



GLIDING NEW ZEALAND INCORPORATED

ADVISORY CIRCULAR
AC 3-03

GLIDER TOW RELEASES

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1. Introduction

Assuming correct tow rings are used, it should always be born in mind that an accidental release can only occur if the hook mechanism is not locked over-centre, or if the release is excessively worn.

This Advisory Circular provides guidance on the maintenance of glider tow release systems, using condition monitoring principles in support of the GNZ Maintenance Programme for Gliders & Powered Gliders. In particular the requirements for:

- Daily inspections.
- Supplemental and annual inspections (Form TECH 22).
- Special inspection at 2,000 launches.

2. Daily Inspection

- 2.1 Essentially, this is a cleanliness and operation check to be carried out during the routine Daily Inspection in accordance with the GNZ Daily Inspection & Tech Log (yellow covered “DI book”) and GNZ Advisory Circular AC 3-01 Glider Daily Inspection. Any foreign matter must be removed, and the mechanism checked for smooth operation and a “normal” feel from the cockpit. If the release force seems unusually light, it could indicate that one of the “legs” of the release return-spring is broken – in which case a suitable entry should be made in the “Major Defects” page of the DI Book and the glider grounded until cleared by a GNZ engineer.
- 2.2 Before the first launch of the day, a check-release must be carried out with the rope under some load – ensure that the hook opens easily and fully when operated from the cockpit and that it returns positively and fully to its correct closed position.
- 2.3 Before the first winch launch of the day, in addition to the check-release as above, a check of the back-release mechanism must be carried out. The back-release check is done by pulling the launch cable backwards to ensure that the ring “cage” moves smoothly backwards under the hook (“parrots beak”) to release the cable. The strength of the return spring should feel “normal” and sufficient to positively and fully return the cage over the hook.

3. Supplemental Inspection (ref TECH 22 Section 1)

- 3.1 For each release, clean then inspect:
- security of attachment
 - hook mechanism for excessive wear¹, corrosion, broken spring
 - actuating system for security, wear, corrosion (especially around the release handle(s))
 - opening and closing operation (including back release if applicable) full and free with minimal friction under a firm spring load².
- 3.2 Lubricate the release mechanism using spray oil or grease³ while operating it several times.

¹ With the release closed, free movement at the tip of the hook should not exceed 1mm in the opening/closing direction and also laterally.

² The force on the cockpit release handle should be between 6kg_f and 9kg_f (13.5lb_f and 20lb_f) to open the hook. If the glider has two releases operated simultaneously by the system, then the release force should not exceed 17kg_f (38lb_f) when there is a 150kg_f (340lb_f) load on the release.

³ Such as WD-40, CRC or HHS 2000.

4. Annual Inspection (ref TECH 22 Section 2)

- 4.1 With the seat pan and/or other access panel removed as required, thoroughly clean each release using a brush and compressed air while operating the mechanism. Carry out the Tech 22 Section 1 inspection and lubrication as above. Pay particular attention to security, wear, and corrosion of all actuating system components. There must be minimal friction⁴ and also about 10mm of slack in the actuating system to allow complete over-centre locking of the release under hook spring pressure.
- 4.2 For each release, identify the manufacturer and serial number, and check that this is properly recorded in the glider maintenance records, along with the number of launches that has been carried out on that release since new or overhaul.

5. Special Inspection at 2,000 launches

- 5.1 As a general rule, all releases must be maintained in accordance with their respective manufacturer recommendations, if any.
- 5.2 All Tost Releases must be sent back to Tost for complete reconditioning at intervals of 2,000 launches.⁵ Note that, for gliders fitted with both CG and nose releases, the launch count applies to both releases regardless of use because cycling of the hook return spring is a determining factor
- 5.2 For releases other than those manufactured by Tost, in the absence of any other relevant manufacturer recommendations, a workbench inspection⁶ should be carried out at intervals of 2,000 launches as follows:
 - 5.2.1 Having thoroughly cleaned the release with compressed air then with solvent, inspect for excessive corrosion in the assembly generally, and specifically for movement in the hook over-centre mechanism. With the release closed, measure the free movement at the tip of the hook beak, which should not exceed 1mm in the opening/closing direction and also laterally.
 - 5.2.2 Check for excessive wear on the hook beak, and on the surrounding ring cage and side slots. Light “polishing” is acceptable.
 - 5.2.3 Inspect the return spring for a possible broken leg. A broken spring must be replaced by a genuine OEM part (not a home-made one).
 - 5.2.4 If the release is considered serviceable, lubricate the mechanism using spray oil or grease (such as WD-40, CRC or HHS 2000) while operating it several times, before reinstalling it in the glider.
 - 5.2.5 Complete the glider maintenance records, noting the release manufacturer and serial number and the fact that it has been re-lifed for a further 2,000 launches.

⁴ Friction in the actuating system must not lessen the return force by more than 1kg_r (2.2lb_r).

⁵ Exchange services for Tost releases are generally available in NZ.

⁶ To be carried out by the holder of a GNZ Class 3 or Class 4 Engineer Approval.