

TEMPORARY REVISION

AMM-TR-MÄM 42-1213/a

supersedes AMM-TR-MÄM 42-1213

T-Yoke Bolt Torque

This Temporary Revision AMM-TR-MÄM 42-1213/a is approved in conjunction with the Mandatory Design Change Advisory MÄM 42-1213/b and is valid in conjunction with the Airplane Maintenance Manual (AMM) until this Temporary Revision has been incorporated into the AMM.

The limitations and information contained herein either supplement or, in the case of conflict, override those in the AMM.

The technical information contained in this document has been approved under the authority of DOA No. EASA.21J.052.

Doc. No.	Section	Affected Pages
7.02.15	05-28-50	16a, 16aa
	20-10-00	4a, 4aa
	27-20-00	2a, 2aa, 3a, 3aa, 6a, 6aa, 7a, 7aa, 7b, 7bb, 9a, 9aa, 101a, 101aa, 206a, 206aa, 208a, 208aa, 210a, 210aa, 211a, 212a, 213a, 213aa, 216a, 216aa, 217, 218, 219, 220, 221, 222

Instruction

- Print this document on yellow paper (double-sided).
- Insert this cover page as the first page of the AMM.
- Insert the other pages of this Temporary Revision adjacent to or in front of the corresponding AMM pages.

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CHAPTER 05
TIME LIMITS AND MAINTENANCE CHECKS
Section 05-28-50
Maintenance Checklist Airframe

2. Cabin**E. Flight Control System in Cabin**

The following item is added to the existing table:

<i>100 hr items marked * apply to US registered airplanes only</i>		Interval					
	Inspection Items, Flight Control System in Cabin	100	200	1000	2000	Time	Initials
12a.	Examine the torque seal marks on the T-yoke bolt head and the self locking nut at the rudder steering bracket.	X*	X	X	X		

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CHAPTER 20
STANDARD PRACTICES
Section 20-10
Standard Practices - Airframe

4. Special Torque Values

The following item is added to the existing table:

Part	Torque (Nm)	Torque (lbf.ft.)
T-yoke bolt at the rudder steering bracket	9.0	6.6

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CHAPTER 27
FLIGHT CONTROLS
Section 27-20-00
Flight Controls - Rudder

Figure 1 is amended to read:

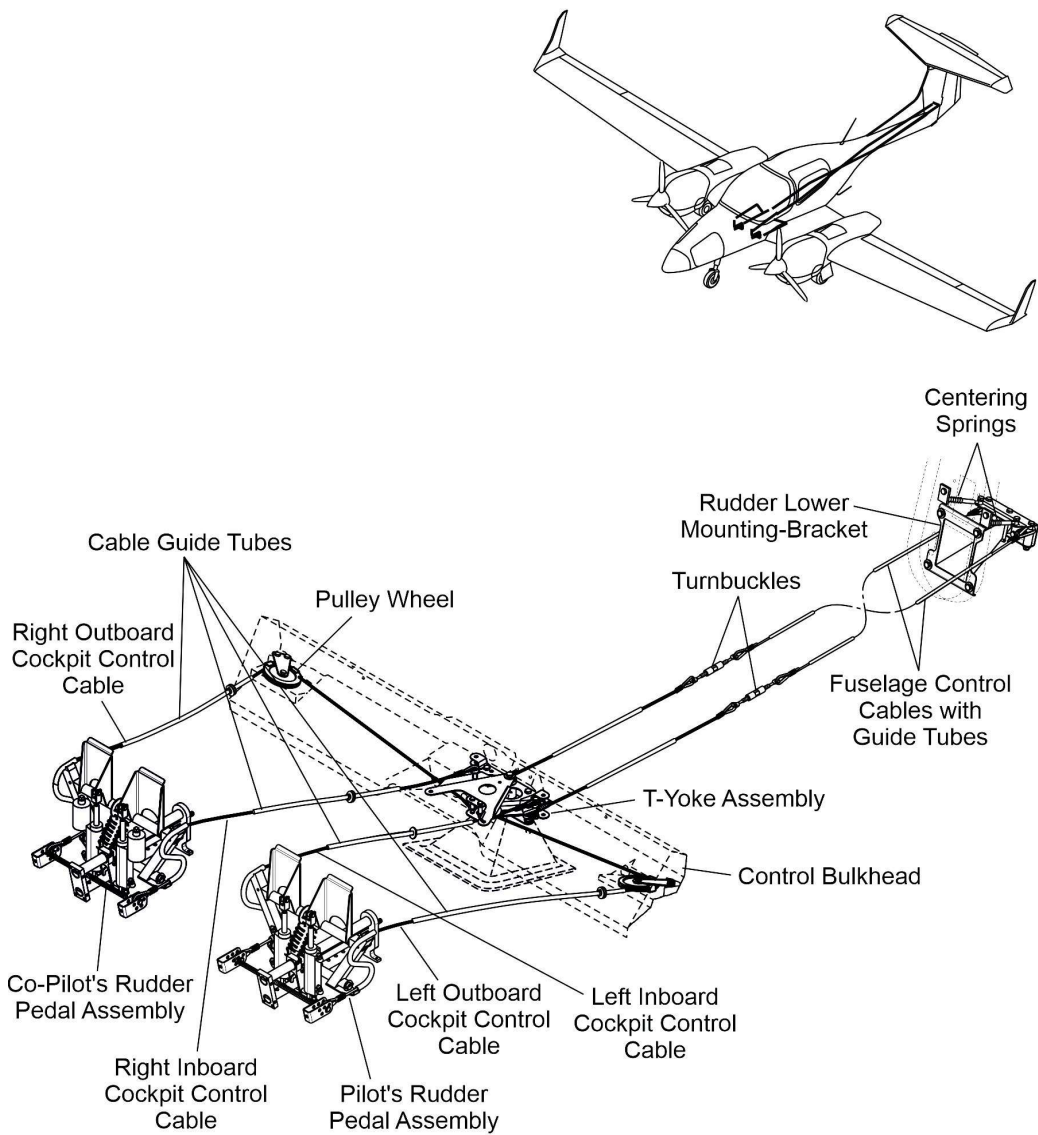


Figure 1: Rudder Control System

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The following paragraph is amended to read:

2. Description

The DA 42 NG has a set of rudder control pedals for each pilot. The pedal assembly can be adjusted.

Figure 1 shows the rudder control system. Figure 2 shows the rudder pedal assembly with manual pedal adjustment. Figure 3 shows the rudder pedal assembly with electrical pedal adjustment (optional equipment, OÄM 42-070). Figure 4, 4A and 4B show the rudder control in the cockpit and Figure 5 shows the rudder controls in the fuselage. The system has these components:

- A rudder pedal assembly for each pilot at the front of the cockpit. The forward part of each pedal connects to a brake master cylinder (refer to Section 32-40 for more data about the brake system).
- An adjuster handle for each pilot, attached to the aft face of each rudder pedal assembly or as optional equipment, an adjuster switch for each pilot, located at the rear wall of the leg room.
- A T-yoke (a “T” shaped lever) assembly in the fuselage below the center console. The T-yoke attaches to the bottom of the control bulkhead and to the rudder steering bracket on the fuselage shell.
- A rudder pedestal at the rear of the fuselage. The rudder lower mounting-bracket is attached to the rudder leading edge. It connects the rudder to the rudder pedestal.
- Cable assemblies. Flexible control cables connect the cockpit front bulkhead to the T-yoke. Two long flexible control cables connect the T-yoke to the rudder. Each of the long flexible cables has a turnbuckle assembly for adjusting the length of the cable.

Six bolts attach each rudder pedal assembly to the cockpit floor.

Each rudder pedal assembly has 2 pedals. Each pedal has a lever and a foot pad. Each pedal has an “S” shaped tube. The lower part of the tube aligns with the pivot of the pedal. The upper part of the tube aligns with the foot pad of the pedal.

Four control cables (cockpit cables) go from the cockpit front bulkhead to enter the bottom of each “S” shaped tube. A multi hole fitting at the bulkhead gives adjustment for each fitting. Each cable goes through an “S” shaped tube and comes out at the top of the tube. Each cable then goes from the tube to the T-yoke.

Each outboard cockpit control cable goes through a cable guide tube in the aft face of the floor panel. Each outboard cockpit control cable goes inboard through a guide pulley on the control bulkhead. The cables connect each outer pedal to the front arm of the T-yoke.

Each inboard cockpit control cable goes through a cable guide tube in the aft face of the floor panel. The cables connect each inner pedal to the side arms of the T-yoke.

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The following paragraph is amended to read:

Two cable assemblies (fuselage cables) attach to the rear of the T-yoke. Each cable has a short front cable and a longer rear cable. All cables go through cable guide tubes. Turnbuckles connect the front cable to the rear cable. The turnbuckles can adjust the tension in the fuselage cables and the neutral position of the rudder.

The two fuselage cables go through cable guide tubes in the rear fuselage. The cables attach to the rudder lower mounting bracket. The cables cross over each other in the rear fuselage.

The rudder stop which limits the rudder deflection to the left side is located left of the lower rudder hinge (Figure 4). The rudder stop which limits the ruder deflection to the right side is located right of the rudder lower hinge. Each rudder stop consists of a nut which is welded to the rudder lower mounting-bracket and a bolt which is held tight in the nut by a jam nut.

The following paragraph is amended to read:

3. Operation

If you move the pilot's (co-pilot's) left rudder pedal forward:

- The top of the "S" shaped tube of that pedal moves forward.
- The "S" shaped tube of that pedal pulls the left outboard cockpit control cable (right inboard cockpit control cable).
- The left outboard cockpit control cable (right inboard cockpit control cable) moves the T-yoke counterclockwise (seen from above).
- The T-yoke pulls the fuselage control cable attached to its right arm forward. This control cable connects to the left of the rudder and deflects the rudder to the left.
- The rudder movement pulls the other fuselage control cable aft. This control cable connects to the left arm of the T-yoke and moves aft with the left side of the T-yoke.
- The T-yoke pulls the left inboard cockpit control cable and the right outboard cockpit control cable aft.
- The left inboard cockpit control cable pulls the "S" shaped tube on the pilot's right rudder pedal aft and the right outboard cockpit control cable pulls the "S" shaped tube on the co-pilot's right rudder pedal aft.

– A spring in the co-pilot's (pilot's) rudder pedal assembly moves the co-pilot's (pilot's) left rudder pedal forward.

If you move the pilot's (co-pilot's) right rudder pedal forward each part moves in the opposite sense. The rudder moves to the right and pulls the left outboard cockpit control cable and the right inboard cockpit control cable aft.

Figure 4 is amended to read:

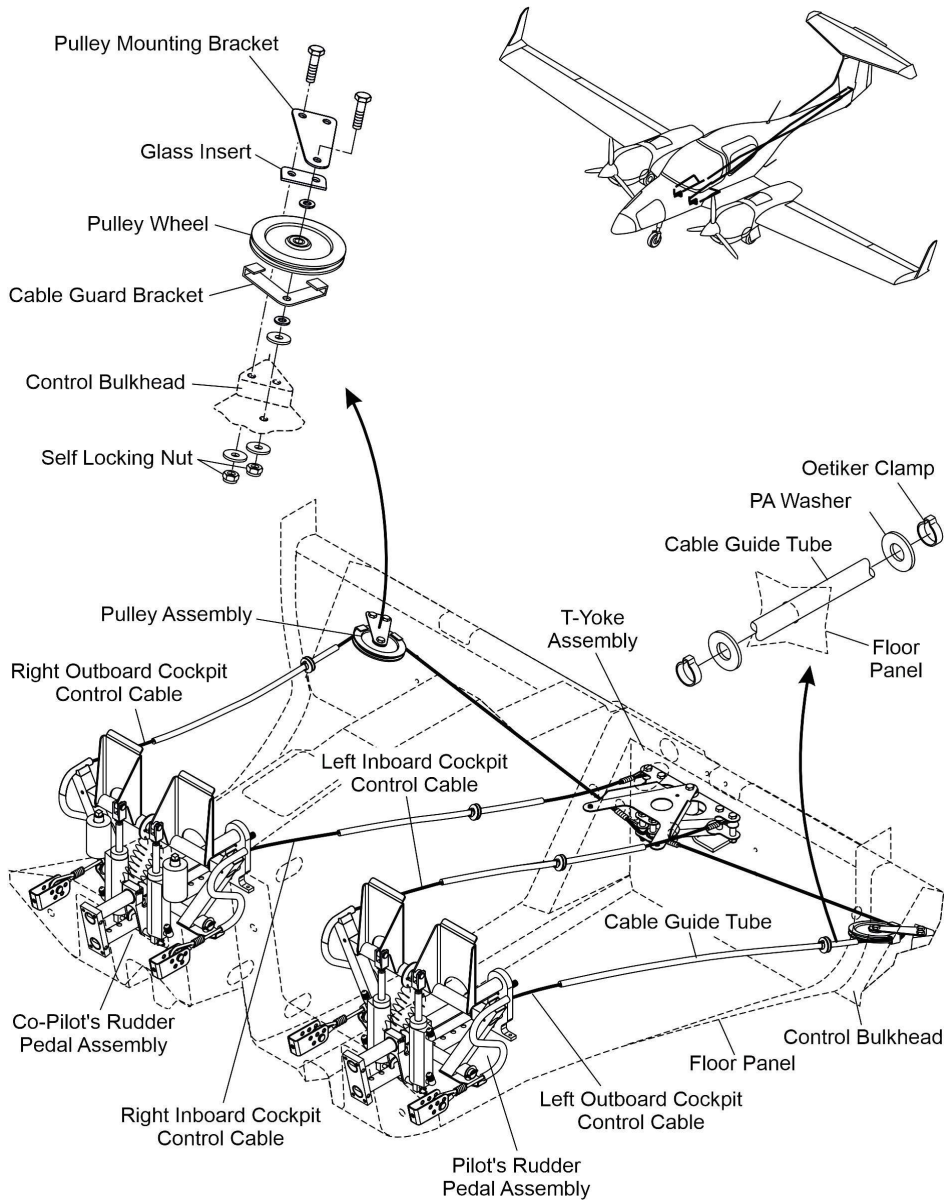


Figure 4: Rudder Controls in Cockpit

The following figure is added:

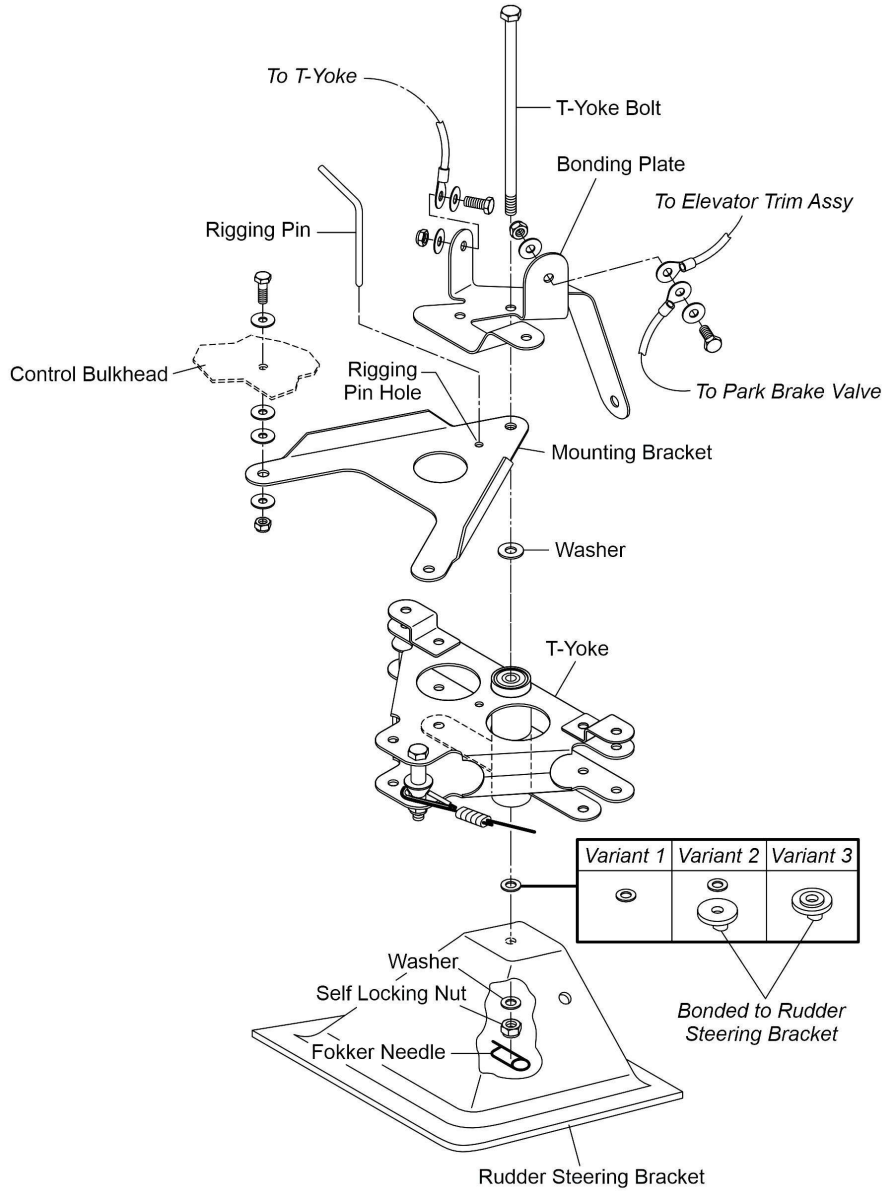


Figure 4A: T-Yoke Installation

The following figure is added:

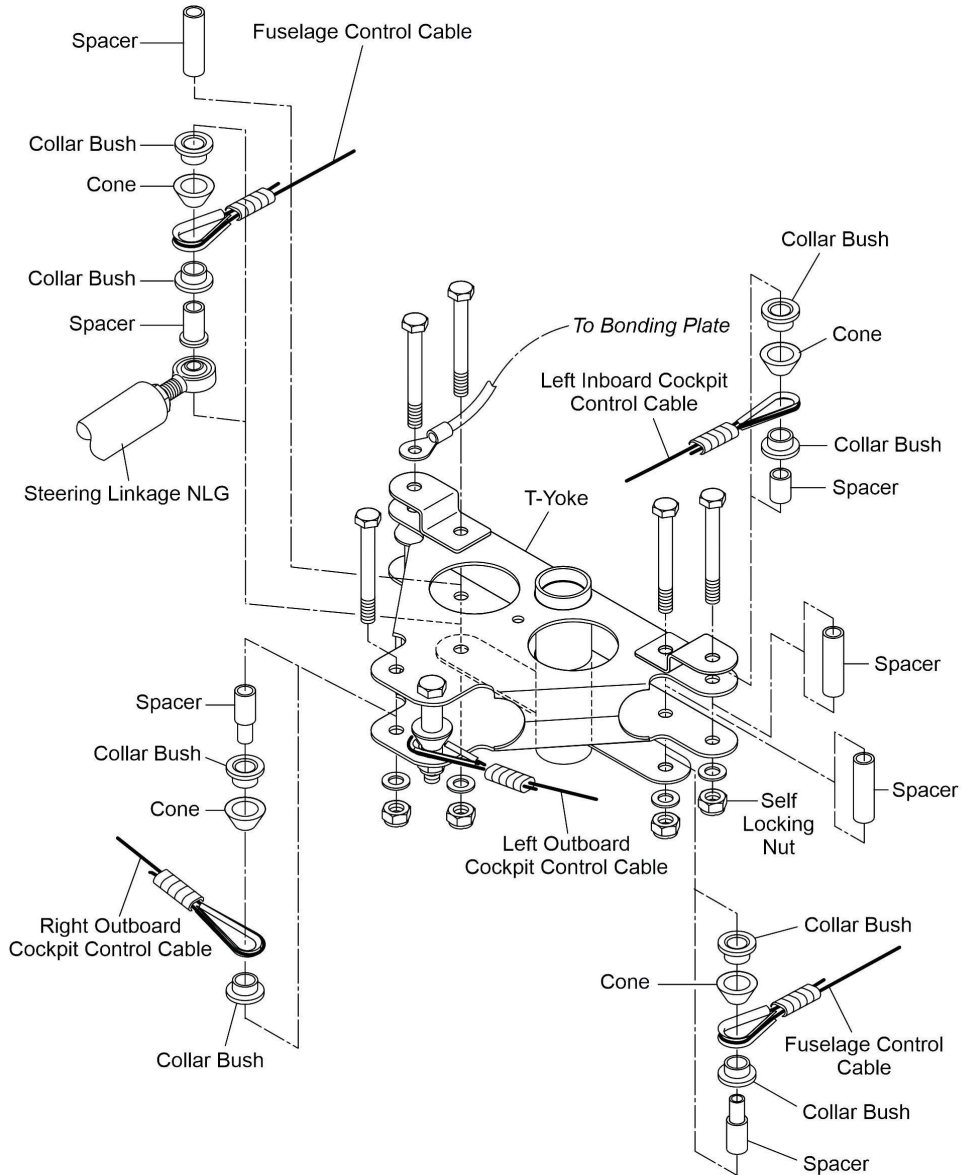


Figure 4B: Cable Installation

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Figure 5 is amended to read:

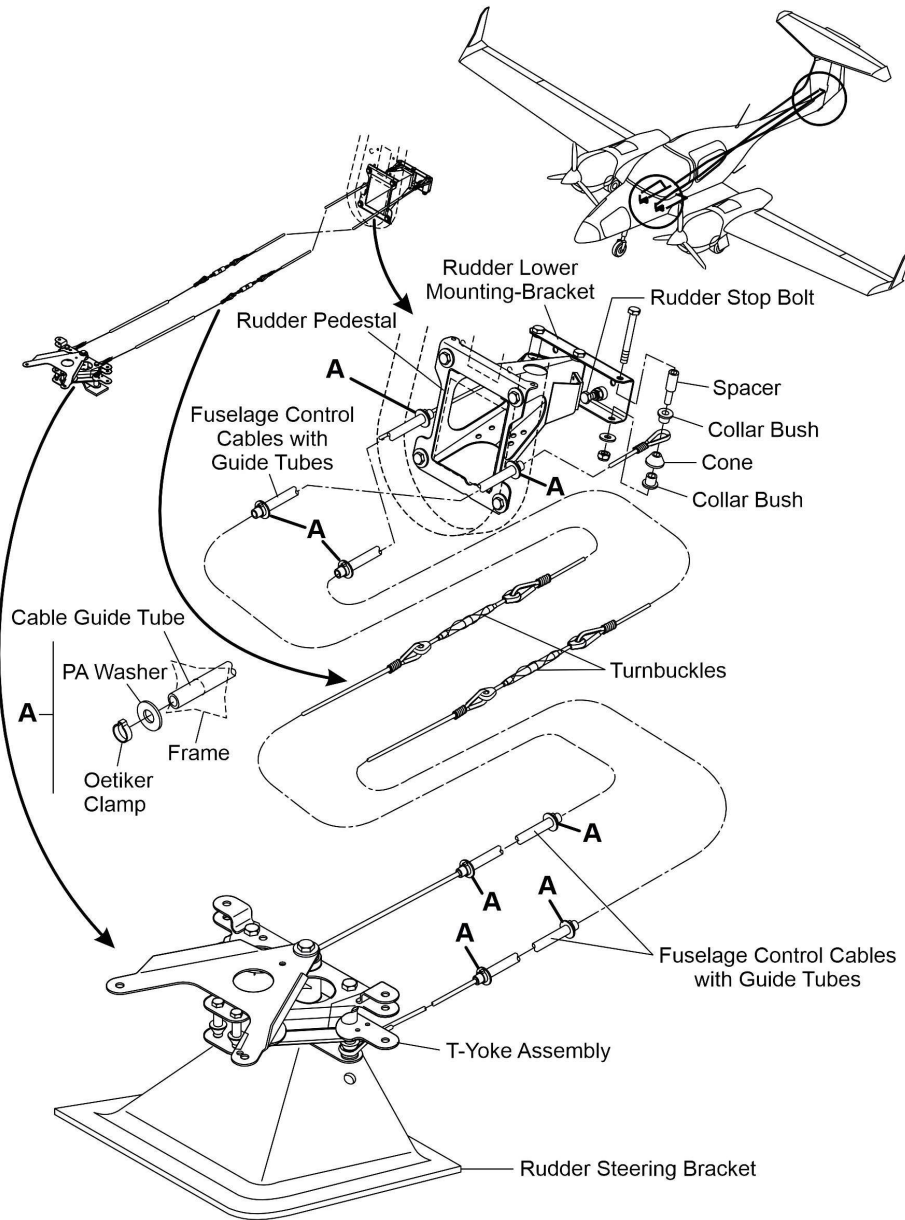


Figure 5: Rudder Controls in the Fuselage

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Trouble-Shooting**1. General**

The following item is added to the existing table:

Trouble	Possible Cause	Repair
Torque seal marks on T-yoke bolt or self-locking nut are broken.	Untightend self-locking nut.	Replace self-locking nut. Torque T-yoke bolt.

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Maintenance Practices

4. Remove/Install the Rudder Control Cables

B. Remove the Cockpit Rudder Control Cables (Front Cables)

The following item is amended to read:

	Detail Steps/Work Items	Key Items/References
(2)	<p>Remove the cable between the cockpit front bulkhead and the T-yoke:</p> <ul style="list-style-type: none"> - Remove the nut, washers, bolt and spacer that attach the cable to the multi hole bracket at the bulkhead. - Remove the nut, washer, bolt, collar bush, cone with pressed-in collar bush and spacer(s) that attach the cable to the T-yoke. - Cut the eye end from the cable that you will remove at the bulkhead end. - Remove the old cable. 	<p>Refer to Figures 2 and 3.</p> <p>Refer to Figure 4B.</p>

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C. Install the Rudder Control Cables (Front Cables)

The following item is amended to read:

	Detail Steps/Work Items	Key Items/References
(6)	Install the cable to the T-yoke: <ul style="list-style-type: none"> - Install the bolt, collar bush, cone with pressed-in collar bush and spacer(s) that attach the cable to the T-yoke. - Install a washer and new self-locking nut onto the bolt. 	Torque to 6.4 Nm (4.7 lbf.ft.). Always use new self locking nuts.

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D. Remove the Fuselage Rudder Control Cables (Rear Cables)

The following items are amended to read:

	Detail Steps/Work Items	Key Items/References
 	(2) Remove the cable between the T-yoke and the turnbuckle: – Remove the nut, washer, bolt, collar bush, cone with pressed-in collar bush and spacers that attach the cable, the NLG steering linkage (only RH side) and the bonding cable (only RH side) to the T-yoke. – Cut the eye end from the cable that you will remove at the T-yoke. – Remove the old cable aft. – Cut the eye end from the cable that you will remove at the turnbuckle.	Refer to Figure 4B.
 	(3) Remove the cable between the turnbuckle and the rudder: – Remove the nut, washer, bolt, collar bush, cone with pressed-in collar bush and spacer that attach the cable to the rudder lower mounting bracket. – Cut the eye end from the cable that you will remove at the rudder end. – Remove the old cable forward. – Cut the eye end from the cable that you will remove at the turnbuckle.	Refer to Figure 5.

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The following procedure is amended to read:

E. Install the Fuselage Rudder Control Cables (Rear Cables)

	Detail Steps/Work Items	Key Items/References
	<p>WARNING: ONLY TRAINED AND AUTHORIZED PERSONS SHOULD INSTALL CABLE EYE ENDS. IF THE EYE ENDS ARE NOT INSTALLED CORRECTLY, THE RUDDER CONTROLS CAN FAIL. THIS CAN CAUSE DEATH OR INJURY TO PERSONNEL.</p>	
	<p>Note: Install eye ends in accordance with FAA AC 43.13-1B, Chapter 7, Section 8.</p> <p>Note: To make the work easier, install an eye end on one end of the cable before you install it in the airplane.</p>	
I	<p>(1) Install a new eye end to the front of the cable at the T-yoke end before you install the cable in the airplane end:</p> <ul style="list-style-type: none"> – Use cables to specification LN9374 or ISO 2020 or MIL-DTL-83420, stretched to 60% MBS. – Make the eye-end using Locoloc thimbles and Nico-Press clamps appropriate to the installed 3.2 mm (1/8 in) diameter steel cables. – Inspect the cable eye end for correct assembly. – If necessary for your Airworthiness Authority, send a sample eye end for proof test. 	<p>Inspect cable swages with go/no go gauge for 1/8 in Nicopress oval sleeve in accordance with FAA AC 43.13-1B, Chapter 7, Section 8.</p>
I	<p>(2) Push the control cable through the cable guide tube from the front.</p>	<p>Refer to Figure 5. Through the front and rear main bulkheads.</p>

	Detail Steps/Work Items	Key Items/References
(3)	<p>Install a new eye end to the cable at the turnbuckle end:</p> <ul style="list-style-type: none"> – Make the eye-end using Locoloc thimbles and Nico-Press clamps appropriate to the installed 3.2 mm (1/8 in) diameter steel cables. – Inspect the cable eye end for correct assembly. – If necessary for your Airworthiness Authority, send a sample eye end for proof test. 	<p>Inspect cable swages with go/no go gauge for 1/8 in Nicopress oval sleeve in accordance with FAA AC 43.13-1B, Chapter 7, Section 8.</p>
(4)	<p>Install a new eye end to the rear cable before you install the cable into the airplane:</p> <ul style="list-style-type: none"> – Use cables to specification LN9374 or ISO 2020 or MIL-DTL-83420, stretched to 60% MBS. – Make the eye-end using Locoloc thimbles and Nico-Press clamps appropriate to the installed 3.2 mm (1/8 in) diameter steel cables. – Inspect the cable eye end for correct assembly. – If necessary for your Airworthiness Authority, send a sample eye end for proof test. 	<p>Inspect cable swages with go/no go gauge for 1/8 in Nicopress oval sleeve in accordance with FAA AC 43.13-1B, Chapter 7, Section 8.</p>
(5)	<p>Push the cable through the cable guide tubes from the front.</p>	<p>Towards the rudder. Refer to Figure 5.</p>

	Detail Steps/Work Items	Key Items/References
(6)	<p>Install a new eye end to the cable at the rudder mounting bracket end:</p> <ul style="list-style-type: none"> - Make the eye-end using Locoloc thimbles and Nico-Press clamps appropriate to the installed 3.2 mm (1/8 in) diameter steel cables. - Inspect the cable eye end for correct assembly. - If necessary for your Airworthiness Authority, send a sample eye end for proof test. 	<p>Inspect cable swages with go/no go gauge for 1/8 in Nicopress oval sleeve in accordance with FAA AC 43.13-1B, Chapter 7, Section 8.</p>
(7)	<p>Install the cable to the rudder lower mounting-bracket:</p> <ul style="list-style-type: none"> - Install the bolt, collar bush, cone with pressed-in collar bush and spacer that attach the cable to the rudder. - Install a washer and new self-locking nut. 	<p>Refer to Figure 5.</p> <p>Torque 6.4 Nm (4.7 lbf.ft.). Use a new self-locking nut.</p>
(8)	<p>Install the cable to the T-yoke:</p> <ul style="list-style-type: none"> - Install the bolt, collar bush, cone with pressed-in collar bush and spacers that attach the cable, the NLG steering linkage (only RH side) and the bonding cable (only RH side) to the T-yoke. - Install a washer and a new self-locking nut. 	<p>Refer to Figure 4B.</p> <p>Torque 6.4 Nm (4.7 lbf.ft.). Use a new self-locking nut.</p>
(9)	<p>Adjust both left and right rudder cable turnbuckles to give the correct tension to the control cables.</p>	<p>Refer to Paragraph 3.</p>
(10)	<p>Do a test for the correct range of rudder movement.</p>	<p>Refer to Paragraph 2.</p>

	Detail Steps/Work Items	Key Items/References
(11)	Make sure the rudder deflects to the left (right), when the left (right) rudder pedal is moved forward.	
(12)	Do an inspection of all the controls that you have adjusted. If necessary for your Airworthiness Authority, do a duplicate inspection of the controls.	
(13)	Install these items: <ul style="list-style-type: none">- The pilots' seats.- The passenger seat.	
(14)	Record type of cables installed (stainless or non-stainless steel cables) in the airplane logs.	

The following procedure is amended to read:

6. Rudder Control Cable and T-Yoke Access

Rudder Cable/Yoke	Remove/Install Access	References
Cockpit cables between the cockpit front bulkhead and the T-yoke.	Pilot's seat.	Section 25-10.
Rear fuselage cables between the T-yoke and the rudder.	Pilot's seat. Passenger seat. Rudder.	Section 25-10. Section 55-40.
T-yoke.	Pilots' seats.	Section 25-10.

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The following paragraph is added:

7. Remove/Install the T-Yoke

A. Remove the T-Yoke

	Detail Steps/Work Items	Key Items/References
(1)	Remove the pilot/co-pilot seats.	Refer to Section 25-10.
(2)	Remove the passenger seats.	Refer to Section 25-10.
(3)	Remove the middle tunnel front cover.	
(4)	For S/N 42.049, 42.054, 42.090 and 42.095 and subsequent: Disconnect the flexible heating hose, that is routed along the aft side of the rudder steering bracket from the heating Y-connector. Remove the flexible heating hose from the aft side of the rudder steering bracket.	For better access. Refer to Section 21-20.
(5)	For S/N 42.049, 42.054, 42.090 and 42.095 and subsequent: Disconnect the Y-connector from the flexible heating hose, that comes from the right center wing.	For better access. Refer to Section 21-20.
(6)	Disconnect the short aileron push rod from the idler lever on the main spar. Discard self-locking nut.	For better access. Refer to Section 27-10.
(7)	Disconnect the cockpit rudder control cables (front cables) from the T-yoke. Discard self-locking nuts.	Refer to Paragraph 4.
(8)	Release rudder cable turnbuckles.	
(9)	Disconnect the fuselage rudder control cables (rear cables) and the NLG steering linkage from the T-yoke. Discard self-locking nuts.	Refer to Paragraph 4. Refer to Section 32-50.
(10)	Remove the Fokker Needle.	

	Detail Steps/Work Items	Key Items/References
(11)	<p>Remove the self-locking nut from the T-yoke bolt:</p> <ul style="list-style-type: none"> - Block the self-locking nut with a wrench. - Turn the T-yoke bolt until the self-locking nut falls off. - Remove washer and self-locking nut from the airplane. - Discard the self-locking nut. 	
(12)	Remove the T-yoke bolt from the T-yoke.	
(13)	Remove the T-yoke.	
(14)	<p>Make sure that the following items are removed:</p> <ul style="list-style-type: none"> - The washer between mounting bracket and T-yoke. - If installed, the washer between T-yoke and rudder steering bracket. - The washer at the self-locking nut. 	Refer to Figure 4A.

B. Install the T-Yoke

	Detail Steps/Work Items	Key Items/References
(1)	Move T-yoke into position.	Refer to Figure 4A.
(2)	<p>Make sure that following items are in position:</p> <ul style="list-style-type: none"> - The washer between the mounting bracket and the T-yoke. - If installed, the washer between T-yoke and rudder steering bracket. - The washer at the self-locking nut. 	Refer to Figure 4A.
(3)	Install T-yoke bolt.	
(4)	Block the self-locking nut with a wrench.	Use a new self-locking nut.

	Detail Steps/Work Items	Key Items/References
(5)	Turn the T-yoke bolt until the self-locking nut is positioned above the hole for the Fokker Needle.	Do not tighten the T-yoke bolt.
(6)	Remove the wrench.	
(7)	Turn the T-yoke bolt into position so that the Fokker Needle can be installed to the T-yoke bolt.	
(8)	Install the Fokker Needle.	Refer to Figure 4A.
(9)	Turn the T-yoke bolt by 180°.	
(10)	Close the Fokker Needle.	
<p>Note: The tightening procedure consists of 2 steps in order to guarantee that the pointy locking piece of the Fokker Needle is hidden under the rudder steering bracket and does not point towards the heating hose.</p>		
(11)	Tighten the T-yoke bolt: – Block the self-locking nut with an open-end wrench.	Torque 6 Nm (4.4 lbf.ft.).
(12)	Remove the open-end wrench.	
(13)	Move the T-yoke bolt into position: – Do NOT block the self-locking nut. – Turn the T-yoke bolt clock-wise so that the pointy locking piece of the Fokker Needle is directly below the rear edge of the rudder steering bracket.	Locking piece pointing to approx. 8 o'clock, seen from above with 0 o'clock in flight direction.
(14)	Tighten the T-yoke bolt: – Block the self-locking nut with an open-end wrench.	Torque 9 Nm (6.6 lbf.ft.). After tightening the T-yoke bolt to the final torque the pointy locking piece of the Fokker Needle will point to the left (approx. 9 o'clock, seen from above with 0 o'clock in flight direction) and will not damage the heating hose.
(15)	Mark the head of the T-yoke bolt with at least two torque seal marks.	

	Detail Steps/Work Items	Key Items/References
(16)	Mark the self-locking nut with a torque seal mark.	
	<p>CAUTION: Tighten the T-yoke bolt to the correct torque only with released rudder cable turnbuckles.</p> <p>CAUTION: It is essential to use a torque wrench, in order assure application of the correct torque and to avoid inadvertent loosening of the self-locking nut.</p> <p>CAUTION: If the T-yoke bolt is already tightened to the correct torque, do not change the orientation of the Fokker Needle by turning the T-yoke bolt.</p>	
(17)	Install the cockpit rudder control cables (front cables) including the bonding cable to the T-yoke. Make sure that bonding cable contact surfaces are not contaminated and blank metal.	Refer to Paragraph 4.
(18)	Install the fuselage rudder control cables (rear cables) and the NLG steering linkage to the T-yoke.	Refer to Paragraph 4. Refer to Section 32-50.
(19)	For S/N 42.049, 42.054, 42.090 and 42.095 and subsequent: Connect the heating Y-connector to the flexible heating hose coming from the right center wing. Fix the flexible heating hose with cable ties.	Refer to Section 21-20.
(20)	For S/N 42.049, 42.054, 42.090 and 42.095 and subsequent: Re-route the flexible heating hose along the aft side of the rudder steering bracket and connect it to the heating Y-connector. Fix the flexible heating hose with cable ties.	Refer to Section 21-20.
(21)	Connect the short aileron push rod to the idle lever on the main spar.	Refer to Section 27-10.
(22)	Install the middle tunnel front cover.	
(23)	Install the pilot/co-pilot seats.	Refer to Section 25-10.

	Detail Steps/Work Items	Key Items/References
I I	(24) Install the passenger seat.	Refer to Section 25-10.

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