TECHNICAL NOTE TN.JS-009

06 July 2012

TITLE

Replacement of Rudder Control Cables

DESCRIPTION

This Technical Note describes the replacement of the rudder control cables on the JS1-A and JS1-B Revelation sailplanes.

INSTRUCTIONS

1. Slide the rudder pedals rearwards to improve access.

2. Disconnect the rudder control cables from the rudder control horns and front anchor points.

3. Cut both cables close to the ferrules at the rudder side. Refer to AC43.13-1B Sub-part 7-147b for instructions on cutting cables.

4. Cut new rudder cables to 8 m (26.25 ft).

5. Remove the rudder control cable and pull the new cable through. The ends of the old and new cables may be temporarily joined to aid pulling the cable in.

6. Crimp thimble-eyes to the rear ends of the rudder cable according to AC43.13-1B Sub-part 7-148. Note that the Nicopress process is used with thimble-eye splices.

7. Pull both new rudder cables forward into the cockpit area until the thimbles line up with the rudder horns and with each cable in turn, position the bolt sleeve into the thimble, slide bolt through rudder horn and bolt sleeve, replace washers, and fit a **new** M6 nyloc nut. Tighten the nyloc nut according to AC43.13-1B Sub-part 4: Nuts, ensuring that the sleeve can rotate freely.

8. Replace plastic tube inserts in S-tubes.

9. Ensure the new cable end is cut clean, without any loose strands. (Using a soldering iron with flux-cored solder, solder the tip of rudder control cable to secure any loose strands. Once soldered, sand off any excess, and then sand the tip into a conical shape, to allow the cable to easily slide into the S-tube). Work the end of the new rudder cable through the S tubes from front to back as depicted in Figure 1.

10. Cut at least 25 mm from where the soldering ends along the cable before finalising the installation. Refer to the note in AC43.13-1B Sub-part 7-148.

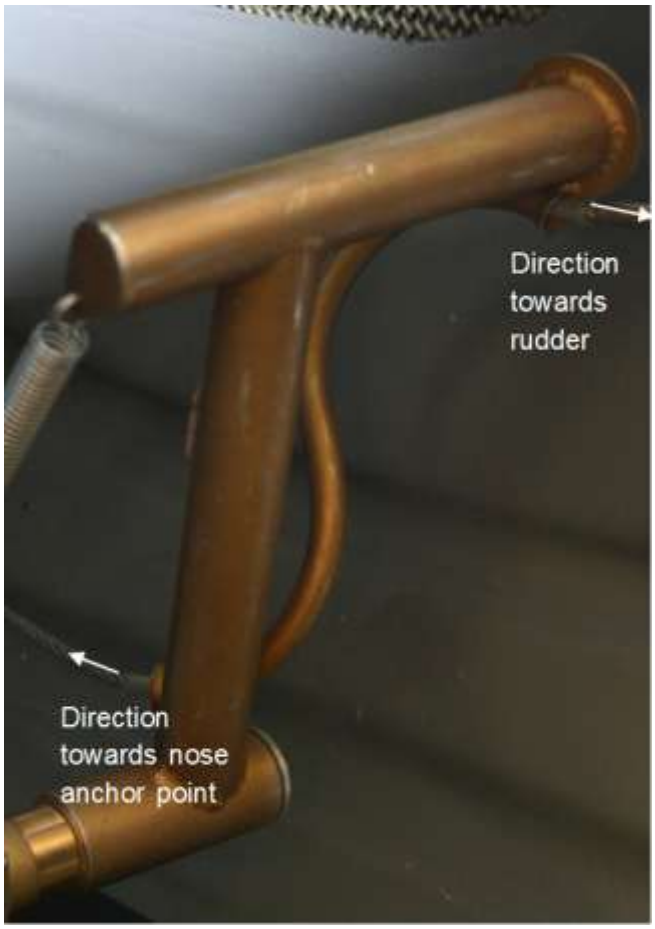

Figure 1: Slide Rudder Control Cable through S-tube and S-tube Plastic Insert

11. Centralise the rudder accurately to the centreline of the fuselage. Secure the rudder in position with masking tape applied diagonally on either side from rudder to the tail plane as depicted in Figure 2, or by other means.

Figure 2: Centralise and Hold Rudder in Position with Masking Tape

12. Feed a new ferrule onto the cable, wrap the cable around a new thimble and pass the free end of the cable back through the ferrule according to AC43.13-1B Sub-part 7-148.

13. Temporarily secure the rudder cables at the front anchor points using the middle adjustment hole in anchor point and sleeves as depicted in Figure 3.

Figure 3: Rudder Control Cable Anchor Points

14. Working on each cable in turn, slide the cable through the ferrules and around the thimbles and tighten until both rudder pedals are approximately centred and at the correct rake angle as depicted in Figure 4.

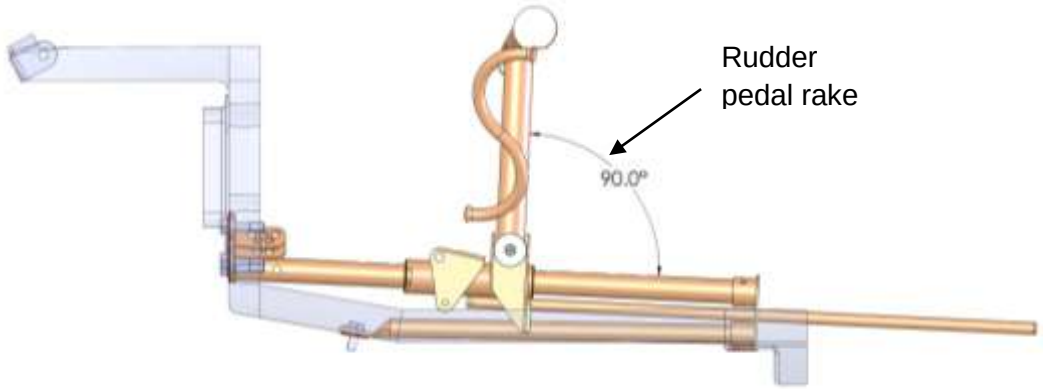

Figure 4: Rudder Pedal Rake Angle

15. Centralise the rudder pedals again and repeat the previous step with the second cable, ensuring that the rudder pedals are exactly centralised.

16. Remove the bolts and sleeves at the rudder cable anchor point and carefully remove the rudder cable end. Permanently crimp according to AC43.13-1B Section 7-148. Repeat for the other cable.

17. Secure the rudder cables to the front anchor points using **new** M6 nyloc nuts. Refer to AC43.13-1B Sub-part 4: Nuts

18. Check that the rudder pedals are centralised with the rudder centralised.

19. Check that the rudder deflection is within the limits prescribed in the Maintenance Manual, with rudder pedals adjusted both fully forward and rearwards. The rudder deflection limits are as specified in Table 3.3.1.1 and 3.3.1.2 of the latest issue of the Maintenance Manual.

20. Verify the integrity of the ferrule swages using the terminal gauge according to AC43.13-1B Sub-part 7-148.

21. Spot mark the newly installed nyloc nuts with spot marking paint.

22. Ensure that all tools and discarded items are accounted for; remove any rag or tissue from the cockpit area and complete the required documentation.

MATERIAL

- 16m Rudder control cables (Part no. 1A-1.21.42, 1/8" 7 x 19 MIL DTL-83420 galvanised lubricated)
- 4 x Thimbles (Part no. 1A-1.21.44, 1/8" for galvanised cable)
- 4 x Cable ferrules (Part no. 1A-1.21.45, 1/8" clamp (Nicopress) zinc-plated copper)
- 4 x M6 nyloc nuts (Stock code 4.4.10)
- 2 x Rudder Pedal Sleeve (Part no. 1A-1.21.20.16)
- Masking tape (not supplied)
- Flux cored solder (not supplied)
- Spot marking paint (not supplied)

TOOLS

- Ferrule swaging (crimping) tool
- Steel cable cutting tool
- 10mm ring spanner
- 10mm open end spanner
- Soldering Iron

MASS AND BALANCE

No effect on mass and balance

NOTES

This Technical Note must be accomplished by approved maintenance personnel.