

Operations Manual for parachuting flight ops – Guide for skydiving clubs

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Accident at Jämijärvi 2014



Accident at Jämijärvi 2014

- ▶ A Comp Air 8 aircraft, carrying skydivers crashed into the woods. The pilot and two skydivers managed to bail out of the aircraft. Eight skydivers died in the collision with the ground.
- ▶ Pilot reduced engine power to idle, in conjunction with which the airflow over the horizontal stabiliser probably decreased suddenly, which generated a rapid nose-down movement. As the angle of attack was decreasing a downward force was generated on the wing. The right wing's wing strut buckled upwards and the right wing folded down against the jump door around the wing root mountings. The aircraft lost its controllability instantaneously and began to rotate around its vertical axis in a flight condition resembling an inverted spin.
- ▶ The investigation revealed that it was likely that the center of gravity of the aircraft was outside the flight manual's aft limit on the jump run. The rating requirements for pilots in skydiving operations are incompatible with the demands of the activity

Accident investigation report L2014-02

Recreational aviation risk survey 2014

▶ Flight operational risks in parachuting

▶ Aircraft loading and take-off

- ▶ Aircraft having an incorrect or shifting centre of gravity that may cause loss of control → correct loading of the aircraft, clearly defined weight limits and markings to indicate where the jumpers should be positioned on board or what kind of movement is allowed during take-off

▶ Exit

- ▶ When the aircraft is flying on the jump run, there is a risk of incorrect or excessive movement by jumpers in the aircraft, especially towards the rear, causing a shift in the aircraft's center of gravity at a critical moment and resulting in a stall → instructions as to how to perform an exit and how to maintain the aircraft center of gravity within permissible limits, for example how many jumpers may at most be stationed at the aircraft doors waiting to exit

Recreational aviation risk survey 2014

▶ **Flight operational risks in parachuting**

▶ **Skydivers' awareness of flight operational risks**

- ▶ Skydivers generally perceive parachuting risks to concern the jump itself, but knowledge of flight operations related to parachuting and the risks involved is low → skydivers should be informed about the risks of aircraft loading and the shifting of the centre of gravity when moving around in the aircraft, and how serious these risks are

▶ **Pilot training for parachuting operations**

- ▶ Pilot training for parachuting operations is the responsibility of the club in the case of non-commercial operations and there are no and there is no nationally coordinated exchange of information nor general instructions for pilot training for parachuting operations → lets make general training instructions for pilots performing parachuting flight operations

Summary and conclusions of the risk survey

- ▶ **Based on the survey, the key risks in parachuting flight operations are connected to loading the aircraft and the movement of the aircraft's centre of gravity both during climb and, in particular, exit**
 - ▶ Among skydivers, the **risks associated with skydiving are acknowledged**, but the **severity of the risks and the factors causing them** are not sufficiently recognised by everyone
 - ▶ As a result, the degree of compliance with the guidelines or familiarisation with them may be inadequate

Summary and conclusions of the risk survey

- ▶ **There are no uniform guidelines for skydivers and pilots on the risks of parachuting flight operations**
 - ▶ Pilot training is managed in a club- and operator-specific manner
 - ▶ There are no uniform national training guidelines for pilots on parachuting flight operations
 - ▶ The survey revealed the **need to increase the awareness of skydivers and parachuting pilots about each other's activities** and, in particular, about key risks and their reduction

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- ▶ Fulfills safety recommendation no. 3 of the accident investigation report (L2014-02) published (16.4.2015) by the Safety Investigation Authority concerning the Jämi crash
- ▶ (for Traficom) In conjunction with the recreational aviation safety project, ensure that the Finnish Aeronautical Association prepares generic guidelines for skydiving operations, around which associations build a training programme and proficiency checks for jump pilots
- ▶ Traficom and Finnish Aeronautical Association agree that the **Parachuting Committee** will direct the work
 - ▶ Parachutists and jumpers from clubs from all over Finland joined the team and Traficom supported the work of the group

Getting started and Challenges

- ▶ Kick-off workshop May 27, 2015
 - ▶ The objectives of the instruction paper were reviewed and the preliminary theme framework was outlined
- ▶ A general instruction would be too simple for both pilots and jumpers
- ▶ A step-by-step guide for one of the target groups would be extra information for another
- ▶ In the end, it was agreed to create a guide for the skydiving clubs for making their own Operations Manual for parachuting flight operations.

Operations Manual for parachuting flight ops – Guide for skydiving clubs (12.8.2016) – rev 1

- ▶ 50 pages, including 10 pages for initialization, **25 pages for template**, and 15 pages for attachments (rev. 1)
- ▶ Guide does not take account of the special characteristics of each jump plane type, organisation or operating site
- ▶ In addition, the skydiving clubs' **existing instructions serve as excellent starting points**, but their functionality, **up-to-dateness and consideration of issues emphasised in this guide should be reviewed**

Operations Manual for parachuting flight ops – Guide for skydiving clubs (12.8.2016) – rev 1

- ▶ The sections of the guide are exemplary and are usually written from the perspective of a “medium-sized club” and a C-182 aircraft (= the most common option in Finland)
- ▶ Efforts have also been made to incorporate the features of large-scale operations and / or aircrafts that carry more jumpers, **but the persons responsible for the club’s activities are also responsible for preparing (updating) instructions that take account of the special characteristics of the club and the aircraft type**

Operations Manual for parachuting flight ops – Guide for skydiving clubs (8.11.2019) – VER 3

- ▶ 83 pages, including 12 pages for initialization, **36 pages for template**, and 55 pages for attachments
- ▶ New things for example are:
 - ▶ Practices and guidelines introduced by the NCO (Annex VII (Part-NCO) to Regulation (EU) 965/2012, Section NCO.SPEC, specialised operations, etc.)
 - ▶ The Finnish Aeronautical Association's safety management system for aviation clubs
 - ▶ Various good examples, other clarifications and emphases presented in individual clubs' instructions
 - ▶ The guideline's appendices include new
 - ▶ model instructions concerning a training programme for parachuting pilots applied by one of the clubs
 - ▶ _exemplary tables for calculating aircraft mass and centre of gravity
 - ▶ a phraseology for parachuting operations

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Key lessons from the process

- ▶ The parachuting community has the best knowledge of the challenges facing them.
- ▶ Facilitation of the process by the National Authority provides experience and knowledge about creating training and operations manuals. And a gently (or firmly, if required) guiding hand when necessary.
- ▶ The process must be led by the community, in order to ensure the acceptance of the end product.

Ongoing process 8/2020

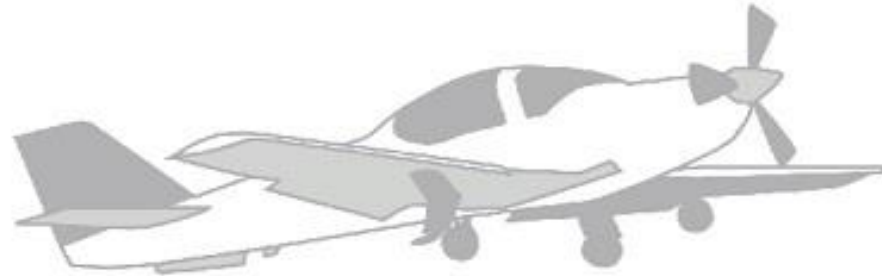


Guide for development of a [training course for parachute operations](#) is under construction.

Q & A

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[Operations Manual for parachuting flight operations – Guide for skydiving clubs]

This document contains a model for a parachuting flight operations guide. Each association must define matters specific to aircraft and engine types, the club, activities and conditions and update the guide accordingly. Version 3.0, 8 November 2019.

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