M.I.C.M. - C.N.I.A.R.
INTREPRINDEREA DE CONSTRUCTII AERONAUTICE
2200 B R A S O V

# MANDATORY SERVICE BULLETIN

## IS-28B2/EO-12

APPROVED BY : DEPARTMENT OF CIVIL AVIATION
with no. 19.321 / 07.12.1982

PRODUCT : IS-28B2

OBJECT : ADDITIONAL INSTRUCTIONS CONCERNING THE FLYING CONTROLS CHECK.

COMPLIANCE : REVISION RECORD CARDS 821/26.10.1982 and 822/11.11.1982

DATE : the 24th November 1982

1. PLANNING INFORMATION

A. Applicability

The bulletin is applied to all the IS-28B2 type aircraft :
- by the user - to the aircraft under servicing ;
- by the manufacturing plant - to the aircraft under manufacturing or those in stock until delivery.

This bulletin shall be applied by the user not later than the 31st of March 1983.

B. Reason

- The detection of some aged and corroded brass wire locks of the control cables turnbuckles for rudder and elevator, in the course of time. If these defects are not detected during the inspections provided in the maintenance manual, they can result, in time, in the lockwires breaking. If the tensions loosening within the control cables is not detected during the daily and preflight inspections, the controls elements separation can finally result.

- In case of incorrect ground handling, if ailerons are forced, or if during an aerobatic flight following a manueuverimg incorrectly carried-out, the glider performs a tail slide and the control column is slipped from hand or is suddenly deflected up to the limiter, an additional stress may occur within the ailerons control. In this case the hinge moment created can deflect the ailerons upwards, above the rated deflection of $28^{\circ}$ and when an angle of approx. $40^{\circ}$ is reached, an additional bending stress occurs on the control rod connected to the ailerons

C. Description

Check the control cables turnbuckles lock wires for elevator and rudder and replace them if corroded, cracked or if they are made of brass, unchanged since the glider delivery.
Visually check the control rod actuating the ailerons, after its removing from wing and replace it with a new one if bent.
Enlarge the cut-out in the aileron leading edge (through which the above mentioned rod passes) according to the dimensions on page 6/6 figure 2.

In order to increase the aileron control parts strength, in case of stresses such as those presented to heading 1.B, which are not normal cases, but which can however occur due to servicing faults, it is recommended to replace the relevant control rod with another part, made of steel (in lieu of aluminium alloy).

D. Compliance
Revision Record Cards no.821/26.10.1982 and 822/11.11.1982

E. Accomplishment
To the gliders serial no.321, and subsequent and to those in stock, the bulletin is applied by the manufacturing plant, including the recommended modification concerning the steel rod replacement. To the gliders under servicing the bulletin is applied by the user, not later than the 1st MARCH 1983.

F. Material - Cost and Availability
The materials are delivered, on request, by the manufacturing plant. The bulletin application as well as the materials used are at the Buyer's expense.

G. Tooling
Tool kit, mill for aluminium alloys.

H. Weight and Balance
Not affected.

I. References
Flight and Maintenance Manual and heading 2.B of this bulletin.

J. Documents Affected
Amendment 17 to the Flight and Maintenance Manual IS-28B2, 3rd issue, and amendment 13 to the Flight and Servicing Manual IS-28B2 2nd issue.

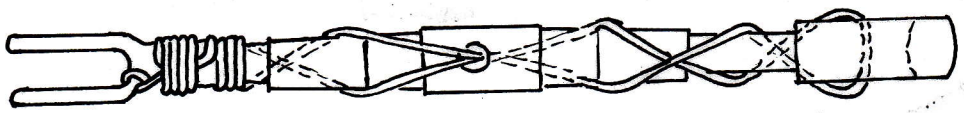
2. USING INSTRUCTIONS

A. Work Preparation
Open the inspection covers in order to get access to the control cables.
Remove the ailerons from wing.

B. Application

Check the control cables turnbuckles lock wires and remove those made of brass (unchanged since the glider delivery) or those showing aging, corrosion or cracks.

Lock the turnbuckles by one of the methods specified by the FAA TECHNICAL STANDARD ORDER TSO-C21. The simple wrapping is recommended, according to the solution below :



Visually check the control rod, proceeding as follows; (see figure 1, page 6/6).

(a). Remove the control rod from the wing lever by unlocking and by removing the nut and screw (item 1) ;

(b). Measure the control rod length between the attachment pins axles at ends (size "l") - to avoid some possible later adjustments ;

(c). Unlock the nut (item 2) and remove the eye (item 3).

(d). Visually check the eye: if bent, replace it with a new one.

(e). Reassemble the parts, in reverse order, adjusting the rod length to size "l".

Enlarge the cut-out in the ailerons leading edge to the dimensions indicated on page 6/6, figure 2, by using a mill. Check the doubler item 4(fig.2) riveting to the skin. The number of rivets item 5(fig.2) shall not be reduced by milling to less than 2 (if required, a new rivet shall be driven in). If the recommended modification is also applied to point C, third paragraph, the original rod is replaced with a new one (made of steel), after having been adjusted to the length "l". If, applying the point d) above, the eye is found distorted and the Buyer does not possess a spare part, on request, all the rods(made of steel) shall be delivered, applying thus directly the recommended modification.

C. Using Instructions

None.

3. MATERIAL INFORMATION

A. Material List

Use wires made of stainless steel, galvanized steel or soft brass (certified aviation materials) of 0.8 to 1.0 mm dia., according to the FAA TSO-C21 indications.
The part with hole no. 30AD.02.063 from the user's spare parts stock - if necessary.
If needed, the manufacturing plant delivers the steel rod assy.

B. Tooling List

- Tool kit
- End mill for aluminium alloy of 10 to 12 mm dia.

C. Supply Indications

The spare parts are delivered by the manufacturing plant, on request, at the Buyer's expense.

4. IDENTIFICATION

The present bulletin application will be mentioned in the glider log card.

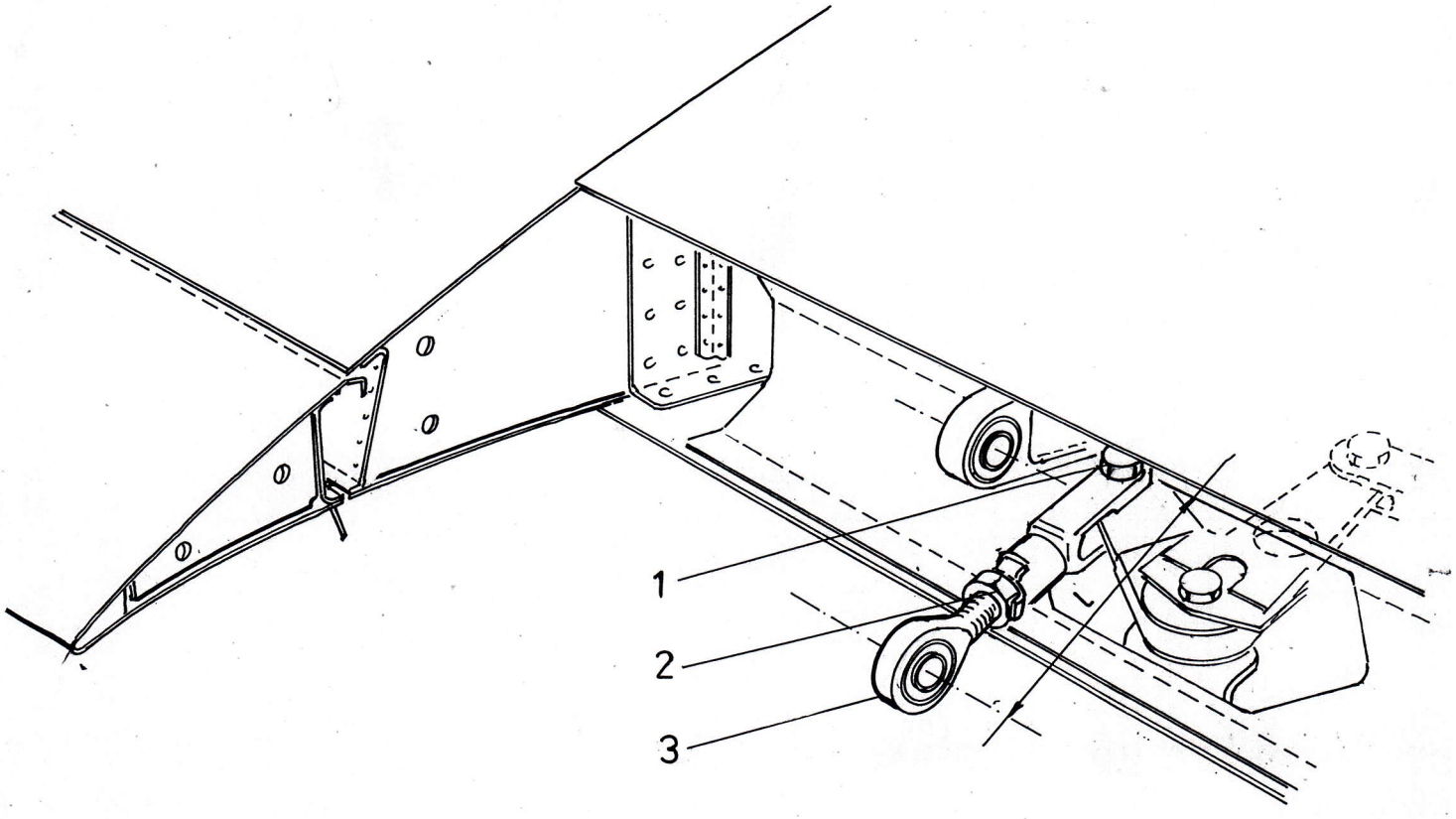



Fig. 1

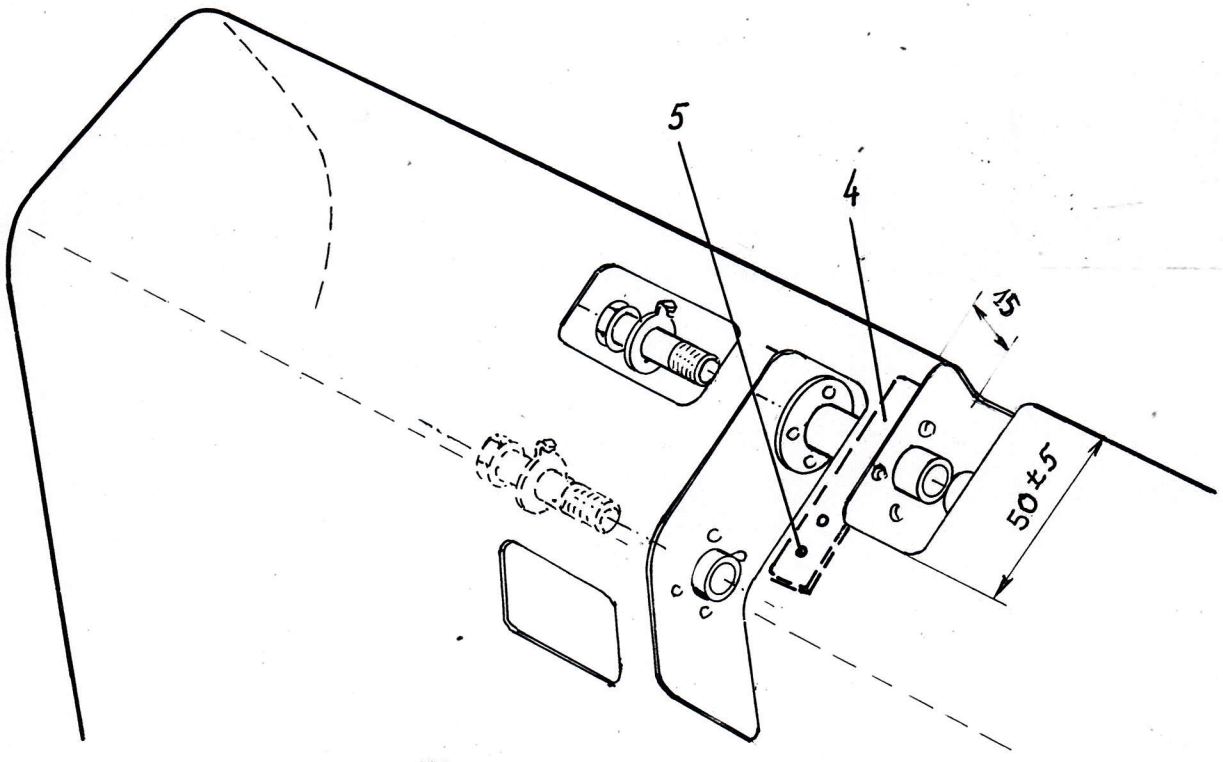



Fig. 2

| Part no. | Amended page | Revision nature | DATA of approval | DATA of insertion | Signature |
|---|---|---|---|---|---|
| 8. | 0.3.F<br>2.4.A | Equipment for flights in "aerobatic" category | 08.10.<br>1980 | | |
| 9. | A.3.1. to<br>A.3.6. | Oxygen system (optional) | 04.11.<br>1980 | - | - |
| 10. | 0.3.G<br>6.10.A | Increased safe life | 04.11.<br>1980 | | |
| 11. | A.4.1.<br>A.4.2. | Double brake wheel (optional) | - | - | - |
| 12. | A.5.1.<br>A.5.2. | Audiovariometer (optional) | - | - | - |
| 13. | A.6.1. | Rear instrument panel (optional) | - | - | - |
| 14. | 0.3.H.<br>1.5.B | Indication on instruments in the front seat | 01.08.<br>1981 | | |
| 15. | A.8.1.<br>A.8.2. | Wheel brake atuated on control column (optional) | 22.10.<br>1981 | - | - |
| 16. | 0.3.H<br>6.9.A | Time increasment between 2 over-hauls | 21.09.<br>1982 | | |
| 17. | 0.3.I.<br>4.12.A<br>6.5.A<br>6.14.B<br>6.27.A. | Flying controls inspection | 21.09.<br>1982 | | |

The speed at the end of correct overturning is approximately equal to that at the end of looping.

## 4.5. POSTFLIGHT INSPECTION

After finishing the flight it is recommended to inspect the glider in compliance with paragraph 4.1. specifications.

17 **CAUTION**

**In case of carrying out a tail slide as a result of an incorrect aerobatic manoeuvering, if during the descent the control column was kept near the neutral position, the control rod item 18, page 6.27.A shall be checked before the next flight. If the rod is distorted (bent) it shall be replaced.**

CAUTION !

Do not use extensions during junction tightening. The two persons at wing extremities shall move the extremities up and down to ease the junction assembling.

The junction wrench shall be locked in one of the places intended to this purpose.

17 | **DO NOT GRASP THE AILERONS OR FLAPS DURING THE WING LIFTING.**

CAUTION !

Take care not to force the aileron, flap and air brake control rods during wing approach to fuselage.

After wing fixing, couple the controls. The couplings are rapid, ball pin type and shall be locked with clips.

When the works mentioned above have been carried out, mount the cowlings.

6.2.1.2. Horizontal tail mounting

The stabilizer can have three positions :

- completely dismounted
- folded along the fin
- mounted in flight position.

To mount the horizontal tail assembly (see fig. 6-3) from folded position, raise the tilting stabilizers tips. Thus, their fittings set between the double fittings from the fin, allowing the insertion of one of the two fixing bolts.

## 6.4. SYSTEMS MAINTENANCE

### 6.4.1. MAINTENANCE WORKS PERIODICITY

| | According to the indications | After every 750 hours | After every 400 hours | After every 200 hours | After every 100 hours | |
|---|---|---|---|---|---|---|
| **LANDING GEAR** | | | | | | |
| 1. Visual check of landing gear holder and riveting to structure. | | | | | * | |
| 2. Visual check of wheel fork (distortion, cracks, corrosion). | | | | | * | 2 |
| 3. Visual check of shock-absorber condition (greasing). | | | | | * | |
| 4. Inspection of wheels (main wheel and tail wheel), bearings, tyres. | | | | | * | |
| 5. Wheel brake (greasing of control and brake shoes). | | | | | * | |
| 6. Inspection of wheel fork-to-landing gear holder joint, by dismounting. | | | * | | | |
| 7. Inspection of wheel fork-to-shock-absorber, shock-absorber fork joint, by dismounting and check. | | | * | | | |
| 8. Inspection of braking surface on wheel hub. | | | | * | | |
| **AIRCRAFT** | | | | | | |
| 1. Visual check of glider exterior. | | | | | * | |
| 2. Visual inspection of glider structure condition. | | | | * | | |
| 3. Visual check of skin junction areas on fuselage and wing. | | | * | | | |
| 4. Visual check of wing junction (greasing). | | | | * | | |
| 5. Wear check of wing-to-fuselage junction bolt. | | * | | | | |
| 6. Visual check of tails junction (greasing). | | | | * | | |
| 7. Cleaning of wing junction fittings with fine abrasive paper and greasing with vaseline. | | * | | | | |
| 8. Plexiglass canopy (visual inspection). | | | | | * | |
| 9. Canopy hinges - inspection, greasing. | | | * | | | |
| 10. Wear check of horizontal tails attachment bolt. | | * | | | | |
| 11. Seats, padding, - adjustment, belts attachment. | | | | * | | |
| 12. Dismounting of control, surfaces, inspection of hinges clearances. | | * | | | | |
| 13. Visual check of instrument panel shock-absorbers, instruments, markings, labels. | | | | * | | |
| 14. Replacement of instrument panel shock-absorbers. | | * | | | | |
| 15. Compass trim. | | | | | | 3 |
| 16. Check of rubber or plastic pipes and, if necessary, replacement. | | | * | | | |
| 17. Air scoops, pipes, sealings, wirings. | | | | * | | |
| 18. Replacement of rubber elements to Braunschweig system. | | * | | | | |
| 19. Water settler (Braunschweig) - drainage. | | | | * | | |
| 20. Radio, antenna, wiring (if any) | | | | * | | |
| **21. Check of board instruments in the workshop.** | | * | | | | 5 |
| **CONTROLS** | | | | | | |
| 171 **1. Visual inspection of cables, pulleys, bearings, greasing, air brake lock turnstiles lock.** | | | | * | | |
| **2. Visual inspection of stick, under floor, greasing** | | | | * | | |
| **3. Visual inspection for trim tab condition and control line (greasing)** | | | | * | | |

19 1

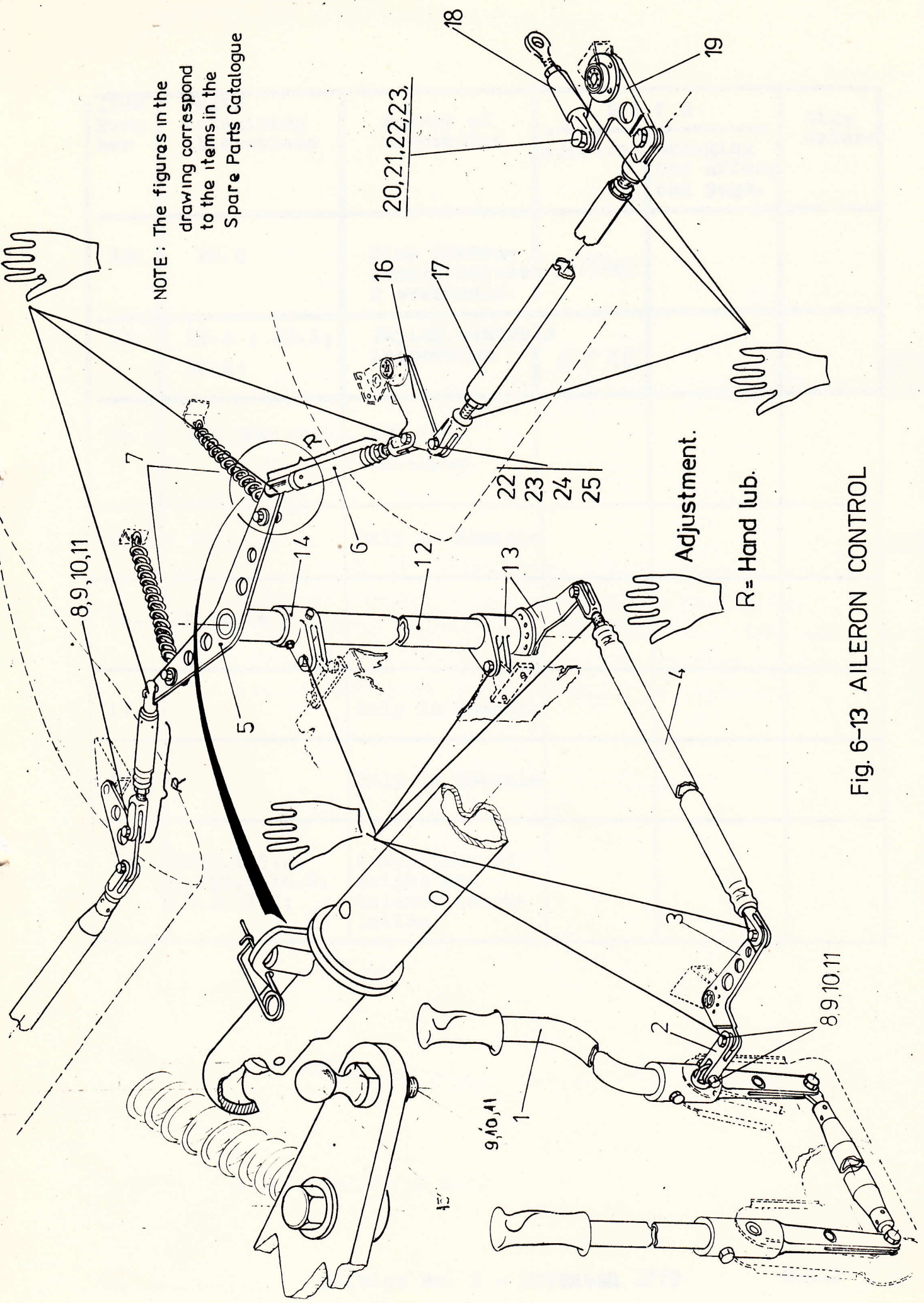



Fig. 6-13 AILERON CONTROL

| Item Number | Pages containing alterations | Nature of alteration | DATE approved | DATE Changing the affected page. | Signature |
|---|---|---|---|---|---|
| 12. | 26.C | Time increasement between 2 overhauls. | 21.09.1982 | | |
| 13. | 15.A ; 23.A; 36.A; | Flying controls inspection | 07.12.1982 | | |
| 14. | 26D; 36B; 37A; | Safe life increasing | | | |
| 15. | | Only in Romania | | | |
| 16. | 22.1; 26.F | | | | |
| 17. | | Only in Romania | | | |
| 18. | | Only in Romania | | | |
| 19. | 9D;9.1;9.2; 9.3;9.4;16.D; 16.1;17.C; | Completion of weight and balance calculation | | | |

When glider spins, speed decreases, so when inverted, it must be approx. 9o km/h. (48 knots)

On inverted flight (horizontal wing),column control gets manner normal. Pilot pulls ease the control stick and operates the second part of manoeuvre which looks like a loop end.

The difference in this case is the higer speed in inverted flight. Do not exceed loo km/h (* in inverted flight, this could bring $V_{NE}$ when recovering.

The right operating of turn over means an 180° turn.

Should the loss of altitude be minimum, get slow speed in inverted flight, the very moment when glider got inverted.

* - 54 knots

13

**CAUTION**

**In case of carrying out a tail slide as a result of an incorrect aerobatic manoeuvering, if during the descent the control column was kept near the neutral position the control rod shall be checked before the next flight. If the rod is distorted (bent) it shall be replaced.**

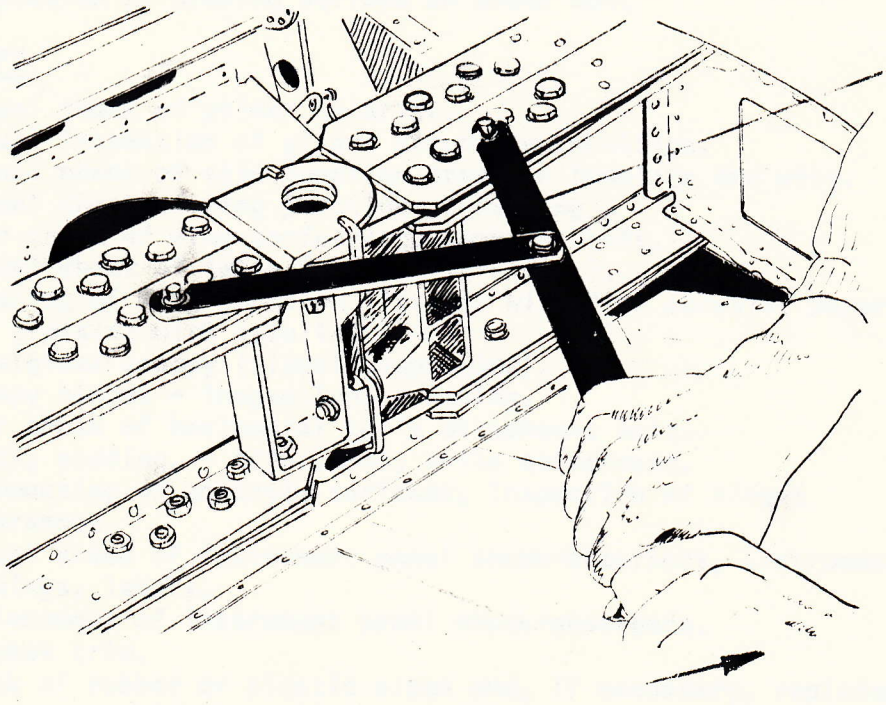
## 7.2. Wing rigging, de-rigging

Wing-fuselage connection consists of four cylindrical bolts and two adjustable conical bolts for tightening up.

Instalation. Each half-wing is guided on the cylindrical bolt by means of an oscillatory bearing.

For easier wing jointing the 29D2.12.01.019 wing jointing device will be used from sailplane no.24 onwards. The device is coupled on two pins on the left and right wing (see drawing). Actuating the handle the wing joint will be achieved.

The wings beeing in position joint will be screwed on with the locking



29D2.12.01.019

13 **DO NOT GRASP THE AILERONS OR FLAPS DURING THE WING LIFTING.**

## MAINTENANCE WORKS PERIODICITY

| | According to the indications | After every 750 hours | After every 400 hours | After every 200 hours | After every 100 hours |
|---|---|---|---|---|---|
| **LANDING GEAR** | | | | | |
| 1. Visual check of landing gear holder and riveting to structure. | | | | | * |
| 2. Visual check of wheel fork (distortion, cracks, corrosion). | | | | | * |
| 3. Visual check of shock-absorber condition (greasing). | | | | | * |
| 4. Inspection of wheels (main wheel and tail wheel), bearings, tyres. | | | | | * |
| 5. Wheel brake (greasing of control and brake shoes). | | | | | * |
| 6. Inspection of wheel fork to landing gear holder joint, by dismounting. | | | | * | |
| 7. Inspection of wheel fork-to-shock-absorber, shock-absorber fork joint, by dismounting and check. | | | | * | |
| 8. Inspection of braking surface on wheel hub. | | | | * | |
| **AIRCRAFT** | | | | | |
| 1. Visual check of glider exterior. | | | | | * |
| 2. Visual inspection of glider structure condition. | | | | * | |
| 3. Visual check of skin junction areas on fuselage and wing. | | | | * | |
| 4. Visual check of wing function (greasing). | | | | * | |
| 5. Wear check of wing-to-fuselage junction bolt. | | | * | | |
| 6. Visual check of tails junction (greasing). | | | | * | |
| 7. Cleaning of wing junction fittings with fibe abrasive paper and greasing with vaseline. | | | * | | |
| 8. Plexiglass canopy (visual inspection). | | | | | * |
| 9. Canopy hinges - inspection, greasing. | | | | * | |
| 10. Wear check of horizontal tails attachment bolt. | | | * | | |
| 11. Seats, padding, - adjustment, belts attachment. | | | | * | |
| 12. Dismounting of control, surfaces, inspection of hinges clearances. | | | * | | |
| 13. Visual check of instrument panel shock-absorbers, instruments, markings, labels. | | | | * | |
| 14. Replacement of instrument panel shock-absorbers. | | | * | | |
| 15. Compass trim. | | | | | * |
| 16. Check of rubber or plastic pipes and, if necessary, replacement. | | | | * | |
| 17. Air scoops, pipes, sealings, wirings. | | | | * | |
| 18. Replacement of rubber elements to Braunschweig system. | | | * | | |
| 19. Water setter (Braunschweig) - drainage. | | | | * | |
| 20. Radio, antenna, wiring (if any) | | | | * | |
| 21. Check of board instruments in the workshop. | | | * | | |
| **CONTROLS** | | | | | |
| 1. Visual inspection of cables, pulleys, bearings, greasing, air brake lock turnstiles lock. | | | | * | |
| 2. Visual inspection of stick, under floor, greasing | | | | * | |
| 3. Visual inspection for trim tab condition and control line (greasing) | | | | * | |

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# MANDATORY SERVICE BULLETIN

## IS-28B2/EO-12

APPROVED BY : DEPARTMENT OF CIVIL AVIATION
with no. 19321 / 07.12.1982

PRODUCT : IS-28B2

OBJECT : ADDITIONAL INSTRUCTIONS CONCERNING THE FLYING CONTROLS CHECK.

COMPLIANCE : REVISION RECORD CARDS 821/26.10.1982 and 822/11.11.1982

DATE : the 24th November 1982

## 1. PLANNING INFORMATION

### A. Applicability

The bulletin is applied to all the IS-28B2 type aircraft :
- by the user - to the aircraft under servicing ;
- by the manufacturing plant - to the aircraft under manufacturing or those in stock until delivery.

This bulletin shall be applied by the user not later than the 1st of March 1983.

### B. Reason

- The detection of some aged and corroded brass wire locks of the control cables turnbuckles for rudder and elevator, in the course of time. If these defects are not detected during the inspections provided in the maintenance manual, they can result, in time, in the lockwires breaking. If the tensions loosening within the control cables is not detected during the daily and preflight inspections, the controls elements separation can finally result.

- In case of incorrect ground handling, if ailerons are forced, or if during an aerobatic flight following a manueuvering incorrectly carried out, the glider performs a tail slide and the control column is slipped from hand or is suddenly deflected up to the limiter, an additional stress may occur within the ailerons control. In this case the hinge moment created can deflect the ailerons upwards, above the rated deflection of $28^{\circ}$ and when an angle of approx. $40^{\circ}$ is reached, an additional bending stress occurs on the control rod connected to the aileron

### C. Description

Check the control cables turnbuckles lock wires for elevator and rudder and replace them if corroded, cracked or if they are made of brass, unchanged since the glider delivery.
Visually check the control rod actuating the ailerons, after its removing from wing and replace it with a new one if bent.
Enlarge the cut-out in the aileron leading edge (through which the above mentioned rod passes) according to the dimensions on page 6/6 figure 2.

In order to increase the aileron control parts strength, in case of stresses such as those presented to heading 1.B, which are not normal cases, but which can however occur due to servicing faults, it is recommended to replace the relevant control rod with another part, made of steel (in lieu of aluminium alloy).

D. Compliance
Revision Record Cards no.821/26.10.1982 and 822/11.11.1982

E. Accomplishment
To the gliders serial no.321, and subsequent and to those in stock, the bulletin is applied by the manufacturing plant, including the recommended modification concerning the steel rod replacement. To the gliders under servicing the bulletin is applied by the user, not later than the 1st MARCH 1983.

F. Material - Cost and Availability
The materials are delivered, on request, by the manufacturing plant. The bulletin application as well as the materials used are at the Buyer's expense.

G. Tooling
Tool kit, mill for aluminium alloys.

H. Weight and Balance
Not affected.

I. References
Flight and Maintenance Manual and heading 2.B of this bulletin.

J. Documents Affected
Amendment 17 to the Flight and Maintenance Manual IS-28B2, 3rd issue, and amendment 13 to the Flight and Servicing Manual IS-28B2 2nd issue.

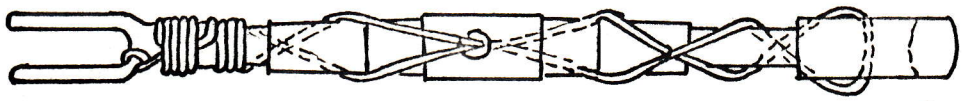
2. USING INSTRUCTIONS

A. Work Preparation
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Remove the ailerons from wing.

B. Application

Check the control cables turnbuckles lock wires and remove those made of brass (unchanged since the glider delivery) or those showing aging, corrosion or cracks.

Lock the turnbuckles by one of the methods specified by the FAA TECHNICAL STANDARD ORDER TSO-C21. The simple wrapping is recommended, according to the solution below :



Visually check the control rod, proceeding as follows; (see figure 1, page 6/6).

(a). Remove the control rod from the wing lever by unlocking and by removing the nut and screw (item 1) ;

(b). Measure the control rod length between the attachment pins axles at ends (size "l") - to avoid some possible later adjustments ;

(c). Unlock the nut (item 2) and remove the eye (item 3).

(d). Visually check the eye; if bent, replace it with a new one.

(e). Reassemble the parts, in reverse order, adjusting the rod length to size "l".

Enlarge the cut-out in the ailerons leading edge to the dimensions indicated on page 6/6, figure 2, by using a mill. Check the doubler item 4(fig.2) riveting to the skin. The number of rivets item 5(fig.2) shall not be reduced by milling to less than 2 (if required, a new rivet shall be driven in). If the recommended modification is also applied to point C, third paragraph, the original rod is replaced with a new one, (made of steel), after having been adjusted to the length "l". If, applying the point d) above, the eye is found distorted and the Buyer does not possess a spare part, on request, all the rods (made of steel) shall be delivered, applying thus directly the recommended modification.

C. Using Instructions

None.

3. MATERIAL INFORMATION

A. Material List

Use wires made of stainless steel, galvanized steel or soft brass (certified aviation materials) of 0.8 to 1.0 mm dia., according to the FAA TSO-C21 indications.
The part with hole no. 30AD.02.063 from the user's spare parts stock - if necessary.
If needed, the manufacturing plant delivers the steel rod assy.

B. Tooling List

- Tool kit
- End mill for aluminium alloy of 10 to 12 mm dia.

C. Supply Indications

The spare parts are delivered by the manufacturing plant, on request, at the Buyer's expense.

4. IDENTIFICATION

The present bulletin application will be mentioned in the glider log card.

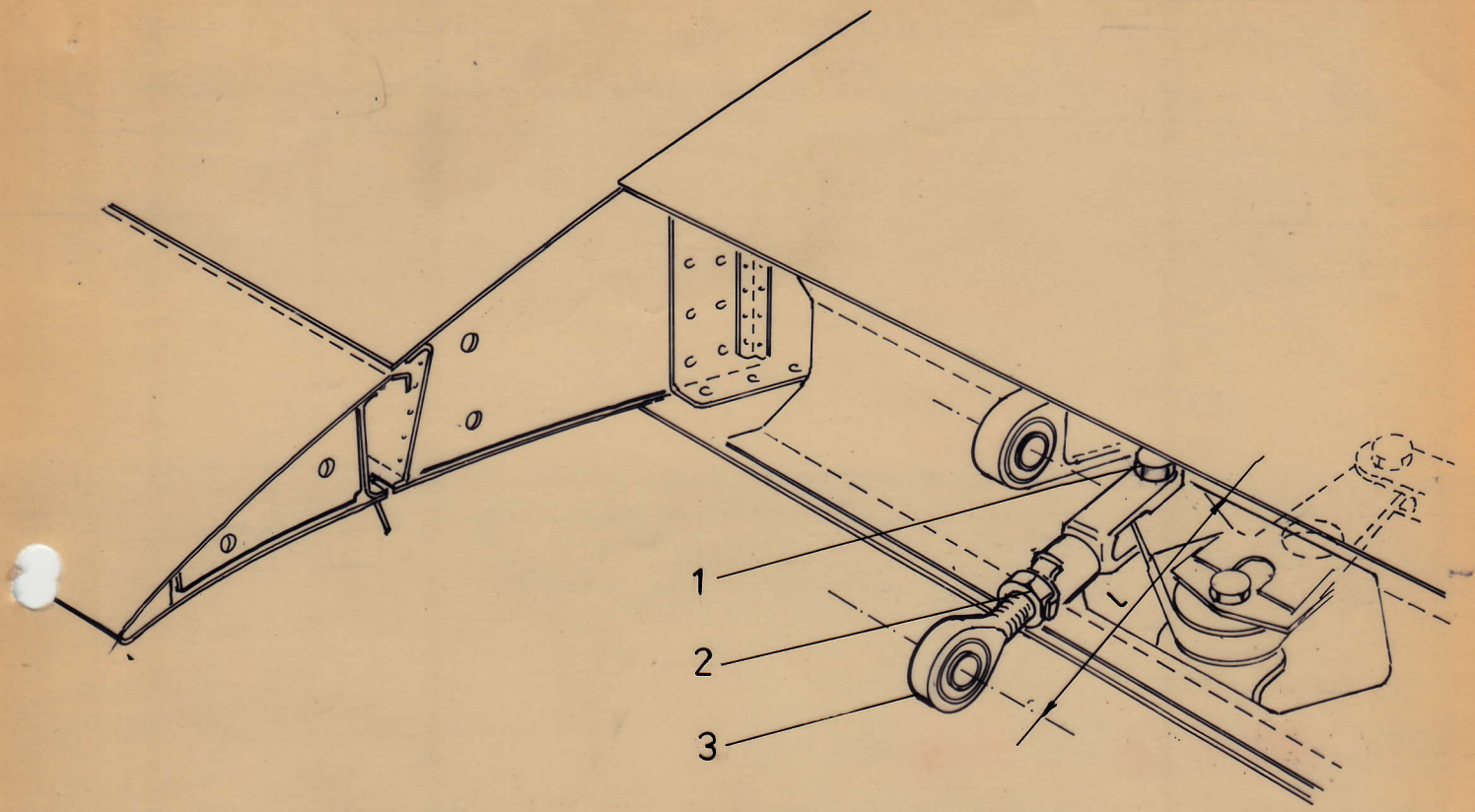



Fig. 1

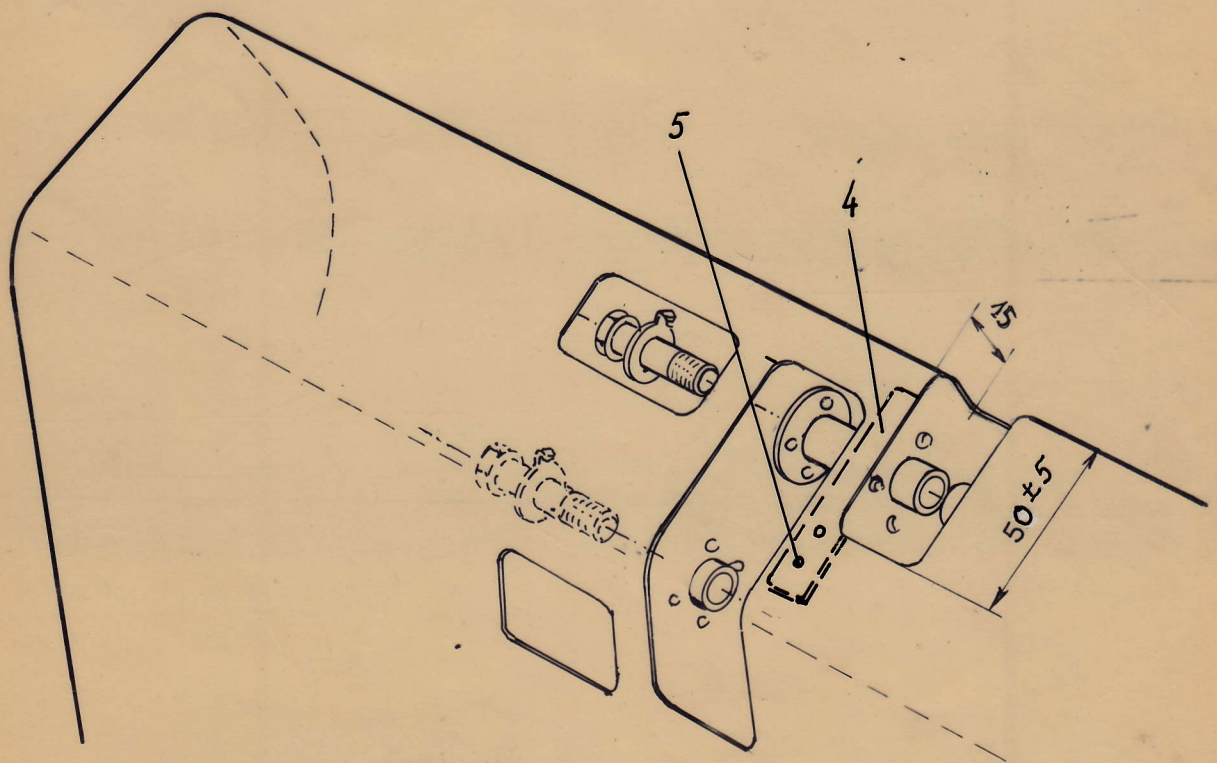



Fig. 2