



Operations

Operations Advice Notice

No. 01/21

Emergency Parachute Maintenance

General

The parachute performs a vital function for the pilot. In the event of an emergency egress, it is extremely important that the parachute deploys quickly and correctly in order to carry the pilot safely to the ground.

Emergency parachutes are not installed on aircraft as a component. As a consequence, emergency parachutes are not subject to the continuing airworthiness / maintenance requirements of CASA or the GFA.

The owner of the emergency parachute is responsible for keeping the emergency parachute in a proper condition in accordance with the approved instructions published by the manufacturer. In particular:

- Rigging of emergency parachutes shall be performed in accordance with the approved instructions published by the manufacturer.
- Any repair or maintenance, other than rigging, in accordance with the approved instructions, shall be carried out only by either the parachute manufacturer or an organisation which is authorised by the manufacturer.
- In Australia, a certificated and appropriately rated parachute rigger holding authorities issued by either the Australian Parachute Federation Ltd, Australian Skydiving Association or the Australian Defence forces may repack and repair emergency parachutes.
- Emergency parachutes owned and used by overseas pilots must be maintained in accordance with their country's legislation.

Advice

Where the pilot is the owner and sole user of the parachute, it is the pilot's responsibility to ensure the parachute is fit for purpose. This will very much depend on how the parachute is stored, how often it is worn, and whether it has been subjected to moisture.

Where a parachute is to be used by a person other than the owner, e.g., parachutes owned by gliding clubs or loaned to third parties, the owner has a 'Duty of Care' (i.e., a moral or legal obligation) to ensure the safety or well-being of others and should therefore comply with the manufacturer's requirements and equipment bulletins as a minimum.

In the interest of aviation safety, the GFA asserts that it is best practice for its members to maintain their emergency parachutes in accordance with the manufacturer's modifications and equipment bulletins (e.g., Technical Service Bulletins, Service Bulletins, Technical Bulletins, Product Service Bulletins, or Information Bulletins).

For further information, please see that attached article from Gliding Australia magazine Issue 35 (April - May 2017).

A handwritten signature in black ink, appearing to read 'C. Thorpe', with a stylized, flowing script.

Christopher Thorpe
Executive Manager, Operations
17 November 2021

PARACHUTE REPACK CYCLE

JO CHITTY
APF Rigger 5

A review of the CASA website showed that there are no regulations or standards for emergency or reserve parachutes. However, Australian Parachute Federation Operational regulations and Service Bulletins define the standards and repack/service requirements for the equipment their members use.



Parachutes Australia, Slimpack

APF riggers and packer 'A' certificate holders service the reserve and emergency parachutes used for skydiving.

Main parachutes are packed by packer 'B' certificate holders or the individuals for their own use.

Emergency parachutes for other aviators such as glider pilots, acrobatic pilots, hang glider pilots etc are not encompassed by the APF rules. APF packers 'A' and riggers, due to their training and experience, are the obvious 'go to' personnel for other aviators to have their parachutes serviced.

Currently, the APF regulations require reserve and emergency parachutes to be inspected and repacked at six month intervals. The

APF Board has directed the National Rigging Officer and Expert Rigger group to prepare a risk assessment to increase the repack cycle

from six months up to one year repack cycle.

Emergency parachutes that are serviced by APF riggers/packers do not come under a CASA regulation or standard, and are vaguely regulated by other aviation bodies for use by their members. Paraglider, hang-glider and glider pilots generally have their parachutes repacked annually, while a few paraglider pilots pack their own parachutes at 'swing and fling' training days supervised by experienced packers.

In the absence of CASA regulations, parachutes should be serviced according to their manuals. It is generally accepted that the manufacturer knows their product and its limitations. Unfortunately, some of the equipment in use is of very old design standards in their country of build and the service requirements vary greatly, some with a four-month repack and others up to 365 days. The US navy has approved a seven-year cycle for the BAE Dura parachute.

If it is stored well, the length of time that a parachute has remained packed has very limited impact on its opening performance. I recently opened a parachute that had been packed for 19 years and it was functional. The main reason for repacking a parachute is to inspect or replace the consumable components, such as rubber bands on the line stows, or if the outer container indicates that it may have been contaminated with a chemical substance or excessive soiling.

The APF has promulgated Technical Directive No. APF TD01/2016 (Rev B) Issued 4 November 2016 covering proposed changes to the APF Operational Regulations that allows experienced skydivers to make compliance decisions in reference to the equipment they jump with.

A similar situation exists where there is no requirement to wear a parachute when flying an aircraft. The pilot or aircrew may elect to wear a parachute that is not within its service requirement as stated in its manual. Pilots should consult with a rigger on the type of parachute and, except in cases where the service cycle is greater than one year, the general equipment in use in Australia should be serviced every 12 months.

The FAA in the US has implemented a 180-day repack cycle, which means that at 181 days the parachute becomes illegal to use. It is not a practical system, as it requires the rigger to use a simple calculator tool to mark the parachute with the date that a repack is due.

It is more practical to nominate a day of the month as the interval period. This means that the repack period may fluctuate a day or so either way but is easier to regulate and a parachute will not become unusable over one day to the next. This is how the APF does it.

Some manufacturers in the US wanted a 12-month repack cycle but were voted down as riggers felt that it would cut their income. Manufacturers have over the years collected data on their parachutes and found that the parachute is actually degraded by excessive packing. Ram air reserves especially are affected because permeability of the fabric changes with handling, which can result in lower performance.

LIST OF COMMON GLIDER PARACHUTE ASSEMBLIES IN AUSTRALIA ALONG WITH THEIR LIFE LIMIT AND REPACK CYCLES

● Parachutes Australia

Thinback and Slimpack container, 20-year life, 8-month repack. Canopy life, indefinite on condition.

● Para-Phernalia USA

Softy series all models, 20-year life, one year repack (outside of USA).

● National USA

All models 20-year recommended life, 180-day repack, FAA.

● Bruggeman Germany

Back type RFS II, 15-year life, 360 day repack.

● Heinrich Mertens Germany

3 Pin Back type, 15-year life, 4-month repack in manual, 12-month stamped on log book?



Strong Enterprises USA



Paraphernalia USA, Softy series



National USA

● Strong Enterprises USA

Pop-top back, chair and seat styles, indefinite life on condition determined at every repack, 365 days.

● Thomas Sport Equipment UK

Pop-top back, no life or repack cycle noted in manual. Use condition and country of use regulations.

● Butler Parachutes USA

All models, estimated service life 20 years (civilian), 14 years military. Repack one year maximum or 18 months in combat with 180 day external inspection.

● Airpol Poland

Back type, life 20 years, repack

120 days if worn, 180 in storage.

● MarS Czech Republic

Back type, 20-year life, 365-day repack.

● Rigging Innovations USA

Aviator ram-air back type, 15 year life, one year repack.

● Spekon Germany

RE-5L Series 5, 20-year life, 360-day repack.

Whole aircraft recovery parachute systems added

as an indicator that time packed is not an issue if there are no degradable items such as rubber bands to control deployment sequence.

● BRS USA

Life on condition at 6-year repack, 12-year rocket replacement.

● Galaxy Czech Republic

30-year life, 6-year repack and rocket replacement.

SUMMARY

From the above list it is obvious that some repack cycles are a throwback to early designs when silk was used in constructing the parachute canopies and cotton and flax for the harness and container. Some early designs also used brass grommets in the container and on deployment diapers that reacted chemically with the rubber bands, causing them to break down into a gooey mess that do not retain the lines. All grommets should be nickel plated or stainless steel. The manufacturers have simply cited their National Aviation Body's repack cycle and have not adjusted their manuals to modern designs and materials.

FAA has stated that the life of a parachute that was TSO (Technical Standard Order) approved without a life statement as part of its approval is deemed to have its life extended at every repack. This is an indefinite life on condition. Some components may become life expired due to age or other climatic effects such as UV or soiling in use or external contamination by oils, acids or strong alkaloids. Replace harness / container if required.

Strong Enterprises fits 26+ years old, 28ft C-9 canopies to their warbird series of emergency parachutes. These canopies have been in controlled storage environment and still pass the relevant tests for safe use.

RECOMMENDATIONS

Except for parachutes that are designed to have a repack cycle in years, emergency parachutes should be repacked every twelve months or for a lesser period as assessed by an APF packer 'A' or Rigger.

Packers/riggers may determine from the condition of the



Galaxy Czech Republic

assembly and the climatic environment it is used in and with the use of a checklist in a clean packing environment and referencing the manufacturer's manual, a repack cycle up to 12 months.

Repack due date to be marked on the log card.

OWNER EDUCATION

CASA regulations require owners of aircraft and aviation products (parachutes) to be responsible for their airworthiness. This requires parachute owners to inspect their equipment regularly, pre-flight, and check on safety bulletins put out by the original equipment manufacturer.

Owners need to read their manuals and talk to their packers about their equipment.

Club talks on parachute use and care can usually be organised.

When owners go for repack cycles of longer than 12 months, they are assuming a greater personal risk.



Bruggeman Germany



BRS USA