

## AIRWORTHINESS ADVICE NOTICE

TYPE AFFECTED: Duo Discus, Duo Discus T.

SUBJECT: Miscellaneous airworthiness information.

APPROVED MODIFICATIONS:

1. Schempp-Hirth Technical Note No 396-6 and the associated Work Instruction describe a recommended modification to the canopy locking system. Copies of the documents may be obtained from the type certificate holder.
2. For Duo Discus sailplanes of serial numbers 1 to 321 and 325 to 333, an optional modification is available in Schempp-Hirth Technical Note No 396-7 (890-1 for Duo Discus T) to lower the airbrake operating forces. Copies of the Technical Note are available from the type certificate holder.

- DEFECTS:
1. One operator has reported that the plates on the ends of the spreader bars between the front and rear cockpits, which take nose-wheel loads, are showing signs of starting to pull off the fuselage walls. The operator has attributed the defect to "hard nose-wheel arrivals". It is reported that it is not a major problem as yet but is expected to get worse. The subject aircraft has done 556 hours and 285 landings.
  2. An Australian Duo Discus operator found a near total failure of the tow release cable at its exit point from the front cockpit T shaped release. The failure was not easy to detect as the broken wire was effectively shielded from easy view by the protruding steel swage at the base of the T handle. There was no cable damage at the rear cockpit release handle. The damage appears to be initiated by a sharp edge on the inside of the steel

SIGNED:



CHIEF TECHNICAL OFFICER

For and on behalf of:

**THE GLIDING FEDERATION  
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swage. The design of the release cable and pulley system is such that operation of the release from the rear cockpit would not have been possible had the front cable failed completely.

3. UNDERCARRIAGE GAS STRUT FAILURE: The gas strut bottom end is suspected to have unwound at the bottom end fitting from the barrel of the gas strut. After detaching, the top attachment ball failed during operations and the gas strut penetrated the parcel shelf behind the rear cockpit.



*Figure 1: View in the wheel wheel looking forward showing port undercarriage arm and disconnected gas strut connection*



*Figure 2: Gas strut end protruding through parcel shelf.*

4. UNDERCARRIAGE GAS STRUT FAILURE: While preparing to put the fuselage in the trailer, the undercarriage gas strut was found disconnected from the lower and upper attachment points. The ball ends had sheared and the end attached to the top of the gas strut rod was bent. Reference defect 3 above, this was the second gas strut failure experienced on the same aircraft.



*Figure 3: Failed gas with bent strut.*

The gas strut rating can vary depending on the mainwheel fitted (TOST or lighter Penta). It acts in tension to assist with retracting the undercarriage. It is attached at the lower end to the undercarriage rocker arm which is part of the shock absorption system. The main wheel mounted to the rocker arm is subject to high oscillatory loads due to the rough nature of Australian grass runway strips for sailplane operations.

The balls which attach the strut are similar in design to L'Hotellier balls in control circuits, but smaller. Rather than being lubricated on a regular basis, they may or may not be lubricated subsequent to entering service and may not be lubricated at an annual inspection.

#### RECOMMENDATIONS:

The Arcus and Duo Discus has the same gas strut arrangement except that the upper attachment on the Arcus is via a clevis pin supported in double shear through an end fitting screwed to the gas strut rod which provides a matching hole. The bottom is still attached to the undercarriage rocker via the ball.

1. LUBRICATION: The ball ends of the undercarriage gas strut should be lubricated every annual inspection.
2. THREAD LOCKING: The threaded junctions on the undercarriage gas strut should be secured against unwinding by use of a thread locking compound (recommend Loctite 243).
3. BALL REPLACEMENT: The ball ends are subject to significant fatigue loads due to the high oscillatory loads on the rocker arm mechanism on the ground roll during take off and landing, and during towing. It is recommended to replace the ball ends whenever the gas strut is replaced.
4. GAS STRUT REPLACEMENT: Replace the gas strut when it becomes noticeable that the retraction effort has increased significantly. Pay attention that the gas strut force rating matches the mainwheel type installed. Refer maintenance manual.