

as specified each 50 hours each 100 hours			Date:	Inspector:
			Serial No.:	Mechanic:
Inspections				
Fuel system				
	O	O	1	Inspect the fuel lines for leaks, security, chafing, dents and cracks. Replace fuel lines as required.
	O	O	2	Inspect fuel selector valve for operation and proper pointer indication
	O	O	3	Drain fuel system
	O	O	4	Check acro- and center tank attachment
	O	O	5	Check acro-, center- and both wing tanks for leaks
	O	O	6	Check boost pump
	O	O	7	Check fuel filler caps for security and proper operation
	O	O	8	Check proper seat and condition of sealing lip
Flight controls				
	O	O	1	Remove wing access panels.
	O	O	2	Inspect control surfaces for security of attachment, free movement, dents, delaminations and cracks.
	O	O	3	Inspect elevator trim system for proper operation and rigging.
	O	O	4	Inspect hinges for condition, cracks and security; hinge bolts, hinge bearings, self-locking nuts.
	O	O	5	Check free play in control system: torque tube, control surfaces, control sticks, rod end bearing, deflector limiter.
		O	6	Lubricate rear torque tube bearing. Remove bolt for greasing.
	O	O	7	Lubricate aileron rodend bearings, trim flap hinges and trim lever bolt.
		O	8	Lubricate adjustment tube of electrical pedal adjustment.
	O	O	9	Inspect rudder control cable following the <i>Inspection Procedure</i> presented in Chapter 27-20-04.

Chapter 27

Flight Controls

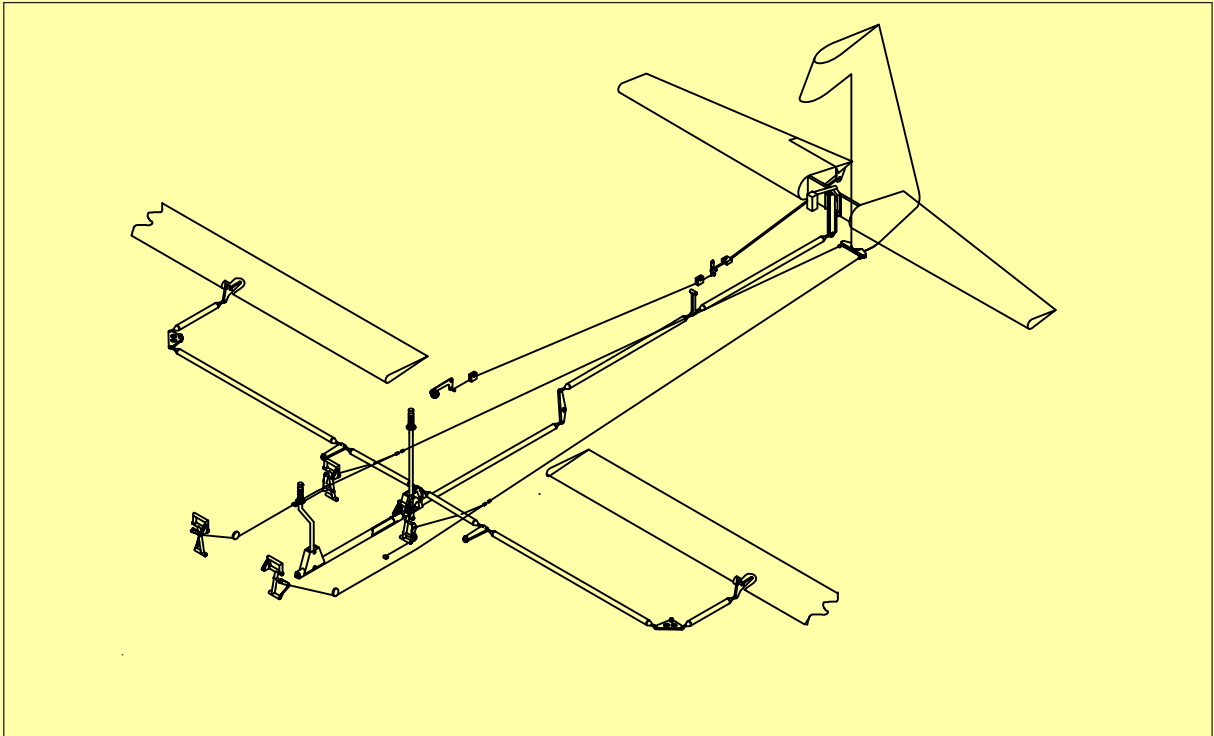
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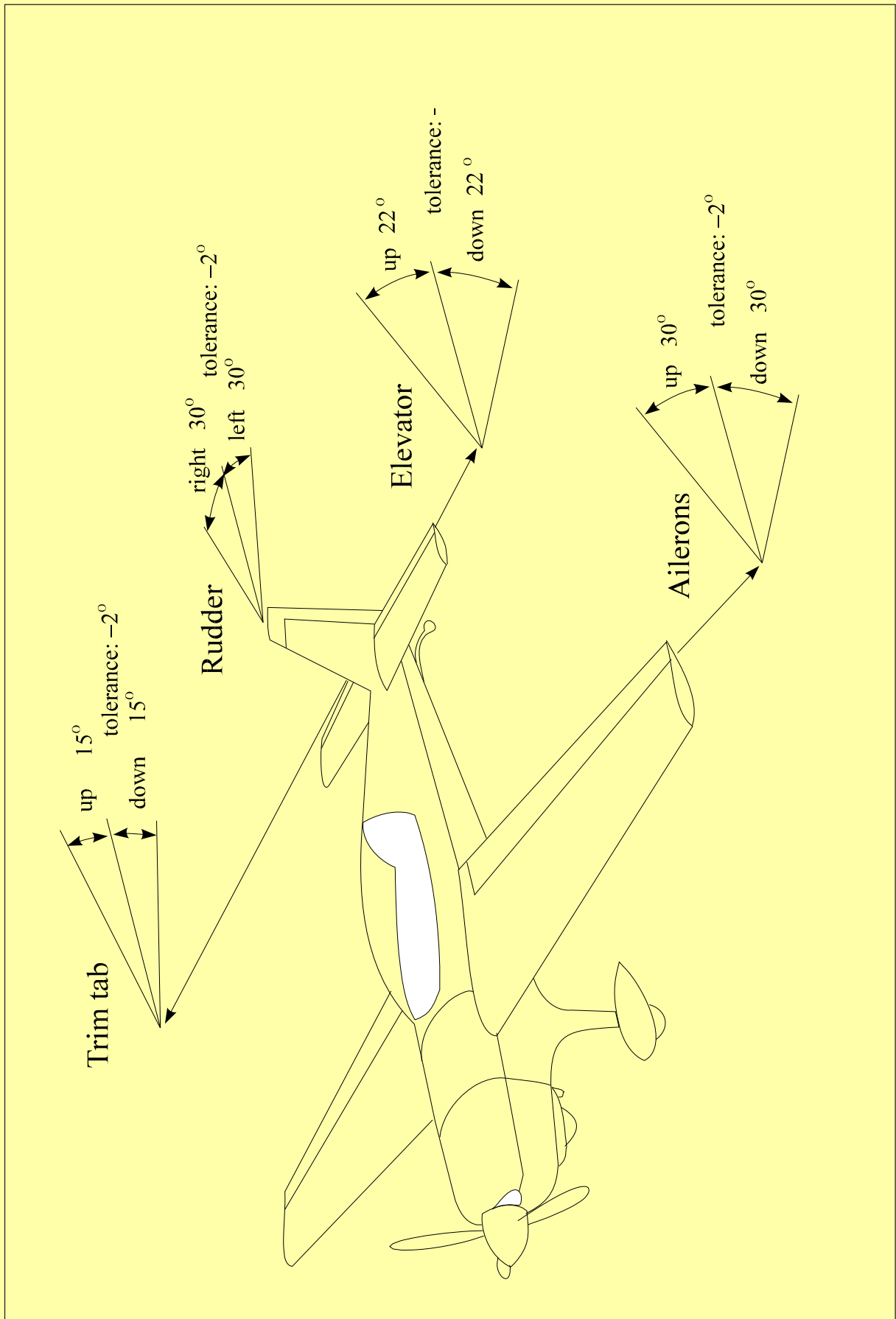
27-00-00

GENERAL

(Refer to Figure 1) The EXTRA 200 is standard equipped with full dual primary flight controls including conventional control sticks and adjustable rudder pedals. The control surfaces are operated by a direct mechanical linkage. The control surface deflections are shown in Figure 2.



*Controls
Figure 1*

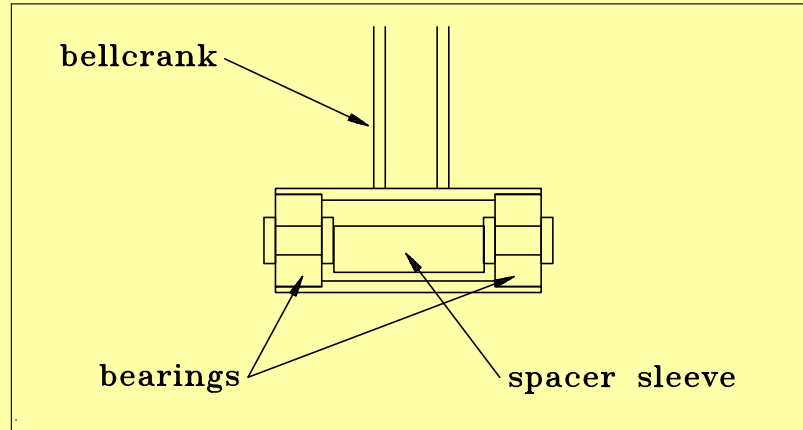


Control Surface Deflections
Figure 2

Maintenance Practices

NOTE

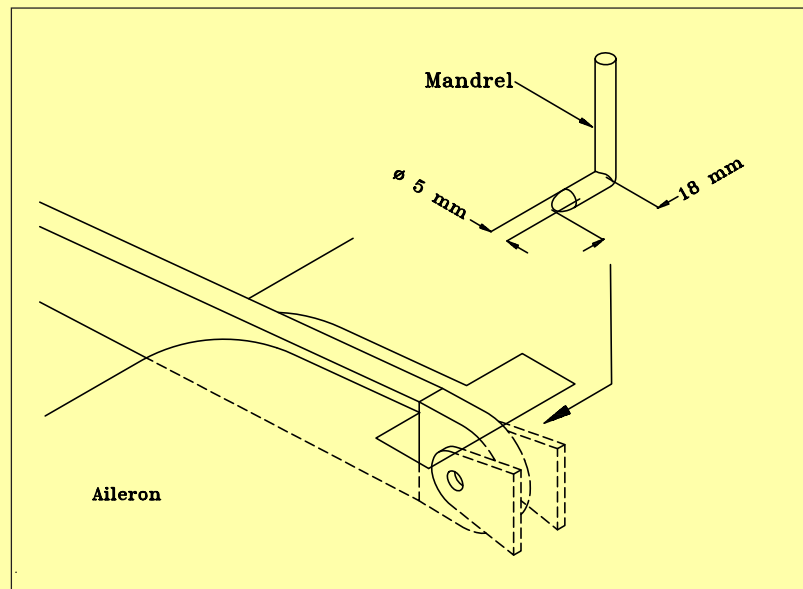
When installing a bellcrank or control stick the spacer sleeve inside the bearing could be displaced as shown in Figure 3. Use a mandrel to adjust the spacer sleeve.



Spacer Sleeve Displaced
Figure 3

NOTE

When installing a control surface use mandrels as shown in the following Figure 4 to preset the control surface. Then press out each mandrel by pushing a bolt into the bearing.



Control Surface Mounting Aid
Figure 4

Free Play in the Control System

With controls (stick and rudder pedals) locked, the free play measured at the control surfaces must not exceed the values listed:

** measured at the trailing edge
and max. chord*

Aileron: ± 1 mm*

Elevator: ± 1 mm*

Trim tab: ± 2 mm*

The rudder has a direct cable connection with retracting springs and is therefore always under tension.

27-00-01

Control Rods

Removal/Installation

Refer to Figure 8. All control rods are attached to the control levers in the same way with AN bolts, washers and self-locking nuts. The control rods inside the wing are interconnected by ground bonding leads fastened to the rod ends by additional nuts. So the rod ends have to be disassembled, when the ground bonding leads shall be disconnected. In this case also refer to Chapter 27-00-01 *Length Adjustment*.

1 Remove the respective access panels.

NOTE

In case of removal of the control rod connecting the control sticks also observe the instructions given in the Chapters 27-00-03 and -04.

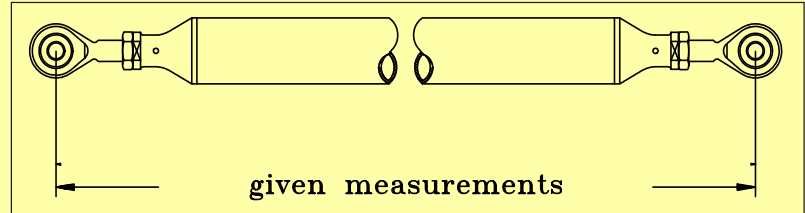
2 Remove the M6 attachment bolts (1).

3 Remove the control rod.

4 Reverse procedure to install the control rod. Replace the selflocking nuts.

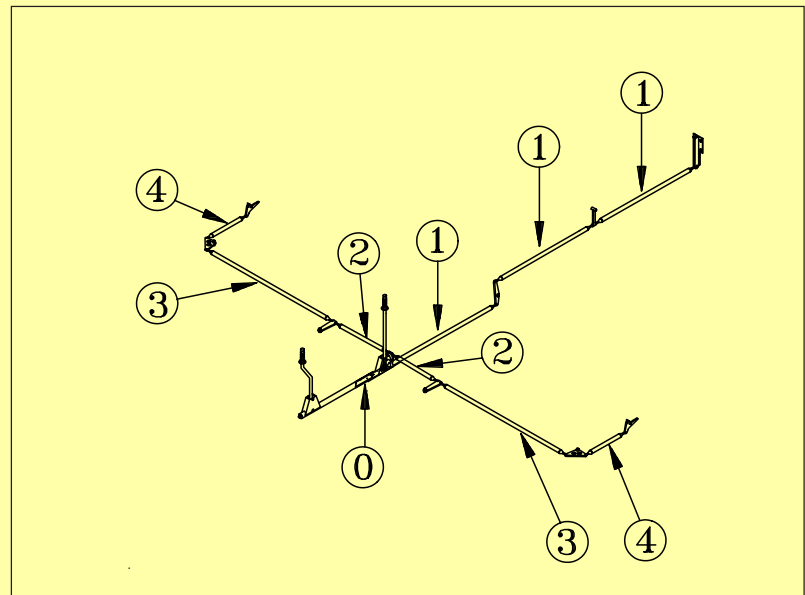
Lengths

The measurements given in this chapter refer to the distances between the centers of the rod end bearings resp. of the clevis head (see Figure 5).



Control Rod Measurement
Figure 5

Refer to the following Figure 6 for identification of the control rods.



Control Rod Identification
Figure 6

* clevis head at the rear control stick

Control rod	Measurements
0*	801 mm
1	932 mm
2	520 mm
3	1884 mm
4	420 mm

Length Adjustment

The standard measurements are given in the *Length Paragraph*.

- 1 Remove the respective access panels.
- 2 Disconnect one rod end from the respective bellcrank.
- 3 Loosen the check nut.

NOTE

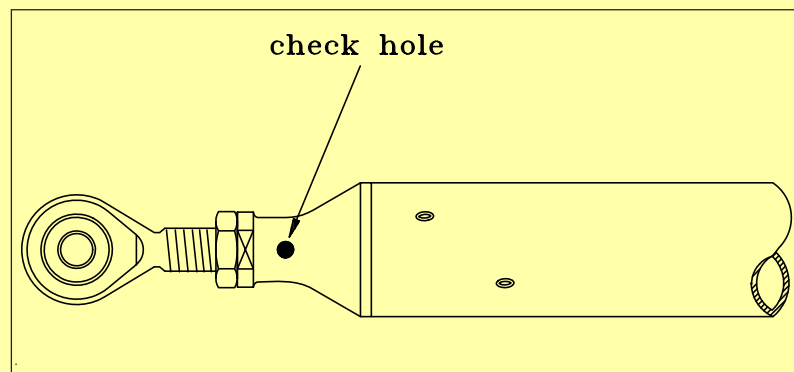
It might be necessary to adjust both rod ends to get the correct length. In this case the free thread of both rod ends should have the same length.

IMPORTANT

Observe that the rod ends joined to the rocker type bellcrank should be adjusted long enough not to obstruct the travel.

IMPORTANT

Ensure that the threaded rod is visible in the check hole (Figure 7) in any case.



*Control Rod Check Hole
Figure 7*

- 4 Turn the rod end in the desired direction to change the length.
- 5 Ensure that the rod end is in proper alignment with the respective control lever and tighten the check nut.
- 6 Reinstall the control rod per *Removal/Installation Paragraph* of Chapter 27-00-01.
- 7 Ensure that the control rods don't jam when the control sticks are moved between the extreme positions.

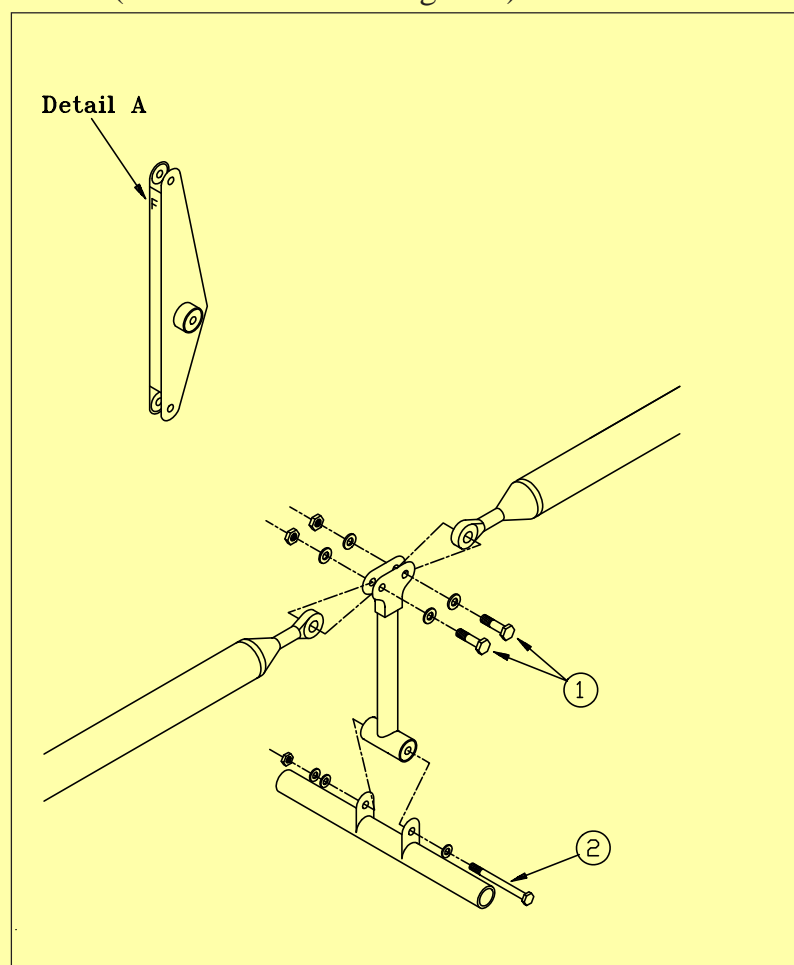
27-00-02

Bellcranks

Removal/Installation

Refer to Figure 8

- 1 Remove the respective access panels.
- 2 Remove the adjacent control rods per Ch. 27-00-01.
- 3 Remove the M5 attachment bolt (2).
- 4 Remove the bellcrank.
- 5 Reverse procedure to install the bellcrank using sufficient washers (min. 2) at the nut side of the bolt to cover the shank (except the rocker type bellcrank: use only one washer on each side). Replace the selflocking nuts. Observe the first Note of Chapter 27-00-00 *Maintenance Practices*. To ensure installation of the elevator rocker type bellcrank in correct direction this bellcrank is marked by an "F" which indicates the front side (refer to Detail A of Figure 8).



Control Levers and Rods Removal/Installation
Figure 8

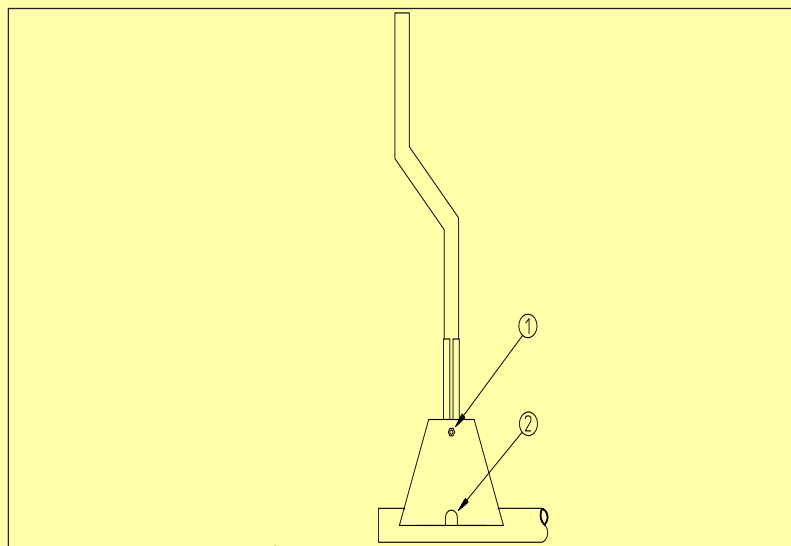
27-00-03

Front Control Stick

Removal/Installation

Refer to Figure 9.

- 1 Remove front seat per Chapter 25-15-01.
- 2 Disconnect the electrical wiring.
- 3 Remove the control stick attachment bolt (1).
- 4 Disconnect the control stick from the control rod per Chapter 27-00-01. Use the control stick to move the control rod attachment bolt within the mounting hole area (2).



Front Control Stick Removal/Installation
Figure 9

- 5 Remove the control stick.
- 6 Reverse procedure to install the control stick. Replace the selflocking nuts. Observe the first Note of Chapter 27-00-00 *Maintenance Practices*.
- 7 Check for potential chafing of the wiring after installation.

| 27-00-04

Rear Control Stick

Removal/Installation

- 1 Remove rear seat per Chapter 25-15-02.
- 2 Disconnect the electrical wiring.
- 3 Remove the control stick attachment bolt.
- 4 Use the control stick to move the control rod attachment bolt within the mounting hole area (2, Figure 9) and disconnect the stick from the control rods per Chapter 27-00-01.
- 5 Remove the control stick.
- 6 Reverse procedure to install the control stick. Replace the selflocking nuts. Observe the first Note of Chapter 27-00-00 *Maintenance Practices*.
- 7 Check for potential chafing of the wiring after installation.

| 27-00-05

Torque Tube

Removal/Installation

- 1 Remove the respective access panels.
- 2 Remove the control sticks and rods from the torque tube per Chapters 27-00-01 and 27-00-03/04.
- 3 Remove the bolt of the rear torque tube bearing.
- 4 Push torque tube some centimeters to the rear to remove pin from the front bearing and remove the torque tube.
- 5 Reverse procedure to install the torque tube. Consider to secure the castle nut of the rear torque tube bearing. Lubricate the bearings with Aeroshell grease 22C or equivalent (MIL-G-81322D).

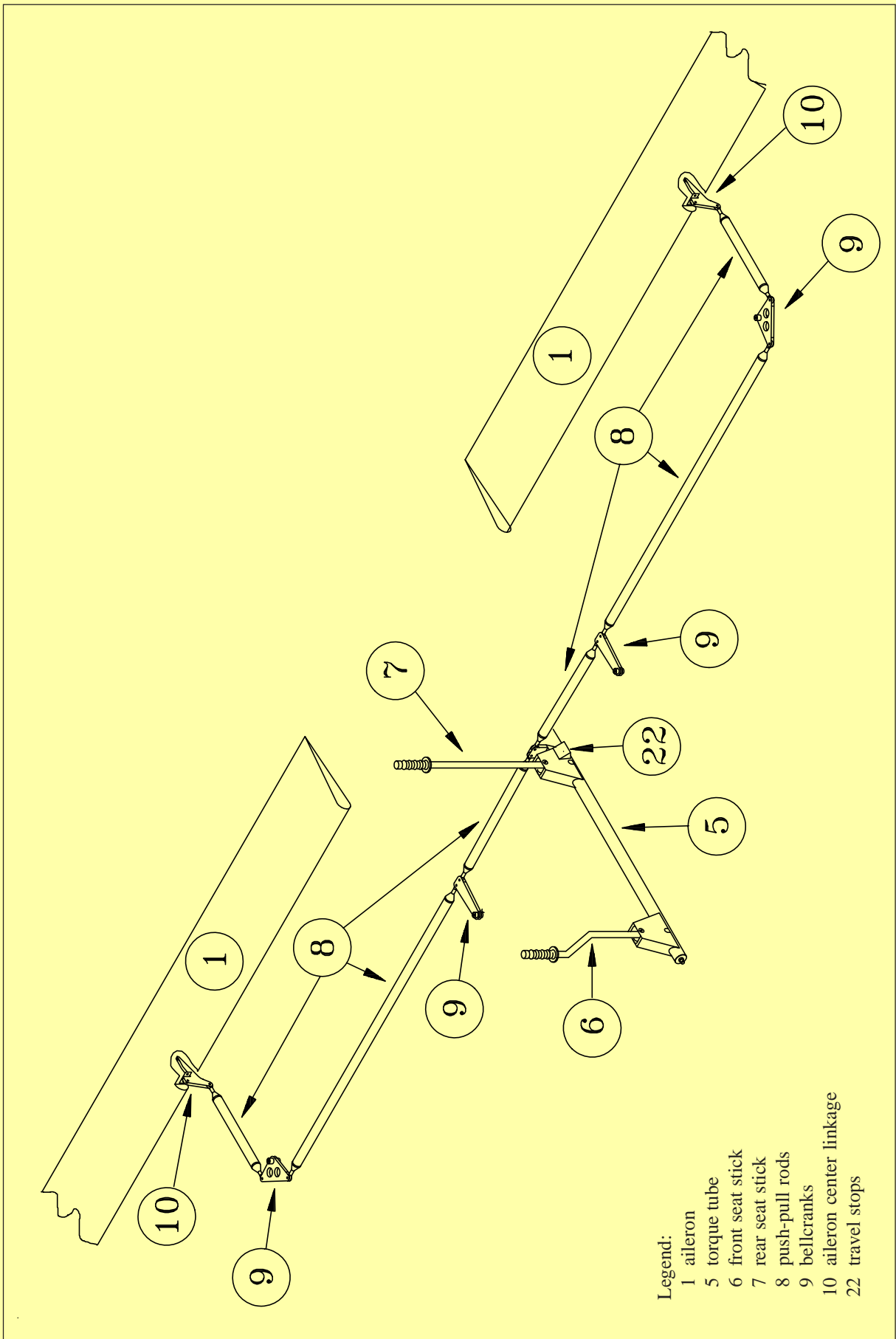
| **27-10-00**

AILERON CONTROL

(Refer to Figure 10) The aileron (1) is direct mechanical linked to the control sticks (6, 7) by the aileron center linkage (10) with spade arm, push-pull rods (8), bellcranks (9) and the torque tube (5). The bell cranks have two sealed ball bearings. Each aileron is mounted at three points in spherical bearings pressed into aluminium hinge arms. For lightning protection reason each hinge arm is grounded to the corresponding attachment bracket at the aileron by bonding leads. The rod end bearings of the push-pull rods located in the wing are also interconnected by bonding leads. The travel stops (22) are located at the torque tube next to the rear control stick (7).

To reduce pilot's hand forces the hinge line of the ailerons is positioned at 20 - 25% of the aileron chord. Furthermore, the ailerons are equipped with spades. To prevent flutter the ailerons are mass balanced in the overhanging leading edge.

Two access panels are located at the bottom surface of each side of the wing.



Aileron Control
Figure 10

27-10-01

Ailerons

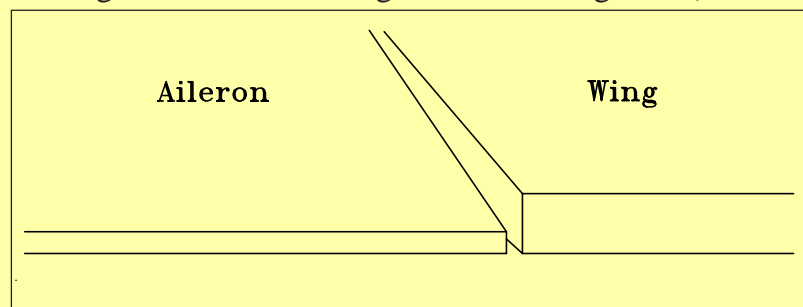
Removal/Installation

- 1 Disconnect the actuator rod from the aileron center linkage.
- 2 Disassemble the spade if necessary observing the quantity and location of washers.
- 3 Loosen the hinge bolts and the ground bonding leads and remove the bolts.
- 4 Install in reverse sequence of removal. Ensure that the spade is installed with the same quantity and location of washers (refer to Figure 12). Observe the second Note of Chapter 27-01-00 *Maintenance Practices*.

Rigging

Before beginning any adjustments inspect control rods, levers and hinges for signs of wear or damage, check if the control rod lengths correspond with the measurements given in Chapter 27-00-01 *Lengths*. If necessary replace parts and correct lengths per Chapter 27-00-01 *Length Adjustment*.

- 1 Secure the control stick in the neutral position.
- 2 Check if the control rods connecting the torque tube and the inner wing bellcranks have the correct length (Refer to Chapter 27-00-01).
- 3 Adjust length if necessary per Chapter 27-00-01.
- 4 Check if the ailerons are in 0°-position (The trailing edge bottom of the aileron is in alignment with the trailing edge bottom of the wing as shown in Figure 11).



Trailing Edge Alignment
Figure 11

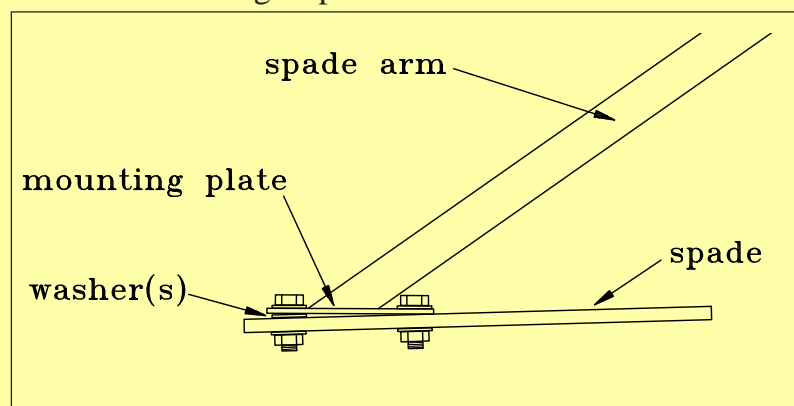
- 5 If necessary adjust the length of the control rods connecting the aileron center linkage to the outer wing bellcrank per Chapter 27-00-01.
- 6 Check if the left aileron travel is within the given tolerances. Use a conventional protractor.
- 7 Adjust the travel stops if necessary.
- 8 Follow step 6 for the right aileron.
- 9 If the travel of the right aileron exceeds the given tolerances, contact the manufacturer.
- 10 Check if the movement of the control sticks is free over the whole travel range and check if the rear control stick travel is symmetrically to each side. If it is not contact the manufacturer.

27-10-02

Spades

Rigging

For roll trim the spade rigging angle of incidence has to be changed. Insert washer(s) between the spade and the mounting plate (refer to Figure 12). For example: When the aircraft rolls to the left, insert washer(s) at the front attachment bolt of the right spade.



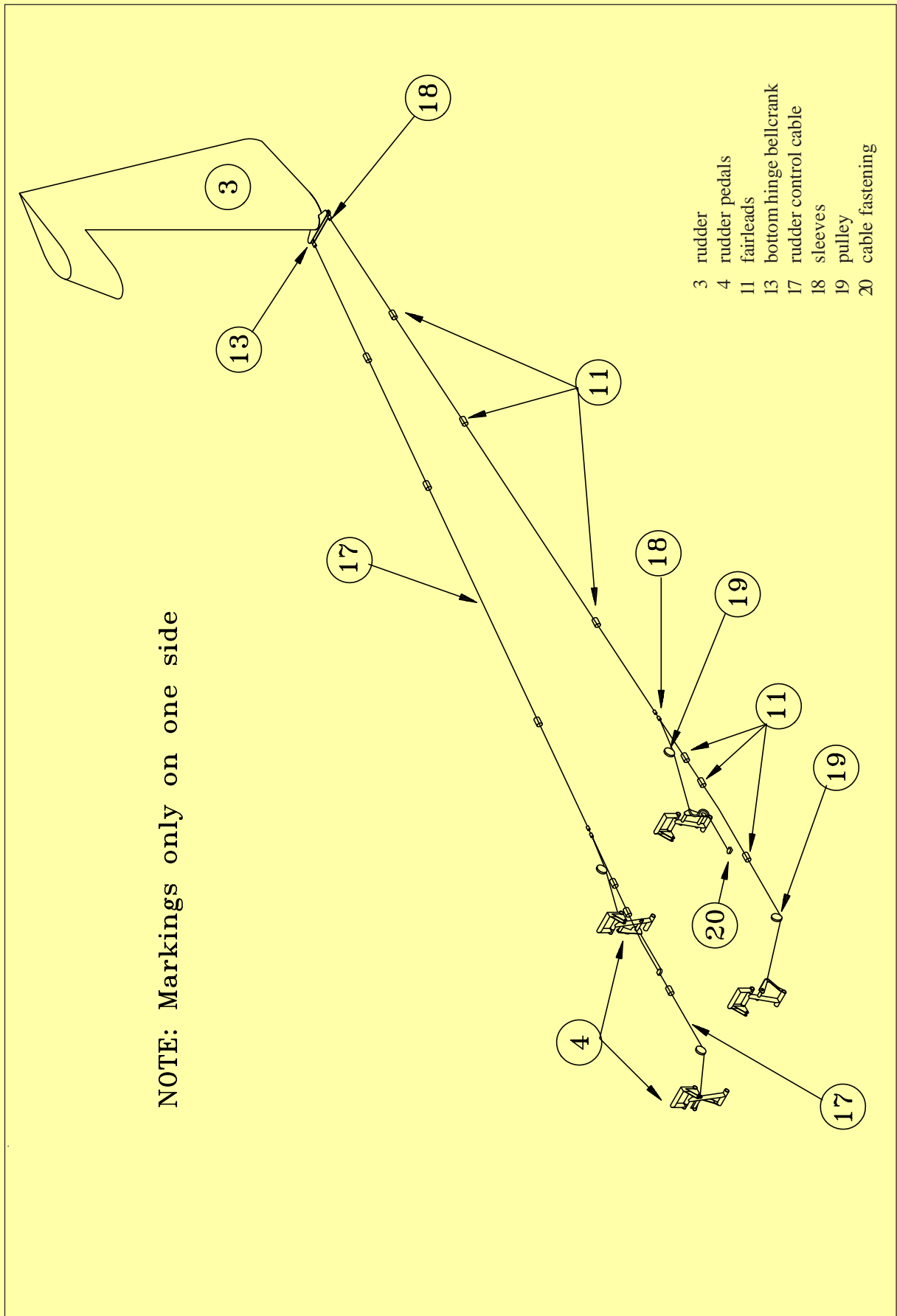
*Spade Rigging
Figure 12*

(Refer to Figure 13) The rudder pedals (4) are connected via a cable system (17) to the bottom hinge bellcrank (13). The cables are guided by fairleads (11). Springs keep the cables under tension when they are not operated. Adjustment of the rear pedals is made via multihole rod. The rudder (3) is mounted at three points in spherical bearings pressed into a aluminium hinge resp. into aluminium hinge arms. For lightning protection reason each hinge (arm) is grounded to the corresponding attachment bracket at the rudder by bonding leads. A travel stop plate is located at the bottom hinge bracket. A second safety stop is located at the rudder pedal bearing having the only purpose of protecting the lower brake system fitting in case of rudder cable failure.

IMPORTANT

This second stop must not be reached under normal operation conditions. Missalignment or excessive elongation of the rudder cables will result in misuse of this second stop and a subsequent overload of the rudder bearing. A subsequent inflight failure of the footrest could occur.

To prevent flutter the rudder is mass balanced. The mass balance weight of the rudder is installed in the rudder horn.



*Rudder Control
Figure 13*

| 27-20-01

Rudder

IMPORTANT

Perform checks 10-11 of "Flight Controls" presented in Chapter 05-20-04 after each maintenance work affecting the rudder control cables.

Removal/Installation

- 1 Disconnect the rudder control cables from the bottom hinge bellcrank.
- 2 Loosen the hinge bolts and the ground bonding leads and remove the bolts.
- 3 Install in reverse sequence of removal. Observe the second Note of Chapter 27-00-00 *Maintenance Practices*.

Rigging

NOTE

Inspect the control cables, the pulleys, the fairleads and the bottom hinge assembly (with the travel stop plate) for signs of wear or damage before beginning any adjustments. Replace parts if necessary.

- 1 Secure the rudder pedals in neutral position.
- 2 Check if the rudder is in 0°-position. (Rudder horn leading edge in alignment with the leading edge of the vertical stabilizer.)
- 3 Replace the control cables and adjust the length per Chapter 27-20-04 if necessary.
- 4 Check if the rudder travel is within the given tolerances.
- 5 If the rudder travel is out of limits, contact the manufacturer for advice.

27-20-02

Bottom Hinge Bracket

Removal/Installation

- 1 Remove the rudder per Chapter 27-20-01.
- 2 Loosen the attachment bolts.
- 3 Remove the bottom hinge bracket with the travel stop plate.
- 4 Install in reverse sequence of removal.

27-20-03

Bottom Hinge Bellcranks

Removal/Installation

- 1 Remove the rudder per Chapter 27-20-01.
- 2 Loosen the attachment bolts.
- 3 Remove the bottom hinge bellcranks.
- 4 Install in reverse sequence of removal.

27-20-04

Control Cable

General

The Control cables installed have a diameter of 1/8 inch and are built in a 7 x 19 construction. Both galvanized and stainless steel control cables are used. The stainless steel version must not be lubricated.

Control cable tension is ensured by retracting springs connected to each pedal, keeping the pedals in most forward position.

The thimble-eye splices on each cable end fitting and the Y-shaped cable connection to the front pedals are swaged on. They are covered with a shrinking sleeve.

The cable sections at the S-shaped pedal adjustment cable guide and at the fuselage skin penetration are covered with a

PTFE-hose. The fuselage skin penetration PTFE hose is held in place by means of a shrinking sleeve.

For detailed explanations concerning control cables refer to *AC 43.13-1B, chapter 7, section 8. Inspection and Repair of Control Cables and Turnbuckles.*

Inspection Procedure

Refer to the *Control Cable Replacement Criteria* Paragraph.

- 1 Visually inspect the structure and other components located next to pulleys or fairleads for cracks and traces of lubrication splashes caused by control cable wires sticking out. Those evidences can indicate a damaged control cable.
- 2 Perform the following inspection item with the pedal adjusted first to the foremost and later to the rearmost position in order to get access to the control cable inside the S-shaped cable guide.
- 3 Visually inspect the PTFE-hoses in the areas of the fuselage skin penetration and of the S-shaped cable guide of the pedal adjustment for wear and other damage.

NOTE

Intact PTFE-hoses render a close inspection of the control cable inside the hose unnecessary.

- 4 Inspect shrinking sleeves fixing the fuselage skin penetration PTFE-hose for function and damage.
- 5 Inspect shrinking sleeves at the control cable end fittings and control cable Y-connections for wear and other damage.

NOTE

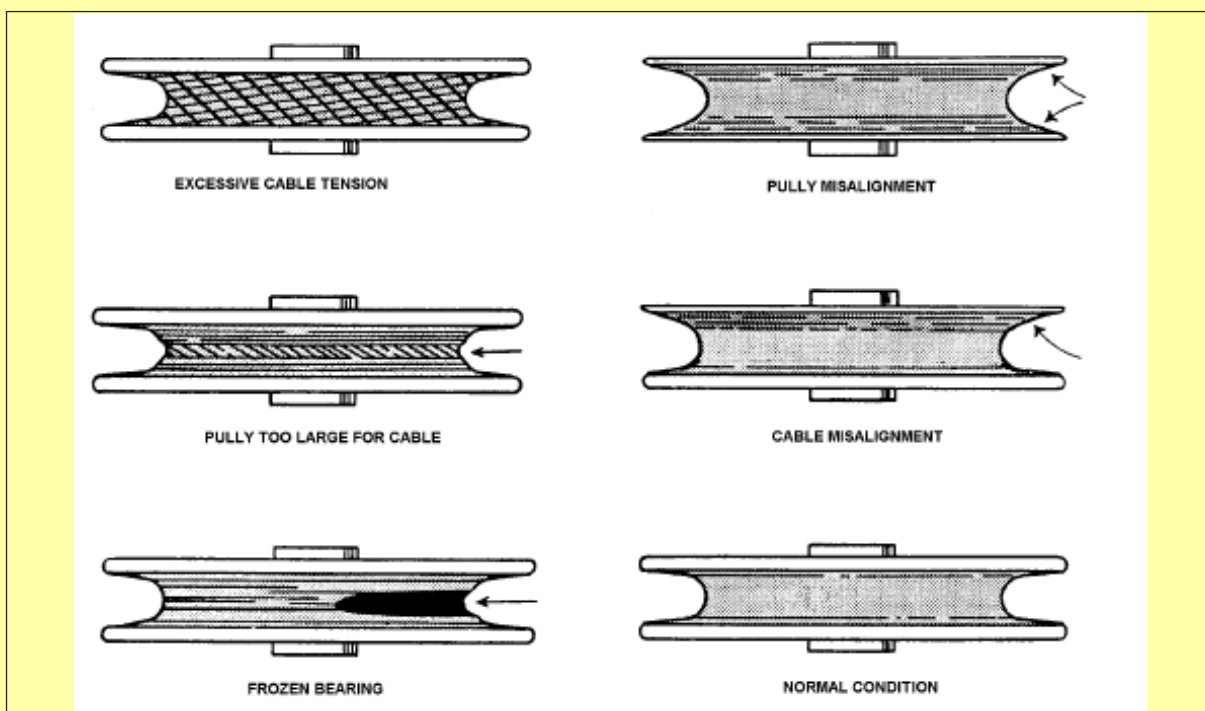
Intact shrinking sleeves render a close inspection of the control cable inside the sleeve unnecessary.

- 6 Disconnect the control cable from the rudder to relieve cable tension. Refer to *Removal Paragraph.*
- 7 Move the rudder control cables during inspection to ensure that the entire cable run including areas of pulleys and fairleads is visible respectively accessible.

CAUTION

Risk of injuries due to broken wires possible. Wear protective gloves.

- 8 Closely inspect control cables by passing a cloth over them to snag on broken wires.
- 9 Visually inspect each flight control cable exterior and interior along its entire length for evidence of broken wires, corrosion, fraying or other damage. Visual inspection may be via direct sight, mirror and flashlight or borescope. Bend and twist cable for proper inspection.
- 10 Inspect cable retracting springs connected to the pedals for correct installation, corrosion or damage.
- 11 Check swaged terminal reference marks for an indication of cable slippage within the fitting. Inspect the fitting assembly for distortion and/or broken strands at the terminal.
- 12 Inspect pulleys for wear (refer to Figure 14), roughness, sharp edges, and presence of foreign material embedded in the grooves.



*Pulley Wear Patterns.
Figure 14*

- 13 Examine pulley bearings to ensure proper lubrication, smooth rotation; and freedom from flat spots, dirt, and paint spray. During the inspection, rotate the pulleys,

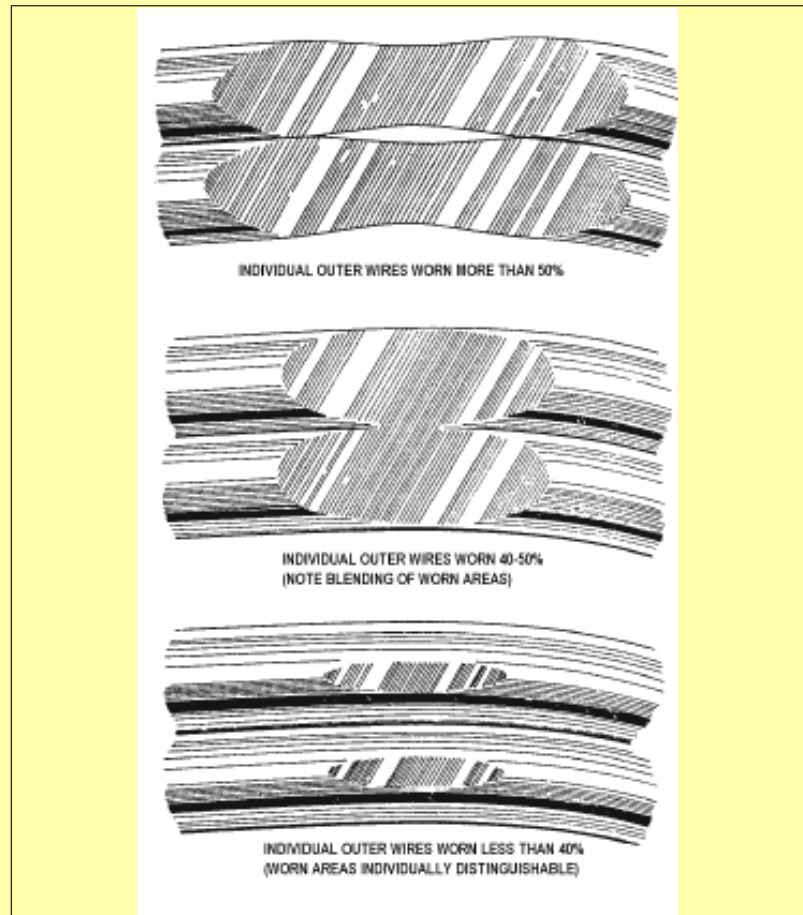
which only turn through a small arc, to provide a new bearing surface for the cable.

- 14 Maintain pulley alignment to prevent the cable from riding on the flanges and chafing against guards, or adjacent structure. Check all pulley brackets and guards for damage, alignment, and security (refer to Pulley wear patterns).
- 15 Reattach the control cable to the rudder as per *Installation* Paragraph.
- 16 Examine cable runs for incorrect routing, fraying, twisting, or wear at fair-leads, pulleys, antiabrasion strips, and guards.
- 17 Inspect fair-leads for wear, breakage, alignment, cleanliness, and security. Examine cable routing at fair-leads to ensure that deflection angles are no greater than 3° maximum.
- 18 Inspect cable systems for binding, full travel, and security of attaching hardware.
- 19 Visually check for proper routing along entire length of cable. Make sure that cables, pulleys and attaching sectors are free and clear of airframe structure and other components.
- 20 Lubricate critical control cable areas with a light coat of grease or general purpose, low-temperature oil (galvanized cable only!).

Rudder Control Cable Replacement Criteria

EXTRA has defined the following replacement criteria when inspecting the rudder control cables:

- Any cable assembly that has one single broken wire must be replaced.
- Replace cable when worn areas on the individual wires in each strand appear 40% or more (as depicted in Figure 15).
- Replace cable when corrosion on the outer or interior strands has been detected.
- Replace cable when a PTFE-hose is damaged.
- Replace cable when a shrinking sleeve is damaged.



*Cable Wear Patterns.
Figure 15*

Removal

- 1 Remove the respective access panels
- 2 Remove the cable to fuselage attachment bolts.
- 3 Remove the cable to rudder bellcrank attachment bolts.
- 4 Cut the control cables behind the front shrinking sleeves and behind the cable to cable connection.
- 5 Remove the control cable parts by pulling out to the back.

Installation

Use only control cables manufactured by EXTRA. Those cables are prepared for simply installation.

- 1 Remove the respective access panels per Chapter 51.
- 2 Secure the rudder (3, Figure 13) in 0°-position.
- 3 Mount the pre-assembled shackle of the longer control cable to the LH cable fastening (20).
- 4 Slip 800 mm teflon protective hose on the control cable.
- 5 Thread the cable through the "S"-shaped tube at the pedal and the pulley (19).
- 6 Adjust rear rudder pedals (4) in rearmost position.
- 7 Let the front end of the protective hose extend to 10 mm in front of the pedal "S"-tube and cut the rear end 10 mm in front of the pulley.
- 8 Slip 2 NICOPRESS (National Telephone Supply Co., Cleveland Ohio) 18-3-M sleeves (18) and a 771095 shrinking sleeve on the control cable.
- 9 Thread the free end of the control cable through the rear fairleads (11) and the hole in the fabric to the tail.
- 10 Slip 600 mm teflon protective hose on the control cable end. The protective hose should extend to the first fairlead inside the fuselage.
- 11 Adjust rear pedals in middle position.

- 12 Fix rear pedals in vertical position (90° relative to the footrest).
- 13 Pre-install the LN9355-06-20 bolt, the DIN 125 M6 washers (2 washers outside, 3 washers inside), the spring clip, the LN 9348 M6 stop nut and the thimble to the bottom hinge bellcrank (also see item 9 on Fig. 3 of Chapter 32).
- 14 Slip the 771095 shrinking sleeve and a NICOPRESS 18-3-M sleeve on the cable end.
- 15 Move the cable around the thimble and stretch the control cable with a force that is equivalent to the tractive effort of the rear pedal retracting spring.

IMPORTANT

Clamping has to be performed in accordance with the Service Bulletin 300-1-93 and the Instruction No. 32 of the National Telephone Supply Co., Cleveland Ohio.

- 16 Consider to let a distance of 1 mm between the thimble and the sleeve and clamp the sleeve.
- 17 Cut the free end of the cable 20 mm in front of the sleeve.
- 18 Slip the shrinking sleeve on the cable end and heat up with a heat gun.
- 19 Remove the pedal securing device.
- 20 Mount the pre-assembled shackle of the shorter control cable to the front pedal.
- 21 Thread the free end of the control cable through the pulley, the front fairleads and the pre-installed NICOPRESS 18-3-M sleeves.
- 22 Fix the front pedal in vertical position (parallel to the firewall).
- 23 Stretch the shorter control cable with a force that is equivalent to the tractive effort of the front pedal retracting spring.

IMPORTANT

Clamping has to be performed in accordance with the Service Bulletin 300-1-93 and the Instruction No. 32 of the National Telephone Supply Co., Cleveland Ohio.

IMPORTANT

To prevent twisting the cables clamp the sleeves in the same plane.

- 24 Consider that the clamping area shall be 30 cm aft the rear pulley and clamp the sleeves.
- 25 Cut the free end of the cable (20 mm behind the sleeve).
- 26 Slip the shrinking sleeve on the rear sleeve and heat up with a heat gun (The front sleeve can be left free for visual control of the cable-to-cable connection).
- 27 Remove the front pedal securing device.
- 28 Follow the steps 3 to 27 for the RH control cable.
- 29 Remove rudder securing devices.
- 30 Check free travel of rudder.

| 27-20-05

Fairlead

Removal/Installation

- 1 Remove the fairlead retaining clip.
- 2 Pull the fairlead halves out of the sleeve.
- 3 Reverse procedure to install the fairlead.

27-30-00

ELEVATOR AND TAB

I

Refer to Figure 16. The two control sticks (6, 7) are connected by a push-pull rod (8) inside the torque tube (5). The control movements are transferred from the rear control stick (7) to the elevator (2) by push-pull rods (8) and bellcranks (9, 9a). The bellcranks have two sealed ball bearings. The elevator is mounted at five points in spherical bearings pressed into aluminium hinge arms. For lightning protection reason each hinge arm is grounded to the corresponding attachment bracket at the elevator by bonding leads. The travel stops (22) are located at the torque tube.

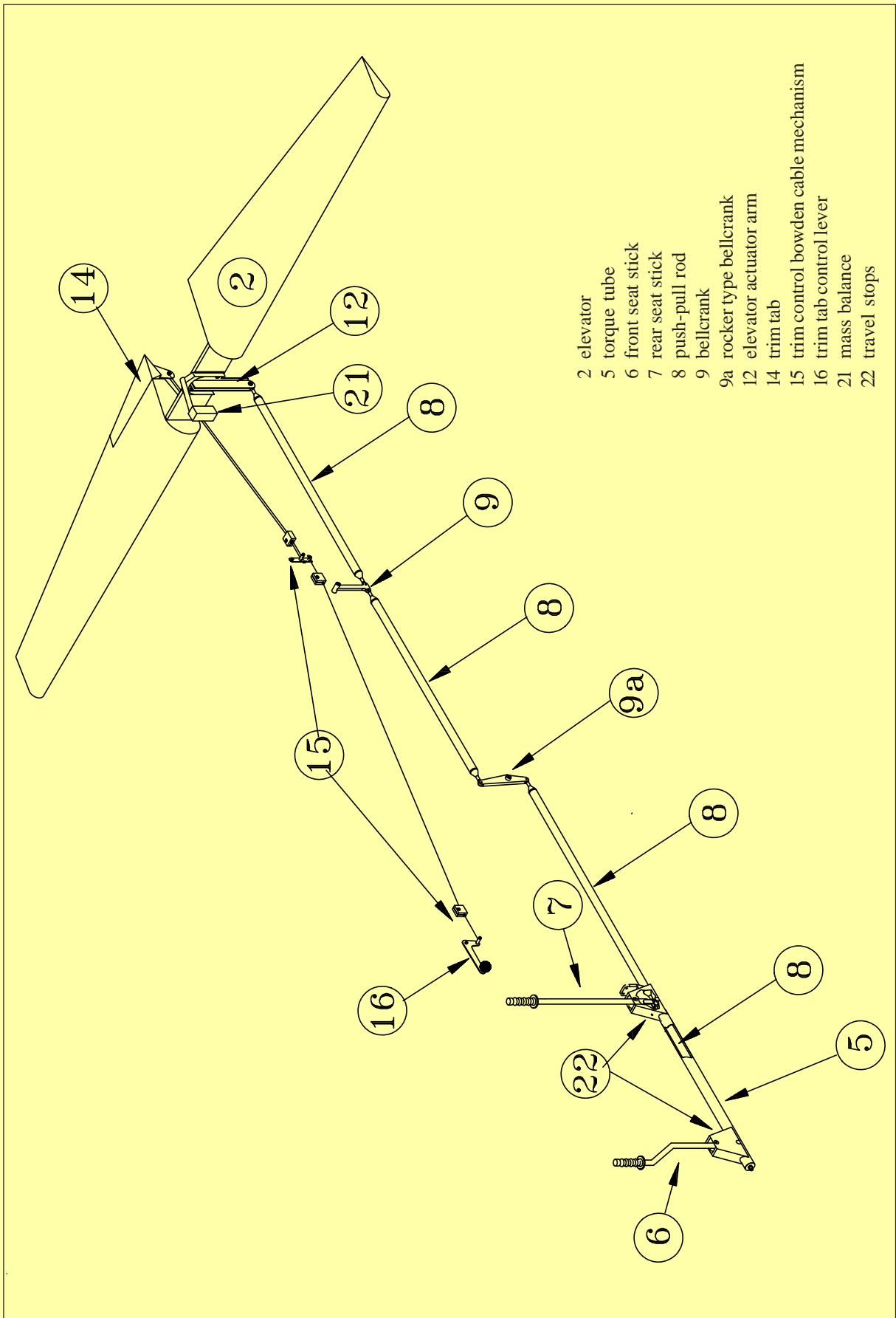
The mass balance weight (21) is mounted on the center bracket of the elevator extending into the fuselage.

An access panel is located at the right side of the rear fuselage.

Trim Tab

The elevator trim control lever (16) is located at the right side in the rear cockpit. Pitch trim is done by means of the trim tab (14) on the right elevator trailing edge operated by a bowden cable mechanism (15). The trim tab is mounted by a piano hinge.

The trim tab is not mass balanced.



Elevator and Trim Tab Control
Figure 16

27-30-01

Elevator

Removal/Installation

Before the removal of the elevator, the vertical stabilizer has to be disassembled.

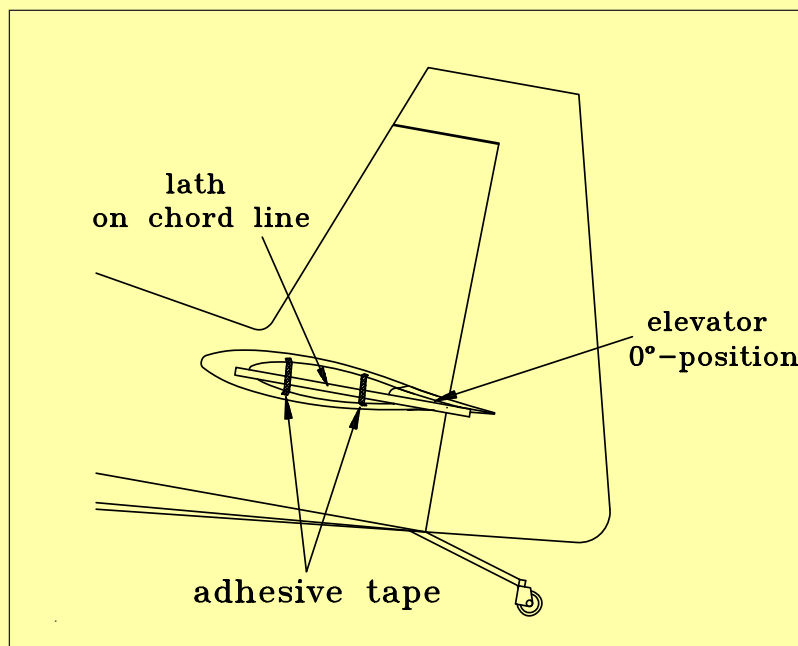
- 1 Remove the respective access panels.
- 2 Remove the rudder per Chapter 27-20-01
- 3 Remove the vertical stabilizer per Chapter 55-21-01.
- 4 Loosen the bowden cables from the trim tab. If a replacement is necessary order new cable.
- 5 Disconnect the elevator actuator arm from the push-pull rod.
- 6 Loosen the hinge bolts and the ground bonding leads and remove the bolts.
- 7 Install in reverse sequence of removal. Observe the second Note of Chapter 27-00-00 *Maintenance Practices*.

Rigging

IMPORTANT

Before beginning any adjustments, inspect control rods, levers and hinges for signs of wear or damage and check if control rod lengths correspond with the measurements given in Chapter 27-00-01. Replace parts and correct lengths if necessary per Chapter 27-00-01.

- 1 Remove the canopy and the main fuselage cover per Chapter 51 and the seats per Chapter 25.
- 2 Secure the rear control stick in the neutral position. (Control stick parallel to the vertical steel tube carrying the trim tab control lever resp. perpendicular to the upper longerons).
- 3 Check if the elevator is in 0°-position. (Trailing edge on chord line. Fasten a lath to the tip rib of the horizontal tail per Figure 17 using adhesive tape.)



Lath on Chord Line
Figure 17

- 4 If necessary adjust the length of the rearmost tail control rod per Chapter 27-00-01 *Length Adjustment*.
- 5 Check if the elevator travel is within the given tolerances. Use a conventional protractor.
- 6 Adjust the travel stops if necessary.
- 7 Check full travel of control sticks in each direction.
- 8 Check if the rear control stick travel is symmetrically.
- 9 If it is not, contact the manufacturer.

27-30-02

Trim Tab

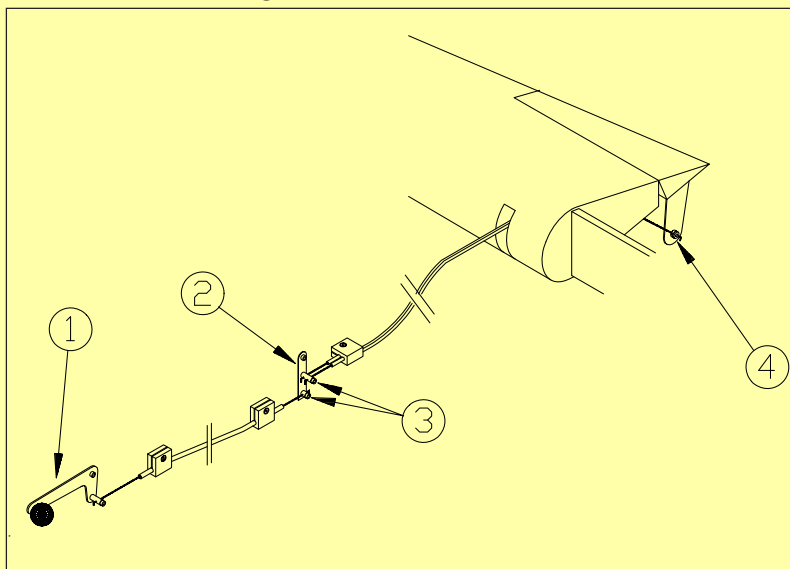
Removal/Installation

- 1 Loosen bowden cables. If a replacement is necessary order new cable.
- 2 Disconnect the safety cotter pin and remove the hinge pin.
- 3 Install in reverse sequence of removal and use a new cotter pin.

Rigging

Refer to Figure 18.

- 1 Secure the rear control stick in normal position.
- 2 Secure the trim control lever (1) in horizontal position.
- 3 Adjust the fuselage bellcrank (2) in middle position. Use new selflocking nuts (3).



Trim Tab Rigging
Figure 18

- 4 Bring the trim tab in 0°-position. Use new selflocking nuts (4).
- 5 Bring the trim lever in extreme positions and check if trim tab travel is within given tolerances. If it is not, check free travel of the trim levers, fuselage bellcrank and bowden cables.