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INTREPRINDEREA DE CONSTRUCTII AERONAUTICE

B R A S O V

# S E R V I C E  B U L E T I N E

IS - 29D/CO - 6

Approval : " Comandamentul Aviaţiei Civile - TAROM "
No. 8186 Date 27.05.1975.

Type : IS - 29D Sailplane

Description : Increasing of Elevator Deflection Range

Compliance : In accordance with F.M. No.433 and 454

Date : May 15/1975

## 1. PLANNING INFORMATION

### A. Effectivity

**IS-29D - 21, 23, 24, 30, 31 series sailplane. Time limit of modification June 15, 1975.**

### B. Reason

This modification has been introduced to increase the elevator deflection. So, in case of light pilots (i.e. the C.G. is situated at its rear position) it is to be performed.

### C. Description

- Remove the elevator fitting from the fin.
- Mount the new fitting.
- Remove the bracket of the elevator control lever from the panel No.9.
- Mount at that place a new lever bracket.
- Adjust the stick limiters corresponding to the elevator control.

### D. Approval

Modification has been approved in accordance with F.M. 433 and 454.

### E. Accomplishment

**This modification shall be performed for all sailplanes mentioned at point A.**

### F. Material, Cost and Availability

The required materials for modification are given in chapter 3 " Material Information ".

G. Tooling

None.

H. Weight and Balance

Not affected.

I. References

See the appended sketches.

J. Affected Documents

In the "Flight Manual" and in the "Maintainance Manual", the affected pages shall be replaced with those witch have been annexed.

## 2. ACCOMPLISHMENT INSTRUCTIONS

A. Preparation

Use the set of tools of the sailplane.
Remove the elevator.
**Dismount the covers from the fuselage and cockpit.**

B. Accomplishment

See drg. No. 1, page

a) Removing

Remove the screw (4) and the balance weight rod (3). Release the cover (2) by removing two securing screws (10) and (11). Remove the nut (12) and the pin (13) connecting the elevator bracket (1) and the control rod (15). Unscrew the screw (5).
Take out bushings (6) from the axle; then, using a peg made of aluminium alloy, pushthe axle out from the elevator bracket and from the fin.
When (1) is released take out the pins (8) and (9).

b) Mounting

Place the bolt (9) on the new bracket (1.a) and the bolt (8) using the washers (16), so that the two flat surfaces of the bolt to be parallel to the surface (A). If the part (8) is an asymmetrical bolt, mount it at initial position. Install the bracket (1.a) in the fitting of the fin and secure it by pressing the axle (7a).

Not to overlook the washers (17) between the bracket and the fitting. Carefully press axle (7a) so that the holes at the extremitis of the axle to concure with that in the bracket (1.a). Connect the bracket (1.a) and the rod (15) using the bolt (12). The nut (13) is to be secured using the splint (14). Mount the cover (2) by the screws (10) and (11).

Push the bushings (6) at the extremities of the axle (7a).

See drg.2 - page

c) Release the turnbuckles (19) of the elevator control cables by releasing the wires (20).

Reduce the tension in the cables by means of turnbuckles Put the nut (21) out of locking and take out the bolt (22) from the bracket (24) and the bellcrank (25).

Remove the nuts (26) and take out the bracket (24) and the 3 plates (27) fasting it.

Replace the bracket (24) with the new one, (24a) using the same parts. Mount the beelcrank (25), secure the nut (21) using the splint (23).

The tension in control cables must be of 10-12 kgf (20-30 lb) and it is performed using the turnbuckles.

The tension is measured by means of a cable tensometer.

After replacing of the bracket it is necessary to adjust the stick position.

The deflection of the elevator must be of $12^{o} + 2^{o}$ for diving and $12^{o} - 2^{o}$ for climbing. Consequently, it is

necessary to adjust the stops of the stick.
In order to find the neutral position of the elevator use a simple protractor. It must be set on the balance weight bar and will indicate $3^{0}$ with regard to the upper generatrix of the conical fuselage. Then, adjust the stops (28) so that the deflection of the elevator to be about $13^{0}$ - $14^{0}$ for diving and $10^{0}30'$ - $12^{0}$ for climbing. During adjusting, carefully inspect the passing of the control rods to the panels and particularly the passing through the rib at the **bottom of the fin.**
If,during the movement, the rods and the panels are too close, cut up the panel.
When the prescripted deflection angles are performed secure the parts have been removed.
The two elevator control cables shall be uniformly pulled to obtain a tension of 15 ± 2 kgf (35 ± 4 lb). Secure the turnbuckle using the wire. Mount the caps over the inspection holes.

C. Mantainance

Not affected.

## 3. MATERIAL INFORMATION

| New Part No. | Description | Item No. | Qty. | OBS. |
|---|---|---|---|---|
| 29D-11.01.0137 | Bracket | 24a | 1 | |
| 29D-11.02.019B | Elevator Mounting | 1a | 1 | |
| 29D-11.02.34 | Axle | 7a | 1 | |
| 29D-11.02.657 | Washer ≠ 0.3 mm | 16 | 2 | |
| 29D-11.02.658 | Washer ≠ 0.5 mm | 16 | 2 | |
| STAS 1991-68 | Splint 1.2mmdia x 15 mm | 14,23 | 4 | |
| STAS 390 - 70 | Wire - Am 63 | 18 | 1 m | |

| Old Part No. | Description | Item No. | Qty. | OBS. |
|---|---|---|---|---|
| 29D-11.02.019 | Elevator Mounting | 1 | 1 | |
| 29D-11.01.067 | Bracket | 24 | 1 | |
| 29D-11.02.34 | Axle | 7 | 1 | |
| STAS 1991-68 | Splint 1.2mmdiax15mm | 14.23 | 4 | |

B. Tooling

Not required.

C. Material - Cost/Availability

The parts shall be supplied by the manufacturer.

## 4. IDENTIFICATION

Mention the performance of the modification in Sailplane Record.

## 5. APPENDICES

The following pages shall be replaced.

- Flight Manual - page 1.6.B
- Service & Maintenance Manual - page 1.5.B
- **Drg. No. 29D-0002**

- The wing flaps are hand controlled, the control lever (at the pilot L.H.side) movement being transmitted through levers and rods.
- The control allows wing flap fixing in intermediate positions as follows : - 5; 0; + 5; + 1o and + 15°

## 1.4.6. HORIZONTAL TAIL

| | |
|---|---|
| - Description | statically balanced flying teil type, with trimming device |
| - Total surface | 1.18 sq.m. ( 12.701 sq.ft) |
| - Trimming tab surace | o.12o sq.m ( 1.292 sq.ft) |
| 10 - Elevator displacement values | up $12^{o}{}^{+2^{o}}_{0}$ <br> down $12^{o}\ {}^{0}_{-2^{o}}$ |
| 2 - Trimming tab displacement values | ± 4.o° ± 2°* <br> ± 31,5 mm ± 65mm(12.405 ± o.256 in)* |
| 2 - Control stick displacement for elevator controlling | ± 8o mm ± 1o mm( 3.1496 ± o.394 in)* |
| - Trimming tab displacement values to trailing edge in glider axis | ± 6,4 mm ± 3.2 mm(o.252 ± o.126 in)* |
| - Trimming tab control lever displacement | 3oo mm ± 2o mm(11.811 ± o.787 in) |

## 1.3. Permitted Angles of Control Surfaces.

### 1.3.1. Survey of Glider.

The corresponding positions of fuselage, wings and control surfaces are checked by survey of the rigging points. The co-ordinates of the rigging points and their permitted tolerances are set down in Drawing No.29D-0002.

The measurements of the vertical rigging points from the rigging level of the fuselage are set down in Drawing No.29D-0002

These measurements do not take into consideration the saggin due to empty weight.

The survey is to be carried out according to instructions in Drawing No.29D-0002 and any deviations from those figures have to be checked against the figures from the Glider's measuring chart.

### 1.3.2. Permitted Play in the Controls.

- the permitted play in the elevator control system in measured at the top of the control colum ..... 2 mm
- the permitted play of the foot pedals is in the rudder controls ..... 3 mm
- the permitted play in the aileron control system is measured at the top of the control column ..... 2 mm
- of wheel brake control ..... 5 mm
- of control of variable camber flap ..... 2 mm
- of control of landing flaps ..... 3 mm

### 1.3.3. Setting of Control Surfaces.

#### 1.3.3.1. Elevator.

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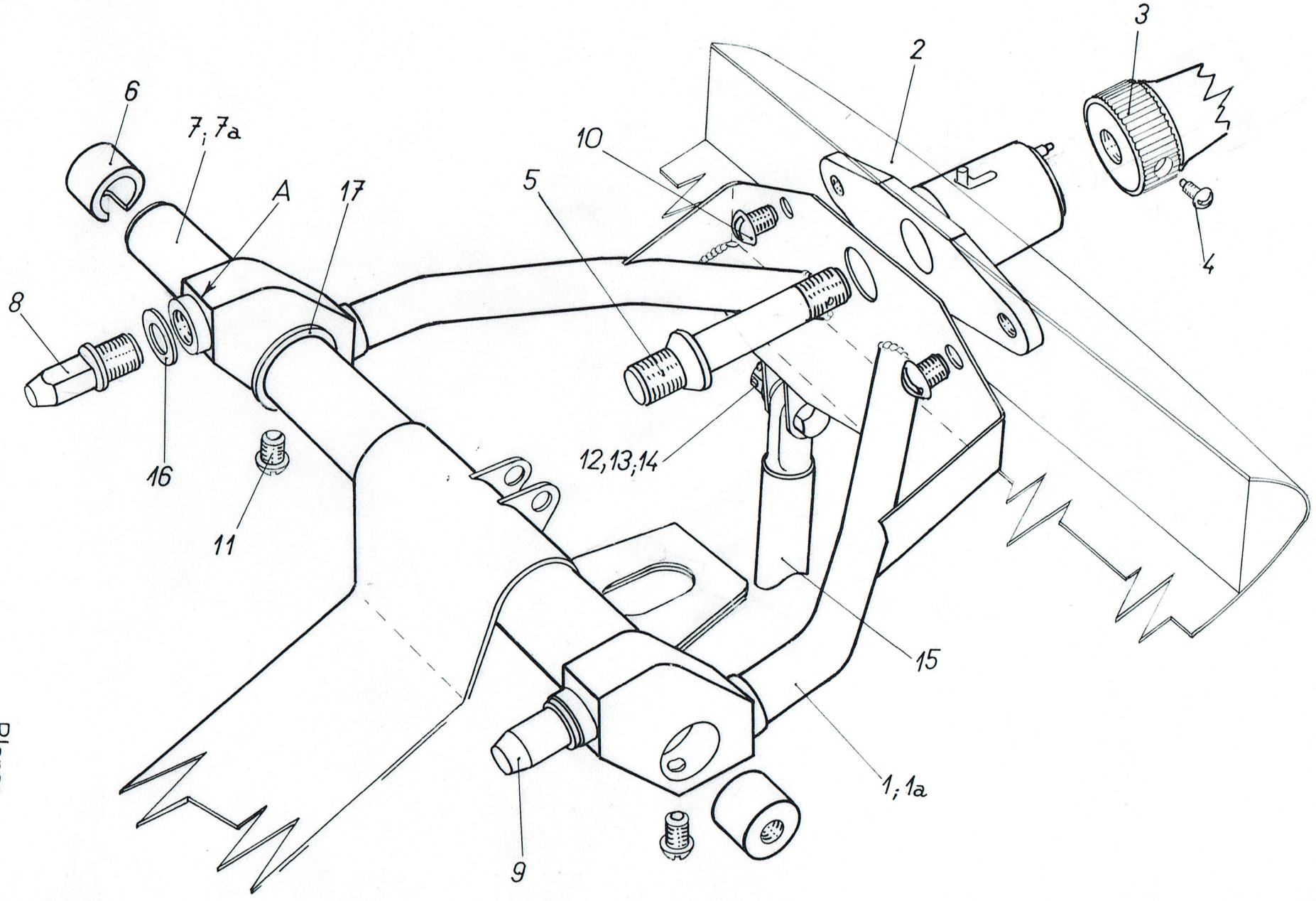
- Angular displacement
  (Dive) up $12\ ^{+2^\circ}_{-0^\circ}$
  Down $12\ ^{0^\circ}_{-2^\circ}$
- $3^\circ$ are provided between elevator reference line and fuselage upper skin.

2

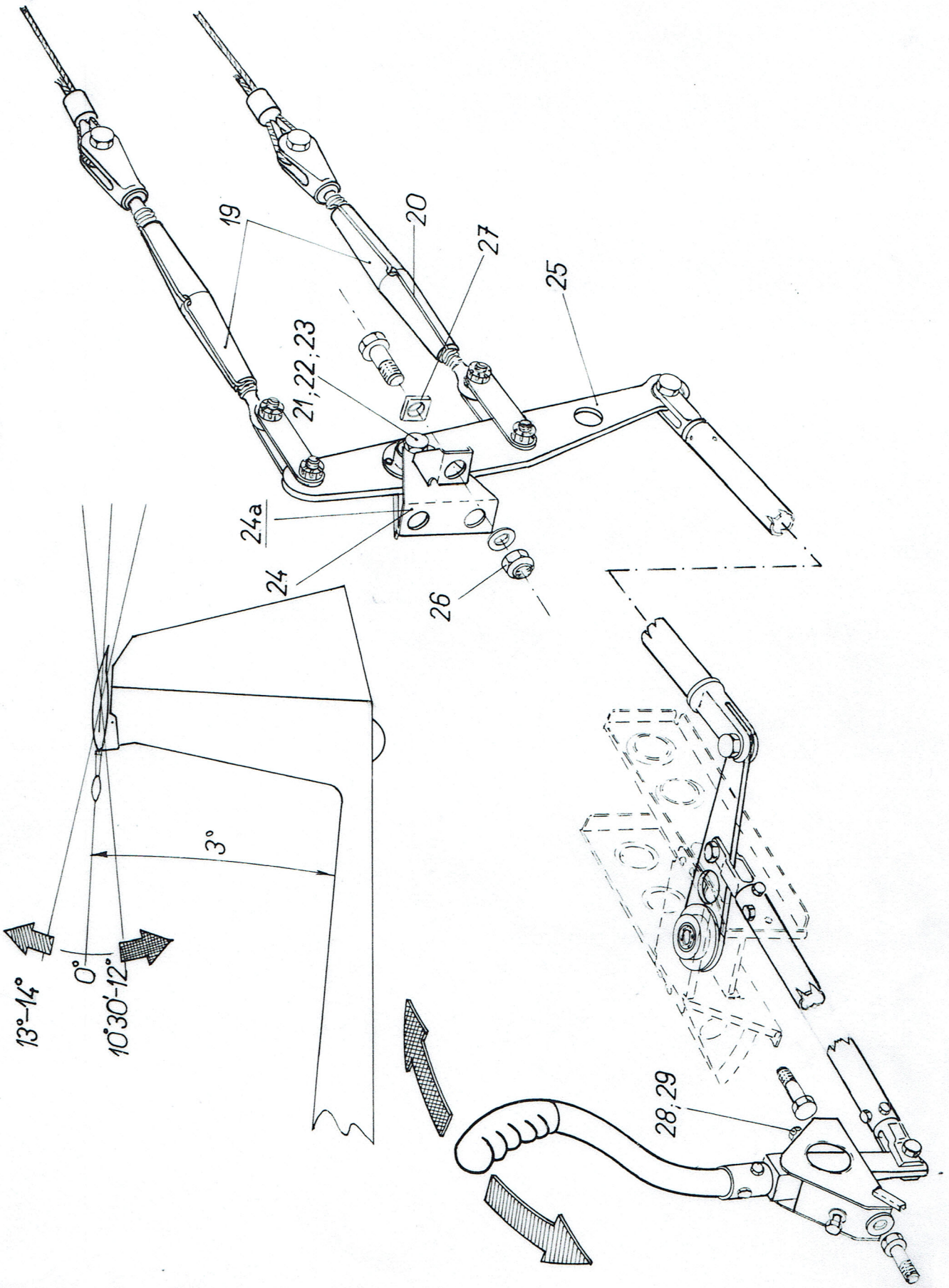
- Linear displacement at trailing edge of elevator (in the axis of the aircraft before fixed trimming) $\pm 31{,}5 \pm 5{,}5$ mm

#### 1.3.3.2. Rudder.

- Angular displacemnet to left $30^\circ \pm 2^\circ$




Plansa : 1
Abd.

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