



Ground Control Instructor Reference Manual

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1.1 INTRODUCTION

CSPA TECHNICAL RECOMMENDATION 3.13 STUDENT SUPERVISION – GROUND CONTROL

A Ground Control Instructor must be adjacent to the intended student landing area to provide guidance to students in the landing of their canopies, through use of a recognized method of signaling. Recognized signaling methods are:

- Radio
- Arrow
- Designated Point System
- Arm Panels and Signals

The student is provided appropriate equipment and is trained to respond to two recognized signalling methods, one of which shall be a radio. Guidance will cease at the discretion of the Instructor.

No matter which methods are in use, the student parachutist must have been taught how to:

- Determine the wind direction under canopy,
- Find a suitable landing area,
- Perform a pattern for landing, and
- Flare the canopy for landing.

Generally, people have adequate arm strength to be able to control a canopy. However, if the ground controller makes the student do numerous turns, this may tire out the student's arms and they may not be able to flare properly. The Ground Control Instructor should be aware of this and let the student enjoy the view as well as help them steer back to the target.

Landing is the most common place for injuries in skydiving. To minimize this risk, have the student prepare to land straight in at about 200'. That is feet and knees together, legs slightly bent, eyes looking forward and not down. Get the student to "stand up" in the harness so that their legs are beneath them, even for a PLF landing.

1.2 RADIO

The method of using a radio is the most common primary communication method with students. A back-up method is still required and must not include another radio. Briefing on the approach pattern and a landmark to set up over to fly into the wind towards the landing area should always be included in the pre-jump preparation. When using the radio, remember to talk across the mike (perpendicular to the unit) rather than speaking directly into the speaker (avoids the "pah, pah" sound). Students can rehearse by listening to the ground controller giving guidance to other students as they are talked down.

OPERATION AND CARE OF THE EQUIPMENT

To give reliable ground control with a radio, you should become familiar with the operation of the transmitter and the receiver. You should know:

- How to turn them on,
- Perform a battery test,
- Set the frequency or squelch if necessary, and
- Check the antenna.

You must also know the maintenance practices necessary to keep the system operational. The system being used may require special recharging or may need its batteries replaced periodically.

PREPARATION

Prior to students loading the aircraft, establish an identity for each parachutist. The identifying name can be their own name, their exit number or the colors of their main providing no two are the same. If the dropzone uses the student's name as their identifying name then make sure that you know their canopy colors. This will help to ensure you have positive communication with them if for some reason the exit order was switched (i.e. no go or rig open). The easier system to use is the exit number because it is less confusing.

The radio receiver should be checked as part of the equipment safety check and communication between the operator and student confirmed just prior to loading the aircraft.

COMMUNICATION RULES

Try these accepted practices:

- The commands used should be simple, clear and concise; consistent with the terms used in the FJC.
- Remain calm at all times while giving commands.
- Use words that will be clearly understood and positive.
- Avoid words that can be mistaken for other meanings, such as "no" and "go". Use "stop" instead of "no" or "don't".
- Make the commands specific. "K.I.S.S." The biggest problem with new Radio Controllers is they speak too much. Less is more.
- When giving a command, always begin the command with the jumper's identifying name, e.g. Jumper Number 1, Left turn ...,
- Repeat commands as necessary, but pause for a response first. Be aware that the student may have trouble hearing during a turn due to the increased wind speed noise.
- Do not chatter at the student, let them have time to think and enjoy the ride.

- Back-up turn commands with physical landmarks. Some people get right and left confused. E.g. turn toward the target or hangar, etc.
- Have your students fly a pattern. Always be consistent in the approach path.
- Use an approach where you only have to give the student 90° turns as they get lower. Low erratic turns could over excite the student.
- If there are obstacles on one side of the target, use a pattern that will fly them over a clear area and not above obstacles, whether left or right.
- Do not continually breathe into the transmitter. If you have nothing to say or are confused, then release the microphone key.
- Try two or three practice flares at altitude to establish how quick of a response you can expect close to the ground.

If they are experiencing a malfunction, do not immediately command them to cutaway. Use the identifying name first; ask them to CHECK the canopy. Remember it is the student's responsibility to make the decision to cut away. The Ground Control Instructor should ensure the student is aware of any problems by asking the student to check their canopy. If the student gets very low direct them to prepare for landing, and never say "don't cutaway". The student might only hear the word "cutaway", and there may be other students in the air; causing multiple reserve rides. Tell them what to DO, not DON'T.

COMMUNICATION EXAMPLE

After the student has exited and is open, the Ground Control Instructor should confirm that the student is receiving the commands. A typical introduction after the canopy is open and the student has been given 10 seconds to perform a flight control check on their own, but has not, would be:

- Hello Jumper #1 (or their actual name), Congratulations on your skydive, do your canopy and flight check.
- "Hello jumper #1 turn right... right ..., stop.
- Jumper #1 hold heading, hold heading.
- Jumper #1 turn right 180° towards the . . . stop.
- Jumper #1 hold heading.
- Jumper #1 turn right face the target.
- Jumper #1 practice your flare: ready, flare! Good, recover slowly.
- Jumper #1 hold heading.
- Jumper #1 turn 90° right to face . . .
- Jumper #1 hold heading.
- Jumper #1 turn left 90° face the target.
- Jumper #1 hold heading.
- Jumper #1 hold heading on target, face the target.

- Jumper #1 toggles all the way up and stand up in your harness. You are now on final approach.
- Jumper #1 Prepare to land, feet and knees together, look ahead.
- Jumper #1 relax, relax, relax, ready, Flare.
- Jumper #1 pull down on one toggle and run towards your canopy - if wind conditions drag student.
- Jumper #1 congratulations; good jump and landing, pick-up equipment, come over here and turn the radio off.

Give student the opportunity to perform the flight control check first. If they have not done so after about 10 seconds from canopy opening, you can then remind them.

A suggestion for training; have students wear radios, move some distance from the Ground Control Instructor (out of hearing), then have them listen to the radio and respond to commands.

Your student should know the commands that they are going to receive and how to respond to them. Commands such as flight control check, hold heading, flare and recover (if necessary) are a few. If the radio system permits, they should know how to test the radio and perhaps even check the antenna connection or the battery closing plate or door.

Students should listen to the Ground Control Instructor as they guide other students under canopy, while waiting for their loads, once they have completed the classroom and ground practice phases.

1.3 ARROW

This is a simple system to use and directionally very effective. The student just has to locate the arrow, face the same direction that it indicates to them and turn in the same direction as the arrow does. While providing directions with the arrow try to avoid having the student face directly away from you. If facing away from the arrow, the student should know to continue to look over their shoulder or under their feet for their next direction. If they find this difficult, they can turn the canopy slightly to one side and take a look then return to the original heading if necessary. The disadvantage to using an arrow with ram air canopies is that it is difficult to assist the student flare and to possibly recover if necessary. Final approach can be backed up with arm panels and semaphore like movements that would be copied by the students. For these to be used the student must land in front of the ground controller. Radio or a bullhorn can also be used to assist with landings.

A further disadvantage with using the arrow is that only one student can be in the air at a time. Dropzones using the arrow deal with this by using the radio to take over student at lower levels.

1.4 DESIGNATED POINT

The Designated Point (DP) system assigns most of the responsibility to the students to get themselves back to the target. The student must:

- Locate the target (after canopy and flight control checks).
- Fly directly to the DP in the dropzone area (landmark or brightly colored tarp).
- Face the target (X or bowl).
- Assess penetration.
- Gentle "S" turns as necessary so as not to overshoot the target.
- Fly directly into the wind for the final few hundred feet.
- Flare at 15'-20'.



Figure: Use of the Designated Point.

TIPS TO USE THIS METHOD:

- The student must know the following prior to take-off: location of DP (aerial photo), wind direction and which way to face for landing.
- The DP is best identified if a bright colored marker is placed out in the field prior to the jump. DP is marked with a mat positioned an appropriate distance downwind of the target on wind line, distance downwind is based on canopy performance and actual wind conditions.
- The student must know the difference between the DP and the target.
- Have the student clearly identify the DP and which way to face for landing from the aircraft during the ascent.
- Following the flight control check the student will fly directly to the DP. This ensures they get back to the dropzone area in the event of a slow climb-out. When spotting try to time the climb-out so the student is not spotted long.
- The student, if overshooting the target at a high altitude, should make an "S" turn away from any obstacles and back to the DP to re-assess the approach to the target. The student should have received target approach perception in their first jump course.
- Students should land with their feet and knees together.
- A Ground Control Instructor should be at the target area and can assist the final approach and landing with radio or arm panels and semaphore with actions that are to be copied by the student.

- Students should be aware that if the marker is moved that the wind direction and therefore the approach direction for landing has changed. The student should always fly to where the marker is even if its location varies from the ground briefing.
- In high wind situations, the S-turns should be small. In low wind situations, the S-turns should be long and wide.

PREPARATION

- Student must distinguish between target and DP.
- Student must locate wind sock, and other wind indicators.
- Use an airport diagram or aerial photo prior to loading to confirm flight pattern.
- Just after take-off, the altitudes of 300' and 500' (for size of objects on the ground) need to be shown to the student to assist in their decision making about when to stop all S-turns and turn on to final approach.
- Confirm orientation points, having the student identify them during the orientation/observation pass.
- Confirm landing direction with the student.
- Provide the student with an altimeter.

CANOPY CONTROL

- Student to perform flight control check.
- Student to fly directly to the DP.
- Once arriving at the DP, student is to turn canopy to face the target and perform a canopy penetration check.
- If overshooting, student is to do a sashay back to the DP, (not on the wind line) then face target and resume approach.
- No turns below 200 -300 feet (estimated altitude).
- Assist final approach and landing using radio and/or paddles.

This system is great except for the difficulty in landing on the dropzone if the upper winds exceed the canopy's forward speed. The other drawback is that assistance for landing needs another method incorporated to make this method complete.

The DP with radio back up is a very good method for teaching canopy approach. The DP method is a limited indirect backup system.

1.5 ARM PANELS OR FLAGS

Arm Panels can be used to assist a student's landing approach once they have flown into the dropzone area and are facing the target. The method is similar to using paddles. The student

would simply mirror image any commands given by the ground controller. An arm dropped would mean to pull down that toggle, both arms up would mean “fly ahead at full glide”, arms down would mean “flare”, etc. This system works well from 1000’ and down. Additionally, the ground controller can extend a leg out to the side several times to indicate adopting the landing position.



Left Turn



Fly Straight



Right Turn



Adopt Landing Position



First Flare



Second Flare



Full Flare

1.6 BULLHORN

This system works the same as arm panels except the student must be in a range to hear the commands. The bullhorn needs power to operate and there is always a chance of equipment failure. It is best used as a back-up device. This system works from 500' and down.

1.7 BACK-UP PROCEDURES

The Ground Control Instructor must make sure that they are ready to provide backup assistance to the student in the event of primary communication problems or failure. Backup control methods such as an arrow, paddles, bullhorn, or the DP system are all options that a dropzone may use. Every student must be taught a back-up method.

1.8 COMBINATIONS

A combination of two or more of the above methods should be used for the greatest chance of success. It is recommended that the following combinations be used:

DP AND RADIO

This is great to assist landing and if there are changes. This method has the highest learning potential as well as having the best back-up communication in case problems arise. If the radio fails the student is already flying the back-up system. Arm panels should be available to the Ground Control Instructor.

RADIO AND DP AND ARM PANELS OR BULLHORN

Almost identical to the above but the tendency is to over control the student rather than let them try it themselves.

RADIO AND ARROW AND ARM PANELS OR BULLHORN

Puts the student totally in the Ground Control Instructor's hands and is excellent for FJ students. This combination works great if the arrow is used until 1500', followed by radio. This method forces students to identify the dropzone and the arrow, hence the backup system. Generally, once the student responds to the arrow, radio contact is made to ensure that system is working. The arrow is then used to 1500' (or lower) and radio is used on base and final. This system works well when multiple students are in the air at the same time, as one is usually following the arrow while the other is following radio control; however, the Ground Control Instructor must be able to multitask.

1.9 CANOPY CONTROL PROGRESSION

Gradual progression of the student in Canopy Control will move the responsibility from the Ground Control Instructor to that of the student.

The Ground Control Instructor can break up the control into 3 areas:

- Canopy turning,
- Landing approach, and
- Flare.

Each jump the student is given more responsibility for their actions on every jump.

PROGRESSION

An example of progression may be:

- Jump 1 - Ground Control Instructor has full control.
- Jump 2 - let student do canopy turning and basic landing pattern, Ground Control Instructor assists in the approach and flare.
- Jump 3 – let student do canopy turning and partial approach (requires altimeter), Ground Control Instructor monitors and assists with the lower approach and flare.

The student assumes full responsibility for guidance according to PIM 1, Technical Recommendation 3.13: "Guidance will cease at the discretion of the Instructor".