
Number: SB 2X-27-16

Issued: October 02, 2009

SNS SUBJECT: 27-50 Flaps - Flap Actuator Modification

1. COMPLIANCE

Recommended: Accomplish this Service Bulletin at the next scheduled maintenance, annual inspection, or within the next 12 calendar months, whichever occurs first. Compliance time begins upon receipt of this Service Bulletin.

2. EFFECTIVITY

Cirrus Design SR20 Serials 1005 thru 2029.

Cirrus Design SR22 Serials 0002 thru 3459.

3. APPROVAL

FAA approval has been obtained on all technical data in this Service Bulletin that affects type design.

4. PURPOSE

Recently, Cirrus discovered a sequential dependent condition where if the 0% flap actuator sensor fails and the actuator extends past the 0% point, the actuator rod end could bend. In the event of deploying the flaps to 100% with a bent rod end, the flaps could over-deploy and allow the flap actuator linkages to over-center. If the rod end were to fail while in this position an asymmetric flap condition could result.

To prevent this condition from occurring, this Service Bulletin installs a collar to the flap actuator to prevent the actuator from over-extending and replaces the actuator end fitting and rod end with versions of a new design. These combined changes reduce actuator travel in the event of a sensor failure.

5. DESCRIPTION

This Service Bulletin contains instructions for the modification of the placement of the flap actuator sensors, replacement of the actuator end fitting and rod end, and the addition of a hard stop on the actuator shaft.

6. WARRANTY INFORMATION

Part and labor cost for this Service Bulletin are at the owner's expense.

7. MANPOWER REQUIREMENTS

1.0 man-hour.

8. OTHER PUBLICATIONS AFFECTED

SR20 Airplane Maintenance Manual (p/n 12137-001)

SR20 Illustrated Parts Catalog (p/n 12138-001)

SR22 Airplane Maintenance Manual (p/n 13773-001)

SR22 Illustrated Parts Catalog (p/n 13774-001)

9. WEIGHT AND BALANCE

N/A

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Cirrus Design SR22 Serials 0002 thru 3459.

10. MATERIAL INFORMATION

The following parts are required to comply with this Service Bulletin. Parts can be obtained from an Authorized Cirrus Design Service Center or Parts Distributor.

Order Kit 70231-001 to obtain the following parts:

Item No.	Description	P/N or Spec.	Supplier	Quantity
1	End Fitting	11185-004	Cirrus Design	1
2	Rod End, Male, RH	11315-005	Cirrus Design	1
3	Collar, Shaft	27425-001	Cirrus Design	1
4	Screw, Socket Head	MS21262-37	Cirrus Design	2
5	Nut, Castellated	MS17825-4	Cirrus Design	1
6	Cotter Pin	MS24665-132	Cirrus Design	1

11. ACCOMPLISHMENT INSTRUCTIONS

A. Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
WS 40 Wing Template	13057-101/-102	Cirrus Design	Flap rigging.
WS 132 Wing Template	13057-107/-108	Cirrus Design	Flap rigging.
Inclinometer	PRO360	Macklanburg Duncan Oklahoma City, OK 73125	Deflection angle determination.

- B. Verify the flaps are in the UP position.
- C. Remove key from ignition.
- D. Pull FLAPS circuit breaker.
- E. Remove passenger seats. (Refer to AMM 25-10)
- F. Remove carpet. (Refer to AMM 25-10)
- G. Remove access panels CF4C and CF5. (Refer to AMM 06-00)
- H. Modify flap actuator. (See Figure 01)

CAUTION: To prevent damage to flap hinges and flaps, tape flaps to wing prior to disconnecting actuator.

- (1) Remove cotter pin, nut, washers, and bolt securing flap actuator to torque tube coupler. Discard nut and cotter pin and retain washers and bolt.
- (2) Loosen jam nut securing rod end to flap actuator end fitting.
- (3) Remove rod end fitting and remove jam nut. Discard rod end fitting and retain jam nut.
- (4) Loosen jam nut securing flap actuator end fitting to flap actuator. Remove and discard end fitting.
- (5) Back jam nut to bottom of flap actuator and install new end fitting (item 1) on actuator.
- (6) Bottom out end fitting on actuator to ensure maximum thread engagement. Tighten jam nut.
- (7) Bottom out existing jam nut onto new rod end (item 2).

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- (8) Install rod end into actuator end fitting and bottom out. Leave jam nut loose at this time.
- (9) Cut cable ties securing proximity sensor wiring to flap actuator.
- (10) To facilitate flap rigging, position proximity sensors on flap actuator as follows:
 - (a) Position 0% sensor in approximate location. (See Figure 01)
 - (b) Position 50% sensor 1.0 inch (2.5 cm) from 0% sensor.
 - (c) Position 100% sensor 1.0 inch (2.5 cm) from 50% sensor.
- (11) Reset FLAPS circuit breaker.
- (12) Rotate FLAPS switch to UP position.

CAUTION: Ensure actuator is clear of obstructions within its range of travel.

- (13) Set MASTER SWITCH to ON position.
- (14) Once actuator has stopped moving, set MASTER SWITCH to OFF position.

Note: Stack-up order may be altered to allow for better alignment between flap actuator and torque tube coupler.

- (15) Install existing bolt and washers connecting rod end to torque tube coupler and secure with new nut (item 5). Do not install cotter pin at this time.
- (16) Remove tape securing flaps to wing.

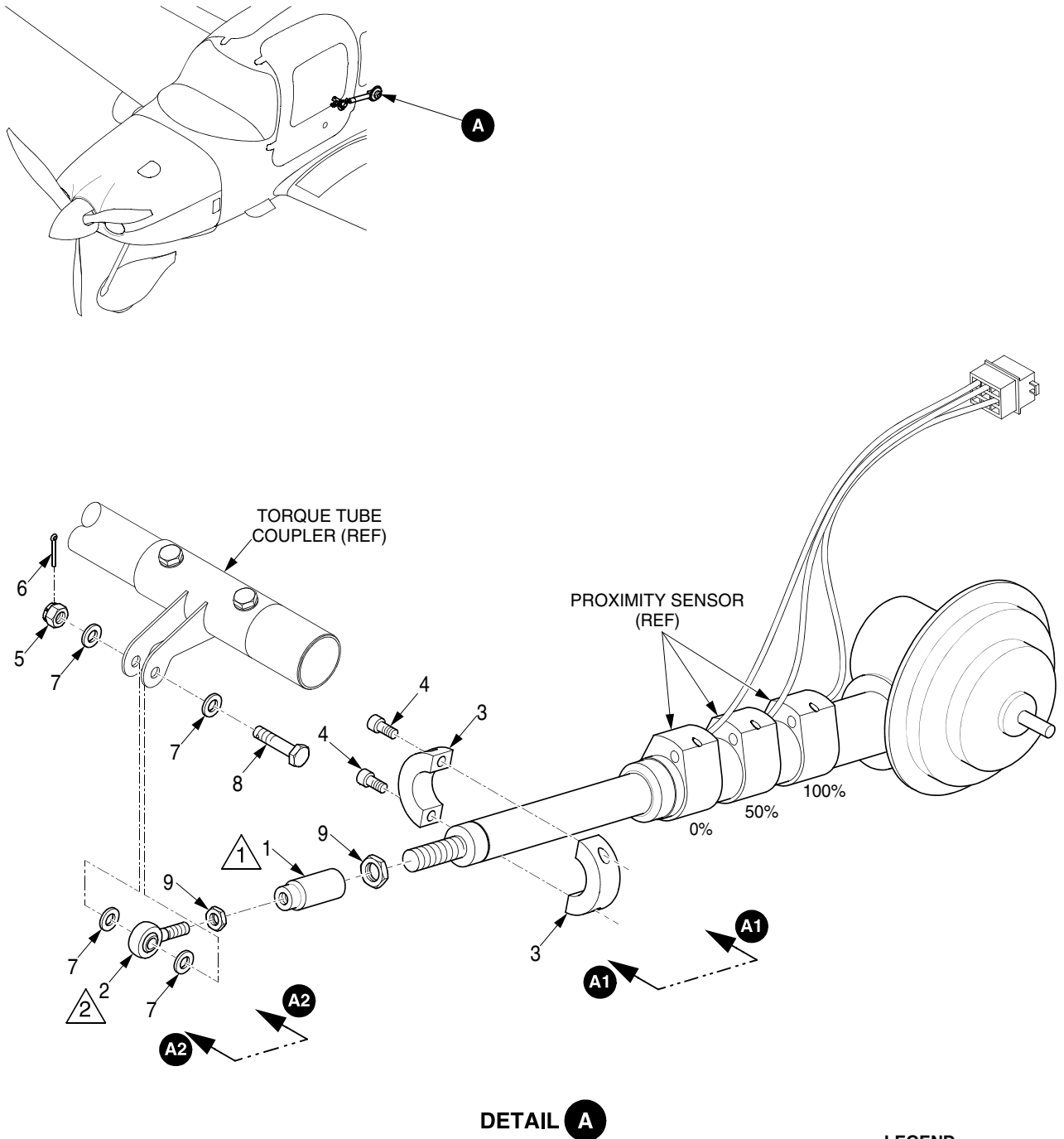
Note: During Adjustment/Test - Flap Travel, it is not necessary to adjust flap actuator end fitting so that flap actuator and rod end connected to torque tube coupler are installed to a depth between end fitting inspection holes. No inspection holes are drilled in new end fitting. Additionally, when in the 0% position, a minimum 0.05 inch (1.27 mm) clearance must be maintained between end fitting and torque tube coupler.

When adjusting position proximity sensors, it may be necessary to lengthen actuator to achieve full 0% position. Accomplish by backing out rod end, but do not exceed 2 turns maximum.

- I. Perform Adjustment/Test - Flap Travel. (Refer to AMM 27-50)
- J. Tighten jam nut securing rod end to actuator end fitting.
- K. Torque bolt securing rod end to torque tube coupler and install new cotter pin (item 6).
- L. Install cable ties securing proximity switch wiring to flap actuator.
- M. Set MASTER SWITCH to ON position.
- N. Reset FLAPS circuit breaker.
- O. Rotate FLAPS switch to 100% position.
- P. Position collar (item 3) onto shaft of actuator leaving 0.05 ±0.01 inch (1.27 ±0.25 mm) clearance between face of collar and actuator seal.
- Q. Torque collar screws (item 4) to 160.0 ±5.0 in-lb (18.1 ±0.6 Nm).
- R. Rotate FLAPS switch to UP position.
- S. Set MASTER SWITCH to OFF position.
- T. Install access panels CF4C and CF5. (Refer to AMM 06-00)
- U. Install carpet. (Refer to AMM 25-10)
- V. Install passenger seats. (Refer to AMM 25-10)
- W. Complete airplane records by noting compliance with SB 2X-27-16 in Aircraft Logbook.

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DETAIL A

NOTE

- 1 Bottom out end fitting on actuator to ensure maximum thread engagement.
- 2 Bottom out rod end in end fitting. During adjustment, rod end may need to be backed out a maximum of 2 turns.

LEGEND

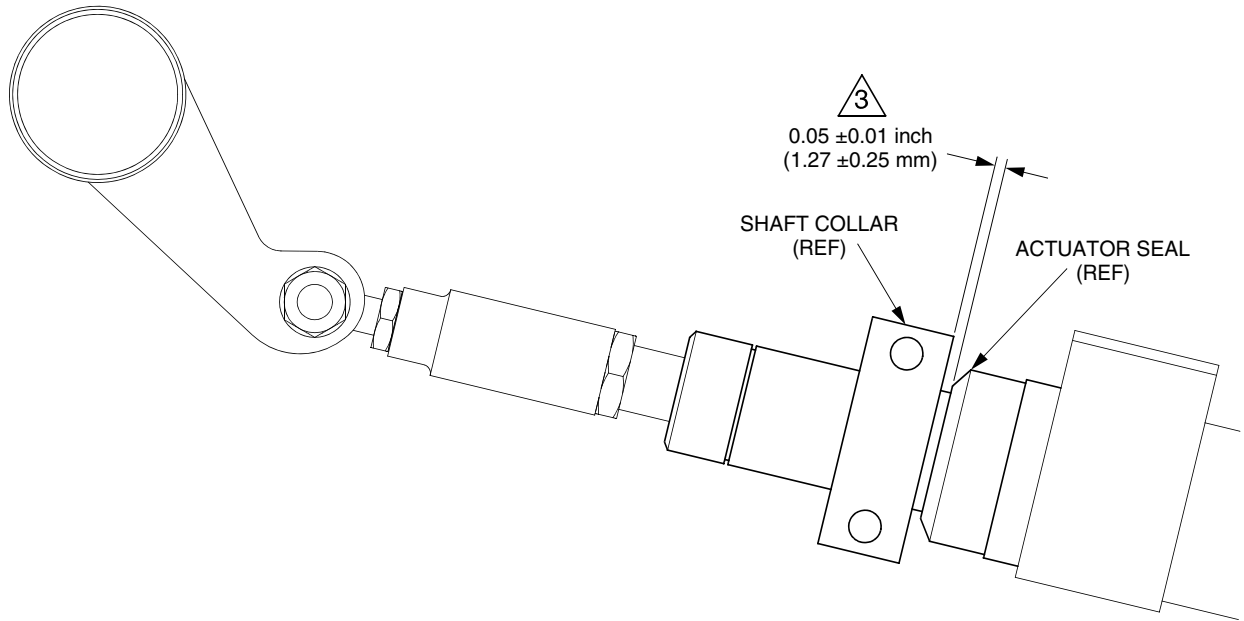
- 1. End Fitting
- 2. Rod End
- 3. Shaft Collar
- 4. Screw
- 5. Castellated Nut
- 6. Cotter Pin
- 7. Existing Washer
- 8. Existing Bolt
- 9. Existing Jam Nut

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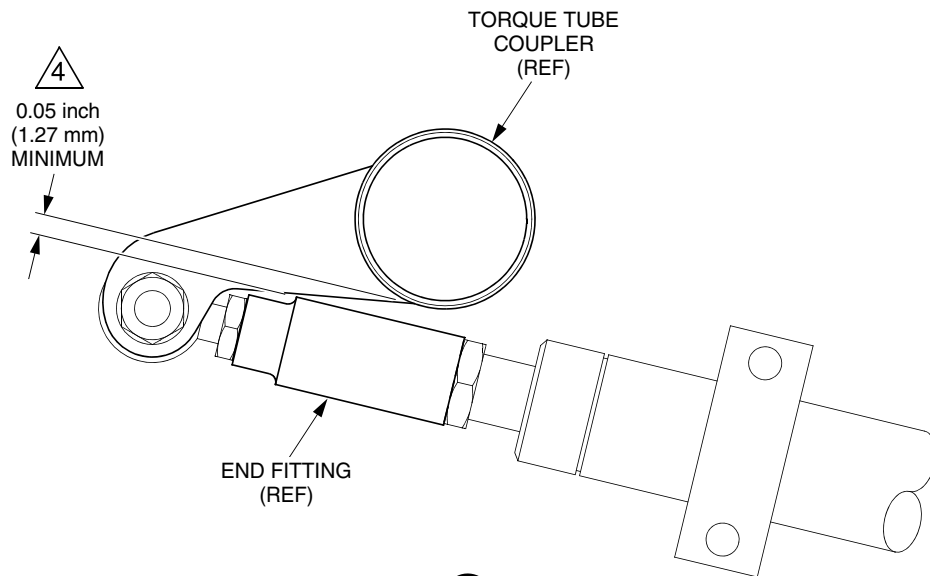
Figure 01
Flap Actuator Modification (Page 1 of 2)

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VIEW A1



VIEW A2

NOTE

- △³ With flaps in 100% position, install shaft collar on actuator shaft with 0.05 ± 0.01 inch (1.27 ± 0.25 mm) gap between face of collar and actuator seal.
- △⁴ With flaps in UP position, ensure a minimum gap of 0.05 inch (1.27 mm) exists between end fitting and torque tube coupler.

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Figure 01
Flap Actuator Modification (Page 2 of 2)

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