



THE GLIDING FEDERATION OF AUSTRALIA

BUILDING 130, WIRRAWAY ROAD, ESSENDON AIRPORT, VICTORIA 3041.

GFA/AN 51

ROLLADEN SCHNEIDER

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Sheet 1 of 1

AIRWORTHINESS ADVICE NOTICE GLIDERS/POWERED SAILPLANES

TYPES AFFECTED: LS1-f, LS3, LS3A, LS4

SUBJECT: Undercarriage structural problems

BACKGROUND: A number of reports received indicate a higher than average incidence of "self retract", due to, in most cases, prior damage to the undercarriage structure and its retract mechanism.

DEFECT REPORT: The following is a copy of the latest defect report received by GFA concerning an LS4 self retracting during the landing roll. "In flight the pilot reported that whilst retracting the u/c 'a pin had sheared'. He suspected the u/c remained down whilst the u/c lever did not seem to do anything. Upon landing the u/c stayed down for most of the ground run but retracted itself in the latter stage. Examination of the sailplane revealed the drive arm had fractured just above the weld. The drive tube was bent and bolt holes elongated. One large u/c rear suspension block was distorted. The 3 hook shaped mechanism arms had been overloaded & were squashed. Examination suggested that a heavy landing (or landing on a rough strip with water) caused the suspension to deflect to its limit. The load was then applied to the mechanism causing the hook brackets to be crushed somewhat and the drive arm/tube to be damaged. The glider continued in service. However each time the u/c was cycled the now distorted hook shaped brackets interfered with other u/c mechanism. This caused higher loads required to raise the u/c. These loads caused the already damaged drive arm to shear."

CONSIDERATIONS:

- (1) The shock absorbing nature of the u/c is such that the pilot may not feel that he has overloaded the system.
- (2) The u/c is rather complex compared with other sailplanes. When inspecting the u/c it must be realised that the dimensional stability of the 3 hook brackets is very critical to the successful locking down of the u/c.
- (3) The dimensions of the brackets can only be checked by removal and checking against a new part or template.

MATERIALS WARNING: Repairs of metal fittings Most fittings are made from 1.7734.4 aircraft material and welded in WIG-process (Shielded arc welding). In no case should they be gas welded, because required properties of the material will disappear.

RECOMMENDATIONS: It is strongly recommended that:-

- (1) A thorough inspection of the undercarriage system must be made after any landing the pilot believes may have excessively loaded the structure.
- (2) The undercarriage structure to be thoroughly inspected at each Form 2, particularly checking the hook brackets dimensionally to verify they have not been distorted.
- (3) The inspector must be certain that he understands the part played by each of the components, in the function of the u/c.

Mike Burr