Perform all maintenance in accordance with the applicable F-28/280/A/C or F-28F/280F Series Maintenance Manual (MM).**

- 6.1 Determine the age of the aircraft and review the aircraft maintenance records to determine the time-in-service for both left-hand and right-hand collective stick sockets.
- 6.1.1 If collective stick socket time-in-service cannot be determined from the aircraft maintenance records, use the aircraft total operating time for the collective stick socket time-in-service hours
- 6.1.2 If the collective stick socket time-in-service equals or exceeds 3,000 hours or has been with an aircraft 25 years or more, perform dye penetrant inspection of the collective stick socket for cracks.
- 6.2 The collective stick sockets may be inspected as installed in the aircraft. Obtain an inspection mirror and a light source to assist with the inspection.
- 6.3 Inspect the collective stick socket for cracks using dye penetrant method. Refer to Figure 1 for the area of the socket to inspect. Inspect all outside surface areas of the socket where indicated by the arrows in Figure 1. The crack will initiate at the edge of the hole for the torque tube and run parallel with the longitudinal axis of the torque tube (or perpendicular to the collective stick). Refer to Figure 2 to see an example of a cracked socket.

6.3.1 Follow the dye penetrant manufacturer's instructions.

### CAUTION

**Use care during dye penetrant application and clean-up. Avoid contaminating the flight control system components and adjacent areas. Thoroughly clean and dry any runoffs of dye penetrant or cleaning liquids.**

6.3.2 If no bleed-back indications are present, the inspection is satisfactory. Thoroughly clean the collective stick socket per the penetrant kit instructions.

6.3.3 A heavy, solid line bleed-back indicates a crack. Reject the collective stick socket and replace with an airworthy collective stick socket. Use the form on page 9 to record the results of the dye penetrant inspection.

6.3.4 Refer to Service Information Letter (SIL) 0183 for replacement instructions.

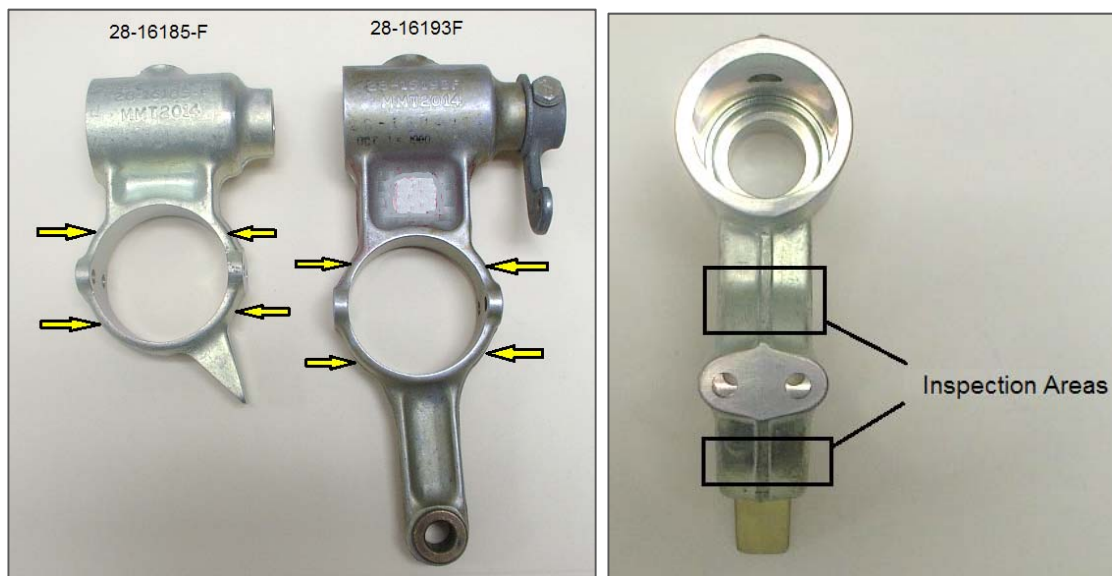


Figure 1. Collective Stick Socket Inspection Areas – Inspect for cracks on the surface between the edges of the torque tube hole.



Figure 2. Crack Example (the crack is near the tip of the arrowhead)

April 29, 2015

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7. PARTS: N/A

8. SPECIAL TOOLS: N/A

9. MAN-HOURS:

Collective stick socket inspection: 2 hours

10. WARRANTY: Per Enstrom Warranty Policy

11. WEIGHT CHANGE: None

12. LOG BOOK ENTRY:

Record collective stick socket time-in-service at the point at which the collective stick socket is dye penetrant inspected.

13. REPETITIVE ACTION:

Repeat the instructions of this SDB every 300 hours for collective stick sockets with over 3,000 hours time-in-service or on aircraft 25 years or older.

**Collective Stick Socket Inspection Report**

Aircraft Information			
S/N		Total Time	
Owner			
Point of Contact			
Address			
Phone			
Email			
Collective Stick Socket Information			
Part Number	Serial Number	Time-in-Service (Hours)	Crack (Yes/No)

Send the dye penetrant inspection results via postal mail, email, or fax to:

**ENSTROM HELICOPTER CORPORATION**  
**Attn: Product Support (Ref. SDB 0120)**  
 2209 22<sup>nd</sup> Street  
 Menominee, MI 49858  
 Email: [customerservice@enstromhelicopter.com](mailto:customerservice@enstromhelicopter.com)  
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