

GFA AIRWORTHINESS DIRECTIVE

- TYPE AFFECTED:** SZD-50-3 PUCHACZ. ALL SERIAL NO'S.
- SUBJECT:** Failure of Pushrod End Bearing in elevator circuit.
- BACKGROUND:** A failure occurred in the elevator control circuit which resulted in total loss of elevator control from the front cockpit. Fortunately the aircraft was being flown dual and the rear pilot landed the glider safely. Had the failure occurred during solo flight or with an inexperienced person in the rear the outcome could have been serious indeed.
- FINDINGS:** On inspection it was found that the rear rod end bearing of the elevator pushrod which connects the front and rear control columns had broken at the point where the threaded portion enters the locknut. The pushrod was therefore completely detached from the rear stick.
- Continuing investigations indicate that the end bearing which failed was mechanically damaged well prior to the failure, and although not yet positively established, it is believed that the end bearing was bent by a person treading on the push rod or end bearing while entering or exiting the rear cockpit; not by loads imposed during flight.
- Accordingly, Issue 2 of this AD removes the requirement to disassemble all pushrod ends which have a keyway cut into the threaded portion (Item 3 of Action A, Issue 1). Metallurgy tests of the broken rod end are still underway.
- ACTION REQUIRED:** **"ACTION A": Before further flight** the following checks must be performed.
1. The pushrod connecting the front & rear control columns is to be examined critically. This is the pushrod which runs down the left side of the cockpit. Remove the rear rod end from the pushrod and inspect the threaded area for bending or cracks using a 10X magnifier.
 2. Notify GFA Airworthiness Department without delay of the results of this inspection *whether cracks are found or not*.

SIGNED:

SENIOR TECHNICAL OFFICER AIRWORTHINESS

For and on behalf of:

THE GLIDING FEDERATION
OF AUSTRALIA

3. Visually inspect all other rod ends in the control circuits for any sign of bending in the threaded area. The positions of any rod ends with a keyway are to be noted and their locations advised to GFA.

4. Any suspect rod ends must be replaced with serviceable components before further flight.

“ACTION B”: AT EACH DAILY INSPECTION.

The rear end of the elevator pushrod which connects the front and rear control columns is to be visually inspected for any sign of bending in the rod or the end bearing. If damage is suspected carry out item 4 of “Action A”.

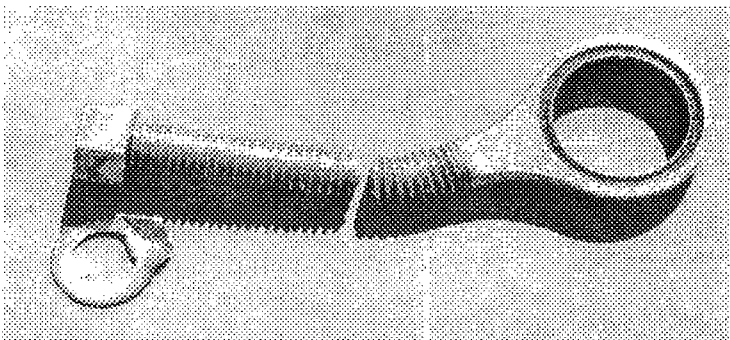
This AD will be re-issued once more information is available.

WEIGHT AND BALANCE: Nil effect.

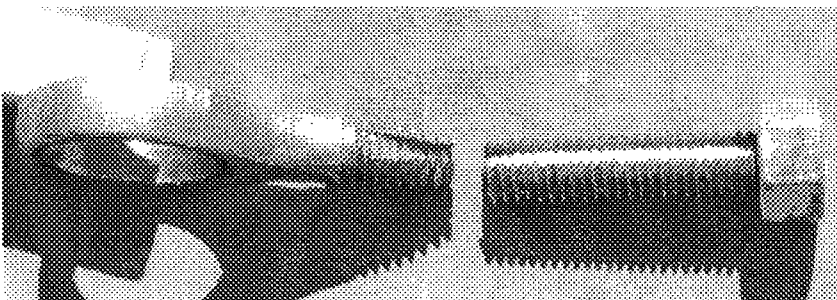
IMPLEMENTATION: The above actions are to be performed by, or under the supervision of, a person holding a current GFA Airworthiness Authority endorsed for Inspection for issue of a Maintenance Release or higher.

Findings are to be reported directly to the GFA Airworthiness office: Fax (03) 9379-5519, Phone (03) 9379-7411 or e-mail stoair@gfa.org.au

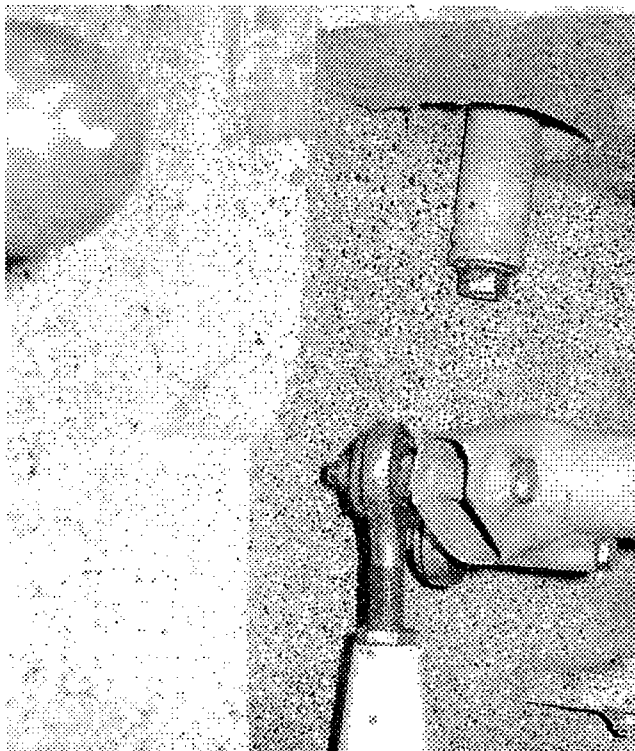
COMPLIANCE: The requirements of this GFA Airworthiness Directive are mandatory. This Directive is issued pursuant to the Rules and Regulations of the Gliding Federation of Australia.



Broken rod end bearing showing extent of bending prior to failure. Note profile of locktab to suit keyway.



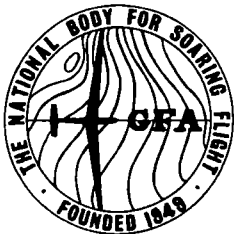
Broken rod end bearing showing keyway.



View looking vertically downwards, left side of rear cockpit floor, showing edge of rear control column cross member and rear end of the elevator pushrod where the rod end bearing failed. Locknut and tab washer are still in place. Trim knob is visible in upper left of picture.



View from rear pilot's seat showing broken rod end bearing and its attachment point to the rear control column cross member.



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SZD-50-3 PUCHACZ AD-623

Guidelines for performing Daily Inspection in accordance with AD-623.

"Action B" of the above AD requires that the elevator push rod located on the left side of the fuselage beneath the cockpit floor level be inspected for bending of the rod or rod end bearing as part of the DI. Normally this would require the removal of the rear seat pan. However a method has been devised whereby the continued straightness of the rod can be verified without the necessity to remove the rear seat.

Satisfactory inspection can be quickly carried out by the utilisation of the following method.

Use a fine tip waterproof marker pen to make two reference lines on the left cockpit wall. This is achieved by using the pushrod as a guide and resting the marker pen on the pushrod but at right angles to it and drawing a line on the side of the fuselage. Draw two lines:- one above and one below the pushrod. The pushrod can then be "sighted" against these lines to check that it is still parallel to them. Any "Angle" visible between the lines and the pushrod will indicate it or the rod end may be damaged, in which case further disassembly would then be necessary.

Naturally, it will be necessary to verify that the rod and rod end are undamaged before any attempt is made to draw the lines on the fuselage wall!

If possible, marking of the cockpit wall should be carried out at the time of performing "Action A" of AD-623.

This method of inspection is approved by the GFA Airworthiness Department, but it offered as advice only and operators are free to use whatever method they wish to employ at the DI to ensure that the pushrod and rod end are undamaged.

John G Viney
Senior Technical Officer, Airworthiness.

05 May 2005