Service Bulletin

SB 2X-27-14 R3

Issued: 09 May 2007
Revised: 10 Oct 2007

Models SR20 and SR22

ATA 27-00: Flight Controls
Rudder-Aileron Interconnect Modification

COMPLIANCE

Mandatory: Accomplish this Service Bulletin within 25 Flight Hours or within the next three calendar months, whichever occurs first. Compliance time begins upon receipt of this Service Bulletin.

Note: This Service Bulletin requires that the Airplane Maintenance Manual has Temporary Revision TR 27-01 incorporated. See the Other Publications Affected section of this Service Bulletin for details.

This Service Bulletin has been revised to:

- add new attaching parts, including an improved bungee clamp that replaces the existing Adel clamp at the end of the rudder-aileron interconnect arm,
- re-orient existing cable clamps 180° at RH rudder cable,
- clarify security of attaching parts and orientation of bungee cord ends,
- change effectivity, and
- change manhours.

Operators who have successfully complied with the original release of this Service Bulletin, dated 09 May 2007 or later revisions, must complete SB 2X-27-14 R3 in its entirety.

EFFECTIVITY

Cirrus Design SR20 serial numbers 1005 thru 1861.

Cirrus Design SR22 serial numbers 0002 thru 2333, 2335 thru 2419, 2421 thru 2437.

APPROVAL

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

PURPOSE

On an airplane with an improperly rigged rudder, aileron, or rudder aileron interconnect, there is a potential condition where full cross control input could cause the RH aileron cable clamp to catch onto attaching hardware on the rudder-aileron interconnect arm. This condition could prevent flight controls from responding.

To prevent any possible interference between attaching hardware, this Service Bulletin provides instructions to check rudder, aileron, and rudder-aileron interconnect rigging, and replace the attaching hardware for the rudder-aileron interconnect arm and RH aileron cable clamps. These instructions will ensure that any possible interference caused by an out of tolerance rudder-aileron interconnect system will not result in the interconnect arm catching on a cable terminal clamp.

It is important to note that the described condition has not been seen on aircraft with flight control systems rigged to specifications.

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DESCRIPTION

This Service Bulletin provides for the replacement of attaching hardware on the rudder-aileron interconnect arm and RH aileron cable.

WARRANTY INFORMATION

For aircraft under warranty at the issue date of this Service Bulletin, Cirrus Design will cover all parts and labor costs for this Service Bulletin if the work is accomplished within the Compliance time period and the work is performed at an authorized Cirrus Design Service Center.

Note: Warranty does not cover manhours associated with aileron and/or rudder system rigging adjustments if required.

MANPOWER REQUIREMENTS

1.5 manhours.

OTHER PUBLICATIONS AFFECTED

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

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

SR20 Airplane Maintenance Manual (p/n 12137-001), Reissue A with Temporary Revision TR 27-01 incorporated, or later AMM revision.

SR22 Airplane Maintenance Manual (p/n 13773-001), Reissue A with Temporary Revision TR 27-01 incorporated, or later AMM revision.

WEIGHT AND BALANCE

N/A

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 70197-001 to obtain the following parts.

Item No.	Description	P/N or Spec.	Supplier	Quantity
1	Bungee Clamp	18937-001	Cirrus Design	2
2	Washer	NAS1149F0316P	Cirrus Design	2
3	Nut	MS21044N3	Cirrus Design	3
4	Nut, Castellated	MS17825-3	Cirrus Design	1
5	Cotter Pin	MS24665-132	Cirrus Design	1
6	Bolt	AN3-7	Cirrus Design	1

ACCOMPLISHMENT INSTRUCTIONS

A. Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
WS 144 Rigging Template	13057-109	Cirrus Design Duluth, MN 55811 218-727-2737	Aileron rigging.
Cable Tie	50239-020	Any Source	Secure bungee cord.

B. Remove key from ignition.

C. Set BAT 1, BAT 2, and AVIONICS switches to OFF positions.

D. Remove rear passenger compartment carpet. (Refer to AMM 25-10)

E. Remove cabin floor access panel 3C. (Refer to AMM 6-00)

F. Remove passenger seats. (Refer to AMM 25-10)

G. Remove MFD. (Refer to AMM 31-60)

Note: Inspection/Check - Aileron System Rigging (if aileron is not verified in neutral position) and Inspection/Check - Rudder System Rigging must be performed to ensure proper flight control surface operation prior to modification of rudder-aileron interconnect.

H. Verify aileron is in the neutral position.

1. Insert lock-out pin at aileron actuation pulley in center console.
2. Position WS 144 rigging template on wing.
3. Ensure that aileron is in the neutral (chord) position.
4. If aileron is in the neutral position, remove lock-out pin from aileron actuation pulley in center console.
5. If aileron is not in neutral position, perform Inspection/Check - Aileron System Rigging. (Refer to AMM 27-10)

I. Perform Inspection/Check - Rudder System Rigging. (Refer to AMM 27-20)

J. To increase clearance between LH and RH rudder cables, re-orient RH rudder cable clamps.

1. At middle of rudder-aileron interconnect arm, remove nut securing bolt, washers, and cable clamps to RH rudder cable. Discard nut.
2. Rotate rudder cable clamps 180° so that RH rudder cable is inboard of cable clamp attach bolt.
3. Install nut (item 3) securing bolt, washers, and cable clamps to RH rudder cable. Torque nut between 20 - 25 in-lb (2.3 - 2.8 Nm).

K. Remove and discard bolt, washers, spacer (if installed), Adel clamp, and nut securing bungee cord to rudder-aileron interconnect arm.

CAUTION: To prevent interference with adjacent control cables, forward edge of rudder-aileron interconnect arm must be oriented 90° +5°/-0° to the control cables.

L. Verify forward edge of rudder-aileron interconnect arm is positioned at 90° +5°/-0° perpendicular to the control cables.

Note: Verify bungee cord fits to contour of channel between clamps.

M. Position upper and lower bungee clamps (item 1) over center of bungee cord.

N. Position bungee clamps to end of rudder-aileron interconnect arm so that arm is located between upper and lower bungee clamps.

Note: Orient bolt so that bolt head is positioned downward. (See Figure 01)

It is permissible to add an additional washer (NAS1149F0363P) to ensure correct thread engagement.

O. Install bolt (item 6), washers (item 2), bungee clamps, nut (item 4), and cotter pin (item 5) securing bungee cord to rudder-aileron interconnect arm. Torque nut between 43 - 47 in-lb (4.9 - 5.3 Nm).

P. At forward and aft ends of bungee cord, remove screws, washers, cable clamps, and nuts securing bungee cord Adel clamps to RH aileron cable. Discard nuts.

Q. If installed, remove cable ties securing bungee cord ends to itself.

R. At forward aileron cable, position cable clamps against the swage end of the cable terminal. Ensure cable clamps are not installed over tapered end of swage.

CAUTION: If not oriented properly, the cable clamps may interfere with attaching hardware at the bungee clamps.

Verify cable clamps are positioned so that screws are oriented vertically.

Verify Adel clamps are parallel to cable clamps.

S. Install screw, washer, cable clamps, and nut (item 3) securing forward bungee cord Adel clamp to RH aileron cable. Torque nut between 45 - 50 in-lb (5.1 - 5.6 Nm).

T. At aft aileron cable, position cable clamps against the swage end of the cable terminal. Ensure cable clamps are not installed over tapered end of swage.

CAUTION: If not oriented properly, the cable clamps may interfere with attaching hardware at the bungee clamps.

Verify cable clamps are positioned so that screws are oriented vertically.

Verify Adel clamps are parallel to cable clamps.

U. Install screw, washer, cable clamps, and nut (item 3) securing aft bungee cord Adel clamp to RH aileron cable. Torque nut between 45 - 50 in-lb (5.1 - 5.6 Nm).

V. Perform Adjustment/Test - Rudder-Aileron Interconnect.

1. Verify rudder-aileron interconnect arm is perpendicular to the control cables.
2. Position WS 144 rigging template on wing.
3. Verify full LH rudder deflection causes 5° - 8° RH aileron trailing edge down.
4. Verify full RH rudder deflection causes 5° - 8° LH aileron trailing edge down.
5. If downward motion is less than 5°, too much slack exists. Reduce slack by pulling bungee cord from forward and aft cable clamps away from interconnect arm.
6. If downward motion is greater than 8°, too much tension exists. Reduce tension by pulling bungee cord from forward and aft cable clamps toward interconnect arm.

7. With rudder and aileron neutral, verify that at full aileron trim travel, the bungee cord does not get tensioned.
   a. To ensure bungee cord is not interfering with full RH trim travels, trim roll trim to full right.
   b. To ensure bungee cord is not interfering with full LH trim travels, trim roll trim to full left.
8. Verify that steady rudder application will move the ailerons the required travel.
9. If excess bungee cord exists at ends:
   a. Fold bungee cord end towards the cable clamps and install cable tie securing bungee cord end to itself.
   b. Position excess bungee cord below cable clamps to eliminate any interference with bottom of interconnect arm.
   c. Ensure cable tie is tightly secured and snug against the clamps.
   d. Repeat with opposite end of bungee cord.
10. Cycle RH aileron cable forward and aft several times. Verify cable clamps remain positioned so that screws are oriented vertically. If clamp orientation is altered due to cable rotation, loosen screw, correct clamp orientation, and re-torque nut.

W. Perform Inspection/Check - Rudder-Aileron Interconnect.
   1. Verify bungee cord ends are folded back upon themselves and secured with cable ties.
   2. Verify cable ties are tightly secured and do not slide on bungee cords.
   3. Verify positive bungee cord clearance under slack and full cross control movement.
   4. With full LH rudder and full RH aileron applied, verify that in crossed controls condition that attaching hardware at bungee clamp does not interfere with attaching hardware at aileron cable clamps.
   5. With full RH rudder and full LH aileron applied, verify that in crossed controls condition that attaching hardware at bungee clamp does not interfere with attaching hardware at aileron cable clamps.

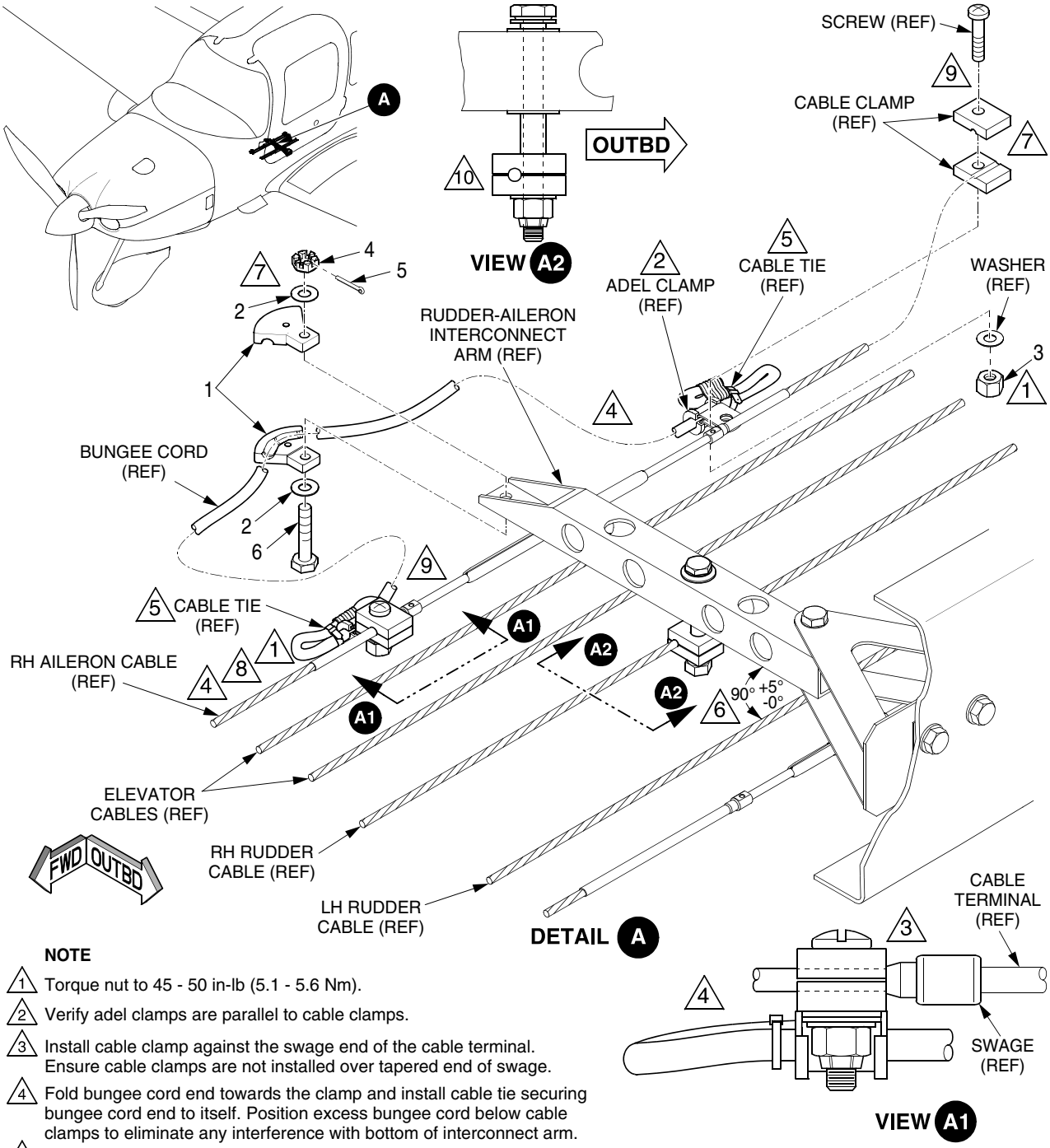
X. Install MFD. (Refer to AMM 31-60)

Y. Install passenger seats. (Refer to AMM 25-10)

Z. Install cabin floor access panel 3C. (Refer to AMM 6-00)

AA. Install rear passenger compartment carpet. (Refer to AMM 25-10)

AB. Complete airplane records by noting compliance with SB 2X-27-14 R3 in Aircraft Logbook.



NOTE

1. Torque nut to 45 - 50 in-lb (5.1 - 5.6 Nm).
2. Verify adel clamps are parallel to cable clamps.
3. Install cable clamp against the swage end of the cable terminal. Ensure cable clamps are not installed over tapered end of swage.
4. Fold bungee cord end towards the clamp and install cable tie securing bungee cord end to itself. Position excess bungee cord below cable clamps to eliminate any interference with bottom of interconnect arm.
5. Ensure cable tie is tightly secured and snug against the clamps.
6. To prevent interference with adjacent control cables, forward edge of rudder-aileron interconnect arm must be oriented 90° +5°/-0° to the control cables.
7. It is permissible to add an additional washer (NAS1149F0363P) to ensure correct thread engagement.
8. If not oriented properly, the cable clamps may interfere with attaching hardware at the bungee clamps. Verify cable clamps are positioned so that screws are oriented vertically.
9. Do not install washer below head of screw. Only one washer is required at nut.
10. *RH rudder cable only:* To increase clearance between LH and RH rudder cables, rotate rudder cable clamps 180° so that RH rudder cable is inboard of cable clamp attach bolt.

LEGEND

1. Bungee Clamp
2. Washer
3. Nut
4. Nut, Castellated
5. Cotter Pin
6. Bolt

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Figure 01 - Rudder-Aileron Interconnect Modification

Service Loop

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Airplane Model: _____ Publication Part Number: SB 2X-27-14 R3

Title of Publication: Rudder-Aileron Interconnect Modification

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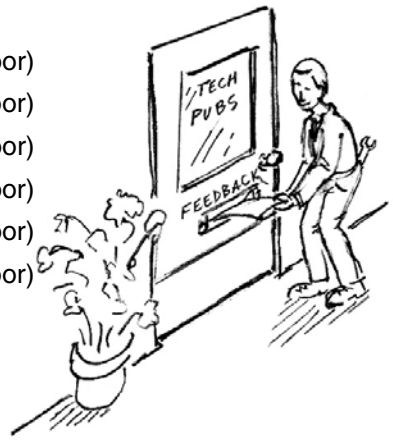

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