

From: NZPIA ceo@nzpia.co.nz
Subject: Safety Notice: Tension Knot Malfunctions
Date: 23 January 2025 at 3:27 PM
To: ceo@nzpia.co.nz

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SAFETY NOTICE NO 25 - 01

To: All skydivers
Subject: Tension Knot Malfunctions
Compliance: Informational
Date of Issue: 23 January 2025
Compliance due: Ongoing

Background:

The NZPIA receives occurrence reports detailing any "out of the ordinary" occurrences during skydiving operations. Those reports are typically submitted to the NZPIA by affiliated operators. The information received is anonymised, collated and analysed before being fed back to industry to spark discussion, learn from and ultimately facilitate better safety outcomes for all. I have a high level of confidence that reporting is accurate and complete.

Section 7 of the NZPIA Standards and Procedures manual describes the definitions, classifications and expectations regarding occurrence reporting.

Tention Knots:

An analysis of all occurrence reports from the start of 2019 to the end of 2024 showed a concerning trend in terms of tension knots causing malfunctions and reserve activations. Tension knots contributed to an average percentage of all malfunctions of 25% over the term. However, 2024 showed an uncomfortable increase to 45%. The individual year percentages were:

- 2019 - 11%
- 2020 - 31%
- 2021 - 12%
- 2022 - 19%

- 2023 - 18%
- 2024 - 45%

The five main factors that causes tension knots in main suspension lines, in order of risk are:

1. Brake lines not being untwisted prior to packing.
2. Line stows bights that are longer than the prescribed length as well as the relationship between rubber bands and single/double stow techniques.
3. General line maintenance and condition.
4. Faster, or more violent openings not allowing natural progression of line stretch prior to opening, caused by over rolling of canopy tail fabric.
5. Longer and delayed openings caused by incorrectly calibrated pilot chute kill lines or worn out pilot chutes.

Recommendation:

The NZPIA strongly recommends that all participants educate themselves on proper packing techniques, equipment maintenance and acceptable levels of wear of pilot chutes/kill lines to mitigate the risk of all malfunctions, including those caused by tension knots.

If you are unsure of anything mentioned above, please consult your NZPIA instructor or parachute technician for more information.

Be safe out there!

David du Plessis

CHIEF EXECUTIVE OFFICER

NEW ZEALAND PARACHUTE INDUSTRY ASSOCIATION (NZPIA)

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