

GLIDING FEDERATION OF AUSTRALIA

AIRWORTHINESS DIRECTIVE GLIDERS

Ref. No. GFA/AD 199 START & FLUG 6

GLIDER TYPE AFFECTED: Start & Flug H101 Salto

BACKGROUND: In a recent incident a H101 Salto glider suffered in flight failure of an aileron actuator and a lever in the dive brake circuit. On joining circuit for landing the glider was dived to a speed of about 150 knots (V.N.E. for the Salto in Category "A" is 151 knots). The pilot reported that he experienced turbulence and commenced to slow down but immediately heard a loud noise and looking out noticed the wing tip flapping rapidly and that the air brakes were deployed. In attempting to close the air brakes the pilot found that the operating handle was still in the locked position and additionally he had no aileron control but he was able to make a safe landing.

In subsequent investigation it was found that ball bearings in the aileron actuator had shattered, jamming the actuator but allowing the aileron to float free and a lever in the air brake control had fractured.

It appears that "brinelling" of the bearings (indentation of the bearing races by the steel balls under impact loading) had allowed slack to develop in the aileron actuator which under the high speed flight condition led to aileron flutter and the violent oscillation of the wings overloaded the air brake control circuit. Brinelling of bearings in gliders has usually been traced to vibration and shock loads imposed during trailering due to inadequate springing of the trailer and support of components in the trailer.

REQUIRED ACTIONS: Before further flight and at intervals not exceeding 100 hours in service or following any hard landings inspect the ailerons for free play in the control circuit. Where "brinelling" of bearings has occurred, free play will usually be noticed only when the aileron is in a particular position, this being when the balls in the bearing are in line with the indentation in the races. Free play may also result from excessive clearance between the actuator shaft and its mating socket in the aileron.

Free play measured at the aileron trailing edge must not exceed 2 mm. If free play is excessive the cause must be eliminated by bearing replacement or by reducing clearance between the actuator shaft and the mating socket in the aileron.

Inspection may be carried out by the holder of a Glider Inspector's Certificate DOT 1109 endorsed for daily inspections or higher category but any replacement or repair must be carried out by or checked by the holder of a Glider Inspector's Certificate DOT 1109 endorsed for Certificate of Airworthiness Inspections with an independent inspection for correct function on completion.

N.B. The aileron actuators are "handed" and fitting the right hand actuator in the left hand wing and vice versa will reverse the direction of action of the ailerons.

COMPLIANCE: The requirements of this directive are mandatory. This directive is issued pursuant to Air Navigation Regulations under authority delegated by the Secretary, Department of Transport.

Douglas Lyon

DOUGLAS LYON.
CHIEF TECHNICAL OFFICER AIRWORTHINESS
GLIDING FEDERATION OF AUSTRALIA

Date of issue: 15th May, 1981