

5C – EFFECTS OF CONTROLS

RETRACTABLE UNDERCARRIAGE

INTRODUCTION

Whilst most training two seat gliders usually have fixed undercarriages, most single seat gliders have retractable undercarriages. In the absence of a two-seater with a retractable undercarriage this exercise can be accomplished by a managed conversion to a single seater. (Chapter G)

THEORY BRIEFING

Retracting the undercarriage reduces drag and improves the performance of the aircraft. Most retractable undercarriages in gliders are manually operated, but a few are now being produced with electrical retraction.

Most manual undercarriages are straight forward and it's obvious how they work, but some have unusual movements of the handle which may not be obvious.

Electrical undercarriages can be complicated, and it is vital to understand not only the retraction and extension processes, but any emergency extension procedure that may be required if the normal procedure fails.

Read the flight manual of the aircraft thoroughly, learning on the job can be expensive!

The undercarriage should not be raised whilst launching. When aerotowing, distraction from flying the aircraft may result in a tug upset, with the associated serious hazard to the tug pilot.



AIR EXERCISE BRIEFING AND EXERCISE

Explain the mechanism and explain that as an upper air exercise they will practice raising and lowering the undercarriage several times. Remind them to avoid the distraction that the exercise generates and to always keep a good lookout. The pilot must properly conduct their pre-circuit checks to ensure the wheel is down for landing.

If conversion to a pilots first retractable undercarriage type is imminent, it can be useful for the trainee to try the

undercarriage on the ground with the aircrafts fuselage securely supported on its fuselage rigging/trailer dolly. It is recommended that the pilot wears their parachute, sits on the required cushions, straps in and closes the canopy to ensure they can operate the undercarriage in the confines of the cockpit. Remind pilots that some undercarriages are forward for down and some work in the opposite direction – always check against the signage in the glider.

TEM

Threats:

Collision

Mitigation:

Maintain thorough Lookout

Errors:

Running out of height for appropriate circuit

Monitor height & position

Failing to lower or lock the undercarriage at the end of flight

Conduct appropriate pre-circuit checks.

DE-BRIEFING

Discuss any problems that may have occurred and take the opportunity to remind the trainee when they should not retract the undercarriage and when it should be extended immediately before entering the circuit.

COMMON DIFFICULTIES

Not reading the flight manual and hence not understanding how the undercarriage will cause most problems, particularly with the more complex arrangements.

Whilst the trainee may be in the habit of conducting their WULF check, long familiarity with fixed wheel aircraft may result in them overlooking the need to lower the undercarriage.