



Parachute Association of Ireland

# **JUMPMASTER MANUAL**

## **2006**

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### **WARNING**

SPORT PARACHUTING IS A POTENTIALLY DANGEROUS ACTIVITY AND THERE IS A RISK OF INJURY OR DEATH EACH TIME ONE MAKES A PARACHUTE JUMP. THE ONUS IS ON THE INDIVIDUAL TO ENSURE THAT HE/SHE UNDERSTANDS THE RISKS. INDIVIDUALS SHOULD NOT TAKE PART IN SPORT PARACHUTING IF THEY DO NOT FULLY UNDERSTAND AND ACCEPT THE RISKS INHERENT IN THE ACTIVITY.

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## **Dedication and Thanks**

This manual is dedicated to the many Irishwomen who have many such great contributions to Irish Sport Aviation in general, and to Irish Parachuting in particular. I am also grateful to Freddie Bond, who in 1993 honoured the contribution of Irishwomen to Sport Aviation.

I acknowledge, with sincere thanks, the help and suggestions in the compiling of these notes of Mary-Clare Bhreathnach, Bernadette McCarrick and Frank Davis. *Nár laga a neart orthu coíche!*

*Liam McNulty November 1993*

I am indebted to Ken Moore and John Kavanagh for their suggestions and improvements which were incorporated into the revised second edition, (September 1994), and also to Vernon McCarthy for the benefit of his long years of experience and his valuable work on the third edition (1999).

*Liam McNulty March 1999*

## **Bibliography**

A Jumpmaster should remain up-to-date with developments in Skydiving and skydiving equipment. Reading parachuting magazines, newspapers, safety notices, bulletins and papers can do this. In particular a jumpmaster MUST be familiar with:

- 1) PAI **Operations Manual** especially
  - a) Static Line Progression Table
  - b) Freefall Table
  - c) Off Drop-zone Landings
- 2) PAI **Teaching Skills Manual** especially
  - a) Skills Analysis
  - b) Providing post-jump feedback.
- 3) PAI Static Line Student Notes especially
  - a) Handouts for each Progression Jump
- 4) Cypres AAD Manual

## 1. Introduction

This manual is a guide for those wishing to become rated PAI Jumpmasters and a reminder to those who are rated PAI Jumpmasters. **Candidates for a PAI Jumpmaster rating must meet the requirements specified in the PAI Operations Manual**

The PAI Operations Manual lays down the rules and regulations for sport parachuting. It is important that jumpmasters and potential jumpmasters are familiar with its contents through frequent reference, and that they receive all updates so that the information and their knowledge are current. The Operations Manual covers basic principles in broad, general terms. Hence the need for this Jumpmaster Manual, which gets more into the specifics and gives more detailed information which has been acquired through experience.

It is not possible to write of, or foresee, every possible occurrence with which a jumpmaster will be required to deal. Care, alertness, attention to detail and diligence in the care of parachutists entrusted to the jumpmaster will help him or her deal with the many eventualities that may arise. He or she should keep abreast of the developments and trends within sport parachuting and discuss incidents, problems and other potential areas of danger, with Instructors. The experience of those involved in sport parachuting, some for many years, is of great value, and should be sought.

These notes will be revised and updated as required. The current version of this document is to be found on the PAI website. Any suggestions and criticisms will be most welcome and very gratefully received as they will add to the body of knowledge of the sports parachuting community and lead to the on-going improvement of techniques and methods.

## 2. Duties and Responsibilities of a Jumpmaster

Being a Jumpmaster carries with it onerous duties and responsibilities. He or she is responsible for student parachutists entrusted to his or her care, and these students, in turn, will rely upon the jumpmaster. No amount of writing and explanation can ever prepare the jumpmaster for every eventuality, but never, never, forget the golden rule of Jump-mastering:

**If you do not know, or if you are in any doubt,  
take the safe option. Never take a chance.**

Parachuting is a potentially dangerous activity. *There is a duty of care on a Jumpmaster to take every precaution to ensure that those participating under his or her supervision will do so in safety.* While jump-mastering a load the

jumpmaster must ensure that parachuting activity is conducted according to the rules and regulations specified in the Operations Manual, and in such a manner as to ensure the safety of all concerned – spectators, parachutists and pilot/s, and the security of the aircraft.

A PAI Jumpmaster is signed-off on the PAI Jumpmaster Proficiency Card as authorized to undertake the following tasks:

- (i) 'Kit-up' Static-line students
- (ii) 'Kit-up' freefall students
- (iii) 'Talk-down' students
- (iv) 'Check-out' students
- (v) Emplane Students
- (vi) Determine the 'run-in' and 'spot'
- (vii) Dispatch continuing static line students
- (viii) Dispatch first jump students
- (ix) Provide a post-jump critique for students who he or she has dispatched.

A Jumpmaster is not an Instructor and must not assume the duties and work of an Instructor. A Jumpmaster may not

- (i) brief (in an instructional sense) students,
- (ii) advise nor train a student
- (iii) Authorise the progression of a student to the next stage or level of Static-line progression.

If a Jumpmaster is experienced in some parachuting discipline, then, by arrangement with the CCI, that Jumpmaster may assist in that area of training.

Jump-mastering of special type activities (e.g. loads in large aircraft, water jumping, night jumping) is not covered in this manual. Only the 'ordinary' regular type jumping is covered here. When a 'special' activity is involved a person competent to provide a brief for that specific activity will carry out briefings. In such cases the jumpmaster will be fully briefed on what is required.

This manual is laid out in the natural sequence of events: putting on equipment, checks and checkouts, pilot briefing, emplaning and so on, so that one section will flow naturally into the next.

### **3. Pre-Jump Checks and Check-outs**

#### **3.1: Pre-Jump Checks**

Prior to emplaning the Jumpmaster must be satisfied that the jumpers under his or her care, be they students or recreational skydivers, are:

- i) Properly briefed and authorised to carry out the particular jump, and
- ii) Correctly equipped (by conducting a 'check-out').

This can be achieved by carrying out the following steps.

- a) Obtaining CCI Sanction: Before any student parachutist may jump, the wind speed must be determined and the CCI must sanction student parachuting.
- b) Gearing-Up Students: a jumpmaster may, or may not, help to 'gear up' the parachutist/s he or she about to despatch.
- c) Confirmation of student identity: It is essential that a jumpmaster ensure that those he or she is about to take on the lift:
  - i) Have been fully trained and briefed for the jump they will make, and
  - ii) Are actually the people manifested to make the specified jump on the particular lift you are jump-mastering.

It is not sufficient to ask the student what he or she is going to do. This must be checked with the Manifest, the student's Instructor or the CCI. The student's log book/card may also be checked.

- d) Exit Rehearsal: A jumpmaster must be satisfied that the student is familiar with the exit from the precise aircraft being used, particularly if he/she may previously have jumped from a different type aircraft. If necessary get the student to do some exits from a mock-up.
- e) Cut-Away Drill: most essential of all, get the student to go through the emergency (cutaway) drill. Nobody, novice or experienced jumper, should emplane without having practiced this drill.
- f) Alternative Plan: In the event of doubt as to whether the required altitude can be obtained, have an alternative plan worked out and agreed with the student and with the pilot. This is an area that requires great care. At an early stage in jumping any deviation from the set plan can be most disconcerting for the student. Ensure that the alternative is safe, bearing in mind the experience and skill level of the jumper, and also ensure that the alternative is acceptable to the CCI.

Make sure that the student understands and is happy about the alternative plan. Alternative plans should not be hatched in the aircraft when conditions are evidently different from what was thought when on the ground. This is dangerous and places too much stress on the student.

### 3.2 **Checking Out Parachutists after 'gearing-up'.**

The Jumpmaster is responsible for ensuring that the parachutists he/she will despatch are 'checked out'. Do not take the student's word as a student may confuse 'checked out' with 'geared up' – all this terminology is new to the student. If the Jumpmaster is unsure about the check out, then he/she must do it (even if it is a repeat).

The checkout listings in the following table show what is to be checked and looked at, for both Static Line and Freefall parachutists. If there is doubt about anything, no matter how small or trivial it may seem, ask about it. The lives and health of people are at stake and nothing other than perfection is acceptable.

**Checkout – Standing IN FRONT of the Parachutist**

1	<b>Helmet</b>	Fits properly, is secure, will not slip over jumper's eyes.
2	<b>Goggles</b> (if worn)	Clean, intact, strap adjusted.
3	<b>Jumpsuit</b>	Not too baggy, in good condition, no loose ends, pockets closed, sleeve not covering wrist-mounted altimeter. If sleeve is loose put a rubber band on it. Jumpsuit pulled back (from the rear) to allow clear views of cutaway pad and reserve handles.
4	<b>Main Risers</b>	Properly stowed, in good condition, no twists.
5	<b>3-Ring Assembly</b>	Properly assembled, loops in excellent condition. If a loop is frayed do <b>NOT</b> allow the equipment to be used.
6	<b>Reserve Shackle</b>	Properly closed
7	<b>Altimeter</b>	Zeroed, in good condition, securely fitted, can be easily seen.
8	<b>Cutaway Cables</b>	Moving freely, in good condition, fully 'home'.
9	<b>Cutaway Pad</b>	Secure, Velcro intact, unobstructed view and access. Jumpsuit <b>MUST</b> be of a contrasting colour to the cutaway pad.
10	<b>Reserve Cable</b>	Moves freely in tunnel, sufficient 'slack'.
11	<b>Reserve Tunnel</b>	Securely tied down, no obstructions (dirt) inside.
12	<b>Reserve Handle</b>	Secure, Velcro intact, unobstructed view and access.
13	<b>Chest Strap</b>	Properly closed, end secured.
14	<b>Side Adjusters</b>	Properly adjusted for student, stowed.
15	<b>Leg Straps</b>	Not twisted, adjusted, snaps secured with springs working (do <b>NOT</b> use if springs are not working), ends stowed.
16	<b>Main Handle</b>	Secure, correctly positioned, correct movement, Velcro intact on throwaway pilot 'chute. With a student ripcord the plastic handle should be about 12mm out from the mouth of the ripcord tunnel.
17	<b>DRP Handle</b>	Secure, about 12mm out from the tunnel mouth.
18	<b>Footwear</b>	Suitable type, secure (street shoes are <b>NOT</b> suitable. The wearing of boots with lacing hooks should be discouraged, but in any case hooks <b>MUST</b> be completely taped over, using a strong, secure tape.

### Checkout – Standing BEHIND the Parachutist

1	<b>Packing Slip</b> (if used)	Present, correctly signed and dated.
2	<b>Main Risers</b>	Properly stowed, no loose ends.
3	<b>RSL</b>	Properly routed, velcroed, attached to reserve pin.
4	<b>Reserve</b>	Correct size for jumper, pilot 'chute properly seated.
5	<b>Reserve Pin</b>	Properly inserted. <b>NOT BENT, SCORED OR DAMAGED IN ANY WAY</b> , clear and unobstructed. NOTE: If the reserve is inside, at the jumper's back (pop-top system), it may be necessary to remove the pack for reserve pin inspection.
6	<b>Reserve Loop/s</b>	Correct length, in excellent condition.
7	<b>Reserve Tunnel</b>	Tied down correctly, no obstructions inside.
8	<b>Reserve Flap</b>	Closed, secured.
9	<b>AAD</b> (if fitted)	Switched on, and was done so at THIS jumping location (see AAD handbook).
10	<b>Main Pin</b>	Properly inserted, clear and unobstructed.
11	<b>Main Loop</b>	Correct length, in excellent condition
12	<b>Main Flap</b>	Closed, secured.
13	<b>Main Handle</b>	Cable free of kinks, no obstructions.
14	<b>Bridle</b>	Correctly routed, secured, no loose pieces.
15	<b>DRP Cable</b>	1) Securely tucked under flap. 2) <b>TAKE CARE THAT THE DRP CABLE IS NOT THROUGH THE MAIN CLOSING LOOP.</b>
16	<b>Static Line and Clip</b>	1) Cleanly routed, in perfect condition. 2) The Static Line <b>MUST</b> be securely bungeed at the securing point.
17	<b>Overall View</b>	Everything neatly contained.
18	<b>Radio</b> (if used)	1) Working, switched on and can be heard by student. 2) Secured. 3) Not obstructing any handles.

#### Additional Points concerning Checking Out

- 1) If there is any doubt about the packing of the parachute to be used it must be opened there and then, and repacked. Suspect parachutes must not be left in such a manner that they appear to be serviceable. If there are other parachutes that have been packed, or are suspected to have been packed,

in a similar manner, or by the same person, as the 'suspect' one, then **ALL** of these must be opened and repacked.

- 2) All parachutists below 'C' Licence level must wear a hard helmet. 'C' Licence holders may wear a soft hat, if preferred, but 'C' Licence holders must wear some headgear.
- 3) Jumpers over 196 Lbs. (89 Kgs) must use a reserve appropriate to their weight.
- 4) Wearers of contact lenses should wear goggles.
- 5) It is **ESSENTIAL** that the Static Line be securely bungeed to the container. This prevents airflow on the Static Line causing a premature pack opening. A Tandem bungee, or a double standard bungee, can be used. The use of a curved pin, rather than a Teflon-coated cable, on Static Lines, is to be avoided. (A curved pin, being short, offers greater opportunity for premature pack opening).
- 6) Gloves, if worn, must not be so bulky as to make it difficult to open a parachute, perform malfunction drill (cutaway) or pull a reserve handle. Gloves should be intact, without loose ends.
- 7) It is not advisable that jewellery, rings and exposed watches be worn when parachuting. These may be lost or may catch on things.

#### **4. Briefing the Pilot**

Being satisfied that the jumpers are properly briefed and authorised to carry out the particular jump and correctly equipped (by conducting a 'check-out') the Jumpmaster then briefs the Pilot of the parachuting aircraft as to what will be required on the lift. This is often done when the jumpers are in the aircraft, but the next section is on emplaning, so briefing the pilot is now covered separately.

The Jumpmaster must know exactly what every jumper is going to do so that safety is not compromised and the correct number of passes and exit order are established. It is not sufficient for a jumper to tell a Jumpmaster 'I am doing my own thing'. This is so imprecise as to mean anything.

The Pilot is briefed by telling him/her:

- a) The load composition, weight wise, especially if there are extremes. (The Pilot will then make the decisions, depending on flying conditions, on how to deal with this matter. The Pilot has total control in this area and the Jumpmaster will always defer to the Pilot's wishes.)

- b) If a Wind Drift Indicator (WDI) will be thrown, and at what height.
- c) Where the run-in is to be.
- d) Where the spot will be and where the stand-by will be given.
- e) The number of passes, the height for each pass and the exits to be made on each pass (FS, Canopy Formation, Dangle, stand-up etc).
- f) Whether students are Static Line or Freefall. If student Freefall, the Pilot should know what type of exits the students will make.

It is important that the Pilot should know exactly what will take place so that air speed and compensations will be suited to the particular exit. If there are a number of requirements on a load, then it may be very difficult to remember all. In that case the Pilot can be reminded after each drop what the next requirement will be.

- g) If there are any AADs on board. (In the event of a descent in the aircraft you will need time to turn off AAD devices, especially student AADs. In this case the aircraft should descend very slowly).

Agreement should be reached with the Pilot as to where the climbing circuit will be so that the Jumpmaster will be constantly aware of where the drop-zone is, relative to the aircraft's position. To facilitate this a Jumpmaster should be familiar with the area surrounding the drop-zone, so that location can quickly be established when some feature is seen.

The Jumpmaster also needs to know if other aircraft, especially jump aircraft, are operating from, or in the vicinity of, the drop-zone. Very strict co-ordination and control is required to ensure that jumpers are not put out of an aircraft over another aircraft or jumpers. This co-ordination is between Jumpmasters, Pilots, and Ground Radio Control.

If there is any doubt, due to conditions, as to whether the jump/s can be made, the Jumpmaster should discuss this, and agree on alternatives, if such are possible.

## **5. Emplaning – Loading the Aircraft**

### **5.1: General Requirements**

- 1) Jumper weight and height - payload: Before jumpers are brought to the aircraft the load should be scrutinised. Are the skydivers small, or tall (over 6 feet / 180 cm) in height; are they light or heavy (over 210 lbs /95 Kgs.) in weight? This is important. If the load appears to be very heavy the Pilot must be consulted. It may be necessary to change around lighter people for some of the heavier ones, or take one person less. This matter of weight

has already been touched upon in the preceding section 'Briefing the Pilot' and it is especially important in conditions of heavy ground, cross wind or nil wind.

- 2) Smoking is NOT allowed airside.
- 3) Approaching Aircraft: The Jumpmaster ideally leads the jumpers to the aircraft and great care must be taken to see that they approach it correctly, avoiding propellers, even if these are not turning. The correct way for all jumpers to approach an aircraft is from the rear.
- 4) Positioning in Aircraft: Heavier people are loaded towards the front of the aircraft to ensure that the centre of gravity is correctly maintained. Lighter people are placed towards the back of the aircraft, but they must **NOT** sit into the rear, as this puts too much weight to the back.
- 5) Static Line Attachment Check: The Static Line attachment points in the aircraft must themselves be secure. The Jumpmaster should check these attachment points. Only one Static Line should be attached to each connecting point.

#### **A NOTE ON STATIC LINE LENGTH**

A Static Line length, including bag and any bridle cord, must not be greater than the shortest distance between the attachment point of the Static Line and the leading edge of the aircraft's horizontal stabilizer. This is to ensure that there are no 'tail strikes'.

Because the length is so critical, a Static Line must not be 'short-lined', that is, held in the hand to cause a faster pack opening through effectively shortening the Static Line length. This practice is dangerous as the bag/canopy, emerging from the container too early, may be too high and hit or go over the aircraft tail – causing a student in tow over the tailpiece, or causing the horizontal stabilizer to be damaged or torn off.

Clearly then, a Static Line must not be too long or too short.

Static Lines must **NEVER** be attached to points other than the approved connecting points, for the following reasons:

- i) An unapproved point may not have sufficient strength.
  - ii) The length of the Static Line is critical, and using any point other than the approved one may change this critical, pre-set, length.
- 6) Each static Lines is hooked-up as each static-line student emplanes.
    - a) The Static Lines should not cross one another when they are being hooked up, to avoid undue pressure on some Static Lines, entanglements, and the risk of container openings.

- b) It is the responsibility of the Jumpmaster to see that all Static Lines are correctly routed, are clear, and have not become fouled in any way. Each Static Line must have a clean run from the attachment point to the student's container.

### **Reasons for 'hooking up' static lines during emplanement.**

In the event of an emergency exit when the aircraft is airborne, there would be delay in having to hook up Static Lines, if this had not already been done on the ground.

There is the possibility, however unlikely, that waiting until airborne to hook up a Static Line could result in a Static Line NOT being hooked up. This would of course result in a Static Line student being in freefall as there is no possible way that the main canopy can be released from the container if the Static Line has not been attached.

## **5.2 Loading the Parachutists**

- 1) If a Jumpmaster is not familiar with the loading of a particular aircraft, especially an aircraft that he/she may not have used before, the advice of the CCI should be sought before loading students.
- 2) If the students are to stand upon a step during their exits, that step must be secure, safe, clean and with a non-slip surface.
- 3) Before takeoff the Jumpmaster must check that:
  - i) there is a knife and a karabiner on board, for use in the event of a hang-up.
  - ii) the Jumpmaster should have his/her personal hook-knife.
  - iii) spare rubber bands can be carried in the Jumpmaster's pocket, to replace the Static Line retaining rubber band on the student container, should this be necessary.
- 4) The last jumper to exit on a load will enter the aircraft first, and so on, in this reverse order, with the first jumper to exit being the last to enter (thus nearest the door).
- 5) Jumpers must **NOT** sit 'back to a control column'.
- 6) The Jumpmaster positions him/herself nearest the door, to protect and give confidence to the jumper nearest the door. The Jumpmaster should be able

to observe all the students and ensure that all is well with the students and with their equipment.

- 7) If the pilot enters the aircraft by a door near to which there is a Static Line jumper, it is important to ensure that the closing door does not catch the Static Line itself, thus shortening the Static Line.
- 8) In cases where an aircraft is being used without an 'in-flight' door being used, the Jumpmaster must place him/herself across the open door to ensure that a student does not fall out. The Jumpmaster must also ensure that he/she has a secure grip and will not fall out of the aircraft himself or herself. Falling out at a low altitude could be fatal. (A Cypres AAD is of no value at low altitudes as the device does not 'arm' until it reaches 1,500 feet in the ascent).
- 9) When the students are emplaning it is essential that all Reserve Handles and Cutaway Pads be constantly protected.

## **6. Taxiing and Takeoff**

- 1) Immediately prior to the aircraft taxiing jumpers should again be reminded:
  - i) Not to sit back into the tail of the aircraft.
  - ii) Not to hold onto the back of the pilot's seat.
  - iii) To keep weight forward for takeoff.
- 2) Helmets, if required, must be worn on takeoff. (Hard helmets must be worn by student parachutists and parachutists holding an 'A' or a 'B' licence. 'C' Licence holders may wear leather hats, but they must wear some headgear. For 'D' Licence holders the use of headgear is optional.)
- 3) If there is not a door on the aircraft jumpers must not stick out arms or feet as this creates drag and makes the aircraft more difficult to fly.
- 4) There should not be any movement by the parachutists in the aircraft until airspeed exceeds 90 m.p.h. and height exceeds a minimum of 500 feet. After that movement should be confined to a minimum to facilitate flying and to maximize the climb rate.

## **7. After Takeoff**

This section deals with dispatching and associated matters including:

- 1) Determining the 'run-in' and 'spot'
- 2) On 'Run In'
- 3) Identifying the 'spot' from the air
- 4) Final Check on Exit Altitude
- 5) Jumpmaster Commands

- 6) Exit Commands during Dispatch
- 7) After a parachutist has exited
- 8) Change of Plan and taking down a lift
- 9) Emergencies
- 10) Student Refusals
- 11) Malfunctions under canopy
- 12) Descending with students in an aircraft
- 13) After dispatch.

### **7.1 Determining the run-in and spot**

The 'spot' is the point above the ground at which, it is intended, jumpers should exit the aircraft if, taking into account the direction and strength of the wind, they are to land on the specified target

The 'run-in' is the direction from which the aircraft should approach the spot.

Spotting is skill that is acquired and improved through experience. It is a necessary prerequisite for Jump-mastering that the Jumpmaster have a proven ability to spot consistently well. The students dispatched by the Jumpmaster MUST land on the drop-zone. Off drop-zone landings are potentially dangerous due to hazards and unfamiliar territory.

Spotting begins prior to take-off: Before take-off the windsock should be observed, as should be smoke or any other such guide, and the run-in and spot be roughly determined. If jumping has been going on previously, the run-in and spot used on other lifts can be watched, and observation of the canopies will indicate how correct these spots have been. The landing point of the student/s previously dispatched should be watched and the predicted spot adjusted if needed.

Wind Drift Indicator: In flight a wind-drift indicator, or 'streamer' can be used to determine the spot.

- 1) A minimum of two wind drift indicators should be taken aloft for a streamer run.
- 2) A wind drift indicator should be about 250mm wide, 600cm long and weight about 100 grams. It should take about 1 minute 30 seconds to reach the ground when thrown at 2,000 feet. Any longer means the streamer is too light; any shorter means that it is too heavy and if either is the case the spot is adjusted to allow for this.
- 3) To avoid confusion the students on the lift should be made aware that a streamer is being thrown. When a streamer is thrown the Jumpmaster shouts 'Streamer Gone' and the pilot will orbit the aircraft so that the Jumpmaster can keep the streamer in sight through the open door. The streamer is watched and timed. When it has landed its distance and

direction from the target is carefully noted. Using this information any necessary adjustments are projected upwards of the target, to determine the accurate exit point or 'spot'.

- 4) If the streamer breaks, or if there is any uncertainty, then another should be thrown.
- 5) When the Jumpmaster has seen the landing point of the streamer the pilot is told where the run-in and spot will be. If there is a photograph of the drop-zone area in the aircraft then it makes life easier, and the run-in and spot can be shown on the photograph.
- 6) Failing this, the easiest way to explain the run-in is to give it as a degree reading (true).
- 7) Despite what the windsock may show it is important to trust the streamer. The windsock only indicates wind direction on the ground. The streamer gives the average, from the height at which it is thrown, to the ground, taking in to account wind speed and direction at various altitude levels where such conditions exist.

## 7.2 Run-In

- 1) When the run-in commences the student who is next to exit the aircraft should be alerted to that fact so that he or she will be mentally prepared for the exit and the jump. The student should have plenty of time to prepare for the exit.
- 2) On the run-in **final checks** may be done on the equipment of the student who is about to exit, as follows:
  - i) Main pin
  - ii) Reserve pin
  - iii) AAD on
  - iv) Reserve and Cutaway handles / pads in place
  - v) Chest strap secure
  - vi) Leg strap clips secure.
  - vii) The closure and routing of the Static Line.
- 3) If a jumper kneels on run-in, and is near to the pilot, care must be taken to ensure that the student does not push the right-hand control column with his / her container.
- 4) If the aircraft is fitted with an in-flight door, it is most important that this door is **NOT** opened until the pilot gives the command. The opening of the door is critical, in that the air speed must be sufficiently slowed to render this opening safe. Hands and fingers (of student and Jumpmaster) should be kept inside the doorframe, as in the event of the door coming down (where the door opens), fingers will be hurt.

### 7.3 Identifying the Spot from the air

- 1) *In order for jumpers to exit directly above the spot*, the aircraft **MUST** be flying straight and level as the spot is approached. This can be ascertained by looking at the wing and the tail. Nose high, tail low is not at all acceptable as the danger of a tail strike by a jumper or a deploying canopy, is greatly increased with this configuration.

### 7.4 Final check for Exit Altitude

- 2) The Jumpmaster should check his or her altimeter against the student's to ensure that both are reading correctly and to ensure that the correct altitude for the particular jump has been reached.
- 3) If there is a difference in the readings on the altimeters, the student must have the one that is reading correctly, *(use the aircraft's altimeter as a point of reference to determine this)*.
- 4) If the correct altitude has not been obtained the pilot will have to 'go around' again and increase the altitude. If the correct altitude cannot be obtained, (usually due to weather) then a Static Line lift **MUST** be landed in the aircraft.

**EXCEPT IN AN EMERGENCY, A STUDENT MUST NOT BE DESPATCHED AT AN ALTITUDE LOWER THAN THAT SPECIFIED FOR THE PARTICULAR JUMP OR EXERCISE.**

**HEIGHT TRANSLATES INTO TIME. MORE TIME GIVES THE STUDENT A GREATER OPPORTUNITY TO DEAL WITH ANY PROBLEM THAT MAY ARISE.**

### 7.5 Commands from the Jumpmaster to the Pilot and Jumper

Commands should be clear, be loud enough to be heard and they should be standardized.

#### Final Run-in Commands

All commands must be precise. The Jumpmaster should be familiar with whatever method is used for giving commands.

- 1) Verbal commands such as 'a bit left' should be avoided. Corrections concerning the run-in should be stated in degrees.
- 2) In cases when the Jumpmaster is positioned close to the pilot, tapping the Pilot's shoulder, left for left correction, right for right correction, can be done, instead of calling out the corrections.
- 3) In some instances buttons placed near the aircraft door are used, usually three buttons – 'left', 'cut' and 'right'.

## 7.6 Dispatch Exit Commands

There are three commands in the dispatch sequence.

- 1) 'Stand-by'
- 2) 'Cut' or 'Cut Power'
- 3) 'Go'

A fourth is often used:

- 4) 'Bag-in'

**"Stand-by"**. This command is given as the spot is approached. This command:

- 1) tells the pilot to have the aircraft flying straight and level and to reduce power to the appropriate speed (bearing in mind the aircraft being used and the optimum exit speed for the canopy deployment).
- 2) tells the student to get ready to jump.

### Control of the Static Line at Exit

At the 'stand-by' stage the student should have enough room to move freely into the exit position. Alertness and care are required from the Jumpmaster to ensure the student's Static Line does not become fouled – on the jumper (around an arm or a foot), on some other jumper or on part of the aircraft.

The actual drill for doing the exit will differ between various aircraft types. The CCI of a centre will demonstrate this drill, and train Jumpmasters in the procedure appropriate to the type of aircraft in use at the centre.

The Jumpmaster, irrespective of the type or aircraft in use, and the varying exiting procedures, must be totally in control of what is happening and of the Static Line.

The Jumpmaster must have a good, solid stance and position.

Again it must be noted that the Jumpmaster must not short-line the Static Line.

The Static Line will normally be aft of the Jumpmaster, to prevent the Static Line from hitting or injuring the Jumpmaster.

### 'Cut' or 'Cut Power'

This second command in the dispatch sequence should come a few seconds after the 'Stand-by' command. The command:

- 1) confirms to the pilot that an exit is about to be made and that the aircraft should be in the correct configuration, with correct speed and power settings for parachuting.
- 2) signals to the jumper that the jump is about to be made and that he/she should get into the proper exit position.

### **'Go'**

- 1) This is the third command in the dispatch sequence. It is the final command of three to the jumper.
- 2) On this command the student breaks physical contact with the aircraft and adopts the exit position as trained. It is important that the jumper, not the canopy, is watched on exit. However, as the canopy opens it will be observed. This can be quite important as a guide to how main canopies are opening and to notice any malfunctions that may arise and the causes thereof.
- 3) The Jumpmaster allows the Static Line to fall away in a controlled manner, with the jumper. (As previously mentioned, the Static Line **MUST NOT** be short-lined).
- 4) The Jumpmaster continues to observe the exiting student so that the jump can be subsequently critiqued.
- 5) At the same time the Jumpmaster starts to pull in the Static Line and bag and, depending upon the aircraft being used, the may tell the pilot 'bag in'.
- 6) Several experienced Static Line jumpers and Free-fallers may be put out on the same pass. This will depend upon a number of factors the most important of which should be the ability of the jumpers involved to handle, what they may perceive, as the additional pressure.

### **7.7 After the Parachutist's Exit**

- 1) After taking in the Static Line and bag they should be neatly wrapped and stowed in the correct place (which will vary according to the aircraft being used).
- 2) It is important to ensure that the Static Line of a dispatched jumper does not become entangled with another jumper or his/her equipment as this could cause a hang-up.

**TO AVOID UNHOOKING THE STATIC LINE OF A STUDENT WHO HAS NOT YET BEEN DESPATCHED DO NOT UNHOOK ANY STATIC LINE UNTIL ALL STATIC LINE STUDENTS HAVE BEEN DESPATCHED**

**STATIC LINES NEED TO BE TREATED AT ALL TIMES  
WITH GREAT CARE.**

**A JUMPMASER MUST BE CONSTANTLY ALERT WITH THEM SINCE  
STUDENTS CAN EASILY FOUL THEM.**

- 3) When all the Static Line students have been dispatched the used Static Lines may all be unhooked, if required, and stored safely. In some aircraft it will not be necessary to unhook, but to place all the Static Lines and bags into the container provided.

**Cloud base**

**STUDENTS MUST NOT BE DESPATCHED ABOVE CLOUD.**

- **IT IS BOTH ILLEGAL AND POTENTIALLY DANGEROUS.**
- **THE JUMPER WILL BE DISORIENTED.**
- **THE JUMPER MAY NOT BE SEEN FROM THE AIRCRAFT NOR FROM THE GROUND AND SO ANY INCIDENT OR ACCIDENT MAY NOT BE OBSERVED.**
- **THE JUMPER MAY NOT LAND ON THE DROPZONE.**

**7.8 Change of Plan and Taking Down a Lift**

- 1) Where there is a change in the planned flight (due to such causes as ATC restrictions or a lowering of the cloud base) the original jump plan/s may have to be changed while aloft. In such conditions a Jumpmaster may decide to take down the lift without anyone jumping. The safe option is always the wise option.
- 2) If possible student AADs should be turned off. If this is difficult then the pilot should descend slowly to ensure that a vertical speed in excess of 29 m.p.h. (2,500 ft. per min.) is not being achieved at altitudes below 1,500 feet (the AAD commences to move into 'firing mode' at about 1,200 feet).
- 3) Alternatives which may have been worked out previously on the ground may not be feasible especially if conditions are such as might make the planned jumps difficult or impossible.
- 4) If the need for a change does occur while airborne the following is the procedure:
- i) the Jumpmaster tells the student what is to be done (changed jump plan).
  - ii) the instruction is repeated, using fingers to indicate seconds delay, and speaking the instruction into the student's ear.

- iii) the student is required to repeat the new instruction to the Jumpmaster.
- iv) the Jumpmaster confirms the new instruction.

## 7.9 Emergencies

It is not possible to anticipate and think of every emergency that might occur. The following are the most common.

### Emergencies requiring immediate exit from the aircraft

- 1) In such an emergency (due for instance to a mechanical fault developing with the aircraft) the duty of the Jumpmaster is to get the students out of the aircraft as quickly as possible with due regard for safety. It is not acceptable for a Jumpmaster to be the first to exit the aircraft should an emergency occur.
- 2) Opinions may vary as to what is the minimum height at which Static Line and Freefall students may be dispatched in an emergency and, depending upon the degree of seriousness of the aircraft problem and the instructions from the pilot, there may be judgment calls required of the Jumpmaster.

**A reserve or a Static Line could safely deploy from a 500 ft. opening and that scenario might result in a safer outcome for a jumper than staying with an aircraft about to crash.**

### 'Student-in-tow' Emergency

- 1) The student-in-tow situation is one that should be carefully thought about so that, if it ever occurs, it can be dealt with calmly and correctly. (Of course strict attention to correct procedures in caring for Static Lines will ensure that this situation will rarely, if ever, occur).
- 2) Procedures for student-in-tow situations are:
  - a) **Conscious Student:** It is important that the student is aware of what is happening.
    - i) The Jumpmaster shows the student a knife.
    - ii) When the Jumpmaster is sure that the student knows what is about to take place, the Jumpmaster cuts the Static Line.
    - iii) Once the Static Line is cut the main container cannot open and unless there is an AAD fitted to the reserve, the only way the student can be saved is by him / her pulling the reserve while in freefall.
  - b) **Unconscious Student:**
    - i) The Jumpmaster climbs down the Static Line, with the aid of a karabiner attached to the Jumpmaster's chest strap and the Static Line.
    - ii) The student is lifted by the harness.

- iii) The Static Line is cut and the student's reserve handle is pulled – even when the student may have an AAD (where physical deployment is possible an AAD should not be relied on).
  - iv) The Jumpmaster then falls away and opens his/her own parachute.
- 3) In either case the pilot should be made aware of what is happening and should be asked to take the aircraft higher – height is freefall time.

#### An Opened Reserve in the Aircraft Emergency

- 1) A reserve parachute opening in an aircraft can have disastrous consequences.
- 2) If this happens in an aircraft with a closed door the door should not be opened and the lift should land without anyone exiting. Another jumper should hold the reserve tightly.
- 3) If the door has been opened and a reserve deploys inside an aircraft then the jumper with this opened reserve should be kept away from the door, another jumper should trap the reserve, and the aircraft should land without any jumping taking place.
- 4) In either case it is important that the pilot be made aware of AADs on board and asked to descend slowly bearing in mind the firing speeds of the AADs at various altitudes.

#### **7.10 Student Refusals**

- 1) A student's clear indication of a refusal to exit the aircraft must be respected and no further attempt should be made to persuade the student to continue with the jump.
- 2) If a student has exited to the point where he is on the strut (Cessna 182) it may not be possible to get the student back inside the aircraft and in those circumstances the jumper has to 'go'. An aircraft cannot land with a jumper on an outside step.
- 3) In some instances it may be possible to change around jumpers to allow others to jump when someone before them has refused. **However this must not be done by unhooking and rearranging Static Lines.** Remember that Static Lines must not be unhooked in the aircraft unless all the Static Lines have been dispatched.

#### **A JUMPER MUST NOT BE PUSHED IF HE/SHE REFUSES TO JUMP**

**The only time a Jumpmaster is justified in pushing a jumper is if the jumper, or others, are endangered by the jumper's actions. A mere refusal is not sufficient reason to push someone from an aircraft and there may be legal consequences for a Jumpmaster who would do so.**

### **7.11 Malfunctions under Canopy**

- 1) There is nothing that a Jumpmaster in the aircraft can do for someone in the air with a malfunction. The Jumpmaster must remain in control, calm, and professional. There may be other jumpers, for whom the Jumpmaster is also responsible, in the aircraft.
- 2) If there is a malfunction, no matter how serious, the attention of the pilot and other jumpers should not be drawn to it.
- 3) The Jumpmaster should observe what is happening (he/she will be required to report later) and if possible, quietly tell the pilot.
- 4) In the event of a malfunction a Jumpmaster should not dispatch other jumpers until he or she get the 'all-clear' from the ground. In the event of a second malfunction there could be serious problems. The pilot will maintain radio contact with the ground.
- 5) If a serious equipment problem is encountered on a lift the Jumpmaster must judge whether there may be similar problems with other rigs on the lift. If there is any doubt then no further jumpers should be dispatched.

**The Jumpmaster must be in control and professional at all times. If thoughts of malfunctions / accidents / problems are too stressful for the Jumpmaster then it would be better not to act as a Jumpmaster – for one's own sake and the sake of students.**

### **7.12 Students descending in an aircraft**

- 1) It is a strict responsibility of a Jumpmaster not to leave a student in an aircraft, therefore, if, for whatever reason, a student cannot jump, then the Jumpmaster must stay with the student and descend in the aircraft with the student.
- 2) The pilot needs to be told about any AAD/s which are turned on in equipment in use by the jumpers remaining in the aircraft
- 3) In the event that a jumper using a centre's equipment that has a fitted AAD that has not been turned on, the Jumpmaster must not allow that person to exit. Once again the Jumpmaster must stay with the jumper in the aircraft.

### **7.13 After all students have been dispatched**

- 1) There is still work to do. The pilot will be grateful of the Jumpmaster's assistance in identifying canopies in the air especially if such canopies are near the runway or may cross it. Watch out for other traffic and canopies,

as the descent is made. The pilot may depend upon a Jumpmaster's knowledge of the experience level of students to predict what they may do under canopy.

- 2) If dispatching students a Jumpmaster may decide to jump after the last student has been dispatched. If so, the Jumpmaster should check his or her own equipment before exiting. Movement and dispatching in an aircraft may have displaced the handles and/or the deployment device on the Jumpmasters own equipment. It is really careless not to check one's own equipment before jumping. Ultimately such bad practice will lead to some problem after exit – which is not the time to discover that something is wrong.
- 3) On landing, the pilot should be thanked. Jumpmasters rely on pilots to fly them and their loads safely and with accuracy. Pilots sit in aircraft for long periods of time flying parachutists with skill, care and accuracy and they should have regular breaks. A Jumpmaster must always defer to a pilot who does not wish to fly due to conditions, or who needs a break, or whatever.

## **8. Tandem Jump-mastering**

The jump mastering of Tandems requires additional knowledge and approaches that are somewhat different to the general run of jump mastering.

### **8.1 Pre-Flight Checkout**

- 1) The Tandem Master normally does this as he or she checks the Tandem equipment thoroughly before putting it on. The Tandem Master also kits up the Tandem Student.
- 2) Best practice is that Tandem Masters, if there are two on a load, check out one another. However a Jumpmaster may be asked to do this check and in such cases the checks will be as with solo equipment, with the addition of the Tandem drogue.
- 3) As Tandem equipment is different from solo, it is necessary that a Jumpmaster be fully briefed on what to look for. For instance the AAD must be switched on (it is mandatory in Ireland for Tandem rigs to be fitted with an AAD).

### **8.2 Emplaning and Flight to Altitude**

- 1) It is the responsibility of the Tandem Master to see to it that the Tandem Student is suitably seated and 'hooked up'.
- 2) The Jumpmaster should watch all that is going on and ensure that handles and equipment are secure and that the Tandem Student is alright. If anything is amiss the Tandem Master should be quietly and discreetly told.

### **8.3 Exit Altitude**

- 1) The minimum exit altitude for Tandem, except in case of emergency, is 7,500 feet. If visuals with the ground are lost below 7,500 feet then the aircraft must descend without the Tandems being dispatched.

### **8.4 On 'Run-in'**

- 1) The Tandem pair may need tightening and the Pilot will give sufficient time for this to be done. The Tandem Master may tighten the student, but if the Jumpmaster is to do this job then the following is the procedure:
  - i) The left-side strap on the student harness is taken in the Jumpmaster's right hand, and with the Jumpmaster pushing his/her left hand against the main lift web on the Tandem rig (pushing back towards the Tandem Master), the left-hand strap on the student harness is pulled tight.
  - ii) The procedure is then reversed and repeated to tighten the right-hand strap.
  - iii) The Tandem Master will indicate when the harness is sufficiently tight.
  - iv) The Tandem Student's hat should be secure and his or her goggles should be in place.
  - v) The student should be told that the door is about to be opened and, at this stage, the Jumpmaster takes care not to be in the way of the Tandem pair.
- 2) It is important to be alert and aware that a Tandem Student may grab at something such as a reserve handle. The Jumpmaster should be conscious of this possibility and try to place himself or herself in such a way that equipment cannot be grabbed by a tandem passenger.

### **8.5 Spotting for Tandem**

- 1) Tandems open at 5,500 feet. The spot can be deep as the Tandem has the altitude to get back to the drop-zone.
- 2) In the case of Tandems being dropped on separate passes, the Jumpmaster must be aware of where the first Tandem/s are and the Tandem/s on the second or subsequent pass/es should not be put out directly above other tandem pairs.

#### **Avoid Collisions**

**In the event of a problem (such as a high opening by an earlier Tandem and/or a low deployment by a later Tandem) there may be the possibility of a collision. If there is any uncertainty about traffic or canopies Tandems, or indeed any jumpers on any lift, should not exit. Better to hold off and do another pass than to risk a collision, which will almost certainly be fatal for those involved.**

## **8.6 Tandem and other Jumpers**

- 1) The objectives are not to have other jumpers over Tandems and not to have a situation arise where a Tandem may have to make an emergency exit at a very low altitude.
- 2) The normal practice is for Tandems to exit last so that other jumpers will not be exiting 'over' Tandems.
- 3) Static Line students should **NOT** be put on an aircraft with Tandems. The altitude for Static Lines (3,000 to 3,200 feet) is very low for a Tandem should there be a problem on dispatching a Static Line.
- 4) Where other canopies are open on the same level as Tandems the solo canopies should stay away from the Tandem.
- 5) Formation Skydiving with a Tandem is only allowed with CCI approval in each individual case.
- 6) Canopy Formation is completely forbidden with Tandem.

## **8.7 Aircraft Emergencies and Tandems**

- 1) In aircraft emergencies when there are Tandems on board, the job of the Jumpmaster is to help the Tandem Master exit quickly. The Jumpmaster must help the Tandem Master in whatever way the Tandem Master wishes.
- 2) The Tandem Master will decide as to whether the side straps will be tightened or not.
- 3) If there are other tandems on board then the Jumpmaster must also help them to exit as quickly as possible.
- 4) Finally the Jumpmaster can exit (as a solo jumper needs less height than a Tandem) taking care not to collide with a Tandem.

## **9. Post-Jump Critiques**

### **9.1 General Approach to Critiquing**

A Jumpmaster is **NOT** an Instructor or Coach and must not assume the responsibilities of such. Good training or coaching is the key to the student doing good jumps and avoiding bad ones.

- 1) After landing the Jumpmaster critiques the jumps of the students dispatched by him or her and writes up and signs the student/s logbook/s.
- 2) On no account should a student be embarrassed or humiliated. There should never be any public reprimand; if this is necessary it should be done in private.
- 3) The objective should be to help the student to sort out any problem and to retain the student in the sport.
- 4) Obviously there will be cases where a jump was really bad, frightening to look at and perhaps potentially very dangerous. In these cases the CCI should be consulted to decide on what is to be done.

## **9.2 Critiquing First Jump Students**

- 1) Always give the first jumper a written critique that he or she can show to his or her friends without embarrassment. If the student does not come back to jump again then nothing is lost by giving a 'positive' critique.
- 2) If a jump is really bad then a common code should be used on the drop-zone – a term such as '*See CCI before next jump*' might indicate a very serious problem or that the person was not to jump again. This code needs to be worked out between Instructors and DZ management. All involved in dealing with students should be aware of this code.

## **9.3 Critiquing Continuing Students**

- 1) Such critiques on the student's log card / logbook should be more rigorous, but the positive sides of the jump should still be emphasised. Coaching and/or further training can approach things that need to be rectified.
- 2) Skydiving is hard for most people – they have anxiety, fear and many other emotions to cope with – so they need encouragement. Every jump has its good aspects and these can be built upon. If negative feedback is over emphasised the student may dwell too deeply upon a problem and it may be much more difficult to correct the problem and put the student on the right track.
- 3) A Jumpmaster is not authorized to clear a student for a next step in progression - this the job of a Coach or Instructor. The Jumpmaster should sign off the student's critique and then go and speak, with the student present, to a Coach or Instructor who will decide on what is next to be done.
- 4) An important point to note is that a Jumpmaster must be responsible when it comes to a student doing a bad, or potentially dangerous, jump. Nobody has a right to play with the lives of others. There will be occasions, however unpleasant, when it may be necessary not to allow the student do further jumps (as the person could be a danger to themselves and others). This is

a decision for the CCI in discussion with the Jumpmaster and a Coach or an Instructor.

## 10. Radio Talk-down

### 10.1 Objectives

- 1) The objectives in the use of radio to 'talk down' student parachutists are:
  - i) To assist students to fly their parachutes and to land safely.
  - ii) To continue the training in the safe flying of parachutes provided in the Canopy Control sections of the First Jump Course.
  
- 2) Radio 'talk down' is used to assist the student, insofar as this is practical and safe, and not to take over completely from him. If the student is to continue jumping the aim is to wean him off radio. This will not be achieved unless the radio person allows the student to learn to fly the parachute, using their own judgement based on the training given, and, after the first jump, using their experience.

### 10.2 Radio Briefing before a Static-line Jump

- 1) It is preferable to brief all the First Jump Students at the same time. The person who will be on radio to the students should where possible, carry out the briefing. This gives the students the opportunity to become familiar with the voice and the commands from that radio person.
  
- 2) A radio briefing is NOT a canopy control lesson. The briefing should be confined solely to the commands that will be given to the student and an explanation of these commands.
  
- 3) All students must be able to clearly hear the briefing and the briefing person must ensure that he has the undivided attention of the students.
  
- 4) Checkouts should not be carried out while the radio briefing is being done. It is preferable to carry out the briefing where the students can see the airfield and landing area and yet not be distracted.
  
- 5) The students should be instructed **NOT** to alter the volume settings on their radios.
  
- 6) The students are informed that each will have a number, corresponding to their exit order from the aircraft. They are cautioned to **remember their number and only to respond to their own number**.
  
- 7) The exit is explained and the following instructions given:
  - i) **On exiting aircraft:** The student will be told '*You **APPEAR** to have a good canopy, if you have twists kick out of the twists, release the brakes and pump the slider*'. (A student should NOT be told that he has a good canopy. The onus for checking this, and making a decision as to whether the canopy is good or otherwise, rests with the jumper, not with the radio person).

- ii) **Malfunctions:** In the event of the student clearly having a malfunction, the student will be told *'Number X, you have a malfunction. Look, locate, peel, punch and pull'*. This drill will be repeated while the student is at a safe height (approx. 1,000 feet) for cutaway. Below that safe height it is a judgement call as to whether the student can land a malfunctioned main without serious injury, or whether it will be better to continue to tell the student to perform the malfunction drill. Circumstances differ.
- iii) **Flying the Parachute:** It must be emphasized that the arms must be fully extended upwards to obtain full flight.
- iv) **Steering Instructions:** It should be explained that if the radio person wants the student to make any manoeuvre the radio person will first use the student's number
- v) **To Turn:** Simple instructions are used – *'Left toggle – Stop'* or *'Right toggle – Stop'*. Ambiguous or imprecise instructions must be avoided. All instructions should be kept simple and a minimum of talk used to avoid confusion. However, the student should be aware that the radio person remains in contact, by the radio person using the odd word of encouragement.
- vi) **Practice Flare/s:** If the opportunity exists (i.e. if the exit not too deep), the student can be given a practice flare, or two. The student is informed that they are about to be given practice flares with the command *'Get ready, get ready'* and after about two seconds, *'Flare, flare, flare'*. These flare instructions will be EXACTLY as will be given for landing. NO OTHER FORMULA OF WORDS SHOULD BE USED.
- vii) **Lower altitude drills:** It is explained that at about 200 feet the student will be turned into wind and they will be told to put their *'Feet and knees together'*. After that command the feet and knees **MUST** be together. At this time the wind direction and the direction in which the student should land, whether or not the student can hear the radio, should be pointed out and explained.
- viii) **At about 50 feet:** the student will be told to *'look out'* instead of looking down (to avoid ground rush) and they will see the ground rising ahead as they look out.
- ix) **At about 20 feet:** the student will be told to *'Get ready'*, and after a pause of about two seconds and the command *'Flare, flare, flare'* will be given. The height at which this instruction is given may vary, depending upon wind strength and the weight of the student.

- x) When the student has landed the ground crew will help him to stow the brakes and correctly gather the canopy
- xi) The radio briefing concludes with the student being given a flight path to take up in the event of their not hearing the radio. This should be clear and simple, using well-defined physical features, easily discernable from the air. One very simple method is to use the sun as a reference.

### **10.3 Radio Check before Emplaning:**

- 1) All radios **MUST** be checked, by giving a radio check, preferably at some distance from the student. If the student is in any way doubtful, or if the radio talk-down person is unhappy with the radio reception by the student, the radio should be changed. Intermittent reception is not acceptable.

### **10.4 Aircraft on Jump Run**

- 1) The radio talk-down person and ground crew must be at the target area by this time and they must ensure that target arrows, or whatever ground markings are in use, are correctly positioned.
- 2) The radio talk-down person should be equipped with the following:
  - i) Radio set to 'talk down' students.
  - ii) Back up radio set to talk down students.
  - iii) Radio on channel different from student channel. (This will be used to contact the operational centre when necessary as it avoids using either the student channel or an aircraft frequency for communication, and is therefore private).
  - iv) Binoculars: to see students on exit. A helper who will relay details to the radio talk-down person may use these.
  - v) Loudhailer: for use to help land student in the event of no radio communication.

### **10.5 Following Exit by the Jumper**

- 1) The procedure as outlined in the radio briefing session is followed exactly to avoid confusion.
- 2) If the student is very responsive he may be allowed to fly the canopy, with the radio talk-down person giving occasional directions, as required, and taking over for the landing.

### **10.6 Flaring and Landing**

- 1) A student should NOT be told '*Do not flare until I tell you!*'. In the event of a bad flare or a too-late flare resulting in injury, the injured party may claim that the radio talk-down person instructed them not to flare and that either he did not give the flare or that he did so too late. The onus is on the student to land safely and he has been trained to do so. There can be two problems:

- i) The student flares too high.
  - ii) The student does not flare at all, flares too little, or flares too late.
- 2) If the student flares too high the radio talk-down person will have to judge whether it is safe or not to tell the student to put up the toggles and then to give the flare.
  - 3) If the student is quite low then putting the toggles up may cause the canopy to surge forward and down, giving no time for recovery and flare. In that case it may be better to get the student to keep the toggles down (in the flare), making sure their feet and knees are together (as the landing may be heavy).
  - 4) Sometimes the student does not flare at all, or too little or too late. A radio talk-down person has no way of knowing that this will happen and so it is essential that feet and knees are together during the landing phase of the jump.
  - 5) It is preferable to have a jumper faced into wind for landing, but where this looks unlikely it is better to have an off-wind, or downwind, landing rather than have the jumper made a radical turn (to face into wind) close to the ground.

### **10.7 After Landing**

- 1) It should be ascertained that the student is alright and if the wind is inflating the canopy the student is told to release one toggle and pull hard on the other (to deflate the canopy).
- 2) When the jumper is in the process of gathering the canopy the radio can be used to offer encouragement.
- 3) If the jumper does not appear to be alright a member of the ground crew stays with the jumper, who should not be moved, and the radio talk-down person calls the drop-zone control centre for assistance.

### **10.8 Handling multiple Canopies in the Air**

- 1) In the event of having two or more students in the air at the same time it is necessary to have an assistant to watch the second and perhaps further canopies, while the radio talk-down person is concentrating on number one, who will probably be nearest the landing stage by this time.
- 2) The assistant will give instructions to the radio talk-down person who will, perhaps without seeing the jumpers, relay them to those jumpers. Clearly it is essential that the assistant/s be reliable and knowledgeable.
- 3) Instructions must be prefaced with the number of the jumper for whom they are intended (e.g. to avoid No.1 cutting away at 100 feet when No.2 at 3,000 feet had a malfunction. In such a case it might be better

to land a very low jumper BEFORE giving a high jumper the malfunction drill. This would obviously depend upon many factors and an assessment has to be made in the circumstances by the radio person).

### **10.9 Accidents & Emergencies**

- 1) It is essential for the radio talk-down person to remain calm and in control if something goes wrong resulting in an incident or accident.
  
- 2) In such circumstances the radio talk-down person remains at his post and reports immediately to the operational centre giving clear details of what has happened. The special radio (not on the student or air-band frequency) is used for this. The drop-zone emergency plan will then come into operation. The radio talk-down person stays at his post unless and until the operational control centre instructs him to do otherwise.