

SUBJECT : **Usage of aeroplanes for parachuting activities**

REQUIREMENTS incl. Amdt. : CS-23 amdt 6

ASSOCIATED IM/MoC : Yes / No

ADVISORY MATERIAL : FAA AC 105-2E, SIB 2018-18

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INTRODUCTORY NOTE:

The following Special Condition (SC) has been classified as important and as such shall be subject to public consultation in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

IDENTIFICATION OF ISSUE:

No requirements exist that define an appropriate certification standard for aeroplanes modified for parachute usage. If an aeroplane is intended to be used for parachuting activities, specific national operational requirements must be complied with. Only after such compliance the granting of an operational approval is possible.

In addition the use of the aeroplane for parachuting activities requires certain installations (handles, special doors, etc.) and manuals (AFMS with limitations, AMMS for installed parts) which need to be approved under Part 21, Subpart D or E.

In 2005, EASA asked the NAAs of all EASA member states to provide their own requirements for parachuting activities. EASA received requirements for the use of an aeroplane for parachuting activities from CAA UK, LBA, DGAC France and FOCA.

Those requirements have been assessed and transferred into the Special Condition, which now forms the EASA standard for certification of aeroplanes and modifications to support parachute activities. Despite the fact that this special condition has been used since 2005, no formal public consultation in accordance with EASA Management Board Decision 12/2007 was performed, therefore this public consultation is now being carried out.

NOTE: This SC covers the technical issues only (both for installation and AFMS). There might also be a need for an operational manual that refers to specific procedures or limits purely linked to the parachuting operation. Compliance of the design with the Special Condition does NOT constitute any operational approval. This must be sought from the appropriate competent authority of the country of registry.

Considering all the above, the following Special Condition is proposed.

SPECIAL CONDITION**Usage of aeroplanes for parachuting activities**

In addition to the baseline certification specifications for normal category aeroplanes (CS 23), the following requirements are applicable to an aeroplane that is used for parachuting activities:

I. General

The following information must be provided by the applicant:

- (a) aircraft type and model and applicable serial numbers;
- (b) Parachute jump type : automatic and/or manual release;
- (c) Maximum number of parachutists to be dropped.

II. Design and Structure

The following items must be substantiated by the applicant:

- (a) The seating/accommodation and restraints (when installed¹) or “means to hold on” that are approved for use during take-off and landing. This should include an assessment that the pilot seat can accommodate a pilot wearing a personnel emergency parachute;
- (b) The suitability of doorway and the approach to it;
- (c) An investigation of weight and CG change during and after departure of parachutists for free fall as well as static line jumping;
- (d) The strength of floor panels and occupant restraints (when installed) according to the loads conditions in CS 23.561 (b) and CS 23.785 (a). If “means to hold on” are used, instead of restraint systems, suitable loads should be defined and applied;
- (e) The strength of the external devices (handles, footsteps, etc.);
- (f) The adequacy of the protection of the control systems on board from contact of parachutists or their material/equipment;
- (g) The adequacy of the protection of any part of the aircraft interior/door that is likely to catch on parachutists equipment;
- (h) An investigation of aircraft oxygen equipment if the dropping of parachutists is from heights that are greater than the altitude where oxygen is required to be used by the operating rules, and the method of change over to personal Oxygen system.
- (i) An investigation of possible hazards on the outside of aircraft (e.g. exhaust gas temperatures which the parachutists or their canopy might encounter);
- (j) For static line systems, an investigation of:

¹The decision to use restraint systems is taken by the operator of the aeroplane as part the risk assessment required by SPO.OP.230. Guidance is available in SIB 2018-18. The design organization may support the operator in such assessment. The design organization should define the installation aspects, the attachment points to the aeroplane of the restraint systems to the parachute harness or the attachment points of the “means to hold on” (ref. SPO.SPEC.PAR.110). The guidance of the FAA AC 105-2E and the SIB 2018-18 may be used.

- (i) The strength of anchor line and attachments to aircraft. Anchor point should be capable of withstanding a limit load of 2 x weight requirement for strength of anchor line. [F=400daN, D=1000kp; à trancher]
- (ii) The length of the static line approved for use with a particular aircraft configuration and type of parachute;
- (iii) The precautions against interference of static lines with the aircraft control surfaces, aerals etc.
- (iv) What actions need to be taken if there is a hang up.
- (k) The specific use linked to parachuting operations must be taken into account when defining the fatigue or damage tolerance spectrum of loads.
- (l) If installed, the suitability and the strength of the pilot back seat wall (or alternative design). This should take into account the function of the wall (provide comfort to the parachutists, protect the pilot from inadvertent interference by the parachutists, etc.). Depending on the function, suitable loads should be defined and applied.

III. Flight

1. Tests that need to be performed for operation of the aircraft with door(s) open or removed in order to determine the effects on:

- (a) Resonance/Buffer in cabin with door open/removed;
- (b) Carbon monoxide contamination of cabin;
- (c) Determination of any hazards associated with opening the door (and in-flight depressurisation procedures if necessary), ability to close door whilst attached to the safety line, security of the door in the open position;
- (d) Airspeed and other limitations;
- (e) Performance Implications.

2. Tests that need to be performed for parachuting operations:

With the aid of either aircraft mounted cameras or a chase aircraft, the following must be recorded:

- (a) The dropping of a dummy or other suitable object without a parachute, in order to establish the trajectory and the effects of downwash etc.;
- (b) Carry out a "free" jump to assess aircraft configuration, i.e. speed, flap setting, weight, power setting, etc.;
- (c) Conduct repeated jumps (at least 20) by experienced teams in small groups to try various body attitudes for leaving the aircraft. At least 5 parachutist droppings must be conducted with the maximum allowable number of parachutists;
- (d) Stream static line with a drogue or bag attached and record the angle of trail of the static line;
- (e) Determination that the static line end does not interfere with or hit the surface controls or the fuselage (which is prohibited);
- (f) For static line parachuting, repeat the single trial jump and then the group jump as before and establish the length of static line appropriate to the type of parachute and that it does not cause a hazard either to the parachutists or the aircraft;

- (g) If utilised or installed , check the proper functioning of the static line retraction system in flight;
- (h) Compatibility of the parachuting operation with other existing equipments (for instance, static ports, etc.)

IV. Airplane Flight Manual and placards

A specific Flight Manual Supplement must be produced, containing the following:

- (a) The limitations for operating the parachuting door, and the precautions to be taken;
- (b) The type of parachuting operations that are authorised (automatic and/or manual release);
- (c) The operating limitations with door(s) open or removed, and the required operating parameters for parachute dropping;
- (d) The approved static line dimensions associated with the aircraft type and the parachute type;
- (e) Any information specifically for the dispatcher and/or the parachutists, e.g. parachutist egress order, body attitude at departure, etc.;
- (f) The dropping speed, preferably at least $1.2 \times V_S$, flap settings and engine power settings;
- (g) The maximum altitude that the door(s) can be opened should be quoted if no oxygen system is approved for this purpose. This will be applicable to aircraft capable of operation at altitudes greater than the altitude where oxygen is required to be used by the operating rules;
- (h) Other limitations and/or requirements linked to each national operational requirement;
- (i) The kind of operations allowed when the aircraft is equipped for parachuting operation.

V. Miscellaneous markings and placards:

- (a) On the outside of the airplane, indication of parts that parachutists must not grab or upon which they must not step;
- (b) A placard with all speed limitations must be installed in clear view of the pilot.