Jabiru Service Bulletin Number A4

Elevator Travel Check

1. Introduction

Test flying carried out by JABIRU as part of the certification of the JABIRU UL450C model aircraft, reinforced the importance that correct elevator travel has on spin recovery procedures, particularly the "Down Elevator Travel".

When JABIRU measured elevator travels on a number of aircraft it was found that the settings between aircraft were quite different, and varied from the specification.

This service bulletin has been issued by JABIRU in the interest of continued safety. It suggests that aircraft owners measure the elevator travels on their aircraft, and confirm that they are within the ranges specified in this Service Bulletin.

2. Applicability

The instructions in this bulletin are applicable to all JABIRU aircraft except for the J200, and J400 models.

3. Approval

Approval of this procedure is provided by signatory indicated in the approval block at the footer of Page #1, for and on behalf of Jabiru Pty. Ltd.

4. Priority

The service bulletin has a high priority, and it is suggested that the inspections be done at the next aircraft inspection following receipt of the information.

5. Requirements

Elevator travels on all aircraft are required be within the following tolerances.

Aircraft Model	Elevator Up Travel	Elevator Down Travel
LSA (Series)	18°+/-1°	6°+/-1°
SK (Series)	18°+/-1°	6°+/-1°
ST (Series)	18°+/-1°	6°+/-1°
SP (Series)	18°+/-1°	6°+/-1°
UL (Series Except UL450C)	18°+/-1°	6°+/-1°

Note: 1 All travels are measured away from the elevator streamline position.

For aircraft whose elevator travels are outside of the tolerances adjust rigging to achieve correct travel before further flight.

6. Acceptable Methods For Checking Travels

6.1. Elevator Travel Check

Perform the steps in Table #1 to verify that the elevator travels on your aircraft are set correctly

Table 1

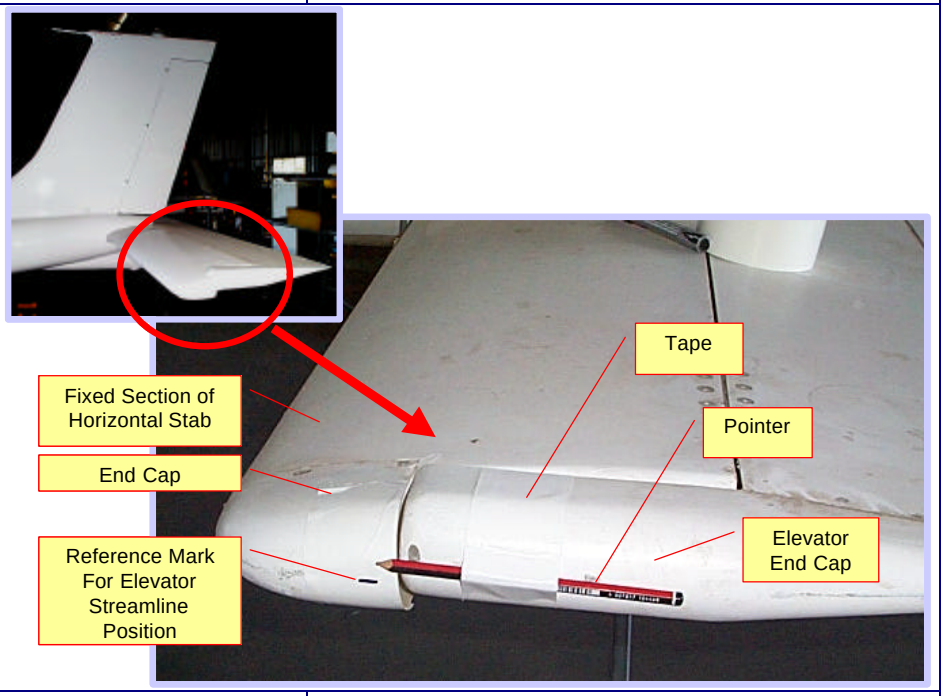
Step	Task	Action and Description
1	Measure the available elevator	Either one of the following procedures can be used. 1. an inclinometer capable of reading with a repeated accuracy of +/- 0.5 degrees, (Use Procedures of Table #2) or 2. a rigging template constructed similar to the drawing included the end of this service bulletin (Use Procedures of Table #3)
2	Record the measured travels	Use Form Included at Annex A to record the measurements and do the calculations.
3	Compare the travels with those specified	Specified Travels are given in Section 5.
4	If Elevator Travels are Within the specified tolerances	No Further Action Required
5	If the travels **ARE NOT** within the specified Tolerances	Adjust elevator travel using procedures specified in Construction Manual
6	Complete Maintenance Record	Place an entry into the aircraft log book to record that these travel checks have been completed

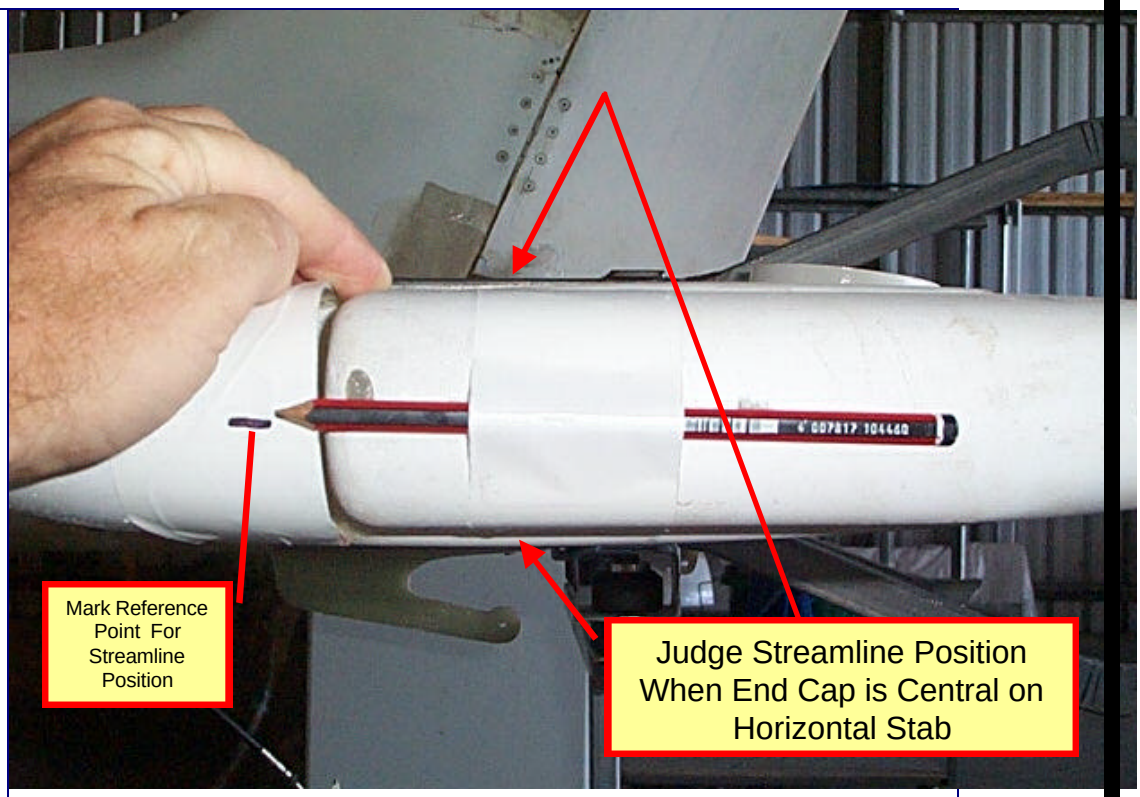
6.2. Procedure to Measure Elevator Travels Using and Inclinometer

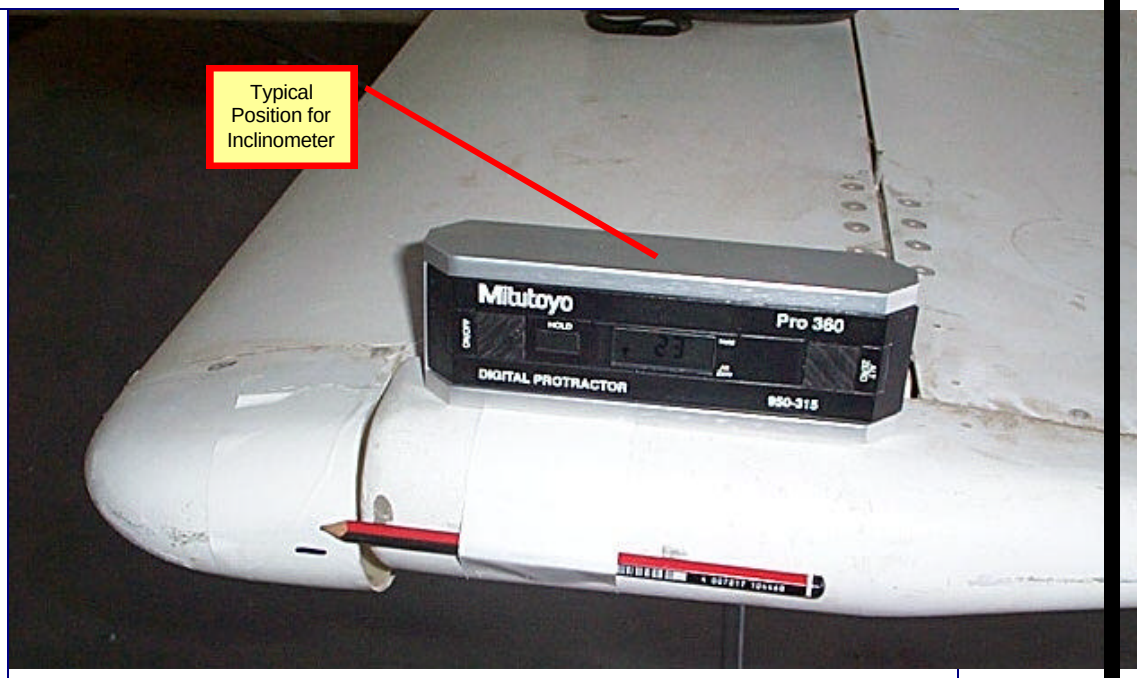
You will need two people to carry out this task. One person will operate the controls in the cockpit, while the other person is measuring the travels at the elevator.

Note: To avoid causing the aircraft from changing attitudes, when the person operating the controls gets into and out of the aircraft, this person should operate the controls by standing on the ground and reaching into the cockpit to move the controls rather than actually sitting in the aircraft.

Table 2

Step	Task	Action and Description
1	Steady the aircraft: .	The aircraft does not need to be leveled to do this check but it does need to have a support to steady the tail boom so that measurements can be made without the aircraft changing its attitude Suggest you place a support under the tail boom just forward of the ventral fin, and also place a suitable "soft weight" on the fixed portion of the horizontal stab so that the tail boom sits firmly on the stand.
2	Secure a suitable pointer onto the end of the Left Side or Right Side Elevator End cap	Consider using a pencil, or stirring stick as a pointer and sticking it in place with some adhesive tape. Make sure that the point of the pointer extends over onto the fixed portion of the horizontal stabilizer.
		
		You can work equally well with either the Left Side or the Right Side, but after choosing which side you are working with, it is not advisable to try to compare the LS Reading with the RS readings because the assembly tolerances used to set up the elevator end caps are greater than the tolerances used to set the travels and you may find that you get confusing readings when you try to do the comparison.
3	Place the elevator in the streamline position	Look sideways at the elevator end cap. Move the elevator manually and judge when the elevator end cap is positioned centrally within the profile of the horizontal stab.

		
4	Mark the streamline position for future reference	Wrap some sticky tape over the end cap on the Fixed section of the horizontal stab, and then use a pen to mark the position of the pointed onto this piece of tape.
5	Zero the Inclinometer or take a zero-reference reading.	Place the inclinometer on the flat surface of the elevator end cap. Ensure the inclinometer is aligned parallel to the longitudinal axis of the aircraft. Best results are obtained in the inclinometer can be clamped or temporarily stuck into this position. If this is not possible clearly mark the position for the inclinometer so that it can be placed in the same location for each measurement. Set the elevator into the streamline position, Then position and zero the inclinometer.

		
6	Measure and record the full up travel	Put the elevator trim on the full aft position. Put the control stick in the full aft position Place the inclinometer in position, observer and record the reading.
7	Measure and record the full down travel	Put the elevator trim in the full forward position. Put the control stick in the full forward position Place the inclinometer in position, observe and record the reading.
8	Do a Repeat Measurement for the Up Travel	Use Same Procedure as Step 6
9	Do A repeat Measurement for the Down Travel	Use Same Procedure as Step 7
10	Calculate Travel	Complete the steps on the Measurement Record Sheet to calculate the available travels.

6.3. Procedure to Measure Travels Using Rigging Template

Step	Task	Action and Description
1	Mount the Rigging Template on the HT	The aircraft does not need to be leveled nor even steadied to do this check with the rigging templates..
2	Place the elevator in the streamline position	Look sideways at the elevator end cap. Move the elevator manually and judge when the elevator end cap is positioned centrally within the profile of the horizontal stab.
3	Mark the streamline position on the rigging board.	Stick a pointed to extend the trailing edge of the elevator onto the rigging template scale. Make a mark on the scale to record the streamline position and record the reading in the Measurement Record Sheet
4	Measure and record the full up travel	Put the elevator trim on the full aft position. Put the control stick in the full aft position Mark and record the reading made by the pointer in the

		rigging template scale.
5	Measure and record the full down travel	Put the elevator trim in the full forward position. Put the control stick in the full forward position Mark and record the reading made by the pointer in the rigging template scale.
6	Do a Repeat Measurement for the Up Travel	Use Same Procedure as Step 4
7	Do A repeat Measurement for the Down Travel	Use Same Procedure as Step 5
8	Calculate Travel	Complete the steps on the Measurement Record Sheet to calculate the available travels.

7. Measurement Record Sheet

7.1. Record of Measurement

	Full Travel Elevator UP	Elevator In Streamline Position	Full Travel Elevator Down
First Reading	[2]	[1]	[3]
Second Reading	[5]	[4]	[6]
Average of Two Readings	[8]=([2]+[5])/2	[7]=([1]+[7])/2	[9]=([3]+[6])/2
Available Travel	[10]=[8]-[7]		[11]=[9]-[7]

7.2. Table of Required Travels

Aircraft Model	Elevator Up Travel	Elevator Down Travel
LSA (Series)	18°+/-1°	6°+/-1°
SK (Series)	18°+/-1°	6°+/-1°
ST (Series)	18°+/-1°	6°+/-1°
SP (Series)	18°+/-1°	6°+/-1°
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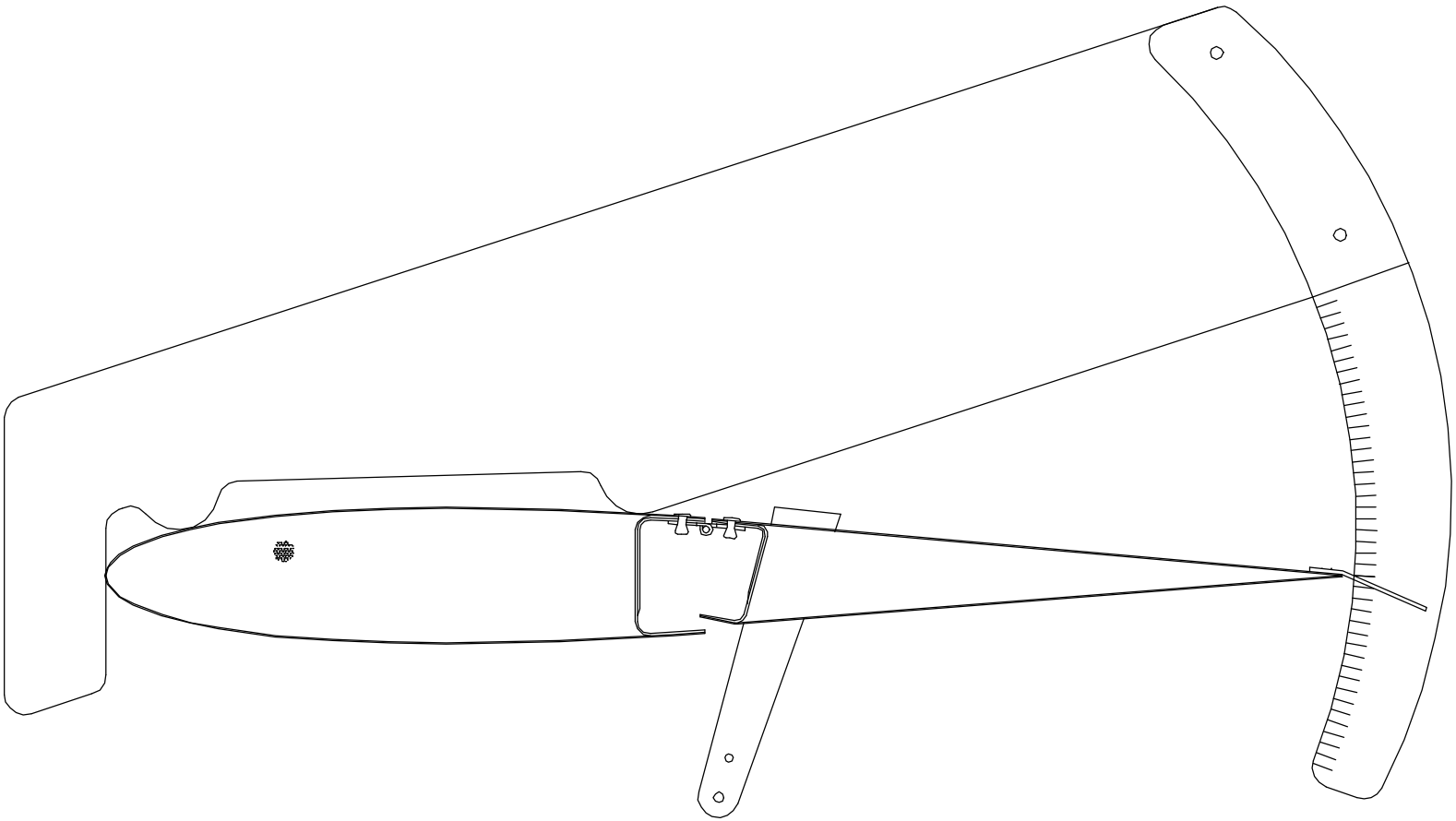
Note: 1 All travels are measured away from the elevator streamline position.



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