

## Federal Aviation Regulations

### §91.307 Parachutes and parachuting.

(a) **No pilot of a civil aircraft may allow a parachute that is available for emergency use to be carried in that aircraft unless it is an approved type and has been packed by a certificated and appropriately rated parachute rigger—**

(1) Within the preceding **180 days**, if its canopy, shrouds, and harness are composed exclusively of nylon, rayon, or other similar synthetic fiber or materials that are substantially resistant to damage from mold, mildew, or other fungi and other rotting agents propagated in a moist environment; or

(2) Within the preceding 60 days, if any part of the parachute is composed of silk, pongee, or other natural fiber or materials not specified in paragraph (a)(1) of this section.

(b) Except in an emergency, no pilot in command may allow, and no person may conduct, a parachute operation from an aircraft within the United States except in accordance with part 105 of this chapter.

(c) Unless **each occupant of the aircraft is wearing an approved parachute**, no pilot of a civil aircraft carrying any person (other than a crewmember) may execute any intentional maneuver that exceeds—

(1) A **bank of 60 degrees** relative to the horizon; or

(2) A **nose-up or nose-down attitude of 30 degrees** relative to the horizon.

(d) Paragraph (c) of this section does **not apply to—**

(1) **Flight tests for pilot certification or rating**; or

(2) **Spins and other flight maneuvers required by the regulations for any certificate or rating** when given by—

(i) A **certificated flight instructor**; or

(ii) An airline transport pilot instructing in accordance with §61.67 of this chapter.

(e) For the purposes of this section, *approved parachute* means—

(1) A parachute manufactured under a type certificate or a technical standard order (C-23 series); or

(2) A personnel-carrying military parachute identified by an NAF, AAF, or AN drawing number, an AAF order number, or any other military designation or specification number.

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91-255, 62 FR 68137, Dec. 30, 1997; Amdt. 91-268, 66 FR 23553, May 9, 2001; Amdt. 91-305, 73 FR 69530, Nov. 19, 2008]

### How You Can Tell If Your Parachute Is An Approved Type

Each parachute (or component, if separately approved) produced under TSO C23 must have a label affixed which states that it is approved under TSO C23; the label may also contain other language relating to other components or operating limits. Military parachutes will have a drawing number or part number and a date of manufacture on **all** components

## **PARACHUTE PRE - FLIGHT**

Taking proper care of your emergency parachute system is equally as important as properly maintaining your aircraft

### **STORAGE:**

The longevity of your parachute system is your responsibility and is almost entirely dependent upon proper maintenance and storage.

When not in use, store the parachute in a bag, in a well-ventilated area away from direct exposure to sunlight, oils, and/or acids.

If you find that your parachute has come in contact with any unsafe conditions including wetness, have it inspected by a qualified rigger immediately. Do not wait until you want to use it again as extended exposure to foreign substances can damage the materials beyond repair.

### **INSPECTION and PACKING**

FAA regulations require a parachute in use to be inspected and packed by a licensed rigger within the last **180 days**, regardless of the number of times it's been worn.. To find a rigger, contact a local sport parachuting center, they will be able to assist you in locating a reputable rigger.

### **PRE-FLIGHT INSPECTION:**

Establish a routine for a preflight inspection of your parachute just as you do your aircraft. Your safety is directly related to the condition of your parachute

- 1) Check the exterior of the container for stains, mildew cuts, tears and excessive wear.**
- 2) Inspect the hardware, be sure snaps function properly and check for corrosion.**
- 3) Look for fraying or nicks in the webbing and inspect for broken or missing stitches.**
- 4) Perform a pin check on the ripcord by lifting the pin protector flap and making sure the pins are straight (can be curved, but not bent) and extend through the closing loop at least 1/2 to 3/4". Also check to be sure that the rigger's red seal thread and lead seal are intact.**
- 5) Make sure that the handle extracts from the pocket easily. Also, there should be no kinks or dents in the ripcord housing.**
- 6) Finally inspect the packing data card. Per the regulations, the last date of inspection and repack must have been within 180 days, the card must be dated and signed by the rigger.**

## **Fitting and Wearing an Emergency Parachute**

After completing the above preflight you are ready to don your parachute for use:

**Loosen the leg straps sufficiently to allow you to snap them into position and stand erect.** If your parachute is equipped with "Quick Ejector" snaps on the leg straps make sure that the release lever is firmly seated against the body of the snap. You should feel a click as the release lever passes over the detent balls that hold it in place. Unless firmly seated, the Quick Ejector release lever can be easily snagged on the aircraft or seat belt and inadvertently opened.

**Fasten the chest strap buckle (or thread the chest strap through the friction adapter) and tighten it only enough to prevent the harness from falling off of your shoulders or shifting around excessively.** Do not over-tighten the chest strap. The main lift web of the harness (the vertical part of the harness running down your chest) is designed to take the opening shock of the parachute. The chest strap is designed only to help keep you in the harness; if you tighten the chest strap excessively you will transfer some of the opening load into the chest strap, which is not designed to accept a load in that manner. Stow the excess chest strap webbing under the elastic keeper provided.

**Tighten the leg straps until they are snug while standing erect and stow the excess under the elastic keeper.** This adjustment will feel slightly looser after you sit down in the aircraft and the leg straps may be further tightened in the cockpit if desired.

Mentally review your egress procedures.

Mentally review your emergency egress decision criteria.

Make a mental note of the location of the ripcord handle and the leg and chest strap release hardware.

You are now ready for flight.

## **USING THE PARACHUTE IN THE AIRCRAFT AND IN FLIGHT**

When entering the aircraft remember that you are wearing your parachute and adjust your movements accordingly. When buckling into the seat - **fasten seat belts and shoulder harness over the parachute harness!** You must be able to release from the aircraft restraint system without unfastening any part of your parachute harness. Remember the following points:

**If your aircraft has a manufacturer's recommended emergency egress procedure - memorize it and be able to do it in the dark, upside down, and inside out.** Go over your emergency procedures until you can do them automatically! Remember that there may not be time to stop and think what you must do to get out of the aircraft in an emergency.

**If your aircraft has no published emergency egress procedure, devise one of your own and practice it until you can do it automatically.**

**Never loosen or remove your parachute in the aircraft while in flight.**

**If you must make an emergency exit, get completely clear of the aircraft before pulling the ripcord.**

**Know your procedures and practice them often.**

**Mentally review your emergency egress criteria.**

## **OPERATION OF A TYPICAL EMERGENCY PARACHUTE SYSTEM**

**After jumping clear of the aircraft, put your legs together, look down at the ripcord handle, reach in with both hands and pull the handle sharply out away from your body.** Your parachute should be fully open within 2 to 3 seconds after you pull the ripcord. (**Look, Reach, Pull**)

**After your parachute opens you should look at your open canopy and inspect for any line(s) over the canopy.** If you discover a line over the canopy, you can cut it loose with your hook knife. Several lines can be cut without affecting the integrity of the parachute. The parachute can be landed with a line over, but steering may be more difficult and the rate of descent may be greater.

**Locate your steering toggles attached to the risers, place your hands on the toggles, pull to release them from the Velcro attaching them to the risers.**

**Look around and get your bearings; if possible, locate the nearest road or shelter and fix its location in your mind.** If you fly regularly in remote areas you should obtain formal survival training from someone familiar with the areas you fly in and you should consider incorporating some basic survival items into your parachute.

**Pick out a landing area that is in range that is flat, open, and clear of obstructions.**

**The basic principle to remember when steering your parachute is that turns are made by pulling down on the control line (or rear riser) on the side to which you wish to turn;** i.e. pull down on the left control line for a left turn and the right control line for a right turn.

**Turns should be made by pulling the control line down 12 to 18"; when you are facing the desired direction, release the control line (riser) to stop the turn.** Some parachutes do not necessarily turn faster with increased control deflection - you may find that only 6 to 12" of control deflection is necessary for the fastest turn rate.

Most canopies installed in emergency parachutes have a forward speed of approximately **5 to 8 MPH.** This allows you to maneuver slightly to avoid obstacles on the ground and to face into the wind for landing. Turning the parachute causes it to oscillate slightly and should be avoided near the ground because the oscillations will increase your rate of descent (in some cases significantly) and raise the risk of injury during landing.

## **LANDINGS**

**Landings should be made facing quartering slightly into the wind, which will minimize your ground speed and reduce the chances of injury upon landing.**

**To prepare for landing, you should have your feet and knees together, toes pointed slightly down, knees slightly bent (not locked!) with legs tensed** (about the same tension as needed to bounce up and down on the balls of your feet just slightly off the ground).

**Before touchdown, you should be looking at the horizon (not at the ground) and steering the canopy with small corrections to maintain your heading until your feet touch the ground.**

**At touchdown, tuck your chin down on your shoulder and bring your elbows in against your side, then roll in the direction of your ground travel to spread the force evenly across your legs, hips and shoulders.**

Remember that the most important part of your landing preparation is **Feet and Knees Together!**

## Dragging

If you land in high wind conditions and are dragged, reel in one or two suspension lines hand-over-hand until the canopy collapses. This can be done in a matter of seconds. After the canopy collapses, disengage yourself from the harness. A good quality hook knife, such as the military type (not the switchblade version) or the "Jack" safety knife, is an excellent idea. Get one and know how to use it if you expect to fly in high wind conditions.

## Water Landings

In general, before entering the water, face upwind and unfasten the chest strap (except for cross chest harness like the Security); however, **the leg straps should never be released in the air!** As your feet touch the water, take a deep breath but do not try to stay on the surface. As you enter the water, you will sink several feet below the surface - before surfacing, remove the parachute harness and swim, underwater, straight ahead as far as you can before surfacing. This should place you clear of the canopy and suspension lines, which will float on the surface for a few minutes.

If dragged in the water, use the same technique described earlier to deflate the canopy. Remember - do not try to fight the water or your parachute; take a deep breath as your feet hit the water, remove the parachute underwater and swim away from the canopy before surfacing. If you become entangled with the parachute lines or fabric, disengage yourself very carefully and slowly as flailing about will only increase the extent of your problem. After you are clear of the parachute use normal water survival techniques. **Panic and fatigue cause drowning - stay calm and conserve your energy.**

## Tree Landings

Put your feet and knees together and prepare for a ground landing as you will probably go all the way through the tree to the ground. Cross your arms in front of your face with your hands placed in opposite armpits with the palms facing outward. Turn your face to one side and bury it in your arms to protect it. Put your feet and knees **FIRMLY** together to avoid straddling a branch. If suspended in a tree, wait for help if at all possible, otherwise use extreme caution in releasing from the harness to avoid falling or choking yourself on part of the parachute.

## Power Line Landings

**Power lines are an extremely hazardous place to land and should be avoided if at all possible.** If a power line landing is unavoidable, throw away the ripcord if you are still holding it, face into the wind and prepare for a ground landing. Put your arms above your head to make yourself as thin as possible and turn your head sideways to protect your face as much as possible. Avoid touching more than one wire at a time and do not grab at the wires as you pass by (it takes two wires or one wire plus a ground to get zapped so avoid all contact with any of the wires if possible). If you do get hung up, do not attempt to get down and do not allow anyone to help you until the power has been cut off in the lines. Nylon will conduct electricity at very high voltages so don't become part of a grounding path in your haste to get down. **Tree landings and downwind landings are generally less hazardous than power line landings.**

## NOTES:

- The above information is provided as a brief, and very general, guide, for the use and care of your parachute. It cannot and does not cover every possible situation you may find yourself in. It should not be considered a substitute for formal survival training and parachute jumping instruction.
- The primary cause of unsuccessful emergency bailouts and ejections is waiting too long to make the decision that you must leave the aircraft! By nature, aviation is an activity that is very unforgiving of mistakes in judgment and human or mechanical failure. Each individual must recognize that he is ultimately responsible for his own fate when he takes to the air; enjoy yourself but remember that indecision and complacency can kill.

**Sources:** - Butler Parachute Systems, Inc., National Parachute Industries, Inc., Parachute Shop

## **EMERGENCY PROCEDURES**

**ASW 24**

### **Flight Manual - Section 3 – Emergency Procedures**

#### **1) To Jettison Canopy**

- Pull both the left and right-hand red levers at the canopy frame back all the way and
- Push canopy UP!

#### **2) Bailing Out**

- Push Instrument Panel UP
- Release safety harness
- Roll over cockpit side
- Push off strongly
- Watch wing and tail surfaces
- Pull parachute

### **Duo Discus**

#### **Flight Manual - Section 3 - Emergency Procedures**

##### **3.2 Jettisoning the canopy**

- The canopy is to be jettisoned as follows:
- Swing back one of the red locking levers – provided on the port side of the canopy frame – and swing canopy sideways fully open.
- The canopy will then be torn out from its hinges by the slipstream and gets carried away.

##### **3.3 Bailing Out**

- With the canopy gone, the person(s) aboard may bail out.
- As the canopy coam frame on the fuselage is made from laminated rovings – so that it is strong and without sharp edges – the person on the front seat can grasp it and use it as a support when bailing out.
- Additionally the crew member on the rear seat can raise himself by grabbing the cutouts provided on either side of the instrument panel.

## **ASK – 21 Flight Manual – Section 3 - Emergency Procedures**

### **3.2 Canopy Jettisoning and Emergency Bail Out**

#### **Front Canopy**

- Move lever with the red knob above the instrument panel to the left and push canopy upwards
- Open safety harness
- Get up and bail out
- With manual chute seize release grip and pull out entirely after 1 to 3 seconds

#### **Rear Canopy**

- Pull back both canopy side locks and push canopy upwards
- Open safety harness
- Get up and bail out
- With manual chute seize release grip and pull out entirely after 1-3 seconds

If circumstances allow, the front pilot should allow the rear pilot to bail out first.