

# SKYDIVE SNOHOMISH

## STUDENT MANUAL





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# INTRODUCTION

Welcome to skydiving! You have chosen to embark on an exciting adventure that presents many new mental and physical challenges and yields growth. The sport of skydiving has endless possibilities to offer you in fulfilling your desire to fly. This progressive sport is constantly evolving and allows for limitless achievement in all of its disciplines. Our community welcomes you, admires your commitment to explore the sport we love, and looks forward to assisting you on your journey to becoming a licensed skydiver.

Now that you have made the commitment to become a skydiver, you will need to become a member of United States Parachute Association (USPA) and purchase a few items:

- **Join USPA (the governing body for Skydiving)**

By Joining USPA you will be covered by 3<sup>rd</sup> party liability insurance and you will receive Parachutist, skydiving's monthly magazine.

- **Obtain the Skydivers information Manual (SIM)**

This book is a wealth of information that will supplement your training as a student and as a licensed jumper exploring the sport. This book contains the USPA Basic Safety Requirements (BSRs) and Federal Aviation Administration (FAA) Federal Aviation Regulations (FARs) that you agree to follow as a skydiver. It also includes recommendations for all of the major skydiving topics and disciplines. It can be purchased or downloaded at [USPA.org](http://USPA.org).

- **Purchase a Logbook**

This book is your official permanent record to keep track of license requirements, currency, and details of each skydive.

This student manual will outline your progression towards achieving an "A" license. It contains guidelines for each jump in terms of objectives and preparation. All jumps have specific objectives designed to develop the skill and knowledge required in each phase of the jump.

- Your preparation includes both reading and physical practice of the concepts and skills described.
- There are minimum requirements you must demonstrate both physically and mentally on each jump in order to advance.
- Do not get discouraged if you are required to make additional jumps at a particular level, all skydivers have some area of difficulty to overcome along the way.
- Upon completion of each jump, you will be expected to commit all new material to memory and apply it to future jumps.
- Throughout your training remember to stay positive, take it one step at a time, and realize that your progression will not be the same as others going through the course.

Skydiving requires a high degree of personal responsibility. There are no "time-outs" once exiting the airplane. For your safety, it is your responsibility to ensure you have been adequately trained and are prepared for your skydive. In order to maximize your learning and to be fully trained for your jump, you must:

- Show up on time or early for your class.

- Arrive well rested and eager to learn/practice the new material.
- Read the assigned reading material prior to training
  - on-line
  - by purchasing a student manual
  - arriving 30 minutes early to read the manual at the dz.
- Have the worksheet completed prior to class time.
- Ask questions so you fully understand the material and objectives.
- If you are scheduled for multiple jumps one day, arrive fully prepared for each scheduled jump.

**If you arrive late or un-prepared, and cause inadequate preparation time for your skydive, you will be subject to a late/no-show fee of \$25.00 or have the option of repeating your last passed skydive.**

**If you cancel or reschedule less than 24 hours prior to your appointment time, you will be charged a \$25.00 no-show fee per jump.**

**If you are unclear about a concept, skill, or piece of information found in this student manual, it is imperative that you ask an instructor for clarification and/or demonstration. It is your responsibility to ensure that you have been adequately trained and are prepared for each skydive.**

At Skydive Snohomish we are committed to providing excellent training to our students. By choosing to do your student training here, you will use state of the art equipment, be trained by an experienced and knowledgeable staff, and enjoy a comfortable atmosphere in which to learn. We look forward to assisting you through each and every step of your student training, sharing your successes, and welcoming you into the community of skydivers! It is our hope that you will develop a great sense of pride knowing that Skydive Snohomish is your home drop zone.

Blue skies!

If at any point you have questions, comments, concerns, or feedback about your training, please contact the Director of Student Operations, Jordan McElderry at [Jordanm@harveyfield.com](mailto:Jordanm@harveyfield.com)





# **SECTION 1**

## **SUPERVISED STUDENT JUMPS**

## **Static Line #1**

Jump altitude: 3,500 feet

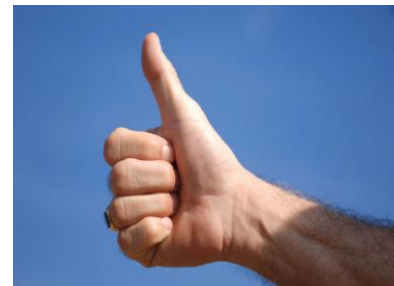
Objectives:

- 1.) Climb out of the plane
- 2.) Perform a hanging exit
- 3.) Present body to relative wind in an arched position
- 4.) Let go of the plane
- 5.) Follow the predetermined descent strategy and listen for instructions from the ground instructor

## **New Skills:**

### **Climb Out**

The instructor will open the door of the plane and give the command, “sit in the door”. To sit in the door, swing both legs out and place them on the step then scoot forward until you are sitting on the edge of the doorframe. The instructor will then give the command to “climb out and hang”. Grasp the strut and pull yourself forward until you are in a crouched standing position on the step. Slide your feet to the far right edge of the step and slide your hands as far out as you can on the strut. Once your hands are in place, gently step off the step with your right foot and then left foot. Once hanging, look back at your instructor and wait for the command to “go”. The speed of your climb out should be at a moderate pace, taking approximately 10 seconds from the time you start to climb out on the instructor’s command until you are hanging and looking over your left shoulder at the instructor. This is important as the instructor is trying to have you exit the plane and let go in an appropriate area that will allow you to easily return to the target field. The first couple of times you climb out expect that you will be a little slow, as this is a new experience for you.



GO! Hand Signal

### **Hanging Exit**

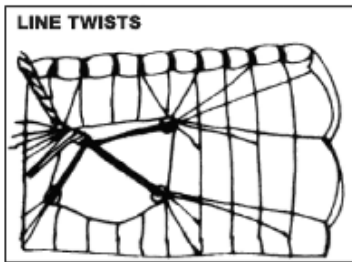
We use a hanging exit at this drop zone initially as it puts you in a good arch position before letting go. Start the hanging exit by following the instructions for the climb out. The instructor will then signal to let go by gesturing up with their thumb. Look up at the underside of the wing to give yourself a focal point, then release the strut with both hands simultaneously, arch hard, and begin counting to 5. The hanging exit also helps reduce the potential of getting entangled with the static line.

### **Canopy Check**

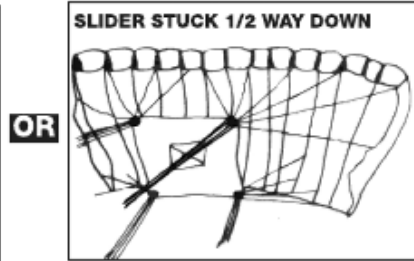
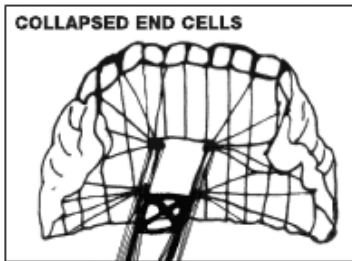
Once you have let go of the plane and counted to five, you will need to perform a canopy check. The purpose of the canopy check is to determine if you have a parachute over your head that is square, stable, and steerable or if there is some kind of problem that you will need to address. When you first look up, the canopy should be fully inflated or just finishing inflating. It should be rectangular in shape, flying forward, all the lines should be straight with even tension, the slider should be down to the top of the risers and it should be fairly quiet. If everything looks good, reach up and unstow your brakes/steering loops/toggles by putting your hands through the yellow loops and pulling them down at the same time to free them from their keepers. Next, perform a controllability check – Flare, Flare, Left turn, Right turn.

Mentally prepare yourself for potentially minor problems that will need to be fixed after the canopy is open.

## YOU MAY NEED TO FIX . . .



**BY** DETERMINE which way the lines are twisted and then vigorously KICK your legs and body in the opposite direction. Kicking out of line twists requires prompt physical response. DO NOT unstow the brakes until the line twists are unwound.  
⇒ Once the line groups are untwisted, unstow the brakes. If the slider needs to be brought down or the end cells inflated, follow the instructions for fixing collapsed end cells or slider stuck ½ way down.



**BY** SMOOTHLY performing two practice flares to full arm extension. Perform controllability check. (Two flares, right turn, left turn)  
⇒

### Emergency Procedures

1. **LOOK** – Look down and to left for the silver emergency handle
2. **REACH** – Reach and grasp the handle with both hands
3. **PULL** – Pull handle slightly downward and forward to full arm extension
4. **CLEAR CABLES** – While holding the handle with the left hand, sweep the cables clear of the container with a downward sweeping motion of the right hand
5. **ARCH** – Return to arch position
6. **CHECK** – Check over your shoulder to ensure reserve deployment

If for some reason you did not have a good grasp on the handle and managed to dislodge it from the Velcro pouch but did not pull it out enough to activate the reserve, you will have a floating emergency handle and must react very quickly. To regain your grasp on the handle, gently wrap both hands around the left vertical strap of the harness just above the chest strap. Slide your hands down until you reach the top of the handle. Grasp the top of the handle and cables and pull. Continue to follow the fourth, fifth and sixth steps above. When trying to relocate a floating emergency handle, do not try to directly grasp the handle while it is moving around. Most often this approach will tend to be futile and fatal.

There are several potential parachute malfunctions in which you will need to immediately execute your emergency procedures:

- **Bag Lock** - In this situation, the last two line stows do not come undone preventing the bag from opening and the parachute from deploying.
- **Streamer** - A streamer happens when the parachute has deployed, but does not completely inflate after your 5-second count.
- **Line Over** - A line over is when one or more lines are crossed over the top of the canopy causing it to spin.

- **Horseshoe** - A horseshoe occurs when you have a second point of connection to any part of the parachute assembly in addition to the risers. An example of a second point of connection is the pilot chute or lines caught on any part of your body. Make two attempts to free the second point of connection, but do not take more than two seconds. If you are unable to clear the horseshoe or if the parachute malfunctions after you have cleared the horseshoe, initiate your emergency procedures.

You may at some time experience having two canopies open at the same time. There are three canopy formations that are possible:

- **Biplane** - One canopy in front of the other.
  - Fly the front canopy using the toggles and making small turns. Try stay over the target area while making the mild turns. If you are unable to stay over the target area, locate a safe alternate landing area. Do not flare either canopy for landing. Perform a parachute-landing fall (PLF).
- **Side-by-Side** - Canopies are flying next to each other.
  - If the canopies are not entangled and are separated by 5ft or less, keep both canopies over your head and steer with the main canopy making very small turns. Do not flare either canopy for landing and perform a PLF.
  - If the canopies are not entangled and are separated by more than 5ft, disconnect the RSL, pull your emergency handle to release the main parachute and fly the reserve to the ground.
  - If the parachutes are entangled, do not cut away; keep them both, to have as much over your head as possible to slow you down and to prevent any further tangling. Perform small turns only when necessary. Do not flare and PLF upon contact with the ground.
- **Down Plane** - Canopies start in a side-by-side and separate downward on either side.
  - Disconnect the RSL and pull the emergency handle regardless of altitude. Fly the reserve parachute the same as you would the main parachute.

**Your decision altitude for using your emergency procedures is 2500ft above ground level.**

**DO NOT cut away your main parachute below 1000ft.**

### Under Canopy

After determining the controllability of your parachute it is necessary to execute the descent strategy as explained by your instructor. Look down at the ground and around to locate the target landing area or decide on an alternate landing area by 2000ft. Then look between your heels at the ground and ensure that you are in the predetermined "holding area" upwind of the target. Constantly monitor your altitude and location, working your way closer and closer to the pattern entry point (800ft). Listen for instructions from the ground instructor, however it is your responsibility to fly your parachute to the ground.

### Landing Pattern

- **Downwind Leg** – 800ft to 600-500ft. Flying with the wind, with the "X" 90 degrees to the side and slightly behind you, then make 90 degree turn to base leg.

- **Base Leg** – 600-500ft to 300-200ft. Flying crosswind, with the “X” 90 degrees to the side and slightly in front of you, then make 90 degree turn to final leg.
- **Final Leg** – 300-200ft until touchdown. Flying into the wind, with the “X” directly in front of you. Put your arms all the way up, feet and knees together, eyes 45 degrees out in front of you and be prepared to flare when told to do so by the “FLARE” command on the radio, the two flags dropping, or when you feel you are 3 seconds from touching down.

### **Landing Priorities**

1. **Wing Level** – Canopy is overhead, not turning or diving towards the ground
2. **Open Area Free of Obstacles** - Large open field free of obstacles
3. **Flare a Minimum of Halfway** – Pull toggles to at least half flare position
4. **PLF** - Perform a Parachute Landing Fall (PLF)

### **Parachute Landing Fall (PLF)**

A PLF is used upon landing to help prevent and/or minimize injuries. Be prepared to perform a PLF on each skydive. To PLF, start by keeping your feet and knees tightly together with the knees slightly bent just before landing. There are five points of contact when doing a PLF. The balls of your feet should be the first point of contact followed by the side of your calf, side of your thigh, butt and your back on a diagonal from your butt to the opposite shoulder.

### **Aircraft Emergency Procedures**

**Emergency Landing Procedures** – Make sure your helmet and seatbelt are on, bring your knees to your chest, interlock your fingers and put them behind your neck, remain still until landing, and quickly but orderly exit the aircraft. If you are exiting a compromised aircraft, immediately get at least 100ft away from the plane.

**Emergency During Flight** – The pilot is in command of the aircraft and will communicate to the instructor to exit or stay in the aircraft. The instructor will then give you one of four commands:

- **Emergency Landing** – Everyone is landing with the plane
- **Exit on Reserve** - Dive out and deploy the reserve parachute. Do this by firmly grasping the emergency handle with your left hand and extending the right hand above your head as you dive, count ARCH thousand, PULL thousand, clear cables and arch.
- **Exit on Main** - Dive out and deploy the main parachute. If you are on a static line, dive out with both arms extended over your head. The static line will automatically deploy the parachute for you. If you are a freefall student, grasp the main ripcord with your right hand prior to leaving the plane and extend your left hand over your head as you dive out. Count ARCH thousand, PULL thousand, clear cables and arch.

- **Routine Exit** – Perform a routine exit if instructed to do so by your instructor. While on solo status or as a licensed jumper, you will take instructions from the pilot about whether to stay or leave and it will be up to you to decide which parachute to use for that emergency situation.

**After an Emergency Exit** – Look for the instructor’s parachute, if possible, and follow them to a clear, open landing area. Select any clear area for landing if you cannot locate the instructor’s canopy.

### **Parachute Open in Plane**

If a parachute opens in the plane you will yell and get everyone’s attention and then do one of three things:

- **CONTAIN** – Do everything you can to contain the material, shut the door, and land with the plane.
- **DIVE** – If the parachute is attached to you and goes out the door, dive out of the plane.
- **THROW** – If the parachute is attached to someone else, it cannot be contained, and any part of it is outside of the aircraft, immediately throw that person out of the airplane door.

## **Static Line #2**

Jump altitude: 3,500 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 10-14 on Static Line #1.
- 2.) Read pages 15 and 16 on Relative Wind Concept, Dive Flows and hand signals and altimeter use.
- 3.) Complete worksheet for Static Line #2 on page 125 prior to class time.
- 4.) Practice arch with 5-second count (10 times standing and 10 times on a creeper).

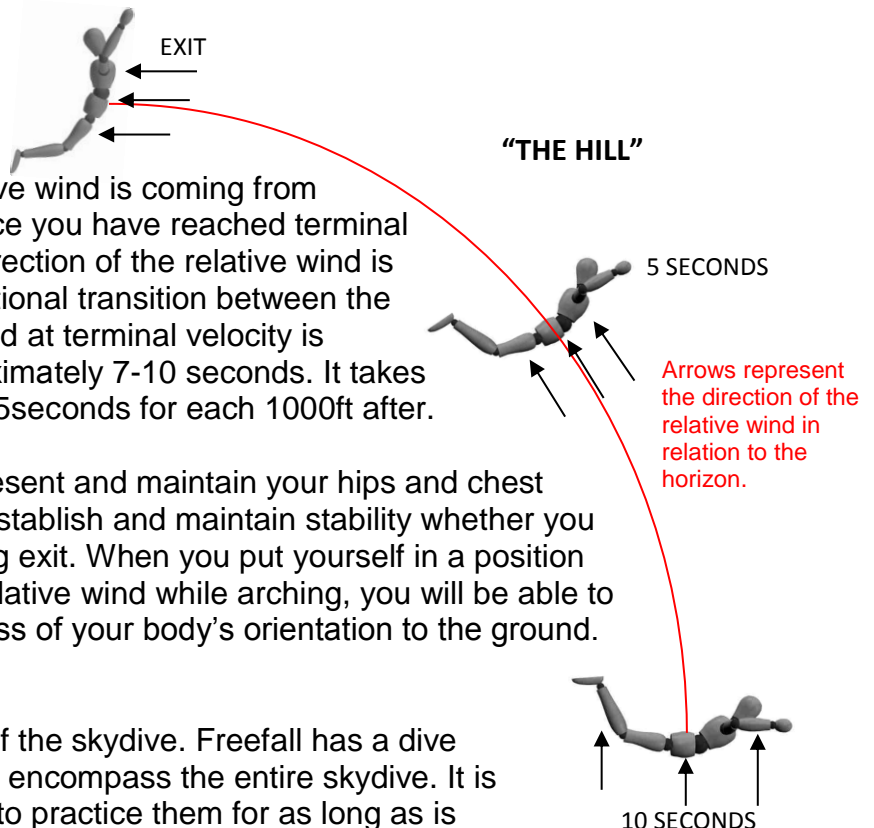
Objectives:

- 1.) Recall equipment emergency procedures, protecting handles, and canopy heading awareness/holding area from first jump class.
- 2.) Understand relative wind concepts: the hill, first 10 seconds of freefall, stability regardless of your body's orientation to the relative wind, dive flows, altimeter use and hand signals.
- 3.) Climb out and hang within 10 seconds from the time the instructor gives the command .
- 4.) Simultaneous release of hands and presenting chest and hips to the relative wind while arching.
- 5.) Follow the predetermined descent strategy and listen for instructions from the ground instructor.
- 6.) Accurately describe exit, jump and canopy flight to the instructor after the jump is finished.

### **New Skills:**

#### **Relative Wind Concept**

The relative wind is the airflow coming from the direction you are going. Upon your release from the airplane the relative wind is coming from the direction that the plane is flying. Once you have reached terminal velocity (constant freefall speed), the direction of the relative wind is now coming from the ground. The directional transition between the relative wind on exit and the relative wind at terminal velocity is referred to as "the hill" and takes approximately 7-10 seconds. It takes 10 seconds to fall the first 1000ft and 5.5seconds for each 1000ft after.



For now, your goal on each exit is to present and maintain your hips and chest directly into the relative wind. This will establish and maintain stability whether you are performing a hanging, step, or diving exit. When you put yourself in a position presenting your hips and chest to the relative wind while arching, you will be able to establish and maintain stability regardless of your body's orientation to the ground.

#### **Dive Flows**

Dive flows are the predetermined plan of the skydive. Freefall has a dive flow and canopy flight has a dive flow to encompass the entire skydive. It is important to know these dive flows and to practice them for as long as is necessary to develop muscle memory for each new skill presented. As you progress onto later jumps, the dive flows become more complex. By repetitively practicing them from start to finish you will deposit them into muscle and mental memory, to ensuring you remember what to do next. A dive flow is the ideal skydive and should be followed as closely as possible, however, skydiving is a sport that requires fluidity and things may change. The dive flows for each skydive are broken down step by step in the appendices under **Dive**

**Flows.** Study these and know them prior to coming to class, to optimize your time with the instructor.

### Hand Signals

Hand signals are used in skydiving because verbal commands are difficult due to the constant noise we are surrounded by. While you are hanging on the strut you may see your instructor giving you hand signals:

- **HIPS FORWARD/ARCH (fig. A)** - The instructor will give this signal if your body is not arched enough; fix this by pushing your hips forward into the relative wind.
- **EXTEND LEGS SIX INCHES AND HOLD (fig. B)** - The instructor will give this signal if your legs are retracted too far and not in the relative wind. Fix this by extending your legs six inches and holding. If six inches is not enough, the instructor will give you the signal again; keep extending your legs in six inch increments until no further hand signals are given.
- **HEAD UP/GO! (fig. C)** - The instructor will give this signal when your body position is good; raise your head, look at the wing of the plane and let go.



Fig. A

HIPS FORWARD/ARCH



Fig. B

EXTEND LEGS SIX INCHES AND HOLD



Fig. C

HEAD UP/GO!

These are only three common hand signals, however, it is good to know all hand signals used in skydiving and those can be found under **Hand Signals** in the appendices.

### Altimeter Use

In skydiving, the altimeter is specifically used for altitude above the surface of where you intend to land. To use an altimeter, turn the dial on the side of the altimeter so that the needle is on the zero. Do this while you are on the ground so the altimeter will read accurately during your jump. Each number on the altimeter represents 1000ft. As the plane climbs, you will see the needle turn clockwise indicating an increase in altitude. You may check the altimeter you are using with the altimeter located on the instrument panel in front of the pilot. Ask the pilot to show you which gauge it is. Always check your altitude prior to exiting. During your skydive, the needle will go down. When it reaches zero, you should be on the ground.

There are many styles of altimeters. Make sure you are familiar with the proper way to wear and read the one you are using. Treat it very carefully and make sure you turn it in immediately to manifest when you return to the drop zone following your skydive. If you break or lose a borrowed altimeter during any of your skydives, you will have to pay a replacement fee of \$150.00. It only takes banging it or dropping it once to break it.





### **Static Line #3 (PRCP #1)**

Jump altitude: 3,500 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 15-16 on Static Line #2.
- 2.) Read pages 17-20 on Practice Ripcord Pulls (PRCP's), protecting handles, upwind/downwind and landing pattern.
- 3.) Complete worksheet for PRCP #1 on page 127 prior to class time.
- 4.) Practice arch with 5-second count and PRCP (minimum 10 times standing and 10 times while arching on a creeper).

Objectives:

- 1.) Understand gear check demonstration given by instructor.
- 2.) Upwind/downwind and protection of handles comprehension.
- 3.) Understand proper landing pattern and the final approach in relation to the wind.
- 4.) Climb out and hang within 10 seconds.
- 5.) Pull ripcord on time (within 5 seconds) while keeping chest and hips facing the relative wind while maintaining an arch.
- 6.) Follow the predetermined descent strategy and listen for instructions from the ground instructor.

### **New Skills:**

#### **Practice Ripcord Pull (PRCP)**

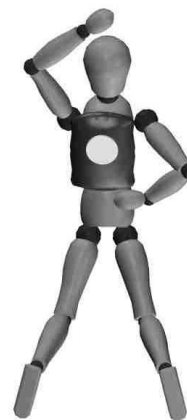
To perform a PRCP, begin by presenting your arched body to the relative wind as you let go of the plane. As you do this, simultaneously bring your left hand above your head and reach your right hand to the lower right corner of the container, this is a symmetrical body position to prevent instability. Locate the ripcord handle with your right hand and pull it as you return both hands back to their original position. If you have difficulty finding the handle, continue arching while reaching back to locate your right leg strap with your right hand and slide your hand up under the flaps of the main container to locate the handle. After you pull, hold onto the handle and continue to arch. Pull the handle even though the canopy will be inflating. After checking the canopy, stow the ripcord down the front of your shirt or jumpsuit so your hands are free to fly the parachute.

#### **New Count**

- ARCH thousand
- **Reach** thousand
- **Pull** thousand
- Four thousand
- Five thousand
- Check Canopy



**PRCP Side View**



**PRCP Top View**

## Protecting Handles

In previous jumps you have been instructed to protect your emergency handle to prevent premature reserve deployment. Now you have another handle to monitor; your practice ripcord. Although nothing will deploy if pulled prematurely, protect this handle as though it is your main deployment device as it will be in a few more jumps. Protecting your handles should be your main concern when: entering the aircraft, moving in the aircraft, or anyone else is moving near you in the aircraft. You should also check your handles prior to the door opening to ensure their proper placement.

## Upwind/Downwind

The world is divided into two sides, the upwind side and the downwind side. The center of this division is the “X”, and the line that divides the two sides runs perpendicular to the wind line.

- **Upwind** – The upwind side of the target is the side where the wind is coming from. It is where you want to exit the plane, open your parachute, and where your holding area is. The upwind side is the preferable side because the wind can be used to your advantage to push you back to the landing area.
- **Downwind** – The downwind side of the target is the side where the wind begins pushing you away from the target. The only time you should be on the downwind side of the target is for your landing pattern. The downwind side is less desirable than the upwind side because you will fight the wind to get back to the target.

## Landing Pattern

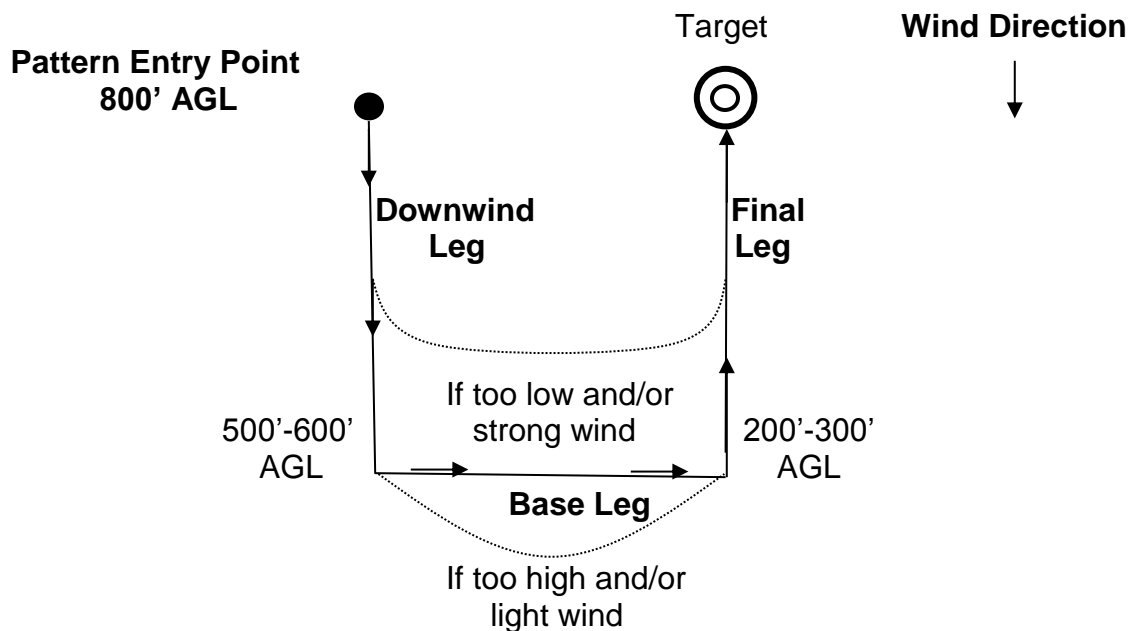
Before you go to the plane, plan out your anticipated descent strategy with your instructor including your Pattern Entry Point, Downwind Leg, Base Leg, and Final Leg. Be aware that it is likely you will adjust your plan for the actual wind conditions under canopy. Adjusting a good plan is usually easier than coming up with a whole new plan. After performing your canopy check, it is time to locate the target (“X”) and ensure you are on the upwind side of the target. This should be the same side of the target that you exited the plane from, but fly towards the target to verify you are in fact flying with the wind (running) and will be able to make it to the planned landing area in time to fly a normal landing pattern. **By 1500ft** you should be close enough to landing area so you can clearly read the wind indicator (Windsock/Flag) on the ground. Map out your landing pattern based on the wind direction and determine the location of your pattern entry point.

- **Pattern Entry Point** – 1000ft-800ft. A point perpendicular to the wind line with the “X” at 90 degrees to the side, indicating the start of the downwind leg.
- **Downwind Leg** – 800ft to 600-500ft. Flying with the wind, with the “X” 90 degrees to the side and slightly behind you then make 90 degree turn to base leg.
- **Base Leg** – 600-500ft to 300-200ft. Flying crosswind, with the “X” 90 degrees to the side and slightly in front of you then make 90 degree turn to final leg.
- **Final Leg** – 300-200ft until touchdown. Flying into the wind, with the “X” directly in front of you. Put your arms all the way up, feet and knees together, eyes 45 degrees out in front of you and be prepared to flare when told to do so by the “FLARE”

command on the radio, the two flags dropping, or when you feel you are 3 seconds from touching down.

**No-wind or light wind scenario** (See diagram below)

Fly to an area that is slightly upwind of your chosen pattern entry point so you are in position to start your landing pattern at the **correct altitude**. To begin your landing pattern on time, plan ahead so that you are crossing over the top of your pattern entry point at 800ft and flying in the same direction the wind is blowing. Upon crossing over the pattern entry point you are now on the **Downwind Leg** of the landing pattern. At approximately 500-600ft, make a 90-degree turn in the direction of the target to fly the **Base Leg** of the landing pattern. The base leg is where you do your major adjustments for accuracy. At approximately 200-300ft, make a turn onto your **Final Leg** of the landing pattern. On this leg you should be flying directly into the wind. Make smooth turns to: line yourself up with the wind and the target; for accuracy, and to avoid obstacles as traffic and altitude permit. Above 50ft, make smooth but effective heading corrections to keep your parachute flying into the wind. Heading adjustments should stop at 50ft to shift focus from accuracy to **landing priorities: Have the canopy flying level to the ground in a straight line, flaring to at least half brakes and performing a PLF on landing.**



**Downwind or Crosswind landings:**

Even with the best intentions, you may find yourself in a situation requiring you to land downwind or crosswind. If it is a light wind day or bad weather is approaching, the winds may shift after you have already entered your landing pattern. If you find yourself in this situation, **DO NOT PANIC OR MAKE ANY DRASTIC TURNS CLOSE TO THE GROUND.** To land downwind or crosswind, flare at the same height above the ground as you would if you landed into the wind. Do not try to run out the landing as you will be going too fast and may risk serious injury. On a crosswind landing you may have to flare more on one side vs. the other to

keep the canopy flying level to the ground. Stay calm, fly your parachute all the way to the ground and perform a PLF upon contact with the ground.

### **Ripcord Procedures**

After pulling your ripcord, check the canopy. If the canopy does not need immediate attention, stow the handle down the front of the jumpsuit or in a secure place. After your jump, present your ripcord to your instructor in the student training area. If you lose a ripcord it will be documented on your progression card. The first ripcord that is lost is a warning and there will be no charge, but each additional lost ripcord will cost \$20.00. If you lose an additional ripcord, go to inside manifest and inform them of your lost ripcord. Once you pay, present your receipt to your instructor to finish your debrief.

## **Static Line #4 (PRCP #2)**

Jump altitude: 3,500 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 13-14 on Aircraft Emergency Procedures and pages 17-20 on Static Line #3 (PRCP #1).
- 2.) Read pages 21-23 on Gear Checks for the back Side of the Rig, Federal Aviation Regulation (FAR) part 91 regarding Seatbelt Use, Line of Flight, Standby Radio and Recovery from Low Turns.
- 3.) Complete worksheet for PRCP #2 on page 129 prior to class time.
- 4.) Practice PRCP a minimum of 10 times standing and 10 times laying on creeper with arch.

Objectives:

- 1.) Explain the back side of the gear check and recovery low turns.
- 2.) Recite FAR's regarding seatbelt use.
- 3.) Review Aircraft Emergency Procedures. **ER – 6**
- 4.) Climb out and hang within 10 seconds.
- 5.) Keep chest and hips facing relative wind.
- 6.) Perform a PRCP while counting and maintaining an arch.
- 7.) Fly proper landing pattern and land on standby radio status.
- 8.) Know correct response to aircraft emergency procedures.

## **New Skills:**

### **Gear Checks (back)**

The most important rule of gear checks is to perform the check in the same order every time so that nothing is missed. The following items should be inspected prior to every jump:

**Cypres 2**– Make sure it is turned on. If it is not already on, turn it on by pressing the yellow button once and releasing. When the red light comes on, quickly press and release the yellow button again. Repeat this step two more times. After the fourth push numbers will appear and begin to count backwards from 10. The final reading should be a single 0 with the arrow pointing down. If any other numbers or letters appear instead of a single 0, tell an instructor who will take the rig offline until a rigger can inspect the Cypres 2 unit.

**Rigger's Seal** – Check to make sure that the red thread is fastened above the flatter end of the reserve pin and below the closing loop. The red thread should have some slack so that it does not break too easily, but not so much that you can slip it off the end of the pin. The thread should pass through the gray seal of the rigger. The seal must have an identifiable mark on it that lets you know which rigger packed the reserve.



**Reserve Closing Loop** – Check that the loop does not have any fraying and that the reserve pin is the only item passing through it.

**Reserve Pin** – Check to ensure that the pin is 3/4 of the way through the closing loop.

**Reserve Ripcord Cable** – Make sure that the metal cable moves freely through the hard housing. If it snags, have it inspected before jumping the rig.

**Reserve Static Line (RSL)** – Make sure that the small ring on the end of the RSL is around the reserve ripcord and located between the reserve ripcord hard housing and the small ring attached to the middle of the reserve top flap. The RSL should be routed over the top of the cable to the AAD control unit.

**Main Ripcord Cable** – Make sure the ripcord cable is routed properly from the lower right of the container through the soft housing and then through the closing loop. Check for any nicks or gouges in the cable especially the portion that passes through the closing loop.

**Main Closing Loop** – Check to make sure the ripcord cable passes through the loop. Also check the loop for any fraying. If there is mild fraying, have an instructor check it to make sure it is okay. In case of severe fraying, the rig should not be jumped until the closing loop is replaced. A main closing loop with damage greater than 10 percent warrants replacement.

**Static Line** – Make sure that a static line is hooked up to the rig. The static line should have the cable portion routed through the closing loop with the excess tucked into the soft housing on the lower right of the container. The static line should have a few inches folded over into a loop on the left side of the container secured by a rubber band wrapped around it three times. If the static line is not secured in this manner, the static line cable can be pulled prematurely when climbing out or exiting the plane.

### **Seatbelt Use – AS – 1 (License Requirement)**

The primary Federal Aviation Regulation (FAR) that covers seatbelt use is FAR Part 91 section 91.107 (SIM pg. 195). According to this regulation:

- All passengers must be briefed on how to fasten and unfasten the seatbelt they will be using.
- Seatbelts are required to be fastened while the plane is taxiing out or in and during take-off and landing.

Here at Skydive Snohomish we leave our seatbelts fastened until the aircraft reaches 1000ft. This is not a Federal Aviation Regulation and varies from drop zone to drop zone.

### **Line of Flight**

The Line of flight is the path that the plane takes over the ground. It is important to determine the planes line of flight to ensure that you are going to climb out and exit the plane at the correct points.

To identify the line of flight:

- Sit in the door
- look forward through the prop and down the side of the airplane and decide if the plane is flying straight over the ground or if the planes direction is slightly skewed in relation to the path over the ground.

### **Standby Radio**

Now that you have become accustomed to flying your canopy under radio instructions, it is time to work toward no longer needing a ground instructor to assist you in flying and landing your canopy. We refer to this process as putting you on “standby” radio. Once you have exited the plane and your canopy has inflated, the ground instructor will come on the radio and give one or two commands to make sure the radio works. The ground instructor will then stop giving instructions unless corrections are necessary. The first two jumps on standby usually require some assistance from the ground instructor, but by the third jump on standby you should be able to fly and land the canopy without any assistance from the ground instructor. After you are no longer on radio command under canopy, you will still carry a radio until you reach solo status.

### **Recovery from Low Turns**

Low turns under canopy are one of the biggest causes of serious injury and death in skydiving. A low turn can be caused by premeditation, an error in judgment, or inexperience. To avoid low turns, fly a planned and predictable pattern to a large open area away from other canopies and obstacles. Make only minor adjustments below 200ft. If you see you have started a turn too low to the ground for a safe landing you should:

- Use your toggles to neutralize the turn and get the canopy overhead.
- Stop the dive of the canopy.
- Flare the canopy and prepare for a hard landing (PLF).
- In case of premature contact with the ground, no matter how hard, keep flying the canopy to prevent further injury.

### **Static Line #5 (PRCP #3)**

Jump altitude: 3,500 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 21-23 on Static Line #4 (PRCP #2).
- 2.) Read pages 24-26 on Gear Checks for the Front Side of the Rig, Step Exit Footwork, Opening Point, and Local Runway Information.
- 3.) Complete worksheet for PRCP #3 on page 131 prior to class time.
- 4.) Practice PRCP a minimum of 10 times standing and 10 times laying on creeper with arch.

Objectives:

- 1.) Explain the front side of a gear check.
- 2.) Know local runway information and the value of that information.
- 3.) Know how and when to initiate emergency procedures.
- 4.) Accurately draw out landing pattern for current winds.
- 5.) Climb out and hang within 10 seconds with step exit foot work.
- 6.) Keep chest and hips into the relative wind.
- 7.) Perform a PRCP while counting and maintaining an arch.
- 8.) Determine with the instructor the opening point, descent strategy and anticipated landing pattern.
- 9.) Fly proper landing pattern and land on standby radio.

**New Skills:**

#### **Gear Checks (front)**

The most important rule of gear checks is to perform the check in the same order every time so that nothing is missed. The following items should be inspected prior to every jump:

**Canopy Release System** – Check both three-ring systems to make sure the small ring only passes through the medium ring and that the medium ring only passes through the large ring. Make sure nothing else is routed through or wrapped around the rings that could prevent them from releasing the main. To gear check the cutaway cable, look for the cable start on the upper left side of the rig passing through the white locking loop holding the left 3-ring system in place, through the emergency handle, back around to the right side of the rig, through the loop holding the right 3-ring system in place, and ends on the upper right portion of the rig. Each end of the cable should have approximately 5 inches extending past the 3-ring loops. Finally, check the cable to make sure there are no nicks or gouges that could potentially catch on the 3-ring loops and prevent the release of the main.

**Reserve Static Line (RSL)** – The RSL should be hooked up to the small silver ring on the right riser of the main parachute. Make sure that the RSL is routed over the right shoulder and that the reserve cable passes through the small silver loop at the end of the RSL lanyard. Also check that the small silver coil, that the red tab is attached to, is not bent in any way that could cause it to catch on something and disconnect the RSL.

**Stitching/Material** – Check over the entire rig to make sure that all stitching is secure and there is no fraying of the stitching or holes in any of the material of the container. Check the harness webbing for any fraying and check the yellow indicator thread on the outer edges for any breaks that would indicate a compromise of the structural integrity of the webbing.



**Leg Straps** – Check that the ends of the leg straps are folded over and securely sewn in place. Also make sure that the straps are properly routed through the metal hardware and that the friction adapter prevents the straps from coming loose. Unhook the clips from the leg straps and re-connect them ensuring that the clips easily snap back into place. The clips should not stick or remain in an open position.

**Chest Strap** – Make sure that the chest strap is securely fastened to the vertical straps of the harness. Check for two extra rubber bands on the right hand side of the chest strap to fasten the radio if you are still on full talk downs or stand-by radio status.

**Emergency Handle** – Check to make sure that the handle is properly stowed in the left vertical harness strap and that the Velcro is functional.

**Reserve Ripcord Cable** – Check to make sure there is a silver ball attached to the end of the silver cable and that the cable passes through the emergency handle.

**Reserve Data Card** – Each rig has a reserve data card located on the back of the left main lift web. Each repack and any other maintenance performed on the reserve parachute are documented on this card by a certified FAA rigger. The reserve must be inspected and repacked every 180 days. Ask your instructor to show you the Reserve Data Card.



### **Step Exit Footwork w/ Hanging Exit**

Start by standing on the step when given the climb out and hang command by the instructor. Once you are standing on the step, cross the left foot over the right foot so that you are standing on the outer edge of the step on the left foot. Finish sliding your hands out as far as you can on the strut and then hang. Remember to step off with your left foot when you hang.

### **Opening Point**

The point at which you deploy the parachute and are no longer in freefall is called the opening point. Prior to jumping, you will need to determine where you want to activate deployment in relation to the target area based on the current wind conditions. Your opening point should always be on the upwind side of the target. The distance away from the target will vary with the strength of the wind. The stronger the wind, the further upwind you want to open.

## Local Runway Information – AS - 2

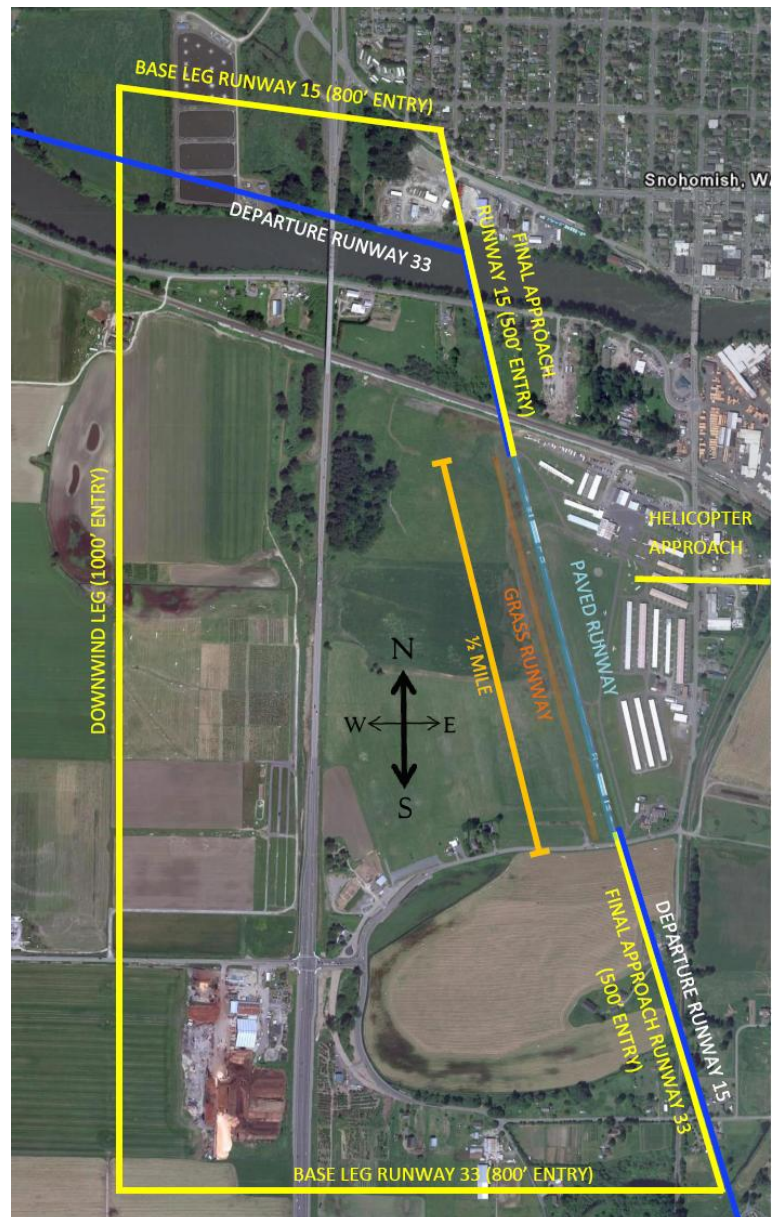
Knowing the headings and lengths of the runway provides reference for direction and judging distance - either from the airplane or under canopy. Being aware of approach and departure patterns for aircraft at the airport informs you of areas where to expect air traffic under canopy and at what altitudes.

- There are two runways at Harvey Field.
  - One is a paved runway that runs generally north and south on the west side of the airport.
  - The other is a grass runway that runs parallel to and just west of the paved runway.
- The runway when landing or departing to the north is “runway 33”, standing for its compass heading of 330 degrees.
- When taking off or landing to the south it is called “runway 15”, referring to its compass heading of 150 degrees.
- The length of each runway is 2650ft or approximately a half-mile.

The traffic pattern for airplanes is similar to the landing pattern you fly under canopy. Airplanes set up in a right hand pattern for landing on runway 15 and a left hand pattern for 33. Their downwind leg is flown parallel to the runway approximately ¼ mile west of highway 9. Airplanes enter the traffic pattern on the downwind leg at an altitude of 1000ft AGL (Above Ground Level).

The plane will then turn on a base leg at approximately 800ft and onto final at approximately 500ft. Watch out for beginner pilots, as they will take the downwind leg out for some distance. If you are jumping at or near the airport, you must stay out of the landing pattern. Also, when landing at the airport, you must cross the runway above 1000ft to ensure that you are not an obstacle disrupting the flow of traffic in the air traffic patterns. Remember that Harvey Field is an airport first and skydiving is only one of the aviation activities in operation here. If for any reason you land on the West side of the runway do not cross the runway. Walk around the end of the runway and return to the dropzone.

The take-off pattern is the same as the landing pattern except that the planes are climbing in altitude. Regardless of taking off or landing, all planes climb and descend to the west.



## **5-Second Delay**

Jump altitude: 4,000 Feet

Reading Assignment/Skills practice:

- 1.) Review page 12 on Horseshoe Malfunction & 24-26 on Static Line #5 (PRCP #3).
- 2.) Read pages 27-30 on 5-Second Delay, Altitude Awareness, Three Rules of Pulling, Total Malfunction, Missing Deployment Handle, Hard Pull, Pilot Chute Hesitation, Pilot Chute Hesitation, Pilot Chute in Tow, Injured Arm and Cypres 2 AAD.
- 3.) Complete worksheet for 5 Second Delay on page 133 prior to class time.
- 4.) Join USPA (uspa.org or speak with manifest about USPA membership).
- 5.) Sign up for packing class.
- 6.) Practice pulling a minimum of 10 times standing and 10 times laying on a creeper arching with new count.

Objectives:

- 1.) Understand and be able to perform a complete gear check. **EK - 1**
- 2.) Demonstrate knowledge, purpose, and use of AAD. **EK - 4**
- 3.) Good climb out using step exit footing.
- 4.) Follow new count and pull at 5 seconds.
- 5.) Maintain arch and presentation to the relative wind on exit.
- 6.) Know the three rules of pulling.
- 7.) Understand pilot chute hesitation, pilot chute in tow, hard pull and know correct response to each.
- 8.) Correctly explain a total malfunction and demonstrate proper response.
- 9.) Determine with the instructor the opening point descent strategy and anticipated landing pattern.
- 10.) Fly proper landing pattern and land without radio assistance.

<b><u>New Count</u></b>	
•	ARCH thousand
•	Two thousand
•	Three thousand
•	<b>Reach</b> thousand
•	<b>Pull</b> thousand
•	Check thousand
•	Two thousand
•	Three thousand
•	Four thousand
•	Five thousand
•	Check Canopy

## **New Skills:**

### **5-Second Delay** **EF - 5**

To perform a 5 second delay, look up and let go of the plane on the instructors command. Arch hard for three seconds, then simultaneously bring your left hand above the top of your head while you grab your handle with the right hand. As you pull the ripcord, simultaneously return both arms to your initial arch position. Remember to arch hard while pulling to maintain stability. If you go unstable or lose your count, pull immediately. You do not have the luxury of wasting time and altitude trying to get stable. It is **YOUR RESPONSIBILITY** to deploy your main parachute. You no longer have a static line deploying for you.

Make sure you hold onto the ripcord until the canopy is inflated and you are able to stow it securely. If you let go of the handle and it is lost you will have to pay an additional \$20.00 for replacement.

## **Altitude Awareness**

Altitude awareness is a skydiver's most important task until the parachute opens. On timed jumps, your count is your altitude. If you lose your count, pull your ripcord.

### **3 Rules of Pulling**

Pulling on time and stable is your goal for each jump. There are rules to pulling. In order of importance, they are:

1. **PULL** – Pull something!
2. **PULL ON TIME** – Pull on time regardless of stability.
3. **PULL ON TIME AND STABLE** – Pulling on time and stable offers you the best opportunity to:
  - Provide the parachute the best platform for deployment
  - Ensure enough time/altitude to properly react to any deployment issues
  - Move forward in the progression

### **Total Malfunction**

A total malfunction occurs when you attempt to activate deployment and the container does not open. Quickly check over your shoulder, to make sure you are not experiencing pilot chute hesitation. If your parachute does not deploy, immediately initiate emergency procedures.

### **Missing Deployment Handle**

If you are unable locate your main deployment handle or it is missing, try to locate the handle a second time. If you are not successful, initiate your emergency procedures. This is also considered a total malfunction.

### **Hard Pull**

A hard pull occurs when it is very difficult or impossible to pull the ripcord. A hard pull may be caused by a misrouted ripcord, a gouge in the ripcord cable that catches on the closing loop, or foreign debris located in the housing for the ripcord. To prevent a hard pull, make sure you complete a thorough gear check before putting on the gear and receive a pin-check in the plane prior to exit. If you do experience a hard pull, try pulling a second time. If you are not successful, initiate emergency procedures. This is also considered a total malfunction.

### **Pilot Chute Hesitation**

Pilot chute hesitation occurs when the pilot chute gets stuck in the jumpers' burble immediately after pulling. This is caused by a very stable body position at pull time. The easiest way to prevent and/or fix pilot chute hesitation is to look over one shoulder after pulling. This will allow airflow into the burble to help the pilot chute create sufficient drag to deploy the main parachute. If the problem is not resolved by doing this, initiate emergency procedures.

### **Pilot Chute in Tow**

A pilot chute in tow occurs when the pilot chute has been deployed, however the container remains closed and prevents the parachute from deploying. Looking over one shoulder, will not fix a pilot chute in tow, however is necessary to identify the malfunction. If you experience a pilot chute in tow, initiate emergency procedures.

## Injured Arm

If for any reason you injure your arm during an exit or skydive, it is important to remain calm and proactive until you land. Here are some possible procedures for an injured arm scenario:

### **Left Arm Injured:**

- Deploy main parachute immediately
- If possible leave brakes stowed
- Fly the parachute using rear risers
- Land the parachute with brakes stowed
  - Protect injured arm on landing
  - PLF

### **Right Arm Injured:**

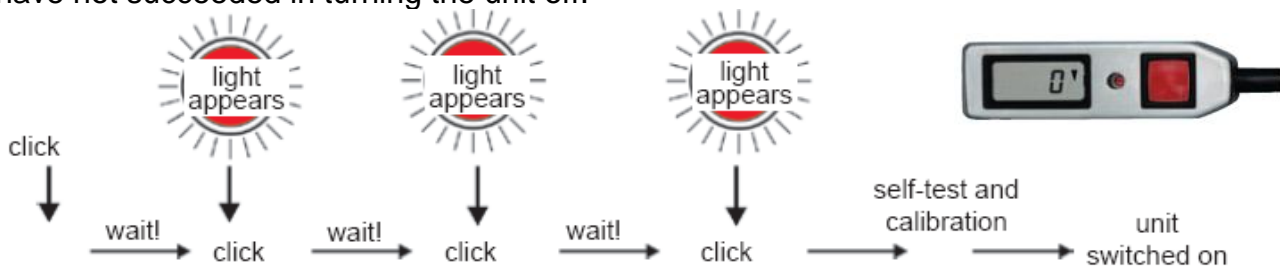
- Deploy reserve parachute immediately
- If possible leave brakes stowed
- Fly the parachute using rear risers
- Land the parachute with brakes stowed
  - Protect injured arm on landing
  - PLF

Ideally, you will leave the brakes stowed in this situation and will avoid steering with both toggles in your uninjured hand. If you do unstow the brakes, hold on to the toggles and do not release them. You may not be able to grasp both toggles again. Practice your flare as best you can but conserve your energy for your final flare.

## Cypres 2 AAD EK - 4

The basic function of the student Cypres 2 is to open the reserve parachute if you are going too fast through approximately 1000ft above ground level (AGL). The setting for an expert Cypres 2 is 750ft AGL and a tandem Cypres 2 is 2000ft AGL. The Cypres 2 is a back-up device only. **Remember that it is possible to activate the Cypres 2 unit under a fully functioning parachute by spiraling below 1200ft.**

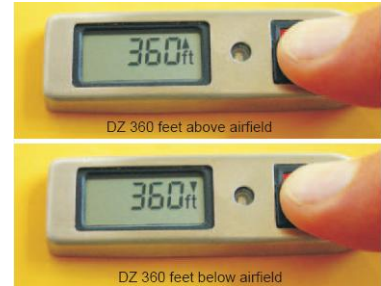
To turn on the Cypres 2, quickly press the yellow button and release. When the red light comes on, very quickly press the yellow button again, after the fourth time of pressing the yellow button the unit will countdown from 10 to 0 with an arrow pointing down. The Cypres 2 should remain on and operational for up to 14 hours. To turn off the Cypres, you will repeat the same steps you used to turn it on. After the fourth time of pressing the yellow button the zero and carat (small triangle) on the display will disappear. If anything shows in the display, you have not succeeded in turning the unit off.



For future reference, it is very important to follow the manufacturer guidelines regarding maintenance of your Cypres unit. The life span of the Cypres is 12 years if it has been properly maintained. Every 4 years the unit should be sent in for inspection. A certified rigger must install the Cypres. It is your responsibility when you have your own gear to send the unit to the manufacturer for inspection.

The Cypres 2 has several features that you should be aware of:

The first is that it is capable of a DZ offset. If you are landing at an elevation different than the airfield you will want to adjust your Cypres 2 unit accordingly. During the startup sequence rather than releasing the yellow button, hold it through the countdown. You will then see the unit counting in 30 foot increments with the arrow alternating up and down. Once the desired offset is obtained, release the button. This offset is only effective for one jump and all the steps must be repeated before any subsequent jumps. At no point should you ever offset your AAD when at Skydive Snohomish.



Second is that the unit is waterproof at 5 feet for a 24 hour period. Whether being intentional or not, a water landing should not affect your Cypres 2 unit. Upon exiting the water you should turn the unit off and leave it off until a rigger can change the filter and dry all components before using again.



CONTROL UNIT

AAD units consist of 3 main parts, the control unit, processing unit, and the release unit (cutter).

- The control unit is accessible by the user. It is used to power the AAD on or off and to scroll through various functions.
- The processing unit is packed with the reserve. It measures barometric pressure to determine a jumpers altitude and fall rate and if needed triggers the release unit.
- The release unit (cutter) is used to initiate the reserve container opening sequence by physically cutting the reserve closing loop.



PROCESSING UNIT

AAD's are to be used as back up devices for a jumper's emergency procedures and should never be relied on to function properly or at all.



CUTTER

When you get your own gear, whether you own a Cypres 2 or other AAD, you should read the User's Guide and understand all the functions of the equipment you are using. For the Cypres 2 User's Guide visit <http://www.cypres-usa.com/>

## 10-Second Delay #1

Jump altitude: 4,500 Feet

Reading Assignment/Skills Practice:

- 1.) Review page 15 on Relative Wind Concept and pages 27-30 on 5-Second Delay.
- 2.) Read pages 31-35 on Winds Aloft Chart, Exit Point, Getting Ready in Plane (In-plane Preparation), Spotting, Go-Around, Climb Out, Heading Awareness, 10-Second Delay, Box Position, basics to Correcting Stability Problems in Free-fall and Rear Riser Turns.
- 3.) Complete worksheet for 10 Second Delay #1 on page 135 prior to class time.
- 4.) Practice arch and count with transition into "Box" position 5 times on a creeper.

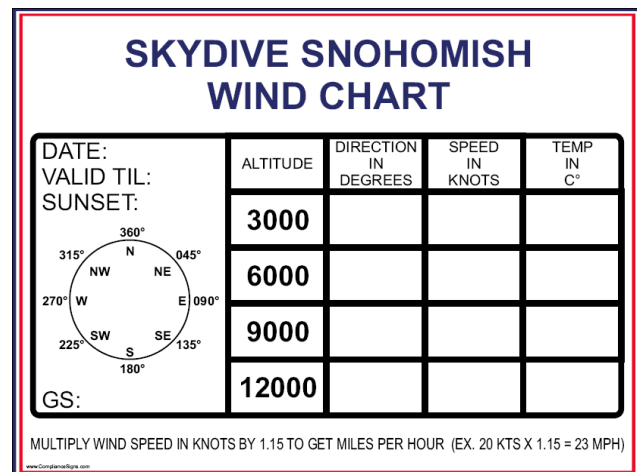
Objectives:

- 1.) Perform proper gear check without help (but under instructor supervision) and demonstrate knowledge of purpose and use of AAD.
- 2.) Understand and properly use the winds aloft chart to determine climb out, exit, and opening points on the skydive.
- 3.) Be ready – seatbelt stowed, helmet on with strap stowed, wearing goggles and altimeter, on knees and looking for aircraft nearby 1000ft prior to exit altitude.
- 4.) Observe the instructor's interaction and communication with the pilot and the instructor's movements regarding spotting.
- 5.) Perform climb out for hanging exit using step exit footwork.
- 6.) Perform a stable exit on heading with freefall awareness and a smooth and symmetrical transition to the "box" pulling on time (at 10 seconds) while stable.
- 7.) Determine with the instructor the exit/opening point, descent strategy and anticipated landing pattern.
- 8.) Perform rear riser turns and flares with brakes stowed and unstowed above 2000ft.
- 9.) Fly proper landing pattern with PLF on landing.

## **New Skills:**

### Winds Aloft Chart

A winds aloft chart shows forecasted wind direction, speed, and temperature at 3000ft, 6000ft, 9000ft, and 12000ft AGL. It is a valuable source to help you determine the ideal spot to exit the airplane that easily allows you to reach the landing target. At Skydive Snohomish, the chart is updated in the morning and again in the afternoon, or as conditions change. Use this chart to estimate the distance and direction of your drift in freefall to determine your exit and opening points. The chart will also allow you to better plan your landing pattern.



To use the wind chart to determine the point you wish to open your parachute, read the information at 3000ft. This information helps you figure out which side of the target is the upwind side. The speed helps you determine how far upwind you should open. The next variable to consider is your exit point. Your exit point is the point over the ground where you leave the airplane. In order to estimate where this point should be, you must consider the drift you will experience in freefall in relation to your selected opening point.

## Exit Point

The exit point is the pre-determined location where you let go of the aircraft. To determine the exit point you must know where you want your opening point to be. Once you have determined the opening point, estimate your drift in freefall. Take the winds that you will be falling through and average them, divide the average by 60 and this gives you the distance you would drift in one minute of freefall. Now decide where you should exit the plane, accounting for drift, so that you will be under canopy in the area of your pre-planned opening point. (Remember, your drift is directly related to the direction and speed of the winds at your freefall altitudes.) **Please note that for freefall delays of 15 seconds or less, the exit point and opening point will be synonymous.**

## In-plane Preparation

Being properly prepared in the plane is just as important as the skydive. Your in-plane preparations should be completed at least 1000ft prior to your exit altitude so that you will not be rushed. These preparations include:

- Properly stow your seatbelt under the pad of the plane
- Helmet on and secured with the excess chin strap securely stowed
- Goggles on and secure
- Altimeter on (check altitude before exiting)
- Gear has been rechecked
- Clothing is secure
- On knees
- Checking for aircraft in the area by looking out of the windows
- Mentally and verbally review the skydive

With proper preparation, many problems can be avoided.

## Spotting

Spotting is a critical skill that you need to develop to open your parachute in the correct area, and to minimize the chance of landing in an unfamiliar or potentially hazardous area. Plan on getting on your knees at least 1000ft before your exit altitude. Once you are on your knees, begin looking out of the aircraft checking for any other planes in the air and locating the landing area. Planes that may be a hazard are those that are at or near the same altitude as the plane you are in and those approaching the airspace above the drop zone. The planes approaching the target may be in the way by the time you plan on exiting. **Point out planes that you see in the immediate area and around the same altitude as you to the pilot.**

As you are coming onto jump run, the pilot will either nod at you or call out "door!" You are now in charge of operating the door and spotting the aircraft.

1. Grip the handle of the door securely to maintain control of it. Be prepared to close it quickly if necessary.
2. Call out "DOOR!"
3. Turn the handle to release the latch and open the door 6 inches to let air move about the cabin.
4. Check inside the plane for any pilot chute or canopy material.
5. Fully open the door and latch it to the underside of the wing.



6. Place your head completely out of the door to be able to look straight down (critical for proper spotting).
7. Look forward through the prop to the horizon and down the side of the aircraft to determine the line of flight.
8. Look off the wingtip to the horizon and run a line perpendicular to find your position on the line of flight.
9. If corrections are needed point your hand, in the direction you wish the plane to go, where the pilot can see your hand. On this jump you will observe the instructors interaction with the pilot.
10. The pilot will correct his heading in 5 degree increments until you stop pointing.
11. When the plane is lined up to fly over the exit point, begin your climb out. Be sure to begin early enough to get into position, without hurrying, and to exit directly over the planned exit point.

Don't start your climb out at the exit point. If you wait until the exit point is below you to climb out, you will be late and increase your risk of landing out.

### **Go-Around**

You may occasionally need to ask for a go-around. Asking for a go-around is acceptable in the following situations:

- The airplane is too far past your exit point for you to make it back to the landing area under canopy,
- The jump run is incorrect,
- Air traffic prevents you from leaving the airplane,
- You are unable to locate the landing area.

Go-Arounds should be kept to a minimum.

### **Climb Out**

On this jump you are going to climb out from your knees rather than in a seated position. Place your right hand on the rear section of the doorframe and the left hand on the front section of the doorframe. Step out onto the step with the right foot and grab the strut with the left hand. Grab the strut with the right hand and finish stepping out onto the step with the left foot. Slide your hands further out on the strut while crossing the left foot over the right foot so that you end up standing on the outer edge of the step on your left foot. Finish sliding your hands out as far as you can on the strut and then hang. Remember to step off with your left foot when you hang.

### **10-Second Delay**

To perform your first 10-second delay, start with a hanging exit using step exit footwork and immediately arch hard. At approximately 6-7 seconds, transition into a "box" position and hold until pull time at 10 seconds. The transition needs to be done gradually and not as a sudden movement. Sudden movements increase your chances of losing stability. You should be aware of your heading the entire skydive.

If you begin to turn, make sure your arms and legs are symmetrical and correct the issue using the techniques below in the **Correcting Stability Problems**.

**If at any time you lose stability and are not able to regain it, you lose your count, or you are near your pull altitude of 3500ft, pull**

#### **New Count**

- ARCH thousand
- Two thousand
- Three thousand
- Four thousand
- Five thousand
- Six thousand
- Seven thousand
- Eight thousand
- **Reach** thousand
- **Pull** thousand
- Check thousand
- Two thousand
- Three thousand
- Four thousand
- Five thousand
- Check Canopy

**immediately!** Look over one shoulder immediately after pulling to prevent pilot chute hesitation. Remember to re-arch, count to five and perform a canopy check after pulling.

### **Heading Awareness**

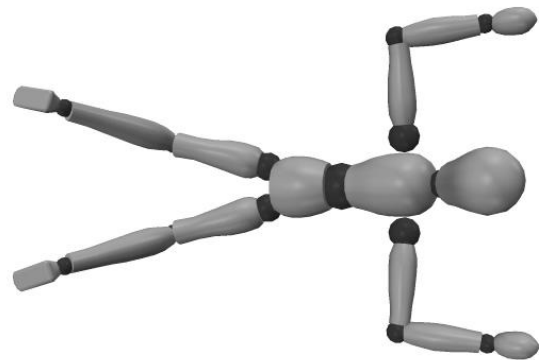
When you leave the plane, you establish your heading. Initially, your heading should be the plane to keep your head up. As you fall down “the hill” (pg.13) your heading should transition to the horizon. Establishing a heading will make it easier to identify and fix an unintentional turn.

### **Neutral Freefall Body Position or “Box” Position**

The neutral freefall body position is performed in a belly-to-earth position. As the name implies, this is your neutral freefall body position where you are not moving forward, back, right, or left. It is the foundation from which you will learn to maneuver around the sky. Your body should be in an arched position with 90-degree angles at the shoulders and elbows. You should be able to see your hands in your peripheral vision. Your legs should be slightly apart so that the knees are inline with the shoulders and the knees should have a 45-degree bend. The most important factors for successfully performing this position are to have a good arch, your head up, and positive pressure on your legs and to keep your body symmetrical.



**“Box” Position Side View**



**“Box” Position Top View**

In studying these illustrations, take note of the body’s symmetry in this position in both height and width.

### **Correcting Stability Problems**

New jumpers may experience some stability problems now that they are falling for longer periods of time and reaching terminal velocity. The two most basic problems are losing stability (tumbling) and uncontrolled turns/spins.

If you find that you are losing stability:

- Look up (looking down promotes a de-arch which then promotes instability).
- Press your hips down and lift your knees up to achieve a better arch position (a good arch will stop you from tumbling through the sky).
- Keep positive pressure on your legs.

## **Stopping Unintentional Turns**

If you find that you are in an unintentional turn or spin, there are three basic things you can do to help stop the turn:

1. Check the position of your arms (make sure they are symmetrical and in the correct “box” position).
2. Click your heels together to make sure your legs are symmetrical (it is very easy to let one leg drop slightly below the other causing a turn).
3. Try to turn slightly in the opposite direction you are currently turning (turn by rotating/tilting your upper body the direction you wish to go).

A good body position allows you to have more success and less frustration. Make sure to practice your skills on the ground and get feedback from your instructor prior to jumping.

## **Rear Riser Turns CS-5**

You must clear your airspace before practicing turns or maneuvers of any kind under canopy. Clearing your airspace means performing a thorough scan of the entire airspace you intend to use and see that it is clear of other traffic. Rear riser turns with the brakes stowed and unstowed are required for your “A” license.

Pulling down on the rear riser on the side in which you wish to turn performs a rear riser turn, and pulling on both rear risers will perform a rear riser flare.

Rear riser turns should be used to avoid any possible canopy collisions with another jumper immediately after your canopy is open. Each rear riser controls a quarter of the canopy and may be difficult to perform. With the brakes set, the parachute will have less forward momentum to overcome to perform a turn. After you are sure the area near you is clear, unstow your brakes and continue flying your canopy. Rear riser turns may also be used in case of a broken steering line or an injured arm.

Rear riser flares should be practiced at altitude and then used to determine if possible to perform in an emergency situation (i.e. broken steering line). If you cannot determine your ability to flare with the rear risers, continue practicing to enhance your awareness of canopy flight.

On this jump, once the parachute is open and there are no problems to address, perform a controllability check using the rear risers while the brakes are stowed: flare, flare, right turn, left turn. Then unstow your brakes and perform another controllability check and compare the control inputs. Finally, with your toggles still around your hands, perform another controllability check using the rear risers to compare the flight characteristics between the three maneuvers.

On future jumps, practice turning immediately upon opening to be prepared for a collision scenario. Canopy skills should be practiced on every jump, but remember to always clear your airspace (look before you turn), and monitor your altitude and location over the ground.

For more information on rear riser turns and canopy flying, refer to the appendices under **Canopy Skills**.

## **10-Second Delay #2**

Jump altitude: 4,500 Feet

Reading Assignment/Skills Practice:

- 1.) Review pages 31-35 on 10-Second Delay #1.
- 2.) Read pages 36-38 on use of RSL, Step Exit, Wave-off and Turbulence in the Landing Area.
- 3.) Complete worksheet for 10 Second Delay #2 on page 137 prior to class time.
- 4.) Practice step exit a minimum of 10 times at plane or mock-up.
- 5.) Practice box position, count, wave-off and pull a minimum of 5 times on creeper.

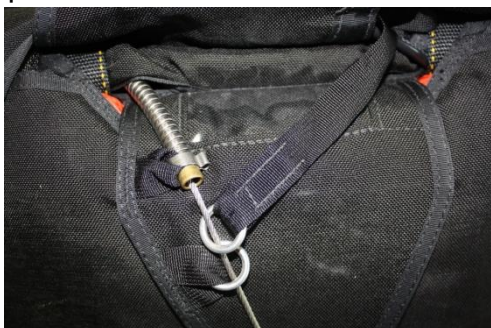
Objectives:

- 1.) Know purpose and use of RSL. **EK - 3**
- 2.) Determine exit point with instructor's assistance.
- 3.) Get on knees in plane and ready 1000ft prior to exit altitude, open door for spotting and begin to spot.
- 4.) Perform climb out with step exit footwork and perform a step exit.
- 5.) Maintain awareness and stability, achieve box position prior to wave-off, wave-off and pull on time while stable.
- 6.) Perform rear riser turn immediately upon opening.
- 7.) Identify areas of turbulence in the landing area including the effects of turbulence and how to fly a canopy in turbulence. **CS - 8**

### **New Skills:**

#### **Reserve Static Line (RSL) EK - 3**

The RSL is a back-up device that automatically pulls your reserve ripcord when you jettison (cut-away) your main parachute. If you only pull your emergency handle far enough to initiate a cut-away of your main parachute, but not far enough to pull the reserve ripcord, the RSL would initiate reserve activation. The RSL is a lanyard (small strip of black webbing) with a silver fitting and red tab on one end and a silver ring on the opposite end. A properly connected RSL has the brass colored fitting attached to the small silver ring located on the back of the right riser group just above the 3-ring system. It is then routed over the right shoulder without being routed around anything, over the Cypres control unit cable, under the reserve flap, and has the reserve cable passing through the silver ring at the end of it. The RSL does **not** disconnect the main parachute.



To disconnect the RSL, pull on the red tab to release the silver fitting from the silver ring on the back of the right riser group. To re-connect the RSL, place one end of the hook through the ring, pull on the red tab with one hand while you squeeze the two parts of the hook together and then release the red tab. Make sure the hook is locked in place. Feel free to try this on your own.

While skydiving there are several situations where

disconnecting the RSL is part of the procedure:

- Landing in high winds (if cutting away is necessary to prevent being dragged)
- Water landing

- Two canopies out scenarios
  - Side by side
  - Downplane
- Landing on top of a building (if cutting away is necessary to prevent being dragged off of the roof).

### **Step Exit**

To perform a step exit, place your right hand on the rear section of the doorframe and the left hand on the front section of the doorframe. Step out onto the step with the right foot and grab the strut with the right hand. Finish stepping out onto the step with the left foot and grab the strut with the left hand. Slide your hands further out on the strut while crossing the left foot over the right foot so that you end up standing on the outer edge of the step on your left foot. Your hands should be in front of you about shoulder width apart on the strut. Your right leg should be relaxed, trailing in the wind slightly behind you.

When the instructor gives the “GO” command; step gently, straight out to the right, as you let go and arch. Transitioning to the proper arch position immediately will help ensure stability. The key is to perform the step exit in a gentle and relaxed manner. Try to minimize any momentum as this can cause instability. Remember to look up at the plane as you step off, this will be hard to do while you are standing on the step.

#### **New Count**

- ARCH thousand
- Two thousand
- Three thousand
- Four thousand
- Five thousand
- Six thousand
- Seven thousand
- **Wave** thousand
- **Reach** thousand
- **Pull** thousand
- Check thousand
- Two thousand
- Three thousand
- Four thousand
- Five thousand
- Check Canopy

### **Wave-off**

The wave-off is a critical skill to learn. Whenever you are in the air with one or more jumpers, you must signal that you plan to initiate deployment to avoid possible collisions. Skydivers can drift in the air and unintentionally fly into the airspace of another jumper. It is important to notify other jumpers around you before you initiate deployment. The signal jumpers use to let others know that they are pulling is the wave-off.

To perform the wave-off, approximately 500ft before you plan on pulling, wave both arms by quickly pulling the hands in front of the face and then back out a little wider than their normal position for the box. Repeat this once more to make sure that all jumpers in the area are able to see the signal. Make sure that you look around to ensure that your airspace is clear of other jumpers. Only after you have done your wave-off and checked the area, deploy your parachute.

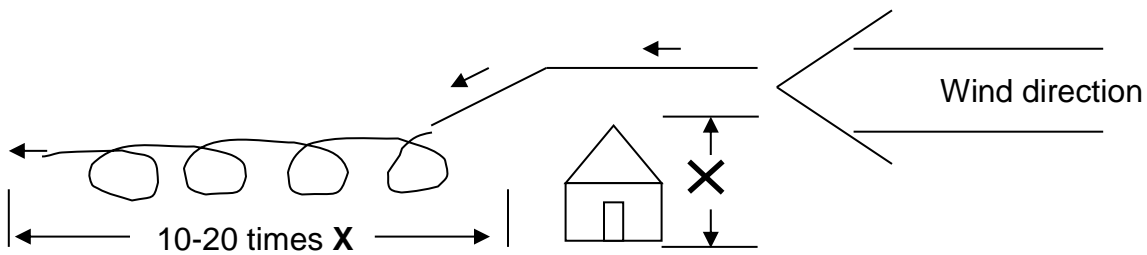
### **Under Canopy**

Practice turning 90 degrees to the right with your rear risers upon opening to simulate avoiding a possible collision. Hold upwind of the target and fly a predictable pattern without radio assistance.

### Turbulence in the Landing Area CS - 8

Turbulence is the disruption of airflow. Turbulence is caused by wind blowing and hitting an obstacle, which results in the air on the other side of the obstacle becoming unstable. Turbulence often occurs near runways, alongside roads, where two areas of different textures meet (such as grass and a paved runway), behind other canopies, over irregular terrain, and downwind of the propeller wash of a taxiing aircraft. Remember, the stronger the winds, the stronger the effects of turbulence will be.

Flying your canopy in turbulence presents a challenge as turbulence can cause extra lift or a sudden loss of altitude. When flying in turbulence, maintain the desired heading using smooth but effective toggle input. Fly full speed (or as directed in the canopy owner's manual) and prepare to PLF. It is safer to land in an open area away from obstacles that cause turbulence. Expect turbulence for a distance of 10-20 times the height of an obstacle on the downwind side.



**10-Second Delay #3**

Jump altitude: 4,500 Feet

Reading Assignment/Skills Practice:

- 1.) Review pages 36-38 on 10-Second Delay #2.
- 2.) Read pages 39-42 on Wing Loading for the Main and Reserve, Obstacle Avoidance and Landings, Landing Off Target and Mid-Brake Canopy Turns.
- 3.) Complete worksheet for 10 Second Delay #3 on page 139 prior to class time.
- 5.) Practice box position, count, wave and pull a minimum of 5 times on a creeper.

Objectives:

- 1.) Understand wing loading and how to calculate wing loading for the main and reserve canopies. **EK - 2**
- 2.) With instructor, select climb out, exit, and opening points on aerial photograph using the winds aloft chart.
- 3.) Get on knees in plane and ready 1000 feet prior to exit altitude, open the door and spot with minimal help.
- 4.) Perform proper climb out and step exit.
- 5.) Maintain heading awareness and stability, wave-off and pull on time while stable.
- 6.) Perform mid-brake turns and practice flares above 2,000 feet.
- 7.) Know how to locate and avoid obstacles and proper procedures for obstacle landings including power lines, trees, buildings/fixed objects and water. **ER - 2-5**

**New Skills:**

**Wing Loading EK - 2**

Wing loading is the weight load supported by the canopy. To calculate the wing loading of the main or reserve, divide the jumper weight by the square footage of the canopy. The jumper's weight is the combined total of body and equipment weight. For example, if you were jumping a large student rig, you would divide your body weight plus 35 lbs. by 280 square feet. Each manufacturer provides a maximum recommended wing loading for a canopy. This guideline should be followed to allow the canopy to perform properly according to its design. Student gear weighs on average 33 pounds.

Rig	Main	Reserve
XS	200	190
S1	220	218
S2	230	190
S3	230	210
M1	260	235
M2	260	235
M3	260	235
M4	260	235
M5	260	235
M6	280	218
L1	280	253
L2	280	253

Wing loading examples

Jumper's exit weight	215lbs	Jumper's exit weight	215lbs
Divided by canopy size	290 sq. ft.	Divided by canopy size	195 sq. ft.
Wing loading	.74:1	Wing loading	1.1:1

Wing loading for the canopies you are jumping

	Main	Reserve
Exit weight (your weight plus the weight of the rig)	_____	_____
Divided by canopy size	÷ _____	÷ _____
Wing loading	= _____	= _____

Different wing loadings will cause a parachute to respond differently to control inputs.

Parachutes at higher wing loadings will generally have a faster forward speed, faster descent rate, faster turns, a steeper and longer dive from a turn, more violent malfunctions and require more skill to flare correctly. Parachutes with lighter wing loadings will generally have less drive against a strong wind, slower turns, more forgiveness of landing errors, and less predictable flight in turbulent conditions.

While wing loading plays a major role in flight characteristics, it is not the only factor; shape, size, construction (7 cell vs. 9 cell), skill level, and experience all play a vital role in how a parachute flies. A smaller canopy at an equal wing loading compared to a larger one of the same design will exhibit a faster and more radical control response and more altitude loss in any maneuver.

**Obstacle Avoidance ER – 2-5** – The first rule for obstacle avoidance is to know where obstacles are located. The second rule is, look away then turn away. If there is no way to avoid hitting an obstacle, follow the procedures for hitting such obstacles:

**Power Line Landings ER – 2** – When landing in power lines, bring the steering toggles down to half brakes to minimize the speed with which you will hit the lines. Keep your legs tightly together and your arms pulled tightly into your chest. The goal is to be as narrow as you can to prevent getting hung up on the lines or touching more than one power line at a time. Try to fly as parallel as possible with the power lines. In the event that you become suspended in the power lines, do not allow anyone to touch you. Wait for the fire department to arrive and determine that the utility company has turned off the power to the lines. Do not try to get down to the ground on your own. If you land in power lines at this drop zone, you will be billed by the PUD for the cost of turning the power off and back on again.

**Tree Landings ER – 3** – When landing in trees is your only option, aim for the center of a large tree. Bring the steering toggles down into half brakes to minimize the speed with which you will hit the tree. Keep your legs tightly together and pull your knees up as high as you can in front of your mid-section. While holding the steering toggles, pull your hands and forearms close together in front of your chest and tuck your face behind them. Once you have stopped traveling forward, grab the tree and hang on. Do not try to get down on your own. Most jumpers that land in trees do not get hurt from hitting the tree, they injure themselves by trying to get down on their own and falling to the ground.

**Building Landings ER – 4** – If it looks like you will land on top of a building, stop any turns in time to make sure you are ready for a PLF. Make sure your feet are the first thing to make contact. On high-wind days, be ready to disconnect your RSL and to pull your emergency handle to cut-away your main parachute to prevent being dragged off the roof.

If it looks like you will hit the side of a building, try to make a minor turn so that you glance off the side of the building at a 45 degree angle versus impacting it head on. Make sure you are in a half flare (to minimize speed), and hit the object feet first. Be prepared to hit the ground hard and PLF.

**Water Landings ER – 5** – Avoid the water if at all possible. Once you have determined that a water landing is inevitable, unthread your chest strap and fly into the wind. You will not fall out of the equipment. If you have goggles on over your eyes, take them off or get them propped



up on your helmet, they will fill with water and make it very difficult for you to see. As you approach the water, bring the steering toggles down into half brakes and be ready to PLF.

Your depth perception will be off over water so do not try to flare completely or cut away your main. Take a big breath of air as you hit the water, let go of the toggles and remove the top half of the rig – similar to removing a school backpack. Unsnap the leg straps and swim down and away from the equipment; or using a gentle leg kick, swim free of the leg straps. Be sure to swim completely clear of the canopy before surfacing. If you become disoriented and do not know which way is up, blow a few bubbles and swim the direction the bubbles travel. The other thing you can do is note which direction the suspension lines are going. They will also go up to the canopy at the surface. Do not try to save the gear. Save yourself.

### **Landing Off Target**

By 2,000 feet you should be deciding on your landing area, if you cannot make it back to the intended landing area, prepare to land off target.

- Choose the biggest area with the fewest obstacles
- Transfer the planned landing pattern to the new landing area
- Identify and avoid all obstacles
- Perform a PLF
- Be respectful of the property on which you land

### **Mid-Brake Canopy Turns**

Mid-brake canopy turns are one of the most important canopy skills a skydiver can learn and continually practice. Mid-braked canopy flight does a couple things:

- It slows your descent rate.
  - This can be helpful if you want to create vertical separation between you and another canopy.
  - If you are landing off target it provides you more time to identify obstacle and transfer your landing pattern to the new location.
  - Flying your canopy in half brakes will help you fly farther when going with the wind This is helpful if you find yourself too far upwind.
- It changes heading while conserving the most altitude. If you find the need to avoid an obstacle at an altitude where a standard toggle turn would be dangerous, a mid-braked turn will allow you more time/altitude to make the turn.

To perform mid-brake turns, start by flying the canopy in half brakes. Then either pull down further with one steering loop or let up on one steering loop to turn. Pulling down will cause you to turn in the same direction as the loop you are pulling down on, while letting up will cause you to turn in the opposite direction. Pull both toggles down to full arm extension to flare from a mid-brake position; this will require a shorter, quicker stroke. Practice turning and flaring from a mid-braked position above 2,000 feet. Performing a braked landing approach and landing is required for your “A” license.

When returning to full flight from the mid-braked position, the canopy will surge forward with the increase in speed, and the glide angle will also increase. When doing any mid-braked

maneuvers near the ground ensure that when you return to full flight your canopy has enough time to recover for a proper landing or landing from a mid-braked position may be necessary.

Before practicing turns or maneuvers of any kind under canopy you must clear your airspace. Clearing your airspace means performing a thorough scan of the entire airspace you intend to use and see that it is clear of other traffic.

For more information on mid-braked turns, landing, and flying refer to the appendices under **Canopy Skills.**

## **15-Second Delay #1**

Jump altitude: 6,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 39-42 on 10-Second Delay #3.
- 2.) Read pages 43-44 on: 15-Second Delay, Heading Awareness, Start, Coast, Stop Principle, Upper Body Turns, Freefall Altimeter Use, and Loss of altitude Awareness.
- 3.) Complete worksheet for 15 Second Delay #1 on page 141 prior to class time.
- 4.) Using an Alti-trainer, practice turns with altitude checks, wave-off, and pull on a creeper a minimum of 10 times.

Objectives:

- 1.) Perform a gear check for another jumper. **EK - 6**
- 2.) With instructor, determine exit and opening points.
- 3.) Perform In-Plane preparation with minimal help.
- 4.) Perform spotting duties; open the door and spot with minimal help from the instructor.
- 5.) Perform proper climb out and step exit.
- 6.) Good box position with a controlled 3-second right turn with a controlled stop.
- 7.) Wave-off at 4000ftk and pull by 3500ft.
- 8.) Perform Mid-brake canopy turns and flares above 2000ft.
- 9.) Fly entire canopy descent without radio assistance.
- 10.) Verify USPA membership with manifest.

**New Skills:**

### **15-Second Delay**

On this jump, you no longer count to establish pull time. Therefore, it will be necessary to check your altimeter regularly during the jump (after every maneuver, when encountering difficulty in completing a current task, when uncertain of altitude, and continually every few seconds).

To perform your first 15-second delay, start with a step exit and immediately arch hard. At approximately 5-7 seconds, transition into a "box" position and check altitude. If you are stable and above 4500ft, look to your right and initiate a 90-degree turn to the right; stop the turn, and check altitude, (if you are still above 4500ft, then you may do a 90-degree turn to the left and check altitude). Only perform the turns if you are stable and are above 4500ft. Wave-off at 4000ft and pull by 3500ft. Remember to check over your shoulder, count to five and perform a canopy controllability check. There is a more comprehensive dive flow in the appendices under **Dive Flows**.

### **Heading Awareness**

When you leave the plane, you establish your heading. Initially, your heading should be the plane to keep your head up. As you fall down "the hill" (pg.13) your heading should transition to the horizon. You should always look before you turn; this will give you a new heading to turn towards and will give you an idea when to begin stopping your turn.

### **Start, Coast, Stop Principle**

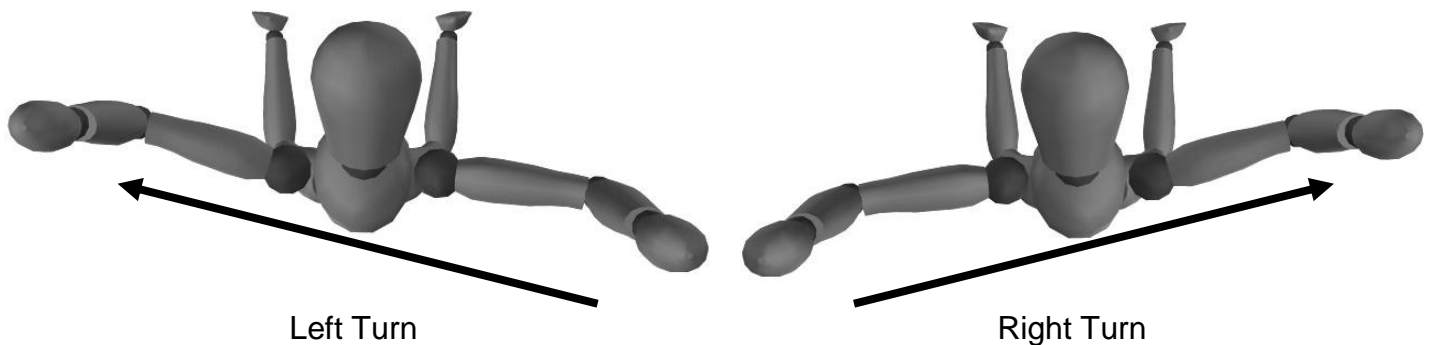
The Start, Coast, Stop (SCS) principle is how most maneuvers are taught in skydiving regardless of the discipline. It consists of three parts: Start, Coast, and Stop - phases to complete one maneuver.

1. The initiating movement (start phase) is the first movement out of a neutral body position that causes the body to move.
2. With that momentum built, return to a neutral body position (coast phase) until the desired heading or maneuver is nearly complete.
3. Counter (turn the opposite direction) the initial maneuver to stop it (stop phase). Once the motion stops, return to a neutral body position.

### Turns

To perform a turn; begin in a neutral “box” position, look to your new heading, lower the elbow in the direction you want to turn while raising the opposite elbow. When your new heading approaches; return to a neutral body position, counter the turn to stop on your desired heading. (Example: To turn left; look over your left elbow, lower your left elbow while raising your right elbow. As your new heading approaches; return to a neutral body position, counter the turn to stop the rotation on your desired heading.) The speed of the turn is determined by the angle of the arms against the relative wind.

**Upper-body turns: Only use shoulders and arms. Do not use legs....yet.**



**Arrows illustrate the direction in which air is being deflected by the arms and shoulders only. This deflection of air causes a rotation in the opposite direction.**

### Using the Altimeter in Freefall

Instead of counting as you have done on previous jumps, you will now use your altimeter to determine your altitude and when to pull. Check your altitude after every maneuver, when encountering difficulty in completing a current task, when uncertain of the altitude, and continually every few seconds. When checking your altimeter, your hand/arm should not move; use your head to look at your altimeter to avoid an unwanted turn. By using an Alti-trainer, you can simulate your skydive and familiarize yourself with the different visuals of the altimeter as you are in freefall. **Remember: your most important task in freefall is altitude awareness to recognize and act at the assigned pull altitude.** At 4000ft wave-off, and then pull.

### Loss of Altitude Awareness

**If at any point you are unsure of your altitude deploy your parachute.** If you lose altitude awareness, your instructor will deploy their parachute at 3500ft to signal for your deployment. If you see this, immediately deploy your main parachute. If you check your altimeter and you are at or below your decision altitude of 2500ft, immediately deploy your reserve parachute. It is **your responsibility** to monitor altitude and act appropriately at the designated altitude.

## **15-Second Delay #2**

Jump altitude: 6,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 43-44 on 15-Second Delay #1.
- 2.) Read page 45-46 on 15-Second Delay #2, Pilot Briefing, Stalls, and Deep Braked Turns.
- 3.) Complete worksheet for 15 Second Delay #2 on page 143 prior to class time.
- 4.) Practice 90 degree turns on a creeper with heading awareness a minimum of 10 times.
- 5.) Using an Alti-trainer, practice the dive flow sequence a minimum of 5 times on a creeper. Practice until perfect.
- 6.) With a sample winds aloft forecast, determine the spot, climb out point, exit point and landing pattern for a minimum of 5 different wind conditions.

Objectives:

- 1.) Properly use the winds aloft chart to determine climb out, exit, and opening points on the skydive. **AS - 3**
- 2.) Brief the pilot on jump run direction, altitudes and passes.
- 3.) Perform in-plane preparations without help from the instructor.
- 4.) Perform spotting duties without help from the instructor.
- 5.) Maintain stability on exit.
- 6.) Perform altitude checks, 2 controlled 90 degree turns, wave-off at 4000ft and pull by 3500ft.
- 7.) Perform deep braked turns above 2000ft.
- 8.) Fly a proper landing pattern and perform a stand-up landing. **CS - 2**

**New Skills:**

### **15-Second Delay #2**

To perform your second 15-second delay, start with a step exit and immediately go to your arch. At approximately 6-7 seconds, transition into a "box" position and check altitude. As long as you are stable and above 4500ft, initiate a 90-degree turn to the right and check altitude, then a 90-degree turn to the left and check altitude. Only perform the turns if you are stable and altitude aware. Wave-off at 4000ft and pull by 3500ft, hold arch, check deployment, count to five and perform a canopy controllability check. There is a more comprehensive dive flow in the appendices under **Dive Flows**.

### **Pilot Briefing**

Before you take off for fun in the sky, you must inform the pilot about your intended plans. Briefing the pilot must be done each time jumpers board the plane. You need to let the pilot know:

- Jumping at the airport or east field
- The number of passes at each altitude
- How many jumpers will be jumping on each pass
- What altitudes jumpers wish to exit
- The direction of jump run

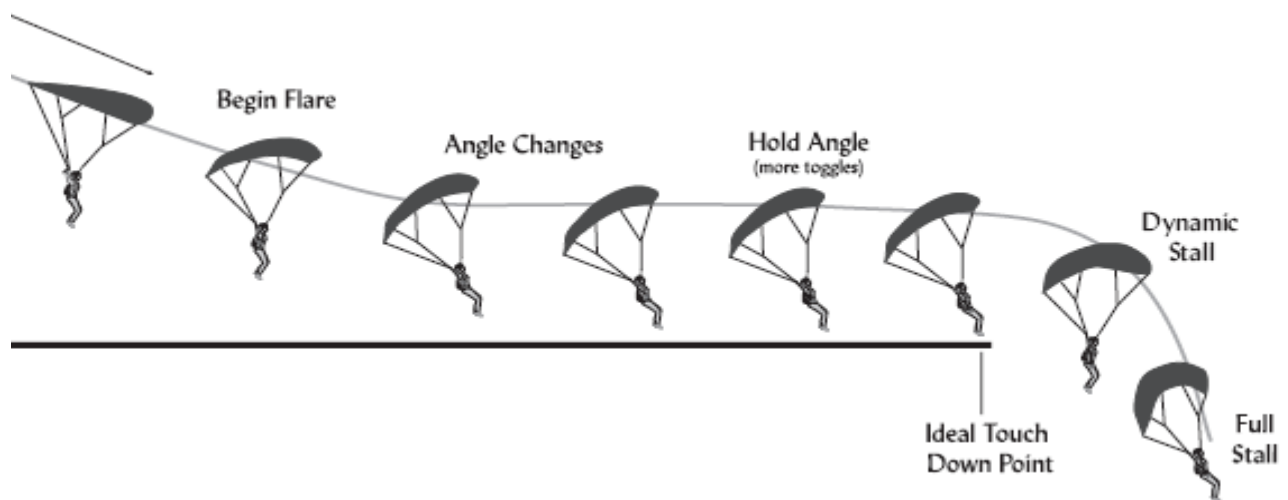
Make sure that you are seated in the plane with the jumpers exiting first (at the lowest altitude) closest to the door. If there are jumpers exiting at the airport and east field at the same altitude, the direction of jump run will determine if jumpers exit at the airport or east field first.

Jump runs to the north or west will drop over the east field and then airport. Jump runs to the east or south will drop over the airport first and then east field.

## **Stalls**

A stall occurs when the canopy's tail is held below its nose for too long; the angle of attack is too great regardless of speed and the point where loss of lift occurs due to lack of forward speed. Knowing the stall point of your canopy is important. It gives you a definite limit to your control range. There are several different types of stalls: aerodynamic stall, dynamic stall, and full stall. Each time you flare you are essentially stalling your parachute, you just happen to touch the ground before the canopy stalls, which is ideal for landing your parachute. When you stall your parachute, your glide decreases and your rate of descent increases.

If you find yourself stalling your canopy, smoothly raise your toggles to full flight and the canopy should recover. Raising the toggles too quickly may induce line twists or a partial collapse of the canopy. A good thing to know is where you need to raise your toggles to recover from a stall, in case you are near the ground and find your canopy in a stall.



For more information on stalls refer to the appendices under **Canopy Skills**.

## **Deep Braked Turns**

Practicing deep braked turns helps you get comfortable with the slow flight characteristics of your canopy. Pull the toggles down, slightly above your waist, and then raise the opposite toggle of the direction you wish to turn. Be careful, the canopy may be very close to its stall point during these maneuvers. If your parachute begins to stall, do not panic; smoothly raise your toggles to full flight.

Before practicing turns or maneuvers of any kind under canopy you must clear your airspace. Clearing your airspace means performing a thorough scan of the entire airspace you intend to use and see that it is clear of other traffic.

## **45-Second Delay #1**

Jump altitude: 10,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 32-33 on Exit Point and Spotting and pages 45-46 on 15-Second Delay #2.
- 2.) Read pages 47-49 on rules regarding Cloud Clearance, The Count, Door Dive Exit, Barrel Rolls, Center Turns, Mid-Braked Approach to Landing and Alternate free-fall altitude references and pages 102-103 on Large Plane Briefing.
- 3.) Complete worksheet for 45 Second Delay #1 on page 145 prior to class time.
- 4.) Practice climb out to door dive position until proficient.
- 5.) Practice Barrel Rolls on the ground minimum of 10 times each direction.
- 6.) Practice 360 degree turns on a creeper a minimum of 10 times each direction.
- 7.) Practice altitude checks after each skill or every 5 seconds.
- 8.) Practice full routine on a creeper until proficient at every skill with an Alti-trainer.

Objectives:

- 1.) Learn FAR's regarding cloud clearance and visibility above and below 10,000ft MSL.
- 2.) Brief the pilot on jump run direction, altitudes and passes.
- 3.) Accurately spot the plane and exit at the proper time.
- 4.) Perform a stable door dive exit while maintaining heading.
- 5.) Perform barrel roll right, barrel roll left, a 360 degree right center turn, 360 degree left center turn, wave-off at 4000ft and pull by 3500ft.
- 6.) Perform a braked approach and landing.

### **New Skills:**

#### **Cloud Clearance AS - 4**

At no time may a skydiver jump into or through a cloud or come closer to clouds than listed.

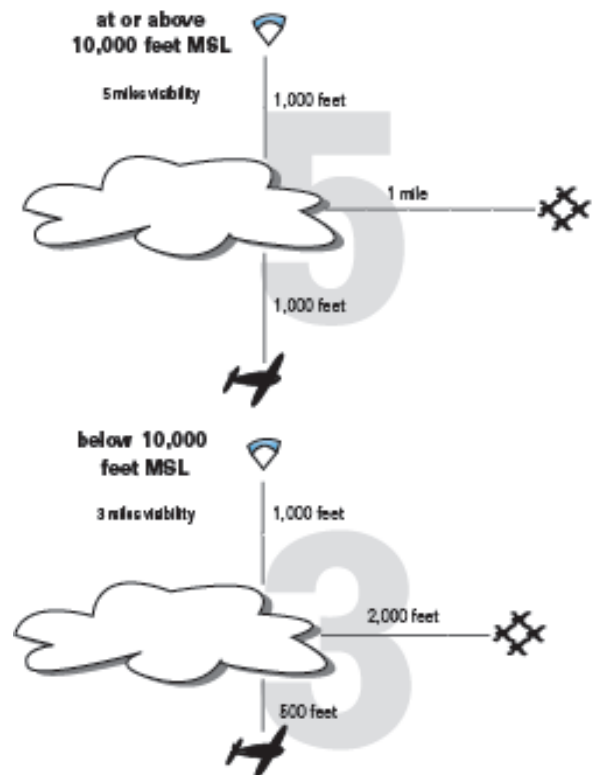
Minimum cloud clearance at or above 10,000ft MSL:

- 5 statute miles for flight visibility
- 1000ft below clouds
- 1000ft above clouds
- 1 mile horizontal distance from any cloud

Minimum cloud clearance below 10,000ft MSL:

- 3 statute miles for flight visibility
- 1000ft above clouds
- 500ft below clouds
- 2,000ft horizontal distance from any cloud

FAR part 105 section 105.17 (SIM pg. 202) covers this information.



## The Count

A count is necessary for jumpers to exit the aircraft as close to the same time as possible. To perform the count, make eye contact with the other jumper(s). Once you have done so:

Yell “**ready**” while rocking your upper body/head towards the tail

Yell “**set**” while rocking towards the front of the aircraft

Yell “**go**” as you rock toward the tail again and let go

Always begin the count by rocking in the direction you will be exiting when you yell “ready”.

## Door Dive

To perform a basic door dive, place each hand on the vertical sides of the doorframe. Step onto the step with your right foot, turning your body to face the tail of the aircraft. Dive out of the plane with your head up and arms extending above your head similar to “Superman” flying. As you reach out with both arms, tuck your heels up towards your backside. Be aware of where the relative wind comes from initially upon exit, with this in mind you will need to present your chest and hips squarely into the wind. This means that your dive out needs to be directed downward. If you go unstable (which is common when you are learning), continue to arch until you regain a stable belly-to-earth body position. **Remember to check and protect all handles prior to exit.**

## Barrel Rolls

Barrel rolls are an excellent way to regain a belly-to-earth orientation after instability leaves you back-to-earth. For a right barrel roll:

- Start in your neutral freefall body position (“box” position).
- Extend your right arm out in front of your head and dip your right shoulder into the direction of the roll. At the same time, extend the right leg and dip your right hip into the direction of the roll.
- Once the rotation begins, align your left arm and leg with the right arm and leg.
- As your rotation brings you belly-to-earth, return to your neutral freefall position to stop the roll. (Initiating a left barrel roll may be necessary to counter any extra momentum.)



Initiating Right Barrel Roll

Mid Barrel Roll

Initiating Left Barrel Roll

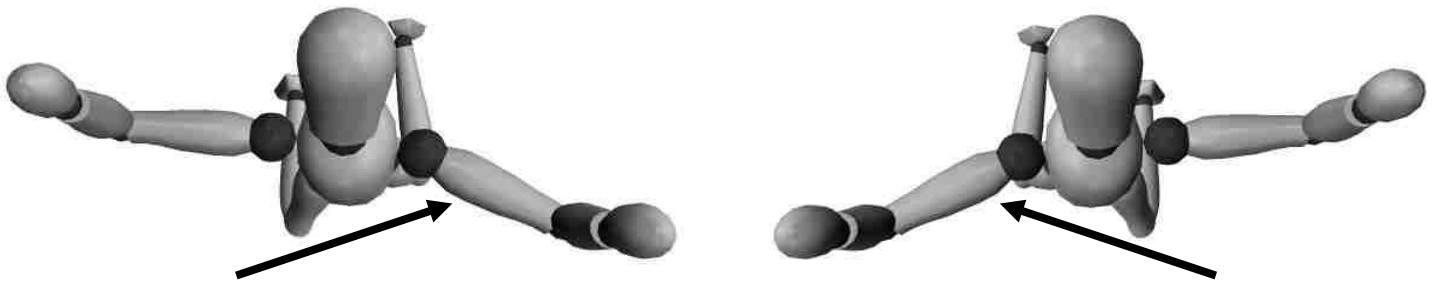
(To perform a Left Barrel Roll, reverse the steps for a Right Barrel Roll.)



## Center Turns

The goal of a **center turn** is to pivot around your center axis, which is your belly button area. Center turns are more efficient than upper-body turns and help make relative work more successful. Center turns are accomplished by using your upper body to deflect air in one direction and using your lower body to deflect air in the opposite direction, much like a propeller. To perform a center turn:

- Start in a stable “box” position.
- Initiate the turn by pressing down with an opposite elbow and knee.
  - By pressing down with the right elbow and left knee, you will perform a right turn.
  - By pressing down with the left elbow and right knee, you will perform a left turn.
  - As either knee is being pressed down for a turn, the foot on the same leg should lean towards the other leg.



**Left Center Turn**

**Right Center Turn**

Arrows indicate the **deflection** of air generated by the position of **the lower body**.

Always make sure that you maintain a good arch when performing center turns. If you have a slower fall rate, you can perform center turns by lifting opposing arms and legs to initiate a turn while maintaining a faster fall rate.

## Mid-Braked Approach and Landing **CS- 3**

A braked approach allows for flatter turns with minimal altitude loss. As you enter the landing pattern, bring both steering toggles down to just below chest level. From this position, make turns in the landing pattern, and then proceed with a landing from mid-brakes. Flaring from mid-brakes will require a quicker stroke, slightly closer to the ground. Be sure to practice mid-braked flares at altitude in preparation for a mid-braked landing. Perform a PLF upon contact with the ground. A braked approach and landing is required for your “A” license.

More information on mid-braked approach and landing can be found in the appendices under **Canopy Skills**.

## Alternate Freefall Altitude References

Being altitude aware is our top priority as skydivers, but what if your altimeter breaks, falls off, or the batteries die during freefall? It is good to create alternate ways to monitor altitude, whether by the angles of the mountains or the bottoms and/or tops of clouds. It is a good idea to start noticing these reference points on the ride to altitude in case your altimeter doesn't work on a skydive. If at any point you are unsure of your altitude, deploy your parachute.



## **Solo Briefing Preparation**

**In preparation for your Solo Student Jumps, you are expected to review all information to this point. You must fully prepare for and schedule a solo briefing for after the successful completion of your 45-Second Delay #2.**

**This should be an extensive self-review. For a detailed list of items to review, see pages 58-59 on Solo Briefing. Come prepared with any questions or ask for clarification regarding any and all topics covered in your training.**

## **45-Second Delay #2**

Jump altitude: 10,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 47-49 on 45-Second Delay #1 and pages 40-41 on Obstacle Avoidance and Landings.
- 2.) Read pages 52-54 on Break-off Sequence, Delta, Back Loops, and Maximum Performance Turns.
- 3.) Complete worksheet for 45 Second Delay #2 on page 147 prior to class time.
- 4.) Practice 360's on a creeper a minimum of 10 times each direction.
- 5.) Practice the break-off sequence a minimum of 10 times.
- 6.) Practice transition from box position to delta and hold delta for at least 5 seconds a minimum of 10 times.

Objectives:

- 1.) Brief the pilot on jump run direction, altitudes and passes.
- 2.) Spot the plane, give the count and exit at the proper time without help.
- 3.) Perform a stable door dive exit while maintaining heading.
- 4.) Perform a back loop, one 360 degree center turn right; at 6000ft initiate the break-off sequence (180 degree turn, delta, wave-off and pull) and demonstrate altitude awareness.
- 5.) Perform Maximum Performance Turns above 2000ft.
- 6.) Land within 20 meters of the target.
- 7.) Know how to avoid obstacles and procedures to land into/on obstacles.
- 8.) Begin preparing for solo briefing.

### **New Skills:**

#### **Break-off Sequence**

The break-off sequence consists of performing one 180-degree turn, a track (delta), wave-off, and pull. It is critical to develop a good break-off sequence, as it helps to minimize the chance of mid-air and canopy collisions by giving you horizontal separation from other jumpers. The purpose of the 180-degree turn is to have you facing the opposite direction from the **center of the formation**. This helps ensure that all jumpers are tracking away from each other. A good track should stay **within 10 degrees of initial heading** and give you and the other jumpers **at least 100ft** of horizontal separation.

When you begin practicing the break-off sequence, it is necessary to start at a higher altitude to allow ample time to complete the skills prior to pulling. Start the sequence at 6000ft with a 180-degree turn; pick a heading, delta/track for 5 seconds, wave-off at 4000ft, and pull by 3500ft.

#### **Delta**

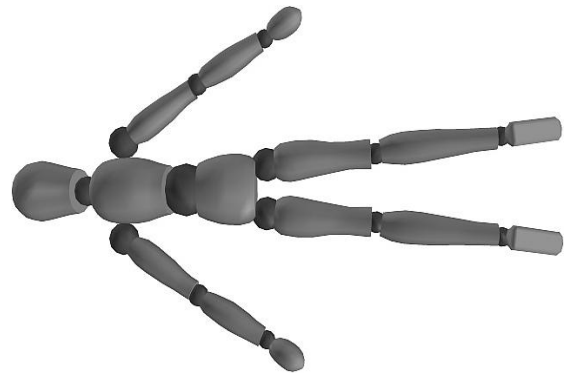
A delta is the beginning stage of learning to track. New jumpers learn this skill before learning a flat track, as the delta achieves separation from other jumpers while maintaining a greater degree of stability.

Start in a box position, then straighten your legs and point your toes, keeping 1-1 ½ft of separation between them. Smoothly move your arms back until they are 45 to 90 degrees away from your sides and straighten them. Your palms should be faced down and approximately 1-1 ½ft away from the body. This is the delta position. Keep your head up during the delta and look out 45 degrees below the horizon to stay aware of your heading and other

jumper traffic. Dip your shoulders slightly to make heading corrections while in delta; try to avoid big corrections while tracking. To stop the delta, return to a box position.



**Delta Side View**



**Delta Top View**

### **Back Loop**

To perform a back loop, throw your head straight back while you tuck your knees to your chest and grab them with your arms. This all needs to be done simultaneously. To stop a back loop, simply arch again. Do not begin to re-arch until you have almost fully completed the loop. Remember that while performing loops, your fall rate will increase and you will lose a lot of altitude quickly. Check your altimeter after each attempt or every 5 seconds. If you lose stability or stop on your back, ensure you are above your pull altitude, relax, and perform a barrel roll to regain stability. Do not initiate any back loops below 7000ft.

If you are having trouble mastering back loops, try starting from the step of the plane. Stand on the step of the plane with both feet, as you let go of the strut lean back and grab both knees with your arms. This will initiate your back loop. You may also go to a swimming pool or lake and practice doing backward somersaults in the water.



**Initiating Back Loop**



**Mid Back Loop**



**Stopping Back Loop**

### **Maximum Performance Canopy Turns CS - 6**

A maximum performance turn (a.k.a. a reverse turn) is accomplished by doing a 90-degree toggle turn to one direction followed immediately by a toggle turn of at least 180 degrees to the opposite direction. Maximum performance turns are the fastest rate that you can turn your parachute without inducing line twists. On smaller parachutes, it is much easier to induce line

twists with toggle turns. Maximum Performance turns should be performed above 2000ft on two separate jumps to meet the “A” license requirement.

Before practicing turns or maneuvers of any kind under canopy you must clear your airspace. Clearing your airspace means performing a thorough scan of the entire airspace you intend to use and see that it is clear of other traffic.

For more information on maximum performance turns (reverse turns) refer to the appendices under **Canopy Skills**.

### **45-Second Delay #3**

Jump altitude: 10,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 52-54 on 45-Second Delay #2.
- 2.) Read pages 55-57 on Front Loops, Promoting a Smooth Flow of Traffic in the Landing Pattern, and Avoiding Canopy Collisions. Read pages 58-59 on Solo Briefing and pages 62-63 on Splitting the Spot.
- 3.) Complete worksheet for 45 Second Delay #3 on page 149 prior to class time.
- 4.) Practice the dive flow a minimum of 10 times on a creeper.
- 5.) Practice giving the pilot briefing for your load.

Objectives:

- 1.) Give pilot briefing (jump run direction, altitude, passes) and accurately spot without assistance.
- 2.) Give count and perform a stable door dive exit while maintaining heading.
- 3.) Perform a front loop, 360 degree center turn left and break-off sequence.
- 4.) Fly and promote a smooth flow of traffic in the landing pattern.
- 5.) Land within 20 meters of the target.
- 6.) Perform emergency procedures in a hanging harness.
- 7.) Be prepared for and get a full solo briefing from the instructor.

### **New Skills:**

#### **Front Loop**

To perform a front loop, you will need to throw your upper body forward by tucking your head down to your chest, quickly pressing both arms down and pulling them into the center of the body, and tucking your knees to your mid-section at the same time. Keep the head tucked down with the arms and legs pulled in tight until you have almost fully completed the loop before you re-arch. If you re-arch before you have completed at least  $\frac{3}{4}$  of the loop, you will not complete the front loop. If you lose stability or stop on your back, verify you are above your pull altitude, relax, and barrel roll to regain a belly-to-earth orientation.

If you are having problems mastering the front loops, try by starting the front loop from the step of the plane. When you are ready, door dive, tuck your head down and tuck your knees up to your mid-section grabbing them with your hands. Just like back loops, try going to a swimming pool or lake and practice. Do not initiate a front loop below 7000ft.



**Initiating Front Loop**



**Mid Front Loop**



**Stopping Front Loop**

## **Promoting a Smooth Flow of Traffic in the Landing Pattern**

It is necessary for you to promote a smooth flow of traffic in the landing pattern. This is especially important when multiple jumpers land in the same area. There are a few things that create separation under canopy and minimize the chance of a canopy collision:

- Upon opening, your first task is to establish and maintain adequate horizontal separation from other jumper(s) and, if necessary, perform a rear riser turn to the right prevent a head on collision with another jumper.
- Clear your airspace. Look before you turn to make sure you are turning into clear airspace. If you do find yourself flying directly head-on into someone, the rule is for both jumpers to turn to the right. Otherwise, fly toward open airspace.
- Evaluate the decent rate of the other jumpers in relation to your decent rate.
  - If there is a jumper who opened higher than you but has a faster decent rate, fly your parachute in brakes to let them pass you.
  - If you open higher but have a faster decent rate than a jumper below you, it is your job to spiral down below them.
  - You should not pass anyone below 1500ft. Establishing vertical separation will help to create an evenly spaced flow of traffic when you enter the landing pattern.
- Draw an imaginary line down the center of the target (in the same direction as the wind line or your final approach) and stay on the right side through your entire pattern if you are flying a right-hand pattern, alternately, fly your entire pattern on the left side if flying a left hand pattern. Do not cross the centerline as this may result in a canopy collision or another jumper having to take evasive procedures to miss hitting you.
- Fly a predictable pattern. Fly a pattern with a distinct downwind leg, base leg, and final approach. Avoid "S" turns in the pattern.
- Lastly, the first jumper down establishes the landing direction for everyone else. If you do not like the direction they have chosen, you may take issue with them after you have flown the established pattern and are on the ground.

Do not wait until you are under your canopy to start thinking about how you are going to create a smooth flow for the landing pattern; it is too late! Before you enter the aircraft, find out who is jumping at the east field with you, how high they are going to open, and what size canopy they are jumping. Take all of this information into consideration when deciding the exit order to achieve separation at opening and in the landing pattern. The freefall portion of the skydive may be done, but the skydive is not over until all jumpers are on the ground. Remember, it is your responsibility to fly your canopy and to land safely on the ground.

## **Avoiding Canopy Collisions**

The best way to avoid a canopy collision is to know where other canopies are at all times. If flying towards a head-on collision, the jumpers should turn to the right, or to open airspace. If a collision is inevitable:

- Protect your face and operation handles.
- Tuck in your arms, legs, and head.
- Avoid hitting the suspension lines of the other canopy or the other jumper, if possible.
- Check altitude with respect to the minimum cutaway decision and execution altitude recommended for your experience.



- Communicate before taking action:
  - The jumper above can strike the jumper below during a cutaway unless one or both are clear or ready to fend off.
  - The jumper below can worsen the situation for the jumper above by cutting away before he or she is ready.
  - If both jumpers are cutting away and altitude permits, the second jumper should wait until the first jumper clears the area below.
  - The first jumper should fly from underneath in a straight line after opening.
  - At some point below a safe cutaway altitude (1000ft), it may become necessary to deploy one or both reserves (may not be a safe option with an SOS system).
  - If both jumpers are suspended under one flying canopy at a low altitude, it may become necessary to land with only that canopy.
  - Communications may be difficult if one or both jumpers are wearing full-face helmets.

# SOLO BRIEFING

## Emergency Reviews

- 1.) Decision altitude: 2,500 feet – WHY?
- 2.) Emergency Procedures (EPs)
- 3.) Equipment Emergencies (physically demonstrate - at hanging harness)
  - a.) Total (Hard Pull, Missing Handle, Total Malfunction) – High speed
  - b.) Pilot Chute (PC) Hesitation, PC in Tow, Bag Lock, Horseshoe, Streamer – High speed
  - c.) Line over
  - d.) Injured arm
  - e.) Unusual slow (Broken lines, Damaged canopy, PC over the nose, One toggle unstowed/toggle fire, Tension knots)
  - f.) Two canopies out
    - 1.) Side-by-side (Un-stow brakes on MAIN canopy, STEER GENTLY)
    - 2.) Biplane (Un-stow brakes on FRONT canopy, STEER GENTLY)
    - 3.) Down plane (Cutaway immediately, regardless of altitude)
- 4.) Obstacle Avoidance and Landings
  - 1) Avoidance: LOOK AWAY, TURN AWAY (the earlier the better)
  - 2) Landings:
    - a) Power lines
    - b) Trees
    - c) Buildings/Fixed Obstacles (Junk yard obstacles, Bus, Barn, Fences)
    - d) Water
  - 3) PLF (physically demonstrate until correct)
  - 4) Downwind/Crosswind landings
  - 5) Landing patterns in higher winds
- 5.) Aircraft Emergency Procedures (at the plane)
  - 1) Parachute open in plane
  - 2) Landing in plane
  - 3) Altitudes to stay or leave and which procedures to use
    - a) 0-1,000 feet EMERGENCY LANDING: Land with the plane, unless catastrophic
    - b) 1,000-4,000 feet EMERGENCY EXIT: Exit on Reserve
    - c) 4,000+ feet EMERGENCY EXIT: Exit on Main
  - 4) Location of fuel switch, altimeter, etc.
  - 5) Large plane briefing – see appendix for procedures
- 6.) Weight and Balance Briefing with jump pilot (if not completed at the time of your solo briefing, it is your responsibility to schedule this with a pilot).
  - a.) As per “A” license proficiency card for Aircraft and Spotting #5

## General Information

- 1.) Manifesting
  - a.) You must have a USPA membership and provide manifest with verification.
  - b.) Solo jumps do not need to be scheduled (schedule checkout dive when ready).
  - c.) Make sure student gear is available.
  - d.) Student Jump Worksheet: Complete and have it signed off by an instructor.
  - e.) Manifest for a flight – No less than a 10 minute call.

- f.) How many/How high – 2 to 3k, 3 to 6k, 4 to 10k (for C182)
  - g.) Obtain a **gear check from a SS instructor, prior to boarding** the plane
- 2.) Winds
- a.) Review use of Winds Aloft Chart
  - b.) Wind limits
- 3.) Spotting
- a.) Splitting the spot (pages 62-63)
  - b.) Exit separation – as a general rule, wait until the previous jumpers or group is at a 45 degree angle behind and below the airplane (more wind, more separation)
  - c.) Ground speed/separation chart in Caravan
  - d.) Cloud Clearances
  - e.) Determining Exit and Opening Points
- 4.) Freefall Safety
- a.) Gear checks (prior to boarding and prior to exit)
  - b.) Check of 3s:
    - a. 3 rings – assembled correctly and RSL properly connected
    - b. 3 straps – chest strap, two leg straps
    - c. 3 handles – check handles in order of operation (you only have 2 ....for now)
  - c.) 3 rules of pulling
  - d.) Tracking safety (No more than 5 sec up or down line of flight, potential risks)
- 5.) Landing Pattern
- a.) Promoting a smooth flow of traffic (Establish and maintain vertical/horizontal separation, Fly a predictable pattern, First person down sets the landing direction)
  - b.) Areas not to be over (Obstacles, Center line on final)
  - c.) Landing off-target (call DZ if you land way out)
- 6.) Goals to be met prior to receiving your “A” license
- a.) Complete missed or remaining license requirements (Your A-license Proficiency Card references can also be found in the appendices under **License Requirements**)
  - b.) Check-out dive and Relative Work jumps (schedule through student availability form)
  - c.) Hanging Harness #2 (dual handle after RW#4)
  - d.) A license Exam (Study SIM quizzes in the appendices under **Category Quizzes** or online at <http://www.uspa.org/SIM/Read/Section4.aspx>)
- 7.) Gear/Rigging
- a.) Gear sales – rigs, canopies, jumpsuits, etc.
  - b.) Rigging – current riggers, repack requirements, etc.

## Prior to Solo Jumps:

Reading Assignment, Requirements:

- 1.) Review all information covered in your training.
- 2.) Receive a solo briefing from an instructor (see pages 58-59).
- 3.) Review all skills required for the checkout dive (see below).
- 4.) Must have completed or be signed up for a packing class.
- 5.) Must have signed up for or have a USPA Membership.

### Checkout Dive

A primary goal of your Solo Jumps is to become proficient in the skills required for your checkout dive. You are required to perform a checkout dive to advance to the relative work jumps and to meet your "A" license requirement.

The ground portion of your checkout dive consists of your ability to:

- Plan a skydive and communicate with another jumper (your instructor).
- Determine the climb out, exit and opening points for the skydive.
- Manifest for a skydive.
- Gear up.
- Be in the loading area and determine load/exit order before boarding the aircraft.
- Brief the pilot of intended plans.

The freefall portion of the checkout dive consists of:

- Perform spotting duties; split the spot if necessary
- Perform a stable door dive
- Front loop
- Back loop
- Barrel roll
- 360 degree turn to the right
- 360 degree turn to the left
- Initiate break-off sequence at 6000ft
- Wave off at 4000ft and pull

All skills must be done within 60 degrees of initial heading which shows control on all axes. You must achieve at least 100ft of horizontal separation from your coach/instructor during the break-off sequence. A USPA coach or instructor will exit the plane with you to observe the dive and either advance you or require you to repeat the checkout dive.

The canopy portion of the checkout dive consists of:

- Promote a smooth flow of traffic
- Land within 20 meters of the target

Practice all of these skills individually until proficient for a complete checkout dive.

**Remember: You may practice your checkout dive out of the caravan from 13,000ft but may have to perform it from 10,000ft out of the 182.**

## **SECTION 2**

# **SOLO STUDENT JUMPS**

# SOLO STUDENT JUMPS

## **Solo Jump #1**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Read pages 62-63 on Solo Jump #1, Gear Checks, Splitting the Spot, Outside Step Exit Position and Flat Track.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Perform a gear check on the gear you are jumping and get a gear check from an instructor.
- 3.) Inform manifest about the type of jump you are making (solo) and exit altitude.
- 4.) Determine the spot including climb out, exit, and opening points using the winds aloft chart and aerial map.
- 5.) Gear up at the 10-minute call for your load.
- 6.) Give the pilot briefing and split the spot.
- 7.) Perform an outside step exit maintaining stability and heading. Relax during jump while maintaining altitude awareness. Perform one 360 degree center turn to the right and one 360 degree turn to the left. Pick a heading and attempt flat track for 5 seconds. If above 7000ft, turn 180 degrees and repeat. Initiate the break-off sequence at 6000ft, wave-off at 4000ft and pull.
- 8.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

**New Skills:**

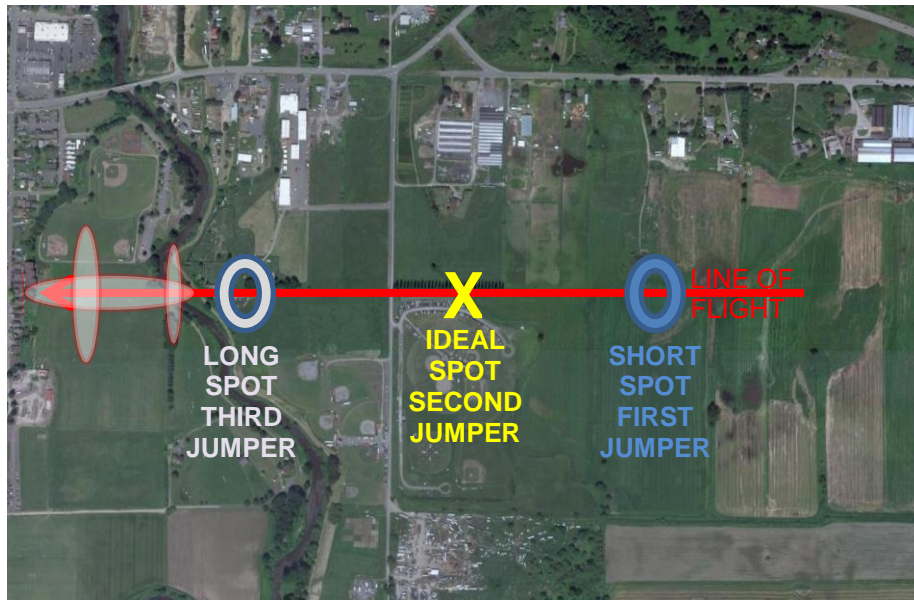
### **Gear Checks**

Even though you are on solo status, it is necessary to receive a gear check prior to boarding the plane by a Skydive Snohomish Instructor. If possible, you should also receive a pin check prior to exiting the aircraft. Do not assume that everyone is qualified to check student gear. As long as you are jumping student gear, it is best to receive a gear check from an instructor, coach or packer familiar with the equipment. In the future when you are jumping your own gear, it is up to you who you ask. Make sure that if there are any quirks about your gear, you point them out to the person performing the check.

### **Splitting the Spot**

Splitting the spot is done when more than one jumper/group will exit the airplane on the same jump pass. While on the ground, pick the ideal exit point. If there are two jumpers planning to exit on the same pass, the first jumper should exit just prior to the ideal spot and the second jumper just past the ideal spot. For three jumpers, the first jumper will exit early (short), the second over the ideal spot, and the third a little late (long). Splitting the spot allows everyone to exit in an area that will let them get back to the target. Watch the jumper exiting before you and give plenty of separation between each jumper/group to avoid freefall or canopy collisions. Remember to take a look before you leap! As a general rule, wait until the previous jumper or group is at a 45 degree angle behind and below the airplane (more wind, more separation). There is an exit separation chart in the caravan (near the lights) that shows the exit delay in seconds, once given the ground speed by the pilot. If you are in the 182, you will have to

gauge the separation between the groups by the distance travelled over the ground by the airplane, with a minimum of 7 seconds. If the jumper(s) ahead of you took too long, you may find yourself too far away from the spot and it may be necessary for you to deploy slightly higher (not above 4500ft) or to ask for a go-around. Remember parachutes, on average, have a 3:1 glide ratio.

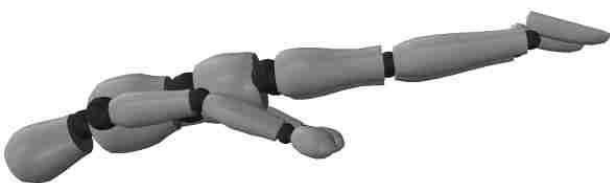


**Outside Step Exit Position (182)**

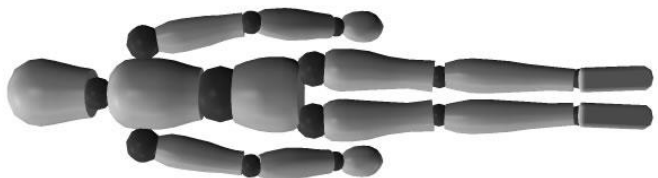
Performing this exit is no different than a regular step exit. On a group skydive, begin climbing out a little earlier than you would for just yourself. You need to allow time for any additional jumpers to get into position without going past your exit point. Position your left foot out to the far edge of the step so there is room for the other jumper(s) to get into position.

**Flat Track**

The Delta position must be mastered before attempting the Flat Track. When performed correctly, a flat track will let you achieve maximum horizontal separation from other jumpers with minimal loss of altitude. Start in a delta; gradually bring both legs together and your arms to your sides. Your hands should be facing down while your shoulders are rounded forward causing a slight cupping action in the chest area. Keep the legs straight with toes pointed and contract the lower abdominal area of your torso to cause a slight cupping position. Keeping the body streamlined in a cupped position with the head up will ensure minimal altitude loss in the track. The flat track is less stable than the delta and will take some practice to master. Experiment when you jump by yourself with pressing down or spilling with one arm or one leg. By pressing down or spilling with an arm or leg, you will cause a turn while you track. This will be a skill you want to develop in case another jumper is too close to you when gaining separation from the center of the formation.



**Flat Track – Side View**



**Flat Track – Top View**

## **Solo Jump #2**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 62-63 on Solo Jump #1, page 53 on Back Loops and pages 13-14 on Aircraft Emergency Procedures.
- 2.) Read page 64 on Solo Jump #2, Inside Step Exit Position and Floater Exit.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Determine the spot including climb out, exit, and opening points using the winds aloft chart and aerial map.
- 3.) Inform manifest about the type of jump you are making (solo) and your exit altitude.
- 4.) Gear up at the 10-minute call for your load.
- 5.) Give the pilot briefing and split the spot, if necessary.
- 6.) Exit from the inside step position (182) or floater exit (caravan) while maintaining stability and heading. Maintain altitude awareness, perform back loops, initiate the break-off sequence at 6000ft, wave off at 4000ft, and pull.
- 7.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

**New Skills:**

### **Inside Step Exit Position (182)**

To perform an inside step exit, climb out just as you would for normal step exit except that you will position your left foot next to the foot of the person on the outside step, allowing the right foot to be trailing just behind the step. Do not leave both feet on the step because if you have three or four jumpers exiting together, not everyone will be able to get a foot on the step as needed. In order to count from this position:

Yell “**ready**” while rocking your upper body/head towards the tail

Yell “**set**” while rocking towards the front of the aircraft

Yell “**go**” as you rock toward the tail again and let go

### **Floater Exit (Caravan)**

To perform a floater exit, you will start in a kneeling position facing out the door. With your right hand gripping the bar at the top of the door with your palm facing out, you will begin to rotate your body to the right. Once at 90 degrees you will grip the bar with your left hand, your palms still facing out of the door. Once your back is outside the door, stand up. Try to keep your body as close to the plane as possible to reduce the resistance by the wind. Your feet should be on the threshold of the door.

When counting from this position, make eye contact with whoever you are jumping with for confirmation that they are ready. Then look forward. In order to count from this position:

Yell “**ready**” while swinging your left leg outwards (be ready for a blast of wind).

Yell “**set**” while swinging it towards the front of the aircraft.

Yell “**go**” as you swing your left leg out and let go, opening your chest and hips into the relative wind.

Always begin the count by rocking in the direction you will be exiting when you yell “ready”.



### **Solo Jump #3**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Review page 64 on Solo Jump #2, page 55 on Front Loops and pages 11-12 on Emergency Procedures and pages 41-42, 49 on Mid Braked Canopy Turns and flares.
- 2.) Read page 65 on Solo Jump #3.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Determine the spot including climb out, exit, and opening points using the winds aloft chart and aerial map.
- 3.) Inform manifest about the type of jump you are making (solo) and your exit altitude.
- 4.) Gear up at the 10-minute call for your load.
- 5.) Give the pilot briefing and split the spot, if necessary.
- 6.) Perform a door dive exit while maintaining stability and heading. Maintain altitude awareness, perform front loops, initiate the break-off sequence at 6000ft, wave off at 4000ft, and pull.
- 7.) Perform mid braked canopy turns and flares above 2000ft.
- 8.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

### **Solo Jump #4**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Review page 65 on Solo Jump #3, pages 40-41 on Obstacle Avoidance and Landings, page 53 on Barrel Rolls and page 46 on deep braked turns.
- 2.) Read page 65 on Solo Jump #4.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Determine the spot including climb out, exit, and opening points using the winds aloft chart and aerial map.
- 3.) Inform manifest about the type of jump you are making (solo) and your exit altitude.
- 4.) Gear up at the 10-minute call for your load.
- 5.) Give the pilot briefing and split the spot, if necessary.
- 6.) Perform a door dive exit while maintaining stability and heading. Maintain altitude awareness, perform barrel rolls, initiate the break-off sequence at 6000ft, wave off at 4000ft, and pull.
- 7.) Perform deep braked canopy turns above 2000ft.
- 8.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

## **Solo Jump #5**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Review page 65 on Solo Jump #4 and pages 62 and 67 on Checkout Dive and discuss any questions with instructor.
- 2.) Read page 66 on Solo Jump #5.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Determine the spot including climb out, exit, and opening points using the winds aloft chart and aerial map
- 3.) Inform manifest about the type of jump you are making (solo) and your exit altitude
- 4.) Gear up at the 10-minute call for your load
- 5.) Give the pilot briefing and split the spot, if necessary
- 6.) Perform a door dive exit maintaining stability and heading. Maintain altitude awareness and perform the following maneuvers within 60 degrees of initial heading: front loop, back loop, barrel roll, 360 degree center turns to the right and left, initiate the break-off sequence at 6000ft, wave-off at 4000ft, and pull.
- 7.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

## **Solo Jump #6**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Review page 66 on Solo Jump #5 and Solo Jump #6.
- 2.) Schedule Checkout Dive with Manifest.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Determine the spot including climb out, exit and opening points using the winds aloft chart and aerial map.
- 3.) Perform a gear check on the gear you are jumping and get a gear check from an instructor.
- 4.) Inform manifest about the type of jump you are making (solo) and exit altitude.
- 5.) Gear up at the 10-minute call for your load.
- 6.) Give the pilot briefing and split the spot, if necessary.
- 7.) Perform a door dive exit maintaining stability and heading. Maintain altitude awareness and perform the following maneuvers within 60 degrees of initial heading: front loop, back loop, barrel roll, 360 degree center turns to the right and left, initiate the break-off sequence at 6000ft, wave-off at 4000ft, and pull.
- 8.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

## **Checkout Dive EF – 1/CS – 1/AS – 6**

Jump altitude: 10-13,000 feet

Reading Assignment/Skills Practice:

- 1.) Review page 66 on Solo Jump #6.
- 2.) Read page 67 on Checkout Dive.

Objectives:

- 1.) Complete a student jump worksheet; have an instructor review and sign it prior to manifesting.
- 2.) Pack the rig you are jumping.
- 3.) Determine the spot including climb out, exit and opening points using the winds aloft chart and aerial map.
- 4.) Perform a gear check on the gear you are jumping and get a gear check from an instructor.
- 5.) Inform manifest about the type of jump you are making (checkout dive) and exit altitude.
- 6.) Gear up at the 10-minute call for your load.
- 7.) Give the pilot briefing and split the spot, if necessary.
- 8.) Perform a door dive exit maintaining stability and heading. Maintain altitude awareness and perform the following maneuvers within 60 degrees of initial heading; front loop, back loop, barrel roll, 360 degree center turns to the right and left, initiate the break-off sequence at 6000ft, wave-off at 4000ft, and pull.
- 9.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.
- 10.) Schedule Relative Work Jump #1 (RW #1).



# **SECTION 3**

## **RELATIVE WORK JUMPS**

# RELATIVE WORK JUMPS

## **RW Jump #1**

Jump altitude: 10,000 feet

Reading Assignment/Skills Practice

- 1.) Review page 64 on the inside step and floater exit and page 56 on promoting a smooth flow of traffic in the landing pattern.
- 2.) Read pages 70-72 on RW Jump #1, Spotting for a Group Jump, Eye Contact, Forward and Backward Movement, Docking, and Maximum Performance Canopy Turns.
- 3.) Practice the dive verbally 3-5 times (at least 2 times perfectly) prior to your appointment.
- 4.) Practice Forward and Backward Movements and Break-off Sequence on creeper a minimum of 10 times with the Alti-trainer.

Objectives:

- 1.) Complete student jump worksheet and have coach review and sign it prior to manifesting.
- 2.) Brief the pilot.
- 3.) Spot for a group jump, give the count and exit from the Inside Step or Floater Exit Position with the coach taking grips on the upper arm.
- 4.) Maintain altitude awareness while performing the following skills: break grips once stable, move backward 5ft from the coach using techniques for Backward Movement and stop. Then move forward towards the coach using techniques for Forward Movement and dock with the coach. Repeat until break-off altitude.
- 5.) Initiate break-off sequence at 5500ft (see page 47). **EF - 4**
- 6.) Perform Maximum Performance turns under canopy above 2000ft. **CS - 6**
- 7.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.
- 8.) Schedule remaining RW jumps.

**New Skills:**

### **Spotting for a Group Jump**

When you jump other jumpers, you will need to adjust your climb out point accordingly. The more jumpers that will be exiting the aircraft with you, the more time it will take to get everyone ready and in their position for exit. This means that you will have to start your climb out earlier. If you do not make this adjustment, you will find yourself and possibly the groups exiting after you with a very long spot. Late exits result in jumpers having difficulty making it back to the target.

### **Eye Contact**

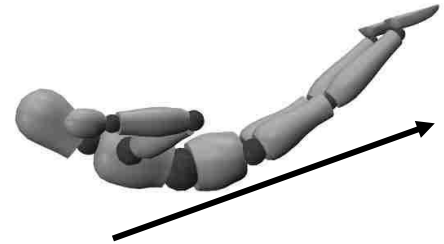
After you have climbed out of the plane, make eye contact with your coach and give the count. As you let go of the plane, keep looking directly at your coach while maintaining presentation to the relative wind. This skill is very important for maintaining close proximity to others in your group and facilitates important non-verbal freefall communication.

## Forward and Backward Movement

In order to maneuver with another jumper in the air, it will be necessary for you to move forward and backward in a controlled manner.

### To move forward:

- Start in a neutral “box” position.
- Extend your legs to move forward.
- Keep your arms in a box position and head up looking at the person you are approaching.
- To stop moving forward, apply the techniques for backward movement (described below) and return to the box position.
- Make sure you slow down in time to avoid a collision with another jumper. Collisions are very dangerous and can result in serious injury.



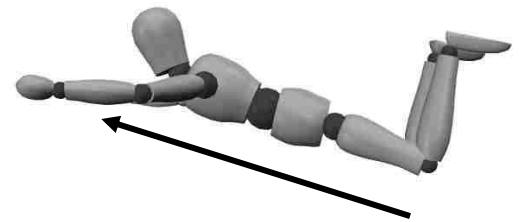
Arrows illustrate the **deflection of air**. This is what causes forward movement.

You may have quite a bit of separation from the jumper you are trying to dock with. It may be necessary to transition into a delta by bringing your arms back to close the gap. Remember to slow down prior to contact with the other jumper. The best method of approach initially is a staged approach where you perform a delta until you are a short distance from the other jumper then use the above procedure with your arms in a box position.

Backward movement is used to slow down your forward movement, or to avoid a collision from someone approaching you too fast.

### To move backward (Back slide):

- Start in a box position
- Extend your arms out in front of you.
- To stop moving backward, return to a “box” position. You may extend your legs if you need to stop faster.



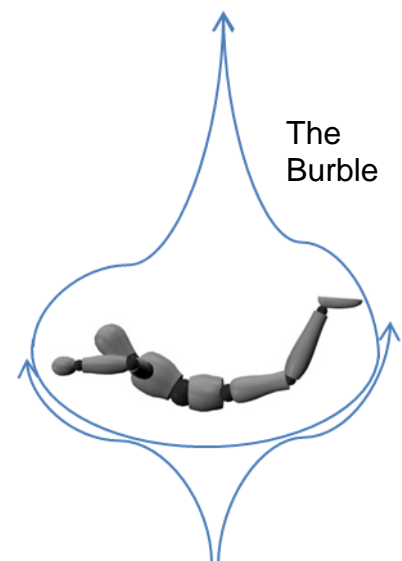
Arrows illustrate the **deflection of air**. This is what causes backward movement.

If you need to move backward at a faster rate, you may also bend your knees pulling your lower legs (from the knee down) out of the relative wind and lower your knees.

## Docking

Docking is the art of making and keeping contact with one or more jumpers in the air. There are a few challenges when you are first learning to dock with another jumper.

The first challenge is breaking through the “burble”. When a jumper is falling, they are displacing air around them. This displaced air creates what we call a burble. The first time you approach and try to make contact with another jumper, you may feel air resistance making it difficult to make contact. Breaking through the burble is done by extending your legs to create forward momentum to counter that resistance. **Do not reach forward with your arms**, this will cause you to travel



backwards and lose momentum.

The second challenge is to anticipate putting on the brakes as soon as you break through the burble. The tendency is to drive forward too hard and possibly collide with the other jumper. To prevent a collision when breaking through the burble, slowly extend the legs until you break through. Be ready to retract your legs to stop forward movement. Once you have made contact a few times, it will become much easier, and you will learn to carry enough momentum from your approach to break through the burble.

The third challenge to docking is to approach from straight ahead and not from an angle. A straight in approach is much easier and docks are accomplished much more quickly. If you try to approach at an angle, you will find that you end up sliding all over trying to get lined up or if you try grabbing another jumper before you are in the correct position, you may cause the skydive to be “funneled”. Adjust your position to the other jumper first, then move straight forward to dock.

**After docking, extend legs slightly to keep positive pressure and keep flying your body (do not stop flying).**

### **Maximum Performance Canopy Turns CS - 6**

A maximum performance turn (a.k.a. a reverse turn) is accomplished by doing a 90-degree toggle turn to one direction followed immediately by a toggle turn of at least 180 degrees to the opposite direction. Maximum performance turns are the fastest rate that you can turn your parachute without inducing line twists. On smaller parachutes, it is much easier to induce line twists with toggle turns. Maximum Performance turns should be performed above 2000ft on two separate jumps to meet the “A” license requirement.

Before practicing turns or maneuvers of any kind under canopy you must clear your airspace. Clearing your airspace means performing a thorough scan of the entire airspace you intend to use and see that it is clear of other traffic.

For more information on maximum performance turns (reverse turns) refer to the appendices under **Canopy Skills**.



## **RW Jump #2**

Jump altitude: 10,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 70-72 on RW #1. Review Start, Coast, Stop Principle on pages 43-44.
- 2.) Read pages 73-74 on Diving to the Coach and Cupping and Spilling.
- 3.) Practice the dive verbally 3-5 times.
- 4.) On a creeper, practice a delta position with a transition into a "box" a minimum of 10 times.
- 5.) On the ground or a creeper, practice Cupping and Spilling a minimum of 10 times each.
- 6.) Practice full dive a minimum of 5 times with the Alti-trainer.

Objectives:

- 1.) Complete student jump worksheet and have coach review and sign it prior to manifesting.
- 2.) Brief the pilot and spot.
- 3.) Give the count and perform a stable door dive exit.
- 4.) Maintain altitude awareness while performing the following skills: dive 100ft and dock with the coach, adjust fall rate to match the coach by using Cupping and Spilling techniques, dock with the coach after each skill until break-off.
- 5.) Initiate Break-off Sequence at 5500ft.
- 6.) Practice mid-braked turns above 2000ft.
- 7.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

## **New Skills:**

### **Diving to the Coach EF – 2 / LE**

You are required to dive a minimum of 100ft after another jumper and dock safely without assistance from the other jumper on two different skydives in order to meet your "A" license requirements.

To accomplish diving to and docking with your coach:

- Start by maintaining eye contact.
- Transition to a delta to begin diving down toward the coach.
- Return to a normal freefall position when you are approximately 20ft in front and above the coach.
- Use cupping and spilling techniques to match the fall rate of the coach before driving forward to dock. Always dive in a straight line and be prepared to slow down quickly to help prevent a collision.
- Extend your legs to finish driving forward to dock.

Try to stay above, and in front, but never directly above any formation or jumper when approaching. Getting directly above or below other jumper/s poses several dangerous situations for skydivers:

- When above or below premature deployments pose a threat to all parties.
- When below other jumper/s, your burble could possibly "funnel" the other jumper/s causing a collision.

- Never give up on the skydive and go “do your own thing”. Always keep the other jumpers in sight and stay with them as well as you can to prevent a possible canopy collision at opening altitude.

To recover altitude after going low on a formation:

1. Get out from directly underneath the formation.
2. Turn 90 degrees from the formation to maintain eye contact with the formation.
3. Perform cupping techniques to recover altitude in relation to the other jumpers.

When diving (swooping), keep eye contact with whoever you are diving to, and also be aware and practice looking for other jumpers around you while still flying in a straight line to prevent a collision.

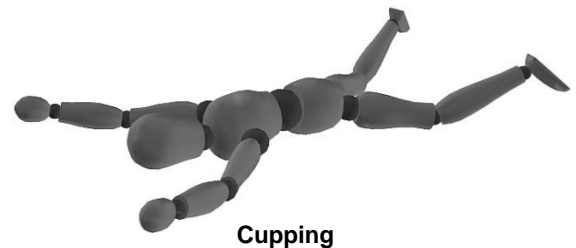
There are a few visual cues when you dive out of the plane to help with your approach to the coach/formation: If you can see the backpack of the other jumper/s then you are high and need to dive down to them. If you can see the front of their leg pads then you are too low and need to slow your fall rate to avoid going lower.

### **Cupping and Spilling: Moving up and down in relation to others**

Cupping and spilling air are techniques used to slow down and increase your Fall Rate (speed in freefall).

#### **To cup air:**

- Start in your “box” position.
- De-arch by flattening your body from your knees to your shoulders.
- Lower your head and turn it to the side to maintain visual of who is above you.
- Extend your arms and legs.
- When you have recovered altitude and are on level, return to your “box” position.



**Cupping**

In a cupping position, you will be less stable because you are de-arching, however, it will allow you to slow down your rate of descent. With practice, you will discover that you can remain stable by using your arms and legs, even though you are de-arched.

Most new jumpers have a tendency to look straight up with their heads, causing them to arch their upper body and have a head high body position. This results in them spilling more air and backsliding.

#### **To spill air**

- Start in a “box” position.
- Perform an exaggerated arch.



**Spilling**

Most new jumpers retract their legs too far out of the wind when spilling, which causes backward movement.

### **RW Jump #3**

Jump altitude: 10,000 feet

Reading Assignment/Skills Practice:

- 1.) Review pages 73-74 on RW #2 and pages 49 on Center Turns.
- 2.) Read pages 75-76 on the Crotch Exit, Head Switch and Front Riser Dives and Turns.
- 3.) Practice getting into position for the crotch exit a minimum of 5 times.
- 4.) Practice giving the count from the crotch position a minimum of 5 times.
- 5.) Practice the dive verbally 3-5 times.
- 6.) On a creeper, practice a delta position with a transition into a "box" a minimum of 10 times.
- 7.) Practice a minimum of 6 – 90 degree center turns to the left and right.
- 8.) Practice a minimum of 6 – 360 degree center turns to the left and right with head switch.
- 9.) Practice the full dive a minimum of 5 times with the Alti-trainer.

Objectives:

- 1.) Complete the student jump worksheet and have the coach review and sign it prior to manifesting.
- 2.) Brief the pilot and spot for a group jump.
- 3.) Give the count and perform a stable diving exit from the crotch position.
- 4.) Maintain altitude awareness while performing the following skills: dive 100ft and dock with the coach **EF - 2**, 2-90 degree center turns, 2-360 degree center turns with a head switch, dock after each skill.
- 5.) Initiate Break-off Sequence at 5500ft.
- 6.) Perform Front Riser Dives and Turns above 2000ft. **CS - 7**
- 7.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.

**New Skills:**

#### **Crotch Exit (182)**

To perform a crotch exit, you should be sitting in the jumpmaster position in the plane. From your knees, step out onto the step with your left foot facing the tail of the aircraft. Grab the strut with your left hand and hold the doorframe with your right. Position the right foot at the base of the strut where it meets the body of the airplane. Shift your weight back so you are sitting on your heel. Your left foot should be the only foot on the step so that there is room for the other jumpers to stand on the step. From this position you will count and exit the same as in a door dive position.

#### **Head Switch**

It is easy to slide away from a coach when performing 360-degree center turns. To help stay in close proximity and on the same level; you will need to perform a head switch. Begin your turn while holding eye contact with the coach. Keep eye contact only as long as you can keep your shoulders square (not allowing the shoulder you are looking over to dip). At that point, turn your head and pick up eye contact as soon as comfortable (without turning your head too far or too quickly as to become unbalanced in the other direction). You do not have to have actual eye contact. Peripheral eye contact is fine. Remember, the point of a head switch is to maintain proximity and keep on level.

The average person cannot maintain balanced shoulders much beyond a 75-degree turn of their head (it will feel more like 90 degrees because one eye will be over the shoulder). Try

turning your head in a standing position. Slowly turn your head to one side – it should feel as if your head is moving but nothing else is. You will reach a point where the feeling changes and your shoulder and chin feel as if they are moving towards each other. You do not want to reach that point while doing a turn.

The purpose of the head switch is to help you fly relative to another jumper while turning; it also allows you to decrease your reaction time if you are losing proximity to that person. If you see yourself starting to float when you begin your turn, focus on spilling more air while in the turn, rather than waiting until the turn is finished, therefore increasing your working time in the sky.

### **Front Riser Dives and Turns CS - 7**

The front risers control the front half of the canopy. They cause the canopy to increase forward speed and descent rate. For that reason, it is important to not perform front riser dives below 2000ft until you become a highly proficient canopy pilot. When doing front riser maneuvers, you will cover a lot more ground horizontally and vertically so make sure that you always clear your airspace before trying any canopy maneuvers.

On the backside of the front risers you will find black loops used to perform front riser maneuvers. When doing these maneuvers, your toggle should be wrapped around all four fingers with your pinky and ring finger closed around the toggle. You should use your pointer and middle finger to grab the front riser loop. You do this so that when you let go of the front riser you do not also let go of your toggle.

- Pulling down on both front risers at the same time performs a front riser dive. This allows the canopy to obtain more forward drive by lowering the front of the canopy to penetrate winds more efficiently. At the same time, your rate of descent will dramatically increase so **be sure to constantly monitor your altitude**.
- Pulling down on the front riser on the side in which you wish to turn performs front riser turns. Be sure to clear your airspace before turning. Front riser turns will cause a dramatic increase in your rate of descent so **closely monitor your altitude before and after each turn**.

All front riser dives and turns must be performed above 2000ft. The dives and turns are required for your “A” license.

**Remember you can activate your Cypres 2 AAD by performing canopy maneuvers too low.**

For more information on Front Riser Dives and Turns refer to the appendices under **Canopy Skills**.

## **RW Jump #4**

Jump altitude: 10,000 feet

Reading Assignment/Skill Practice:

- 1.) Review pages 75-76 on RW #3.
- 2.) Read pages 77-78 on Side Slides, Sidebody, Sport Rig Gear Check, and Final Assignments.
- 3.) On a creeper, practice side slides a minimum of 10 times to the right and left.
- 4.) Practice dive verbally 3-5 times.
- 5.) Practice full dive a minimum of 5 times with Alti-trainer.

Objectives:

- 1.) Completely fill out student jump worksheet and have coach review and sign it prior to manifesting.
- 2.) Brief the pilot and spot for a group.
- 3.) Give the count and perform a stable door dive exit.
- 4.) Maintain altitude awareness while performing the following skills: dive 100ft and dock with the coach, perform 90 degree turn to the left and perform a side slide to the right into the instructors grips to create a **sidebody**, perform 180 degree turn to the right and perform a side slide to the left into the instructors grips to create a **sidebody**, perform 90 degree turn to the left and dock with the instructor, repeat until breakoff altitude.
- 5.) Initiate the Break-off sequence at 5500ft.
- 6.) Practice front riser maneuvers above 2000ft.
- 7.) Fly and promote a smooth flow of traffic in the landing pattern; keep horizontal/vertical separation from other jumpers, stay on the proper side of the target in the pattern, and land within 20 meters of the target.
- 8.) Complete final assignments.

## **New Skills:**

### **Side Slides: Sideways movement**

To perform a side slide, press down with the elbow and knee on the same side of the body. The more you press down, the faster and farther you will travel during the slide. To stop a side slide, return to the box position (if necessary, do a counter slide by pressing down with the elbow and knee on the opposite side of the body). You are using the same concept as forward and backward movement except you are now deflecting air to the side. It is important that you deflect the same amount of air with your lower body as you do with the upper body to prevent turning.



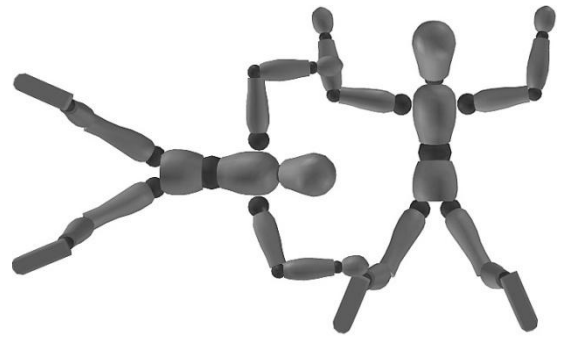
**Left Side Slide**



**Right Side Slide**

## **Sidebody**

A sidebody is a formation used in formation skydiving (FS) to link two or more jumpers. One jumper (A) presents their side to another jumper (B) and jumper B takes grips on jumper A's upper arm grip and leg grip.



**Sidebody**

## **Sport Rig Gear Check**

When you gear-check a sport rig, you may and will encounter several differences from student gear. You will get more intimate with a sport rig with your two handle briefing, but this is a basic introduction to a general gear check.

1. A sport rig may or may not have an AAD. If there is an AAD, it may not be a Cypres. You will need to find out from the jumper if they have an AAD, what type it is, and how to properly check the power and calibration.
2. There may or may not be an RSL. If there is an RSL, it could be on the right or left side of the rig and the jumper may have opted to disconnect it.
3. There may be one or two closing pins for the reserve. Ask the jumper how many pins should be there. If the answer is two, make sure the rigger's seal is on the bottom pin.
4. A curved pin closes the container for the main. You will need to check to see that the pin extends  $\frac{3}{4}$  of the way past the closing loop.
5. Many rigs have collapsible pilot chutes so checking the small window on the opposite side of the bridle where the pin attaches will reveal the kill line. When the pilot chute is cocked (set to catch air) the kill line will be colored in some fashion. If the kill line is white then the pilot chute may be collapsed (streamline) and may cause a pilot chute in tow malfunction. There may not be a window for non-collapsible pilot chutes.
6. The pilot chute is no longer inside of the container. Most jumpers have their pilot chute located at the bottom of the container, but you may occasionally find one mounted on the leg strap. Make sure that the bridle is not "exposed" (hanging out where it could be snagged) and that the pilot chute is completely in its pouch with the handle out.
7. There are two handles for emergency procedures on a sport rig. The right handle is for cutting away and the left handle is for deploying the reserve. Check that the cables for both are routed correctly and the handles are secured in Velcro.
8. The final difference is that the leg straps are "step through" (they no longer have clips). Other than the clips, check the leg straps the same as you would for student gear. All other parts of the gear check will be the same as your student gear. If you find something you are not sure about, or you know is wrong, bring it to the jumper's attention.

## **Final Assignments:**

- 1.) Schedule a meeting with an instructor to make sure all "A" license requirements have been met.
- 2.) Study for and take the A license Exam to be given by an Instructor or Instructor/Examiner.
- 3.) Obtain an "A" stamp on the back of the proficiency card.
- 4.) Turn in your completed "A" license proficiency card to Manifest to be faxed or mailed to USPA including the \$30.00 licensing fee.
- 5.) Receive a Two Handle Briefing.
- 6.) Fill out licensed jumper contract.

# **SECTION 4**

# **APPENDICES**

# HAND SIGNALS



Arch / Hips forwards into the relative wind



Extend legs six inches and hold



Legs in (Retract legs slightly)



Head up/ GO!



Relax (breathe)



check arm position



Knees together slightly or toe taps



Deploy the parachute (Pull)



# DIVE FLOWS

## SL#2

### In Plane

- Verify attachment of the static line to the aircraft
- Verbally and mentally review the skydive
- Keep eyes open for canopy material in the plane while the instructor is opening the door
- Move slowly when told, protecting handle
- Follow Instructors command to sit in the door

### Climb Out

- Climb out and hang within 10 seconds of the instructors command
- Arch your body or respond correctly to hand signals
- Release both hands simultaneously when given the "GO!" command

### In Air

- ARCH thousand
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### Canopy

- Controllability check
- Listen for instructions from the ground instructor
- Identify landing area
- Identify holding area
- Hold in holding area
- Enter the landing pattern 1000-800 feet
- Turn base leg at 600-500 feet
- Turn onto final approach 300-200 feet
- Flare
  - To full arm extension if given Flare command by radio or flags
  - To waist and no further if no ground instructor present or landing off target
- PLF upon contact with the ground

## PRCP #1

### In Plane

- Verify attachment of the static line to the aircraft
- Verbally and mentally review the skydive
- Keep eyes open for canopy material in the plane while the instructor is opening the door
- Move slowly when told protecting handles
- Follow instructors command to sit in the door

### Climb Out

- Climb out and hang within 10 seconds of the instructors command
- Arch your body or respond correctly to hand signals
- Release both hands simultaneously when given the "GO!" command

### In Air

- ARCH thousand
- REACH thousand
- PULL thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### Canopy

- Controllability check
- Listen for instructions from the ground instructor
- Identify landing area
- Identify holding area
- Hold in holding area
- Enter the landing pattern 1000-800 feet
- Turn base leg at 600-500 feet
- Turn onto final approach 300-200 feet
- Flare
  - To full arm extension if given Flare command by radio or flags
  - To waist and no further if no ground instructor present or landing off target
- PLF upon contact with the ground

## **PRCP #2**

### **In Plane**

- Verify attachment of the static line to the aircraft
- Verbally and mentally review the skydive
- Keep eyes open for canopy material in the plane while the instructor is opening the door
- Move slowly when told protecting handles
- Follow instructors command to sit in the door
- Identify the line of flight of the aircraft

### **Climb Out**

- Climb out and hang within 10 seconds of the instructors command
- Arch your body or respond correctly to hand signals
- Release both hands simultaneously when given the "GO!" command

### **In Air**

- ARCH thousand
- REACH thousand
- PULL thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### **Canopy**

- Controllability check
- Identify landing area
- Identify holding area
- Hold in holding area
- Fly landing pattern on standby radio
- Flare
  - To full arm extension if given Flare command by radio or flags
  - To waist and no further if no ground instructor present or landing off target
- PLF upon contact with the ground

## **PRCP #3**

### **In Plane**

- Verify attachment of the static line to the aircraft
- Verbally and mentally review the skydive
- Keep eyes open for canopy material in the plane while the instructor is opening the door
- Move slowly when told protecting handles
- Follow instructors command to sit in the door
- Identify the line of flight of the aircraft

### **Climb Out**

- Climb out and hang within 10 seconds of the instructors command using step exit foot work
- Arch your body or respond correctly to hand signals
- Release both hands simultaneously when given the "GO!" command

### **In Air**

- ARCH thousand
- REACH thousand
- PULL thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### **Canopy**

- Controllability check
- Identify landing area
- Identify holding area
- Hold in holding area
- Fly landing pattern on standby radio
- Flare
  - To full arm extension if given Flare command by radio or flags
  - To waist and no further if no ground instructor present or landing off target
- PLF upon contact with the ground

## **5 Second**

### **In Plane**

- Verbally and mentally review the skydive
- Keep eyes open for canopy material in the plane while the instructor is opening the door
- Move slowly when told protecting handles
- Follow instructors command to sit in the door
- Identify the line of flight of the aircraft

### **Climb Out**

- Climb out and hang within 10 seconds of the instructors command using step exit foot work
- Arch your body or respond correctly to hand signals
- Release both hands simultaneously when given the “GO!” command

### **In Air**

- ARCH thousand
- TWO thousand
- THREE thousand
- REACH thousand
- PULL thousand
- Check thousand
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### **Canopy**

- Controllability check
- Identify landing area
- Identify holding area
- Hold in holding area
- Fly landing pattern without radio assistance
- Flare without radio assistance
  - To full arm extension if at the correct altitude
  - To waist and no further if too high or landing off target
- PLF upon contact with the ground

## **10 second #1**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
  - Stow seat belt, secure helmet and goggles, on knees looking for aircraft, gear check complete
- Open the door when prompted by instructor- maintain awareness of premature deployment in the plane
- Spot aircraft with instructor assistance
- Observe interaction of pilot and instructor

### **Climb Out**

- Climb out from knees using step exit footwork and hanging within 10 seconds of starting climb out
- Arch your body or respond correctly to hand signals
- Release both hands simultaneously when given the “GO!” command

### **In Air**

- ARCH thousand – establish heading
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- SIX thousand
- SEVEN thousand
- EIGHT thousand
- REACH thousand
- PULL thousand
- Check thousand
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### **Canopy**

- Perform controllability check with rear risers, with both brakes stowed and unstowed
- Identify landing area
- Identify holding area
- Hold in holding area
- Fly landing pattern and land without radio assistance

## **10 second #2**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
  - Stow seat belt, secure helmet and goggles, on knees looking for aircraft, gear check complete
- Open the door when prompted by instructor- maintain awareness of premature deployment in the plane
- Spot aircraft with instructor assistance

### **Climb Out**

- Climb out from knees using step exit footwork to step exit position within 10 seconds of starting climb out once over designated climb out point
- Perform stable step exit when given "GO!" command from instructor

### **In Air**

- ARCH thousand – establish heading
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- SIX thousand
- SEVEN thousand
- WAVE thousand
- REACH thousand
- PULL thousand
- Check thousand
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### **Canopy**

- Perform rear riser turn upon opening
- Controllability check
- Perform descent without radio assistance
- Fly landing pattern and land without radio assistance

## **10 second #3**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by instructor- maintain awareness of premature deployment in the plane
- Spot aircraft with minimal assistance

### **Climb Out**

- Climb out from knees using step exit footwork to step exit position once over designated climb out point
- Perform stable step exit when given "GO!" command from instructor

### **In Air**

- ARCH thousand – establish heading
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- SIX thousand
- SEVEN thousand
- WAVE thousand
- REACH thousand
- PULL thousand
- Check thousand
- TWO thousand
- THREE thousand
- FOUR thousand
- FIVE thousand
- Check canopy

### **Canopy**

- Controllability check
- Perform mid-braked turns above 2,000 feet in holding area
- Perform entire canopy descent without radio assistance

## **15 Second #1**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by instructor- maintain awareness of premature deployment in the plane
- Spot aircraft with minimal assistance

### **Climb Out**

- Climb out from knees using step exit footwork to step exit position once over designated climb out point
- Perform stable step exit when given "GO!" command from instructor

### **In Air**

- Establish heading
- Transition to "Box" position and check altimeter
- If above 4.5k, look 90 degrees to the right and establish a new heading
- Initiate right hand turn using upper body only
- At 90 degrees stop the turn and check altimeter
- If above 4.5k, look 90 degrees to the left and establish your original heading
- Initiate left hand turn using upper body only
- At 90 degrees stop the turn and check altimeter
- Wave off at 4k
- Pull at 3.5k
- Check canopy

### **Canopy**

- Controllability check
- Perform mid-braked turns above 2,000 feet in holding area
- Perform entire canopy descent without radio assistance

## **15 Second #2**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by instructor- maintain awareness of premature deployment in the plane
- Spot aircraft without assistance

### **Climb Out**

- Climb out from knees using step exit footwork to step exit position once over designated climb out point
- Perform stable step exit when given "GO!" command from instructor

### **In Air**

- Establish heading
- Transition to "Box" position and check altimeter
- If above 4.5k, look 90 degrees to the right and establish a new heading
- Initiate right hand turn using upper body only
- At 90 degrees stop the turn and check altimeter
- If above 4.5k, look 90 degrees to the left and establish your original heading
- Initiate left hand turn using upper body only
- At 90 degrees stop the turn and check altimeter
- Wave off at 4k
- Pull at 3.5k
- Check canopy

### **Canopy**

- Controllability check
- Perform deep-braked turns above 2,000 feet in holding area
- Perform entire canopy descent without radio assistance
- Perform a stand up landing

## **45 second #1**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by instructor- maintain awareness of premature deployment in the plane
- Spot aircraft without assistance

### **Climb Out**

- Signal for the instructor to begin climb out when over the designated climb out point
- Efficiently move into door dive position and establish eye contact with instructor
- When given confirmation (eye contact/head nod/thumbs up) give the count – Ready, Set, GO!

### **In Air**

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a barrel roll to the right
- Check altimeter
- Perform a barrel roll to the left
- Check altimeter
- Perform a 360 degree center turn to the right
- Check altimeter
- Perform a 360 degree center turn to the left
- Check altimeter
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### **Canopy**

- Controllability check
- Perform mid-braked turns and flares above 2,000 feet
- Perform descent without radio assistance
- Perform a mid-braked approach and landing
- Perform a PLF

## **45 second #2**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance

### **Climb Out**

- Signal for the instructor to begin climb out when over the designated climb out point
- Efficiently move into door dive position and establish eye contact with instructor
- When given confirmation (eye contact/head nod/thumbs up) give the count – Ready, Set, GO!

### **In Air**

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a Back loop
- Check altimeter
- Perform a 360 degree center turn to the right
- Check altimeter
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### **Canopy**

- Controllability check
- Perform maximum performance turns above 2,000 feet
- Perform entire descent without radio assistance
- Land within 20 meters of the target

### **45 second #3**

#### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance

#### **Climb Out**

- Signal for the instructor to begin climb out when over the designated climb out point
- Efficiently move into door dive position and establish eye contact with instructor
- When given confirmation (eye contact/head nod/thumbs up) give the count – Ready, Set, GO!

#### **In Air**

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a Front loop
- Check altimeter
- Perform a 360 degree center turn to the left
- Check altimeter
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

#### **Canopy**

- Controllability check
- Promote a smooth flow of traffic under canopy
- Perform entire descent without radio assistance
- Land within 20 meters of the target

### **Solo #1**

#### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

#### **Climb out**

- **Caravan** - Efficiently move into door dive position and exit giving the appropriate exit separation
- **182** – Efficiently climb out to outside step exit position and exit giving the appropriate exit separation

#### **In Air**

- Exit on go, with a stable door dive exit or outside step exit
- Once stable check altimeter
- Perform a 360 degree center turn to the right
- Check altimeter
- Perform a 360 degree center turn to the left
- Check altimeter
- Pick a heading and attempt flat track for 5 seconds
- Check altimeter
- If above 7,000 feet turn 180 degrees and attempt flat track for 5 seconds
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

#### **Canopy**

- Controllability check
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

## **Solo #2**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### **Climb out**

- **Caravan** - Efficiently move into floater position and exit giving the appropriate exit separation
- **182** – Efficiently climb out to inside step exit position and exit giving the appropriate exit separation

### **In Air**

- Exit on go, with a floater exit or inside step exit
- Once stable check altimeter
- Perform a back loop
- Check altimeter
- Perform a back loop
- Check altimeter
- Repeat back loops until 7,000 feet
- Do not attempt back loops below 7,000 feet
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### **Canopy**

- Controllability check
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

## **Solo #3**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### **Climb out**

- Efficiently move into door dive position and exit giving the appropriate exit separation

### **In Air**

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a front loop
- Check altimeter
- Perform a front loop
- Check altimeter
- Repeat front loops until 7,000 feet
- Do not attempt front loops below 7,000 feet
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### **Canopy**

- Controllability check
- Perform mid braked canopy turns and flares above 2,000 feet
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target



## Solo #4

### In Plane

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### Climb out

- Efficiently move into door dive position and exit giving the appropriate exit separation

### In Air

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a barrel roll
- Check altimeter
- Perform a barrel roll
- Check altimeter
- Repeat barrel rolls until 7,000 feet
- Do not attempt barrel rolls below 7,000 feet
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### Canopy

- Controllability check
- Perform deep braked canopy turns above 2,000 feet
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

## Solo #5

### In Plane

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### Climb out

- Efficiently move into door dive position and exit giving the appropriate exit separation

### In Air

- Exit on go, with a stable door dive exit
  - Once stable check altimeter
  - Perform a front loop
  - Check altimeter
  - Perform a back loop
  - Check altimeter
  - Perform a barrel roll
  - Check altimeter
  - Perform a 360 degree turn to the right
  - Check altimeter
  - Perform a 360 degree turn to the left
  - Check altimeter
  - **All maneuvers should be within 60 degrees of initial heading**
  - Initiate the breakoff sequence at 6,000 feet
    - Turn 180 degrees – make sure to stop turn
    - Extend legs
    - Move arms to 45-90 degrees off hips
    - Track for 5 seconds
    - Return to arch
  - Wave off at 4,000 feet
  - Pull at 3,500 feet
  - Check canopy
- ### Canopy
- Controllability check
  - Promote a smooth flow of traffic under canopy
  - Land within 20 meters of the target

## Solo #6

### In Plane

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### Climb out

- Efficiently move into door dive position and exit giving the appropriate exit separation

### In Air

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a front loop
- Check altimeter
- Perform a back loop
- Check altimeter
- Perform a barrel roll
- Check altimeter
- Perform a 360 degree turn to the right
- Check altimeter
- Perform a 360 degree turn to the left
- Check altimeter
- **All maneuvers should be within 60 degrees of initial heading**
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### Canopy

- Controllability check
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

## Check Out Dive

### In Plane

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### Climb out

- Efficiently move into door dive position and exit giving the appropriate exit separation

### In Air

- Exit on go, with a stable door dive exit
- Once stable check altimeter
- Perform a front loop
- Check altimeter
- Perform a back loop
- Check altimeter
- Perform a barrel roll
- Check altimeter
- Perform a 360 degree turn to the right
- Check altimeter
- Perform a 360 degree turn to the left
- Check altimeter
- **All maneuvers should be within 60 degrees of initial heading**
- Initiate the breakoff sequence at 6,000 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### Canopy

- Controllability check
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

## **Relative Work #1**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### **Climb out**

- Efficiently move into inside step (182) or floater (caravan) position
- Give count while allowing appropriate exit separation

### **In Air**

- Exit on go, with a stable exit
- Once stable break grips with instructor
- Move backward 5 feet from instructor and stop
- Check altimeter
- Move forward 5 feet from instructor and dock
- Check altimeter
- Repeat above steps until break off altitude
- Initiate the breakoff sequence at 5,500 feet
  - Turn 180 degrees – make sure to stop turn
  - Extend legs
  - Move arms to 45-90 degrees off hips
  - Track for 5 seconds
  - Return to arch
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### **Canopy**

- Controllability check
- Perform maximum performance turns above 2,000 feet
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

## **Relative Work #2**

### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

### **Climb out**

- Efficiently move into Diving position
- Give count while allowing appropriate exit separation

### **In Air**

- Exit on go, with a stable diving exit
- Dive 100 feet and Dock with instructor
- Break grips with instructor – instructor moves up or down
- Use cupping/spilling techniques to match instructors fall rate
- Dock with instructor
- Check altimeter
- Break grips with instructor – instructor moves up or down
- Use cupping/spilling techniques to match instructors fall rate
- Dock with instructor
- Check altimeter
- Repeat above steps until break off altitude
- Initiate the breakoff sequence at 5,500 feet
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

### **Canopy**

- Controllability check
- Practice mid braked turns above 2,000 feet
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

### **Relative Work #3**

#### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

#### **Climb out**

- Efficiently move into Diving position
- Give count while allowing appropriate exit separation

#### **In Air**

- Exit on go, with a stable diving exit
- Dive 100 feet and Dock with instructor
- Break grips with instructor
- Perform 90 degree right turn maintaining eye contact
- Check altimeter
- Perform 90 degree left turn maintaining eye contact
- Dock with instructor
- Check altimeter
- Perform 360 degree turn with a head switch
- Dock with instructor
- Perform 360 degree turn with a head switch
- Dock with instructor
- Check altimeter
- Initiate the breakoff sequence at 5,500 feet
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

#### **Canopy**

- Controllability check
- Practice front riser dives and turns above 2,000 feet
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

### **Relative Work #4**

#### **In Plane**

- Verbal and mental review the skydive
- Perform In Plane preparations
- Open the door when prompted by pilot - maintain awareness of premature deployment in the plane
- Spot aircraft without assistance split the spot if necessary

#### **Climb out**

- Efficiently move into Diving position
- Give count while allowing appropriate exit separation

#### **In Air**

- Exit on go, with a stable diving exit
- Dive 100 feet and Dock with instructor
- Break grips with instructor
- Perform 90 degree left turn maintaining eye contact
- Check altimeter
- Perform a side slide to the right presenting a sidebody
- Instructor will dock
- Check altimeter
- Perform 180 degree right turn maintaining eye contact
- Check altimeter
- Perform a side slide to the left presenting a sidebody
- Check altimeter
- Perform 90 degree left turn
- Dock with instructor
- Repeat above steps until break off altitude
- Initiate the breakoff sequence at 5,500 feet
- Wave off at 4,000 feet
- Pull at 3,500 feet
- Check canopy

#### **Canopy**

- Controllability check
- Practice front riser dives and turns above 2,000 feet
- Promote a smooth flow of traffic under canopy
- Land within 20 meters of the target

# GEAR CHECKS

Whether you are checking student gear or licensed jumper gear it is important to do the gear check the same way each time so nothing is overlooked. Do not let anyone distract you as you are performing a gear check or gearing yourself up. If you have any questions about a gear check consult an instructor or rigger for an answer.

## STUDENT GEAR

**Back side** – Perform the back side gear check from top to bottom

**Cypres 2**– Make sure it is turned on. If it is not already on, turn it on by pressing the yellow button once and releasing. When the red light comes on, quickly press and release the yellow button again. Repeat this step two more times. After the fourth push numbers will appear and begin to count backwards from 10. The final reading should be a single 0 with the arrow pointing down. If any other numbers or letters appear instead of a single 0, tell an instructor who will take the rig offline until a rigger can inspect the Cypres 2 unit.

**Rigger's Seal** – Check to make sure that the red thread is fastened above the flatter end of the reserve pin and below the closing loop. The red thread should have some slack so that it does not break too easily, but not so much that you can slip it off the end of the pin. The thread should pass through the gray seal of the rigger. The seal must have an identifiable mark on it that lets you know which rigger packed the reserve.



**Reserve Closing Loop** – Check that the loop does not have any fraying and that the reserve pin is the only item passing through it.

**Reserve Pin** – Check to ensure that the pin is 3/4 of the way through the closing loop.

**Reserve Ripcord Cable** – Make sure that the metal cable moves freely through the hard housing. If it snags, have it inspected before jumping the rig.

**Reserve Static Line (RSL)** – Make sure that the small ring on the end of the RSL is around the reserve ripcord and located between the reserve ripcord hard housing and the small ring attached to the middle of the reserve top flap. The RSL should be routed over the top of the cable to the AAD control unit.

**Main Ripcord Cable** – Make sure the ripcord cable is routed properly from the lower right of the container through the soft housing and then through the closing loop. Check for any nicks or gouges in the cable especially the portion that passes through the closing loop.

**Main Closing Loop** – Check to make sure the ripcord cable passes through the loop. Also check the loop for any fraying. If there is mild fraying, have an instructor check it to make sure it is okay. In case of severe fraying, the rig should not be jumped until the closing loop is replaced. A Main closing loop with damage greater than 10 percent warrants replacement.

**Static Line** – Make sure that a static line is hooked up to the rig. The static line should have the cable portion routed through the closing loop with the excess tucked into the soft housing on the lower right of the container. The static line should have a few inches folded over into a loop on the left side of the container secured by a rubber band wrapped around it three times. If the static line is not secured in this manner, the static line cable can be pulled prematurely when climbing out or exiting the plane.

**Front side** – Perform the front side gear check starting at the top of the right side (RSL side) and working your way down the right side before moving to the left side. Then perform the left front side of the gear check from top to bottom. Try to make your gear check as linear as possible to prevent any missed components.

**Canopy Release System** – Check both three-ring systems to make sure the small ring only passes through the medium ring and that the medium ring only passes through the large ring. Make sure nothing else is routed through or wrapped around the rings that could prevent them from releasing the main parachute. To gear check the cutaway cable, look for the cable start on the upper left side of the rig passing through the white locking loop holding the left 3-ring system in place, through the emergency handle, back around to the right side of the rig, through the loop holding the right 3-ring system in place, and ends on the upper right portion of the rig. Each end of the cable should have approximately 5 inches extending past the 3-ring loops. Finally, check the cable that there are no nicks or gouges that could potentially catch on the 3-ring loops preventing the release of the main.



**Reserve Static Line (RSL)** – The RSL should be hooked up to the small silver ring on the right riser of the main parachute. Make sure that the RSL is routed over the right shoulder and that the reserve cable passes through the small silver loop at the end of the RSL lanyard. Also check that the small silver coil that the red tab is attached to on the right rear riser is not bent in any way that could cause it to catch on something and disconnect the RSL.

**Stitching/Material** – Check over the entire rig to make sure that all stitching is secure and there is no fraying of the stitching or holes in any of the material of the container. Check the harness webbing for any fraying and check the yellow indicator thread on the outer edges for any breaks that would indicate a compromise of the structural integrity of the webbing.

**Leg Straps** – Check that the ends of the leg straps are folded over and securely sewn in place. Also make sure that the straps are properly routed through the metal hardware and that the friction adapter prevents the straps from coming loose. Unhook the clips from the leg straps and re-connect them ensuring that the clips easily snap back into place. The clips should not stick or remain in an open position.

**Chest Strap** – Make sure that the chest strap is securely fastened to the vertical straps of the harness. Check for two extra rubber bands on the right hand side of the chest strap to fasten the radio if you are still on full talk downs or stand-by radio status.

**Emergency Handle** – Check to make sure that the handle is properly stowed in the left vertical harness strap and that the Velcro is functional.

**Reserve Ripcord Cable** – Check to make sure there is a silver ball attached to the end of the silver cable and that the cable passes through the emergency handle.

**Reserve Data Card** – Each rig has a reserve data card located on the back of the left main lift web. Each repack and any other maintenance performed on the reserve parachute are documented on this card by a certified FAA rigger. The reserve must be inspected and repacked every 180 days. Ask your instructor to show you the Reserve Data Card.



## LICENSED JUMPER GEAR

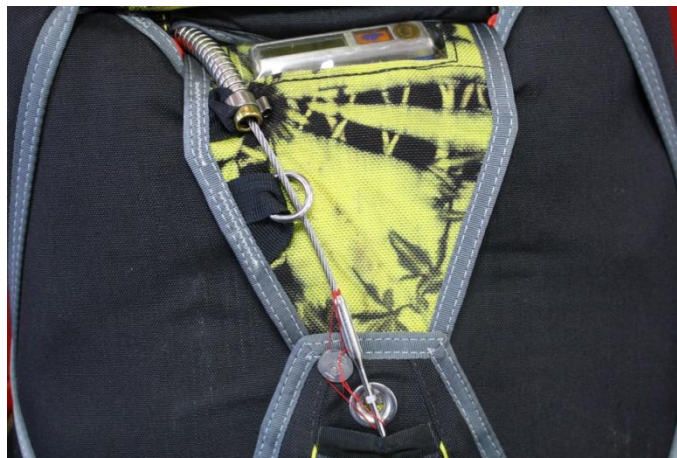
As you receive training on, begin jumping, and gear checking licensed jumpers gear you will notice differences from what you were initially trained on. If you have any questions about any new component on any rig, ask an instructor or rigger to explain. Do not jump any gear that you do not understand as this may pose a possible dangerous situation for you. It is your responsibility to gear check your gear prior to jumping and assure that it is in working order prior to your skydive.

### Back side

**AAD (Automatic Activation Device)** – First it needs to be determined if the rig has an AAD or not, they can be found in a few places; on top of the reserve flap like student gear, under the reserve flap, located on the back pad of the rig. There are different models of AADs, so whichever kind you encounter, you should familiarize yourself with it by taking the time to

read the owner's manual or user's guide. You need to find out how to turn it on, how to verify the power and calibration settings.

**Reserve Static Line (RSL)** – Check to see if a RSL is present. Make sure that the small ring on the end of the RSL is around the reserve ripcord and located between the reserve ripcord hard housing and the small ring attached to the middle of the reserve top flap. Some containers are set up slightly different, if you encounter something that is new to you ask for clarification. The RSL should be routed over the top of the cable to the AAD control unit.



**Rigger's Seal** – Check to make sure that the red thread is fastened above the flatter end of the reserve pin and below the closing loop. The red thread should have some slack so that it does not break too easily, but not so much that you can slip it off the end of the pin. The thread should pass through the gray seal of the rigger. The seal must have an identifiable mark on it that lets you know which rigger packed the reserve.

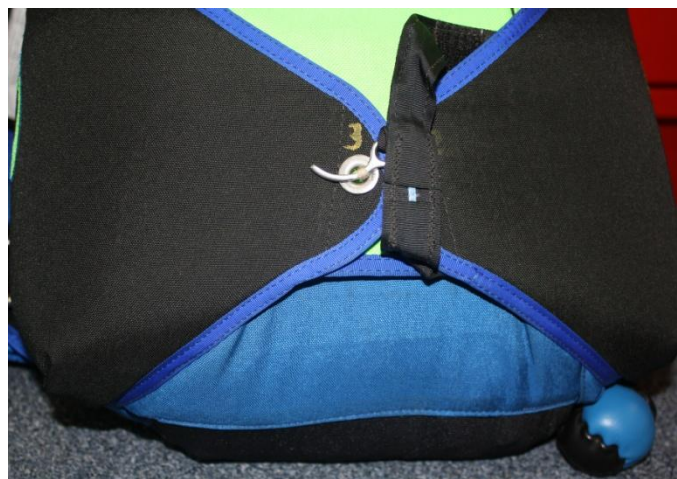
**Reserve Closing Loop** – Check that the loop does not have any fraying and that the reserve pin is the only item passing through it.

**Reserve Pin** – Check to ensure that the pin is  $\frac{3}{4}$  of the way through the closing loop.

**Main Closing loop** – Check the main closing loop for any fraying. More than 10 percent warrants a replacement. The main closing loop should be tight enough that the pin does not move freely or easily fall out.

**Main closing pin** – The curved pin that holds the main pack tray shut should be  $\frac{3}{4}$  of the way through the closing loop.

**Bridle Routing** – The bridle should go straight from the pin to the Bottom of Container (BOC) pouch. It should not be wrapped around anything. It should be protected the entire way, without any snag points, or excess material exposed.

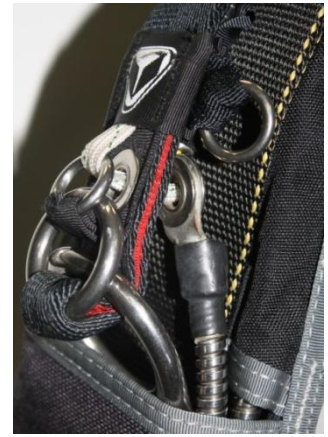


**Pilot Chute** – You should not be able to see much if any pilot chute material when it is packed into the BOC pouch. The main deployment handle should be out of the pouch and easily accessible.



## Front side

**Canopy release system** – Check both three-ring systems to make sure the small ring only passes through the medium ring and that the medium ring only passes through the large ring. Make sure nothing else is routed through or wrapped around the rings that could prevent them from releasing the main. To gear check the cutaway cable, look for the cable start on the upper left side of the rig passing through the white locking loop holding the left 3-ring system in place, through the emergency handle, back around to the right side of the rig, through the loop holding the right 3-ring system in place, and ends on the upper right portion of the rig. Each end of the cable should have approximately 5 inches extending past the 3-ring loops. Finally, check the cable that there are no nicks or gouges that could potentially catch on the 3-ring loops preventing the release of the main.



**Reserve Static Line (RSL)** – Check to see if one is present on the rig. The RSL should be hooked up to the small silver ring on one of the risers of the main parachute. Make sure that the RSL is routed over the shoulder and that the reserve cable passes through the small silver loop at the end of the RSL lanyard. Also check that the small silver coil that the red tab is attached to on the right rear riser is not bent in any way that could cause it to catch on something and disconnect the RSL.

**Stitching/Material** – Check over the entire rig to make sure that all stitching is secure and there is no fraying of the stitching or holes in any of the material of the container or harness webbing.

**Cutaway handle** – Located on the right side of the main lift web just below the chest strap there will be a handle, this handle is the handle that jettisons the bad parachute in case of an emergency. Two yellow cables should be running from the top of the handle through the rig and up to the back side of the canopy release system. Check to make sure that this handle is firmly seated on the Velcro.

**Reserve handle** – This handle can either be a D-ring type handle, or a pillow type handle. If a D-ring, check to make sure there is a silver ball attached to the end of the silver cable and that the cable passes through the emergency handle. Make sure that the handle is firmly seated in the Velcro provided for it.

**Leg Straps** – Check that the ends of the leg straps are folded over and securely sewn in place. Also make sure that the straps are properly routed through the metal hardware and that the friction adapter prevents the straps from coming loose. There most likely will be no snaps on licensed jumper gear.



# CANOPY SKILLS

In this appendix canopy skills are elaborated on more than in the manual, this is not everything there is to know about canopy flight. You can find more information in various places on the internet. Remember to check with an instructor before attempting any maneuver in the sky.

1. Rear riser steering
  - a. Steer using the rear risers with the brakes still set to change heading quickly after opening.
    - i. With the brakes set, the canopy has less forward momentum to overcome for a turn.
    - ii. The rear risers operate more than the entire back quarter of canopy.
  - b. Using risers to steer in case of a malfunctioned toggle (discussion):
    - i. Release both brakes.
    - ii. You need to conserve enough strength to complete all turns with rear risers until landing and still be able to flare.
    - iii. Especially on a smaller canopy, you should practice riser flares many times above 1,000 feet on a routine jump before committing to a riser landing (important).
    - iv. Your plan to land or cut away your canopy in the event of a malfunctioned toggle should be made before you ever encounter the problem.
    - v. One locked brake with the other released may necessitate a cutaway; decide and act by 2,500 feet.
  - c. Practice all riser maneuvers above 1,000 feet and focus on the canopy pattern and traffic from 1,000 feet down.
  - d. Before making any turns, look in the direction of the turn to prevent collisions and entanglements.
2. Types of stalls
  - a. An aerodynamic stall is a stable, steady-state stall, or sink, with decreased glide and increased rate of descent.
    - i. associated with older designs and specialized accuracy canopies
    - ii. may not be achievable with newer, flatter gliding canopies, which often fly flatter almost until a full stall
  - b. A dynamic stall occurs at the end of a flare when the jumper begins to rock back under the canopy and the canopy begins to nose forward.
    - i. associated with a sharp dive
    - ii. may signal a full stall
  - c. A full stall occurs when the trailing edge (tail) is pulled below the leading edge (nose) and the canopy begins to fly backwards.
    - i. collapses the canopy
    - ii. may result in unrecoverable line twist in smaller, more highly loaded wings stalled with the toggles (a back riser stall may be more controllable)
    - iii. may be contrary to the manufacturer's recommendations
    - iv. may result in entanglement with the jumper if released too abruptly
    - v. may result in injury if done too low
  - d. Raise the controls smoothly after any stall to avoid diving and partial collapse.
  - e. More information on stalls can be found in section 6-11 of the SIM
  - f. Proper flare technique:
    - i. Keep your feet and knees together to maintain heading during the landing flare (level harness).
    - ii. Flare with the hands in front to provide visual feedback for level control.
  - g. Discovering the best landing flare ("sweet spot") for the canopy being jumped (nine practice flares):

*Note: Complete all maneuvers above 1,000 feet.*

- i. From full glide, flare to a mid-point in the toggle range.

1. approximately the bottom of the rib cage
      2. at a medium rate of flare
    - ii. Feel the amount and duration of lift before the stall.
    - iii. Return gently to full flight for at least ten seconds.
    - iv. Repeat to the same depth.
      1. once at a faster rate
      2. once at a slower rate
    - v. Compare the strength and duration of the lift before the stall.
    - vi. Flare at three different speeds to a point deeper in the toggle stroke, approximately at the hips.
    - vii. Flares at three different speeds to a higher point in the toggle stroke, approximately at the shoulders.
    - viii. Compare the flares to determine the stroke rate and depth that produces the maximum combined strength and duration of lift for that canopy.
  - h. Best flare height above the ground
    - i. Use the best flare procedure (discovered during the nine practice flares) upon landing, beginning one body height above ground.
    - ii. Flare to minimum descent (or flat) and hold that toggle position when the glide begins to flatten.
    - iii. Smoothly continue the toggle stroke to maintain the flat glide.
    - iv. If the canopy begins to stall and drops several feet, begin the flare that much lower on the next jump.
    - v. If you don't achieve the flattest glide before landing, begin to flare slightly higher on the next jump.
  - i. Review of traffic avoidance procedures:
    - i. Watch for other traffic, especially upon entering the landing pattern.
    - ii. The most dangerous point of the pattern occurs when two jumpers on opposite base-leg approaches turn to final approach.
    - iii. The lower canopy has the right of way, but one jumper should not maneuver to assert right of way over another.
    - iv. It takes two people to have a collision, but only one to avoid it.
3. Braked turns:
  - a. Performed correctly, braked turns provide the quickest heading change with the least altitude lost.
  - b. A braked turn may be the best choice when a quick heading change is needed.
    - i. when suddenly encountering another jumper under canopy or someone in the landing area
    - ii. recognizing an obstacle
    - iii. too low to recover from a full-flight turn
  - c. Practice braked turns.
    - i. From the slowest speed at which the canopy will fly, raise one toggle slightly to initiate a heading change in the opposite direction.
    - ii. Try to change heading as quickly as possible without banking or stalling.
4. Using brakes to attain the maximum glide and minimum descent:
  - a. On lower-glide designs, the minimum descent may begin nearer the half-braked position.
  - b. On higher-glide designs, the minimum descent may be nearer the three-quarter braked position or just prior to a full stall (reverse flight).
  - c. Some canopies achieve minimum descent using the back risers instead of the toggles.
  - d. Minimum sustainable descent (float):
    - i. allows the jumper to remain above other jumpers on descent
    - ii. allows the canopy to cover a greater distance
5. Recognizing and adjusting for minimum descent and maximum glide path

- a. Look ahead to the point on the ground that appears not to rise or sink in your field of vision.
    - i. Everything before that point appears to fall.
    - ii. Everything beyond it appears to rise.
    - iii. That point is the projected landing point on the canopy's current glide path.
  - b. Pull the toggles down slightly to see if the stationary point moves farther away.
    - i. If so, the glide path has flattened.
    - ii. The canopy will cover more distance.
  - c. Repeat until the point begins to move closer, then return to the maximum glide position that you have just determined.
6. When flying downwind in maximum glide:
- a. As the winds decrease at lower altitudes, your glide path will degrade.
  - b. The actual landing area will be closer than you initially anticipated.
7. Increasing the glide when flying against the wind:
- a. in lighter winds, may improve distance
  - b. in stronger winds, may slow the canopy too much and reduce its upwind range
8. Braked pattern and landing approach
- a. Fly one entire landing pattern in at least half brakes, to determine the effect on glide path.
  - b. Plan for a change in glide path.
    - i. A lower-glide design may require a smaller pattern when flown in brakes.
    - ii. A higher-glide design may require a bigger pattern when flown in brakes; extend the final approach to avoid overshooting the target.
  - c. Fly final approach in quarter to half brakes.
  - d. Flare carefully from the braked position:
    - i. Practice high to avoid a stall.
    - ii. To get the best flare may require a shorter, quicker stroke initiated lower to the ground.
    - iii. The stall may occur more abruptly.
    - iv. Plan for a PLF.
  - e. A smaller canopy may descend too quickly in deep brakes for a safe braked landing.
9. Performance turn entry and exit with balance
- a. Enter a turn only as quickly as the canopy can maintain balance (center of lift over the center of load) during the turn.
  - b. Surging, lurching, or line twist indicate a turn entered too quickly.
  - c. A canopy is more susceptible to collapse from turbulence during entry and exit from a turn.
  - d. The canopy dives sharply after a maximum performance turn.
10. Reverse turns
- a. You must know the maximum safe rate of turn entry for each canopy you jump.
  - b. Practicing reverse turns helps you determine the maximum safe toggle turn rate before inducing a line twist.
  - c. Make a smooth but deep turn at least 90-degrees to the right, then reverse toggle positions smoothly but quickly for a 180-degree turn to the left (four sets recommended to complete Category G).
  - d. A line twist at landing pattern altitudes may be unrecoverable in time for a safe landing, particularly with a higher wing loading.
  - e. In case you induce a line twist, you should complete all maximum-performance turns above the 2,500-foot decide-and-act altitude for a cutaway.
11. The potential for collision with other jumpers increases when making performance maneuvers in traffic or near the ground (review).
- a. Other jumpers may be focused more on the target than on traffic.
  - b. The lower jumper has the right of way.
  - c. It takes only one jumper to avoid a collision.
  - d. Jumping a faster canopy requires more attention to traffic.
12. Using front risers

- a. Front risers may be used to dive the canopy:
    - i. to lose altitude rapidly
    - ii. to maintain position over ground in strong winds
    - iii. to catch up with another jumper under canopy below
    - iv. to have fun
  - b. Heading control with front risers depends on
    - i. airspeed
    - ii. the rate of turn
    - iii. the speed of turn entry
  - c. Heading control with front risers takes practice to become predictable.
  - d. Practice heading control with front-risers.
    - i. Pull both front risers down to dive straight ahead.
    - ii. Pull one front riser to complete two 90-degree and two 180-degree turns.
  - e. Initiate a sharp, deep front-riser turn, raise the riser slightly to decrease the turn rate, and then pull the riser fully down again to attempt to increase the rate of the turn.
    - i. The rate of turn may not increase.
    - ii. The resistance on the riser may make it too difficult to pull the riser down farther after raising it.
    - iii. This exercise demonstrates the different nature of front-riser heading control.
  - f. Complete all front-riser maneuvers by 1,000 feet.
13. Front-riser safety
- a. Watch for traffic below and to the sides prior to initiating a front-riser dive.
  - b. Front riser maneuvers can be very dangerous near the ground:
    - i. Turbulence may affect canopy heading or descent rate.
    - ii. A mishandled front-riser turn can lead to an undesirable heading, e.g., towards an obstacle, without time to complete the turn safely before landing.
    - iii. A crowded landing pattern is never the place for high-speed maneuvers.
  - c. Keep both steering toggles in hand when performing front-riser maneuvers to make heading changes more reliably and quickly if necessary.

# LARGE PLANE BRIEFING

## Caravan Briefing

The Caravan is a turbine aircraft that will hold up to 16 jumpers. Jumping out of this plane is considerably different than jumping out of a Cessna 182. Make sure you receive a briefing about the plane and procedures from a Skydive Snohomish Instructor. If you are not sure who to talk to, ask manifest. Also, make sure you practice entering and exiting the plane at the mock-up prior to jumping to facilitate loading, climb out, and handle protection.

## Loading the plane

Approach the plane from the rear and left side of the plane as the door is near the tail of the aircraft on the left side. The loading order is as follows:

- High pulls (above 5500ft)

- Tandems

- Solos

- “Free flyers” (smallest to largest groups)

- “Relative workers” (smallest to largest groups)

This is the loading order, not the exit order. You will be sitting on the floor of the plane. There will be jumpers sitting in two single file rows with one row on the left and the other on the right facing the rear of the plane. Each jumper needs to sit with their legs apart so that the jumper in front of them can sit between their legs. As you sit down in your spot, use the seatbelt farthest back so that everyone will have a seatbelt to use. If possible, fasten the seatbelt around your waist. If you are not able to do this, make sure the seatbelt is routed through the vertical lift web at your midsection, but be sure to maintain awareness of your handles. Fasten the seatbelt securely, removing any slack. Once your seatbelt is securely fastened, get the next seatbelt ready for the jumper sitting in front of you. All equipment must be on or secured prior to take-off. Seatbelts should be taken off, left unbuckled and stowed at 1000ft.

## Climb to Altitude

Since the Caravan climbs at a faster rate, you should start making final preparations for your jump approximately 2500ft before the plane reaches altitude. In larger planes, lights are used to signal when you can open the door and exit. Each plane varies on the number of lights they use (1 or 2), the color of the light(s), and whether they use a solid or flashing light. Check with an instructor to learn how to follow the light signals. When the signal to open the door is given, one jumper near the light should yell “door!” Another jumper located at the door should grab the base of the door and push up to slide it open. If you are the person responsible for opening or closing the door, **do not slam the door**. In some planes there is a latch to secure the door in an open position.

## Spotting

Each group and individual exiting the plane is responsible for looking out and checking the spot. If corrections need to be given to the pilot, do this by pressing and holding one of the two buttons to the right of the door. The pilot will continue to turn the plane until you release the button you are holding. If the spot is off, and making corrections will not help, ask for a go-around. Remember that splitting the spot becomes more critical with multiple groups and individuals jumping on the same pass.

### Exiting the plane

When planning a jump from any aircraft that is unfamiliar to you, spend extra time practicing your exit at the mock up to adequately prepare. The maximum number of jumpers that can exit from outside of the plane at one time is 5. More than 5 jumpers make it difficult for the pilot to fly the plane. The positions outside of the plane are 1 jumper on the front step, 1 jumper on the camera step and 3 in the door. The remaining jumpers exiting on a larger formation will exit from the interior of the plane. When it is your turn to exit, wait until the jumper/group before you leaves, and then quickly move forward into your exit position. Too many jumpers at the rear of the plane when the plane is full may cause the plane to be unbalanced and potentially cause an emergency. A good rule of thumb is to wait for the jumper/group before you is 45 degrees diagonally down and away before you exit. In 55B we use a chart based on ground speed, the pilot will provide the jumpers with the ground speed and it is then their responsibility to determine the amount of separation to give the group prior to them.

### Freefall

Stick to your dive plan and communicate with other jumpers on your load about what you will be doing on your jump. Deciding to do a tracking dive, pulling high, etc. after exiting the plane puts everyone at risk for mid-air collisions.

### Canopy Control/Landing Pattern

Fly and promote a smooth flow of traffic in the landing pattern, keeping horizontal and vertical separation from other jumpers. More canopies in the air means you need to be much more aware, and always clear your airspace before making any turn. Do not fixate on the landing target. Keep your eyes open for all canopies in the area and be prepared to take split-second evasive actions to avoid a collision.

The first jumper on the ground establishes the landing direction. It is best to discuss the landing direction and pattern prior to boarding the plane, but always be sure to follow the landing direction of the first person down.

### Landing with the Plane

If for some reason you will not be exiting the plane, make sure the pilot knows as early as possible. Fasten your seatbelt prior to the last jumper exiting, as the plane will go into a dive as soon as the last jumper has left the plane. You are required to keep your seatbelt fastened until the plane has come to a stop on the ground.

### Aircraft Emergency

In the event of an aircraft emergency, the pilot is in charge. Follow any directions given immediately.

## A LICENSE REQUIREMENTS

### **Changing/Adjusting Main Closing Loop EK- 8**

You will need to adjust and change the main closing loop of the main container to meet your "A" license requirement. Remove the worn closing loop from the container. Place it next to the new closing loop so you can measure it to be the same length as the old. Mark the new closing loop the same distance down from the top of the loop to where it goes into the knot on the old loop. Tie the knot on the new closing loop to match the knot on the worn closing loop. (The purpose of the knot is to keep the closing loop from slipping through the grommet.) Thread the top of the loop through the washer and then through the grommet in the keeper (part of the rig) for the main closing loop.

Occasionally you may find that your closing loop has stretched out slightly (due to the knot tightening over time), and no longer securely holds the pin/ripcord in place, or that you did not make the closing loop short enough when you replaced it. To fix a closing loop that is too long, open the container and re-tie the knot up closer to the loop. Repeat this step until the pin/ripcord is securely held in place when you close the container.

### **Canopy Release System (3-ring) Operation and Maintenance EK - 7**

Check the webbing to make sure that the largest of the 3 rings is anchored securely to the harness. Check all three rings for any nicks or deformities that may not allow them to release properly. Check the loop that the cut-away cable passes through for any fraying. Check both cables for any nicks or gouges that could get hung up on the loops preventing the 3-ring from releasing. When it is time for the reserve to be repacked, pull the cut away and remove the cut-away cables. Clean the cables lightly with 3 and 1 oil or silicone and inspect for kinks, nicks, or any exposed cable.

You will need to learn to disconnect and re-connect the 3-ring release system. To disconnect the 3-ring, pull the cut away handle/cables until the ends of the cable pass through the locking loop that secures the 3-ring. Make sure that the rings can easily come undone. To re-connect, place the risers and container on the ground with the rings facing up. Starting on one side, slip the medium ring at the end of the riser through the large ring on the container. Next, slip the small ring through the medium ring. Finally, slip the loop through the small ring and push it through the riser grommet and then through the fitting on the end of the cut away cable housing then slide the cut-away cable through the loop. It may take a few tries before you are successful in getting it hooked up. Repeat the same steps for the other side. (This is only a guide. Always ask a rigger or instructor to ensure that you have assembled the canopy release system correctly.)

### **Packing (Main/Reserve) EK-9**

FAA regulation part 105 covers all skydiving activity. Packing is specifically covered under Advisory Circular 105-2c #7 which states the main must be repacked by the jumper that will be jumping it, a certified rigger or a packer under the supervision of a rigger within 180 days before the date of its use. It further states that the reserve is required to be inspected and repacked every 180 days by a certified FAA rigger.



You are required to take a packing class prior to solo status. Sign up for the packing class at manifest. You must pack a main parachute without assistance to meet your "A" license requirement.

### **Weight and Balance aircraft briefing AS – 5**

1. Skydivers play a more integral role in aircraft operations than ordinary passengers, because their procedures can dramatically affect the controllability of the aircraft, particularly during exit.
  - a. Parasitic drag reduces airspeed necessary for flight and reduces the effectiveness of control surfaces.
  - b. Excess weight in the rear of the aircraft can cause the pilot to lose control of the aircraft and cause it to stall.
2. All jumpers should be briefed by a jump pilot on the topics outlined in Aircraft Briefing from Category E of the USPA Integrated Student Program (SIM Section 4).
3. The smallest aircraft to be used for student jumping should be able to carry the pilot and at least three jumpers.
4. High openings
  - a. The pilot and all jumpers on board the aircraft should be informed in advance whenever an opening is planned to be above the normal opening altitude (generally 4,500 feet AGL and lower).
  - b. When more than one aircraft is being used, the pilots of each aircraft in flight at the time of the jump should be notified.
5. Aircraft fueling
  - a. Aircraft fueling operations should occur away from skydiver landing and loading areas, and no person, except the pilot and necessary fueling crew, should be aboard the aircraft during fueling.
  - b. USPA accepts the practice of rapid refueling (fueling an aircraft while an engine is running) for certain turbine-powered aircraft when performed in accordance with the guidelines of Parachute Industry Association Technical Standard, TS-122.
6. Entering the aircraft
  - a. Students should never approach an aircraft, whether the engine is running or not, unless they are under the direct supervision of a USPA instructional rating holder.
  - b. Everyone should always approach a fixed-wing aircraft from behind the wing and always approach a helicopter from the front or the side, only after making eye contact with the pilot.
  - c. Everyone should always protect his or her ripcord handles while entering the aircraft and follow procedures to avoid the accidental activation of any equipment.
7. Everyone on board the aircraft is subject to the seating requirements found in FAR 91.107 and the parachute requirements found in FAR 91.307.
8. Ride to altitude
  - a. Everyone should have a thorough understanding and be prepared to take the appropriate actions in the event of an accidental activation of parachute equipment in the aircraft.
  - b. Seat belts should remain fastened and all hard helmets and other potential projectiles secured until the pilot notifies the jumpers that they may unfasten them.
  - c. Students should sit still and move only when specifically directed to do so by their instructor(s) or coach.
  - d. Seating arrangements should be determined in advance and will vary according to the particular aircraft and the size and type of the load.

- e. It is important for the load to be properly distributed in the aircraft to maintain the balance in relation to the center of gravity, which is necessary for the aircraft to fly safely.
  - f. The jumpers must cooperate fully with the pilot to keep the aircraft within its safe performance envelope throughout the entire flight.
  - g. The aircraft must not be loaded with more weight than the maximum allowed in the manufacturer's operating manual.
  - h. Failure to maintain proper weight and balance throughout the flight may result in loss of control of the aircraft.
9. When not in use, seat belts should be stowed out of the way but never fastened together unless being worn.
10. All pilots and other occupants of a jump aircraft must wear parachutes when required by the FAA.

### **GROUND LICENSE REQUIREMENTS REFERENCES**

- CS – 8** Accurately predict the presence and effects of turbulence in the landing area – (p. 38 SS student manual)(SIM Section 4 Category C page 50,51)
- EK – 1** Demonstrate knowledge, inspection, donning, use, and owner maintenance of all equipment to be used on the jump – (p.21-25, 93-95 SS student manual)
- EK – 2** Calculate the wing loading of both main and reserve canopies and compare the sizes against the manufacturer's recommendations – (p.39 SS student manual)(SIM Section 4 Category C page 49-50)
- EK – 3** Demonstrate the understanding, use and disconnection of a Reserve Static Line (RSL) – (p. 36-37 SS student manual)
- EK – 4** Demonstrate the understanding and use of an automatic activation device – (p. 29-30 SS student manual)
- EK – 6** Check equipment for another skydiver
- EK – 7** Perform manufacturer recommended owner service on a canopy release system – (p. 104 SS student manual – Packing Class)
- EK – 8** Change or adjust a main closing loop – (p. 104 SS student manual – Packing Class)
- EK – 9** Show knowledge of FAA rules on parachute packing intervals and required personnel – (p. 104 SS student manual – Packing Class) (SIM Section 9-1 page 204)
- AS – 1** Demonstrate understanding of the seat belt use and applicable FARs – (p. 22 SS student manual)(SIM Section 9-1 page 195)
- AS – 2** Identify local runway headings, length and aircraft approach and departure patterns – (p. 26 SS student manual)
- AS – 3** Using an aviation winds aloft forecast select the correct exit and opening point – (p. 25,31-32 SS student manual)(SIM Section 4 Category E Page 70)
- AS – 4** Recite cloud clearance and visibility requirements for above and below 10,000 feet MSL – (p. 47 SS student manual)(SIM Section 4 Category D page 60)
- AS – 5** Receive a briefing on weight and balance, the effect of a jumper on aircraft control surfaces when outside an aircraft, spotting, and radio, and onboard communication procedures – (p. 105-106 SS student manual)
- ER – 1** In a training harness, recognize and take appropriate action for all parachute malfunctions
- ER – 2** Review power line avoidance and landings – (p. 40 SS student manual)
- ER – 3** Review tree avoidance and landings – (p. 40 SS student manual) (SIM Section 5-1)
- ER – 4** Review building avoidance and landings – (p.40 SS student manual) (SIM Section 5-1)

- ER – 5 Review water avoidance and landings – (p. 40 SS student manual) (SIM Section 5-1)
- ER – 6 Review aircraft emergency procedures – (p. 13-14, 58 SS student manual)
- LE – A license exam – (SIM Category A-H Quizzes know all questions) (p. 100-109 SS student manual)
- LE – Join USPA

## CATEGORY QUIZZES

### Category A Quiz:

- 1.) Describe how to avoid the propeller(s) when approaching an aircraft.  
*Approach fixed-wing aircraft from the rear.*  
(First-jump course outline)
- 2.) Who is responsible for seat belt use in the aircraft?  
*pilot and jumper*  
(FAR 91.107.A.1 through .3)
- 3.) When must seat belts be fastened?  
*Movement on the surface (taxi), takeoff, and landing*  
(FAR 91.107.A.2)
- 4.) From whom do you take direction in the event of an aircraft problem?  
*My instructor*  
(First-jump course outline)
- 5.) Why is it important to exit on "Go!" (or "Arch!")?  
*Helps student and instructors to leave at the same time and to leave at the right place over the ground*  
(First-jump course outline)
- 6.) Where does the wind come from initially upon exit from the aircraft?  
*Ahead*  
(First-jump course outline)
- 7.) Why do skydivers first learn to fall stable face to earth (think in terms of equipment)?  
*Best position for deployment*  
(First-jump course outline)
- 8.) What does a canopy do immediately following a turn?  
*Dives*  
(First-jump course outline)
- 9.) What are the landing priorities:
  - a. *Land with the wing level and flying in a straight line.*
  - b. *Land in a clear and open area, avoiding obstacles.*
  - c. *Flare to at least the half-brake position*
  - d. *Perform a parachute landing fall.*(First-jump course outline)
- 10.) What is the purpose of the landing flare?  
*Convert forward speed to lift*  
(First-jump course outline)
- 11.) Describe the procedure for a hard landing (parachute landing fall or PLF).  
*Feet and knees together, hands and elbows in, roll on landing. Balls of feet, side of calf, side of thigh, butt, back (on a diagonal from the butt to opposite shoulder).*  
(First-jump course outline)

### Category B Quiz:

- 1.) Who must directly supervise your student training jumps?  
*USPA Instructor rated for my discipline*  
(BSRs 2-1.E.2.b)
- 2.) What is your most important task in freefall?  
*Altitude awareness to recognize and act at the assigned pull altitude*  
(Category B outline)

- 3.) What are the maximum winds in which any student may jump?  
*10mph for a round reserve canopy; 14 mph for a ram-air reserve, waivable by an S&TA*  
 (BSR 2-1.F.1)
- 4.) How would you clear a pilot chute hesitation?  
*Change body position to modify the air flow over my back.*  
 (Category A and B outline)
- 5.) In the event of a canopy problem, students should decide and act about executing emergency procedures by what altitude?  
*2500 feet*  
 (SIM 5-1.E)
- 6.) How would you address the following routine opening problems?  
 a. *Twisted Lines – Before releasing the brakes, spread risers or twist risers to transfer line twist to risers, kick in opposite direction, watch altitude to 2500 feet.*  
 b. *Slider stops halfway down – Pump rear risers or steering controls while watching altitude to 2500 feet.*  
 c. *End cells closed – Pump rear risers or steering controls while watching altitude to 2500 feet.*  
*If stubborn, determine controllability with turn and flare by 2,500 feet*  
 d. *Broken lines or other damage – Determine controllability and ability to flare by 2500 feet.*  
 e. *Good canopy that is turning – Be sure both brakes are released.*  
 (Category A and B outline)
- 7.) What is the appropriate action if below 1,000 feet without a landable parachute?  
*Immediately deploy the reserve parachute, but not below 1,000 feet with an SOS system.*  
 (category A and B outline)
- 8.) If the pilot chute goes over the front of the canopy after it has opened, how can you tell if it's a malfunction?  
*If the canopy flares and turns correctly, it is probably safe to land.*  
 (Category A and B outline)
- 9.) What is the correct response to an open container in freefall using a hand-deployed system?  
*No more than two tries or two seconds to locate and deploy the main pilot chute; if no success, cut away and deploy the reserve.*  
 (SIM Section 5-1.E)
- 10.) If part of the deployed parachute is caught on the jumper or the equipment (horseshoe), what is the correct response?  
*Cut away and deploy the reserve.*  
 (Category A and B outline)
- 11.) If the pilot chute extracts the deployment bag from the parachute container (backpack) but the deployment bag fails to release the parachute canopy for inflation, what is the correct response?  
*Cut away and deploy the reserve.*  
 (Category A and B outline)
- 12.) What are the compass headings of the runway nearest the DZ at your airport?  
*150 and 330 (Harvey Field)*

- 13.) What compass directions do the runway heading numbers represent?  
*South south-east and North north-west (Harvey Field)*
- 14.) How long is the longest runway at your airport?  
*2,650 feet approximately ½ mile long (Harvey Field)*
- 15.) Describe the three legs of the canopy landing pattern with relation to the wind direction.  
*Downwind (with the wind), base (across the wind but downwind of the target), and final (into the wind)*  
(Category A and B outline)
- 16.) At what altitude over the ground do aircraft enter the traffic pattern at your airport?  
*1,000 feet (Harvey Field)*
- 17.) Why is it undesirable to land off the end of a runway?  
*Approaching and departing aircraft*  
(Category B outline)

### Category C Quiz:

- 1.) In flat stable belly to earth freefall at terminal velocity, how long does it take an average jumper to fall 1,000 feet?  
*5.5 seconds*  
(Category C syllabus)
- 2.) What is the correct procedure for recovering from instability to the belly-to-earth position? *Altitude, arch, legs, relax*  
(Category C syllabus)
- 3.) Which is correct, to pull at the planned altitude or to fall lower to pull with stability?  
*Pull at planned altitude, regardless of stability.*  
(Category C syllabus)
- 4.) What is the purpose of the wave-off before deployment?  
*To signal other jumpers*  
(Category C syllabus)
  
- 5.) What is the purpose of the parachute landing fall (PLF), and why is it important for skydivers?  
*It protects against hard landings, and all skydivers have hard landings*  
(Category C syllabus)
- 6.) What part of the landing pattern is most dangerous to skydivers?  
*The intersection of the base and final approach legs*  
(Category C syllabus)
- 7.) How do higher wind speeds affect the planned landing pattern as compared to the pattern plan for a calm day?  
*Shortens the final approach, shortens the base leg, lengthens the downwind leg, and places the planned pattern entry point farther upwind*  
(Category C syllabus)
- 8.) In moderately strong winds, how far downwind of an obstacle would you expect to find turbulence?  
*10-20 times the height of the obstacle*  
(Category C syllabus)
- 9.) What is the best procedure to use when flying your canopy in turbulent conditions?

*Keep the canopy flying in a straight line at full flight (or as directed by the owner's manual).*

(Category C syllabus or owner's manual)

- 10.) What weather conditions and wind direction(s) are most likely to cause turbulence at your drop zone?  
*According to the local landing area and obstacles*  
(Instructor)
- 11.) Why is it important to protect your parachute system operation handles when in and around the aircraft?  
*Keeps them in place and prevents accidental or premature deployment*  
(Category C syllabus)
- 12.) Describe the equipment pre-flight strategy to use before putting on your gear.  
*Top to bottom, back to front*  
(Category C syllabus)
- 13.) How does the three-ring main canopy release system disconnect the main parachute from the harness?  
*Pull the cables to release the cloth loop*  
(closed parachute system briefing)
- 14.) How do you know if a reserve parachute has been packed by an FAA rigger within the last 120 days?  
*Information found on the reserve packing data card*  
(closed parachute system briefing)
- 15.) How do you know the reserve container has not been opened since the FAA rigger last closed it?  
*Rigger's packing seal on the reserve ripcord*  
(closed parachute system briefing)
- 16.) If the surface winds are blowing from west to east, which direction will you face to fly the downwind leg of the landing pattern?  
*East*  
(Category C syllabus)
- 17.) What is the wing loading of the parachute you will use on your next jump?  
*Divide the exit weight by the square footage*  
(Supplements)
- 18.) Which canopy size (same model design) will exhibit quicker control response?  
a. 210-square feet with a 210-pound jumper (geared up)  
b. 170 square feet with a 170-pound jumper (geared up)  
*170 Square feet/ 170 pounds*  
(Category C syllabus)
- 19.) When is it OK to attempt a stand-up landing?  
*When the jumper has control of all the variables and has executed a good flare at the appropriate altitude*  
(Category C syllabus)

**Category D Quiz:**

- 1.) For planned deployment initiation at 3,000 feet, approximately how long should an average-sized jumper fall after exiting at 5,000 feet?  
*15 seconds*  
(Category D outline)
- 2.) What is the most appropriate response to loss of heading control in freefall?

*Altitude, arch, legs, relax*  
(Category D outline)

- 3.) What is the best way to avoid a canopy collision when turning?  
*Look first in the direction of the turn*  
(Category D outline)
- 4.) What is the quickest and safest way to change heading immediately after opening?  
*Rear riser turn with the brakes still set*  
(Category D outline)
- 5.) How would you steer a parachute that has a broken brake line?  
*Use the rear risers*  
(Category D outline)
- 6.) How would you prepare to land a canopy using the back risers to flare?  
*Practice with rear-riser flares at altitude with that canopy during a routine jump*  
(Category D outline)
- 7.) Describe your procedure for landing on a building.  
*Disconnect the RSL (if time), contact the building feet first, PLF, cut away after landing on top of a building, wait for competent help*  
(SIM Section 5-1.F)
- 8.) What is the purpose of the automatic activation device?  
*To back up the jumper's emergency procedures*  
(SIM Section 5-3.G)
- 9.) Describe the "check of threes."  
*Check three-ring release system for correct assembly and RSL; three points of harness attachment for snap assembly or correct routing and adjustment; three operation handles- main activation, cutaway, reserve*  
(Category D outline)
- 10.) What must the spotter do to determine what is directly underneath the aircraft while on jump run?  
*Place head completely outside the aircraft and look straight down*  
(Category D outline)
- 11.) How far horizontally must jumpers be from any cloud?
  - a. below 10,000 feet MSL?  
*2,000 feet*
  - b. 10,000 feet MSL and above?  
*One mile*  
(FAR 105.17)
- 12.) What are the minimum visibility requirements?
  - a. below 10,000 feet MSL?  
*three miles*
  - b. 10,000 feet MSL and above?  
*Five miles*  
(FAR 105.17)
- 13.) Who is responsible for a jumper observing cloud clearance requirements?  
*Jumper and pilot*  
(FAR 105.17)
- 14.) According to the BSRs, what is the latest a student may jump?  
*All student jumps must be completed by sunset*



(SIM Section 2-1.E.9)

- 15.) Describe the technique for determining the point straight below the aircraft during jump run.

*Determine two lines from the horizon, one ahead and one abreast, and find the intersection of those two lines*

(Category D outline)

- 16.) What must the jumper look for below before exiting the aircraft?

*Clouds and other aircraft*

(Category D outline)

### **Category E Quiz:**

- 1.) What happens to a jumper's fall rate when performing rolls, loops, or other freeflying maneuvers?

*increases*

(Category E outline)

- 2.) What happens to a visual altimeter when it's in the jumper's burble?

*Reads unreliably*

(SIM 5-3.1)

- 3.) What is the best way to recover from a stall to full glide?

*Smoothly raise the controls*

(Category E outline)

- 4.) Describe an aerodynamic stall as it applies to a ram-air canopy.

*Stable state of decreased glide and increased rate of descent*

(Category E outline)

- 5.) When does a dynamic stall occur?

*At the end of a flare when the jumper begins to rock back under the canopy*

(Category E outline)

- 6.) What happens after a dynamic stall if the tail is held lower than the nose?

*Full stall*

(Category E outline)

- 7.) What is the best way to determine a canopy's optimum flare speed and depth for landing?

*Practice different rates of flare entry at different depths of flare*

(Category E outline)

- 8.) Describe your procedure for landing in high winds.

*Stay well downwind of any obstacle, face into the wind early, disconnect the RSL, land with a PLF, pull one toggle down completely, and after landing, cut away if necessary*

(Category E outline)

- 9.) How many A-lines does a nine-cell canopy have?

*ten*

(Category E Open Canopy Orientation)

- 10.) To what part of the canopy do the steering lines (brake lines) connect?

*Tail or trailing edge*

(Category E Open Canopy Orientation)

- 11.) What lines go through the rear slider grommets?

*C, D, and brakes*

(Category E Open Canopy Orientation)

- 12.) Where does the main pilot chute bridle attach to the canopy?

- Top center*  
(Category E Open Canopy Orientation)
- 13.) Who may pack a main parachute?  
*FAA rigger, person jumping the parachute, person under rigger's supervision*  
(FAR 105.43)
- 14.) How often do the main and reserve parachute need to be packed?  
*Every 180 days*  
(FAR 105.43)
- 15.) Who is in command of the aircraft?  
*pilot*  
(FAR 91.3.A)
- 16.) Name two purposes for wearing seat belts in an aircraft.  
*To maintain the correct balance; protection in a crash*  
(Category E Aircraft briefing)
- 17.) Who is responsible that the aircraft is in condition for safe flight?  
*pilot*  
(FAR 91.7.B)
- 18.) Above what altitude MSL is the pilot of an unpressurized aircraft required to breathe supplemental oxygen?  
*14,000 feet*  
(FAR 91.211.A.2)
- 19.) Above what altitude MSL are all occupants of an unpressurized aircraft required to be provided with supplemental oxygen?  
*15,000 feet*  
(SIM 2-1.L; FAR 91.211.A.3)
- 20.) In an aircraft with the exit door near the back, what must jumpers do to maintain the balance during exit procedures?  
*Remain forward until it is time for their group to exit*  
(Category E Aircraft Briefing)
- 21.) What is the biggest danger to a jumper when flying the canopy pattern?  
*Other canopies*  
(Category E outline)
- 22.) What is the best way to avoid a canopy collision?  
*See and remain clear of other jumpers*  
(Category E outline)
- 23.) How does the RSL work?  
*Forms a separable link between the main riser and reserve ripcord so that cutting away the main activates the reserve, if the RSL is hooked up*  
(SIM Section 5-3.F)
- 24.) What would happen if the main riser attached to the RSL breaks at the 3-ring?  
*The reserve deploys with the main still attached by the other riser.*  
(SIM Section 5-3.F.)
- 25.) What is the best way to prevent risers from breaking?  
*Inspection and maintenance; correct packing, tight line stowage, and stable deployment, all to prevent hard openings*  
(SIM Section 5-3.F)
- 26.) Name one way to prevent a dual deployment.

Any of the following:

*Deploy the main parachute at the correct altitude to avoid AAD activation  
Initiate malfunction procedures high enough to cut away safely and avoid AAD activation*

*Maintain and correctly operate hand-deployed pilot chutes, especially collapsibles  
Protect equipment before exit to prevent pins or handles from being knocked loose  
Maneuver gently below the AAD's firing range*

(Category E outline)

27.) What is generally the best action to take in the following two-canopy-out scenarios?

a. Biplane

*release the brakes on the front canopy only and steer that canopy gently; PLF*

b. Side by side

*release the brakes on the dominant canopy only and steer that canopy gently; or release the RSL (if time) and cut away; PLF.*

c. Downplane

*release the RSL (if time) and cut away*

(SIM 5-1.E)

### **Category F Quiz:**

1.) What is the best way to change the direction of canopy flight while conserving the most altitude?

*Braked turns*

(Category F outline)

2.) What happens if a canopy is controlled too deeply in brakes?

*stalls*

(Category F outline)

3.) Describe the difference between flaring from half brakes and full glide.

*Flaring from half brakes requires a quicker stroke, the stroke is shorter, and stalls occur sooner*

(Category F outline)

4.) How does the half-braked position affect the canopy's flight?

*Slows descent, changes glide*

(Category F outline)

5.) What is a glide path?

*The angle at which the parachute descends towards its projected landing point*

(Category F outline)

6.) How do you determine your glide path?

*Look ahead to find the point on the ground that appears not to rise or sink.*

(Category F outline)

7.) How does wind affect the glide path?

*The glide path will degrade as the wind decreases when flying with the wind. The glide path will degrade as the wind speed increases when flying into the wind.*

(Category F outline)

8.) How is heading corrected during a track?

*Dip one shoulder slightly in the direction of the turn*

(Category F outline)

9.) When making tracking jumps from a large plane, why is it important to track perpendicular to the jump run?

*To avoid other groups ahead and behind*

(Category F outline)

- 10.) What is the ground speed of a jump aircraft with an airspeed of 90 knots when flying against a 50-knot headwind on jump run?  
*40 knots*  
(pre-flight planning)
- 11.) How can jumpers assure adequate separation between groups exiting the aircraft?  
*Gauge separation according to position over the ground*  
(SIM Section 5-7)
- 12.) What are the three most important aspects of packing the main canopy?  
*Lines straight and in place in the center, slider up, tight line stows*  
(Category F outline)
- 13.) How can you tell if the RSL is routed correctly?  
*Clear path from snap shackle to guide ring*  
(Category F outline)
- 14.) What is the make and model of parachute system you are jumping?  
a. *Main canopy?*  
*Navigator or Solo (Refer to 10 second #3 for canopy sizes)*  
b. *Harness and container system?*  
*Velocity Sports Equipment, Northern Lite III - Infinity*  
c. *Automatic activation device?*  
*Cypres2*  
(equipment data)  
(Instructor)
- 15.) What is the minimum pull altitude allowed for student skydivers and A license holders?  
*3,000 feet*  
(SIM 2-1.G)
- 16.) What are the maximum winds allowed for student skydivers?  
a. *14 mph*  
(SIM 2-1.F)
- 17.) If a jumper falls for one minute through upper winds averaging 30 mph from the west:  
a. How far will the jumper drift? Note: 60 mph = 1 mile per minute; therefore, 30 mph = 1/2 mile per minute.  
*1/2 mile*  
b. In which direction?  
*east*  
(Category F outline)
- 18.) Describe your procedure for landing in power lines.  
*Avoid the area early during the descent, minimum braked turn necessary to avoid lines, land parallel to the wires, braked landing, prepare for PLF, try to touch only one line at a time, wait for help and confirmation that the power has been turned off and will remain off until recovery operations are complete*  
(SIM 5-1.F)
- 19.) In the event of an aircraft emergency with no students or instructors aboard, who should coordinate procedures between the pilot and the other jumpers on the load?

*Jumpmaster; or spotter*

(Category F outline)

- 20.) At your drop zone, what is the lowest altitude the pilot would likely ask jumpers to leave the plane during an engine-out emergency?  
*1,000 feet*  
(Instructor)
- 21.) In an aircraft emergency, what is the lowest exit altitude that you would deploy your main parachute before choosing the reserve instead?  
*4,000 feet*  
(Instructor or pilot)
- 22.) How many jumps are required for the USPA A license?  
*25*  
(SIM 3-1.E, A license)
- 23.) What does a USPA A license permit a skydiver to do?  
*Jump without supervision, pack his or her own main parachute, engage in basic group jumps, and perform water jumps*  
(SIM 3-1.E, A license)
- 24.) What should an A-licensed jumper do to regain currency after a ten-week period of inactivity?  
*Make at least one jump under the supervision of a USPA instructional rating holder*  
(SIM Section 5-2, Re-Currency Training)
- 25.) What should an A-licensed jumper do to regain currency after a four-month period of inactivity?  
*Make at least one jump beginning in Category D with a USPA AFF Instructor or in Category B with a USPA IAD Static-Line, or Tandem Instructor before proceeding to unsupervised freefall*  
(SIM Section 5-2, Re-Currency Training)

### **Category G Quiz:**

- 1.) What is the primary directional control when moving forward to dock in freefall?  
*legs*  
(Category G outline)
- 2.) What is the minimum break-off altitude for freefall in groups of five or fewer?  
*1,500 feet above planned deployment altitude*  
(SIM Section 6-1.C)
- 3.) What is the danger of entering a toggle turn too quickly?  
*line twist*  
(Category G outline)
- 4.) What does a canopy do after completing a maximum input toggle turn?  
*dives*  
(Category G outline)
- 5.) What are the three biggest dangers of a hard toggle turn near the ground?  
*line twist, collision with jumpers, collision with the ground*  
(Category G outline)
- 6.) What are the first things to do in the event of a collision and entanglement with another jumper?  
*check altitude, establish communication*  
(SIM 5-1.H)

- 7.) What is the most critical aspect of closing the main container equipped with a hand-deployed pilot chute?  
*bridle routing and placement*  
(packing lesson)
- 8.) Why is it a bad idea to drag the harness and container system when stowing the lines?  
*unnecessary wear on the three-ring release webbing and loops*  
(Category G outline)
- 9.) When Velcro is used on the brake system, why is it a good idea to place your toggles back on the Velcro after you land?  
*covers the hook Velcro, which can damage other components, prevents tangles*  
(Category G outline)
- 10.) Who may maintain a main parachute system?  
*FAA rigger*  
(FAR 65.125.a.1)
- 11.) Why is it bad to leave a parachute in the sun?  
*Ultraviolet rays degrade nylon.*  
(Category G outline)
- 12.) What damage could occur from storing a parachute for prolonged periods in a car during the summer?  
*shorter life for AAD batteries, stow band degradation*  
(Category G outline)
- 13.) What happens to Velcro touch fastener when it is used frequently?  
*loses tackiness*  
(Category G outline)
- 14.) What happens to stiffened tuck flaps that are frequently used?  
*distortion*  
(Category G outline)
- 15.) Who publishes and enforces rules regarding parachute packing and parachute maintenance?  
*FAA*  
(rigger briefing)
- 16.) What may result if recovering altitude (floating up) under a freefall formation?  
*collision with formation, funnel*  
(Category G outline)
- 17.) What extra consideration is required when wearing an AAD near the open door of an aircraft or when climbing out?  
*AAD activation near the open door of an aircraft presents a dangerous situation.*  
(Category G outline)
- 18.) Why is it important to remain clear of the area directly above and below other jumpers in freefall?  
*possibility of AAD activation or other accidental or unplanned pack opening*  
(Category G outline)
- 19.) Why is it important to maintain an automatic activation device to the manufacturer's standards?  
*to improve their chances for correct operation, to help prevent premature AAD activations, to comply with the law*  
(Category G outline)

- 20.) What is the correct response to a canopy entanglement with another jumper below 1,000 feet if it appears the two canopies cannot be separated in time for a safe landing?  
*Deploy the reserve (may not be a safe option with an SOS system).*  
 (SIM Section 5-1.H)
- 21.) Describe your procedure for landing in trees.  
*Face into the wind, prepare for PLF, flare to half brakes, protect face and under arms, wait for help.*  
 (SIM 5-1.F)
- 22.) What does a tall cumulus cloud indicate?  
*thunderstorms in the area*  
 (SIM Section 5-5)
- 23.) What is the most dangerous part of an incoming front for aircraft and skydivers?  
*thunderstorms in the gust front; rapid and significant changes in winds*  
 (SIM Section 5-5)
- 24.) How does a canopy's air speed, ground speed, and descent rate change with an increase in density altitude?  
*each will increase*  
 (SIM Section 5-5)

#### **Category H Quiz:**

- 1.) Why is it important to look ahead during a swoop toward other jumpers in freefall?  
*to see others and avoid a collision*  
 (Category H outline)
- 2.) What is the fastest way to slow down from a freefall swoop approach?  
*slow fall position with arms forward and knees down*  
 (Category H outline)
- 3.) What is the danger of a loose or worn main container closing loop?  
*premature deployment*  
 (Category H outline)
- 4.) Why must three-ring release cables be cleaned periodically?  
*Corrosion deposits cause them to bind.*  
 (Category H outline)
- 5.) If you see that you have begun to turn too low to the ground for a safe landing, what should be your first response?  
*Neutralize the turn and get the canopy overhead.*  
 (SIM Section 5-1.I)
- 6.) What effect does pulling on the front risers have on the canopy?  
*dramatic increase in rate of descent*  
 (jump experience)
- 7.) When performing front riser maneuvers, what should you do with the toggles?  
*Keep them in your hands.*  
 (Category H outline)
- 8.) What are the two biggest dangers of front-riser maneuvers near the ground?  
*collisions with other jumpers, collision with the ground*  
 (Category H outline)
- 9.) What are some of the possible results of a turn made too low to the ground?  
*serious injury or death*  
 (SIM Section 5-1.I)

- 10.) Describe your procedure for landing in water.  
*Inflate flotation device, disconnect chest strap and RSL, prepare for PLF, face into wind, flare, hold breath, cut away once feet are wet, remove leg straps, swim upwind; if under the canopy, dive deep and swim away or follow one seam until out from underneath.*  
(SIM Section 5-1.F)
- 11.) What is the maximum percentage of visible wear allowable on a main closing loop?  
*ten percent*  
(Category H outline)
- 12.) Can a jump be legally made from an aircraft without an operating radio?  
*no*  
(FAR 105.13.a.1)
- 13.) What is the least notification the FAA requires before any jump or series of jumps may be made?  
*one hour*  
(FAR 105.25.a.3)
- 14.) Where can a pilot look to determine if a plane is approved for flight with the door removed?  
*AC 105.2, Appendix 2, or aircraft owner's manual*  
(Category H outline)
- 15.) Whose name will the FAA require when filing a notification for parachute jumping?  
*person giving notice*  
(FAR 105.15.a.6)



# TWO HANDLE BRIEFING

- What is different from student gear?
  - AAD: Is there one? Where is it? What kind is it? How to turn on/off? What should it say when turned on?
  - Main pin:  $\frac{3}{4}$  of the way through the closing loop, color on the kill line in bridle window
  - Pilot chute: Throw out, collapsible/non collapsible, Bridle routing, how to fold
  - Leg straps: Thread through
  - Cutaway handle: Purpose, routing, seating in Velcro
  - RSL: Is there one? Which side is it on?
  - Reserve handle: Purpose, routing, swage placement on end of cable, seating in Velcro
  
- How to throw out – Physically practiced 10 times
  - Rotation of right hand to palm up
  - Throw the pilot chute in a way to present it to the air flow while limiting possible entanglements (away from you)
  - Return to arch
  - Check over shoulder for pilot chute in tow

## ● EMERGENCY PROCEDURES

- **LOOK, REACH, LOOK, PULL, PULL**
  - **LOOK** – Look at the cutaway handle on the right side
  - **REACH** – Reach and grasp it with both hands
  - **LOOK** – Look at the reserve handle on the left side
  - **PULL** – Pull the cutaway handle while continuing to look at the reserve handle
  - **PULL** – Pull the reserve handle
  - **ARCH** – Arch
  - **CHECK** – Check reserve pilot chute deployment
  
- Rule of Two's
  - Two tries to pull
  - Two tries to clear a horse shoe
  - Two tries to clear a pilot chute hesitation
  
- Malfunctions
  - Total Malfunction
    - High Speed
    - Why? Hacky slips into BOC, hard pull
    - Execute Emergency procedures
  - Pilot chute in tow
    - High speed
    - Why? Misrouted bridle, Un-cocked pilot chute
    - Execute Emergency procedures
  - Horse shoe malfunction
    - Premature container opening
      - High speed
      - Why? Loose/Worn main closing loop

- Two attempts to find Pilot chute and deploy
- If unsuccessful in finding pilot chute – Execute emergency procedures
- Pilot chute entanglement (arm/leg/neck)
  - High speed
  - Why? Lazy pull/ unstable deployment
  - Two attempts to clear entanglement
  - If unsuccessful in clearing – Execute emergency procedures
- Differences in canopies
  - Flares
    - Speeds – two stage flare
    - Practice at altitude
    - Stalls
  - Turns
    - Altitude loss
    - Possible line twists



# **SECTION 5**

# **WORKSHEETS**

## Student Jump Worksheet SL #2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

How long does it take to fall the first 1000ft in freefall? \_\_\_\_\_



Describe what this hand signal means. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Where does the wind come from initially on exit? \_\_\_\_\_

What is your decision altitude? \_\_\_\_\_

What are your emergency procedures? \_\_\_\_\_

Why do you want to make sure your altimeter is on zero on the ground? \_\_\_\_\_

### Student Preparation and Late/No-Show Fee Policies

There is a high degree of personal responsibility required of us in skydiving. There are no "time-outs" once exiting the airplane. For your safety, it is your responsibility to ensure that you have been adequately trained and prepared for your skydive. In order to maximize your learning, and to be fully prepared and trained for your jump you must:

- Show up **on time** or **early** for your class time.
- Read the assigned material prior to the start of class.
- Have the worksheet completed prior to the start of class
- Ask questions so you fully understand the material and objectives
- Arrive well rested and eager to learn/practice the new material

**If you arrive late or un-prepared, causing inadequate preparation time for you skydive, you will be subject to a no-show fee of \$25.00 or have the option of repeating your last passed skydive. If you cancel or reschedule less than 24 hours prior to your class time, you will be charged a \$25.00 no-show fee per jump.**

### Orientation Checklist

- Check in at inside manifest
- Equipment Checkout at inside manifest
  - Radio
  - Altimeter
  - Gloves
  - Goggles
- Report to student area
- Preparation
  - Manual read
    - Online, At DZ (arrive early), Purchase
  - Worksheet completed
    - Prior to class time
    - Covers previous material
- Currency
  - 30 days
  - Will do a PRCP again
  - Can do low altitude jump to maintain currency
- Proficiency Card

Once you have read and understand the policies above please print and sign your name and fill in today's date.

Printed Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Instructor's signature \_\_\_\_\_ Date \_\_\_\_\_



# Student Jump Worksheet PRCP #1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

Why do we protect our handles? \_\_\_\_\_

Why do you move your left hand when reaching for the handle with your right hand? \_\_\_\_\_

What is your response to line twists? \_\_\_\_\_

Why do you want to be upwind of the landing area? \_\_\_\_\_

**Draw a standard landing pattern with altitudes:**

Wind direction



**X**

What is your new count?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_





# Student Jump Worksheet PRCP #2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

When must seatbelts be used? \_\_\_\_\_

What FAR applies to seatbelt use? \_\_\_\_\_

Describe the "Line of Flight" - \_\_\_\_\_

Describe how to "Exit on the Reserve" - \_\_\_\_\_

What is your response to a Bag Lock? \_\_\_\_\_

How do you recover from a turn made too low? \_\_\_\_\_

What are your landing priorities? 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

Why is it important to perform a gear check in the same order every time? \_\_\_\_\_

What does standby radio mean (or describe standby radio)? \_\_\_\_\_

**Using the picture, plan and draw a landing pattern with altitudes.**

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
<div style="text-align: center;"> </div> <p>GS:</p>	<b>3000</b>	<b>290</b>	<b>09</b>	<b>-</b>
	<b>6000</b>	<b>280</b>	<b>17</b>	<b>0</b>
	<b>9000</b>	<b>300</b>	<b>20</b>	<b>-5</b>
	<b>12000</b>	<b>310</b>	<b>34</b>	<b>-7</b>

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



**Final Leg** – 300-200ft until touchdown. Flying into the wind, with the "X" directly in front of you. Arms should be all the way up, feet and knees together, eyes 45 degrees out in front of you and prepared to flare when told to do so by the "FLARE" command, the two flags dropping, or when you feel you are 3 seconds from touching down.



# Student Jump Worksheet PRCP #3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

What are the headings of our runways? \_\_\_\_\_ & \_\_\_\_\_ How long are the runways at HAF? \_\_\_\_\_

Why is it important to know runway information? \_\_\_\_\_

Where should the RSL attach on the front of the rig? \_\_\_\_\_

What is the maximum percentage of wear on a main closing loop? \_\_\_\_\_

Why do we perform step exit footwork? \_\_\_\_\_

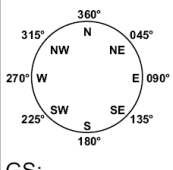
Describe "Opening Point" - \_\_\_\_\_

What is your response to a Line Over? \_\_\_\_\_

## Using the picture, plan and draw an entire descent with altitudes

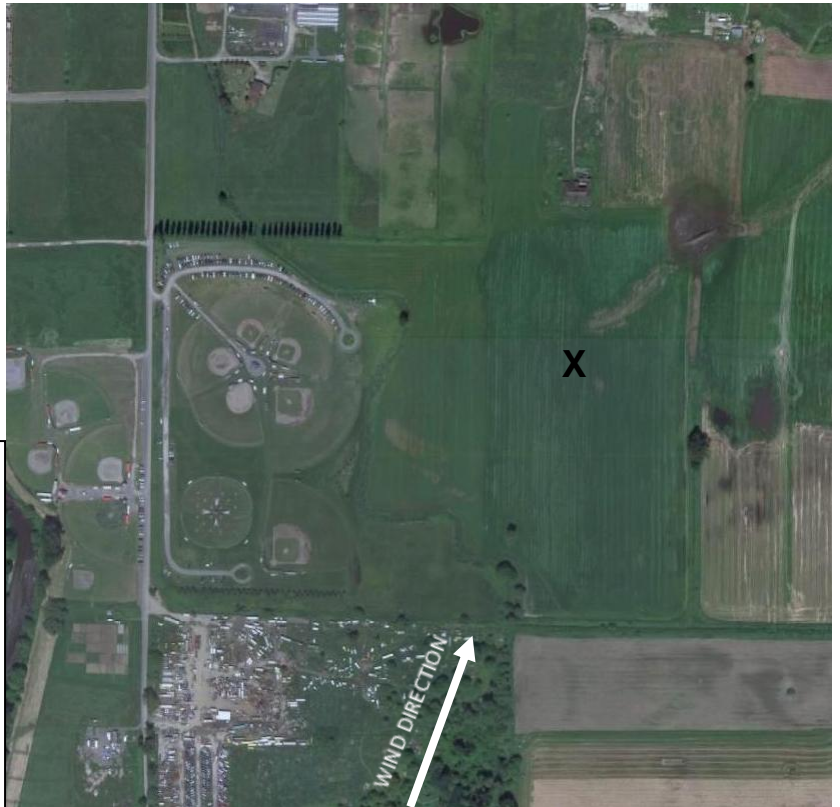
### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	3000	200	06	-
	6000	310	05	-1
	9000	280	23	-1
GS:	12000	280	32	-6



MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)

[www.snohomishsky.com](http://www.snohomishsky.com)



**Base Leg** – 600-500ft to 300-200ft. Flying crosswind, with the "X" 90 degrees to the side and slightly in front of you then make 90 degree turn to final leg.

**Downwind Leg** – 800ft to 600-500ft. Flying with the wind, with the "X" 90 degrees to the side and slightly behind you then make 90 degree turn to base leg.

**Pattern Entry Point** – 1000ft-800ft. A point perpendicular to the wind line with the "X" at 90 degrees to the side, indicating the start of the downwind leg.

Indicate Line of Flight (jump run) with a line  
 Indicate opening point with "O"  
 Designate Holding area with a square  
 Draw landing pattern with altitudes



# Student Jump Worksheet - 5 Sec Delay

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

How long is the lifespan of a Cypres 2? \_\_\_\_\_ At what altitude does a student Cypres fire? \_\_\_\_\_

What are the 3 main components of a Cypres? \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

What are the 3 rules of pulling? \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

What is your response to the following:

Hard Pull –

Pilot Chute Hesitation –

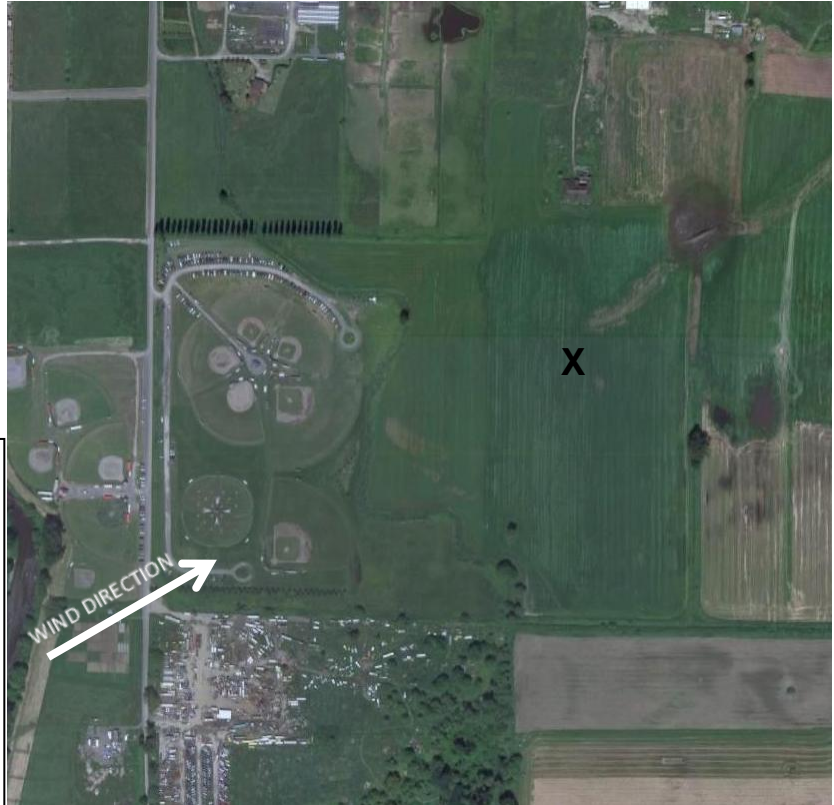
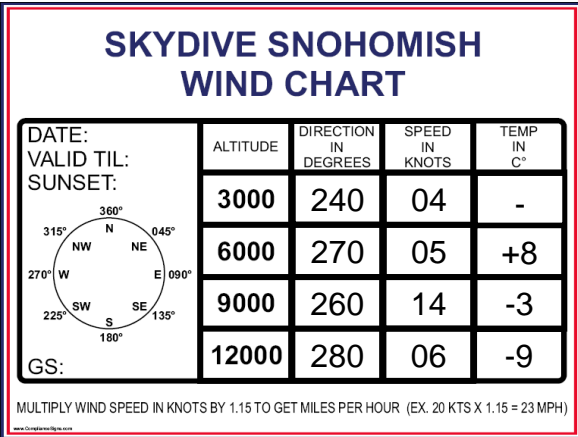
Tumbling in Freefall –

Horseshoe Malfunction –

What is your new count?

1. _____	7. _____
2. _____	8. _____
3. _____	9. _____
4. _____	10. _____
5. _____	11. _____
6. _____	

Using the picture, plan and draw an entire descent with altitudes.



**Upwind** – The upwind side of the target is the side from which the wind is coming from. It is where you want to exit the plane, open your parachute, and where your holding area is. The upwind side is the preferable side because the wind can be used to your advantage by pushing you back to the landing area.

**Downwind** – The downwind side of the target is the side where the wind begins pushing you away from the target. The only time you should be on the downwind side of the target is for your landing pattern. The downwind side is less desirable than the upwind side because you are fighting the wind to get back to the target.

Indicate Line of Flight (jump run) with a line  
 Indicate opening point with "O"  
 Designate Holding area with a square  
 Draw landing pattern with altitudes



# Student Jump Worksheet - 10 Sec #1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

What is your new count? \_\_\_\_\_

At what altitude should you complete your in-plane prep? \_\_\_\_\_

Describe Exit Point - \_\_\_\_\_

Where should you be looking when the door gets cracked 6"? \_\_\_\_\_

Where should the relative wind be coming from at 10 seconds? \_\_\_\_\_

How should your body be positioned in relation to the horizon at 10 seconds? \_\_\_\_\_

How do you stop an unintentional turn? \_\_\_\_\_

How do you correct instability? \_\_\_\_\_

What is your response to a Pilot Chute in Tow? \_\_\_\_\_

When do you use rear riser turns? \_\_\_\_\_

Using the Winds Aloft Chart, plan and draw an entire descent with altitudes.

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
<div style="font-size: small; margin-bottom: 5px;">GS:</div>	3000	290	09	-
	6000	280	17	0
	9000	300	20	-5
	12000	310	34	-7

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



**Downwind or Crosswind landings:** Even with the best intentions, you may find yourself in a situation requiring you to land downwind or crosswind. If it is a light wind day or bad weather is approaching, the winds may shift after you have already entered your landing pattern. If you find yourself in this situation, **DO NOT PANIC OR MAKE ANY DRASTIC TURNS CLOSE TO THE GROUND.** To land downwind or crosswind, flare at the same height above the ground as you would have if you landed into the wind. Do not try to run out the landing as you will be going too fast and may risk serious injury. On a crosswind landing you may have to flare more on one side vs. the other to keep the canopy flying level to the ground. Stay calm, fly your parachute all the way to the ground and plan on performing a PLF.

Line of Flight with a line – Exit point with “E” - Opening point with “O”  
Holding area with a square - Draw landing pattern with altitudes





# Student Jump Worksheet – 10 Sec #2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

What is the purpose of the RSL? \_\_\_\_\_

How do you disconnect the RSL? \_\_\_\_\_

What is your new count? \_\_\_\_\_

What is the purpose of the wave-off? \_\_\_\_\_

Why would you do a rear riser turn on opening? \_\_\_\_\_

How far downwind of an obstacle could you find turbulence? \_\_\_\_\_

How should you fly your canopy in turbulence? \_\_\_\_\_

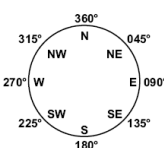
What is your response to a parachute open in the plane? \_\_\_\_\_

What is key to perform a step exit? \_\_\_\_\_

What is one situation when you may disconnect your RSL? \_\_\_\_\_

Using the Winds Aloft Chart, plan and draw an entire descent with altitudes.

### SKYDIVE SNOHOMISH WIND CHART

	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
DATE: VALID TIL: SUNSET:	3000	200	06	-
	6000	310	05	-1
GS:	9000	280	23	-1
	12000	280	32	-6

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



**Recovery from Low Turns**  
 Low turns under canopy are one of the biggest causes of serious injury and death in skydiving. A low turn can be caused by premeditation, an error in judgment, or inexperience with a situation. To avoid low turns fly a preplanned, predictable pattern to a large open area away from other canopies and obstacles, and make only minor adjustments below 200ft. If you see you have started a turn too low to the ground for a safe landing you should:

- Use your toggles to neutralize the turn and get the canopy overhead.
- Stop the dive of the canopy.
- Flare the canopy and prepare for a hard landing (PLF).
- In case of premature contact with the ground, no matter how hard, keep flying the canopy to prevent further injury.

Line of Flight with a line – Exit point with “E” - Opening point with “O”  
 Holding area with a square - Draw landing pattern with altitudes



# Student Jump Worksheet – 10 Sec #3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

What is your wing loading on your main \_\_\_\_\_, and your reserve \_\_\_\_\_ ?

What is the purpose of the mid-braked turn? \_\_\_\_\_

What is your response to a Biplane two out situation? \_\_\_\_\_

How do you avoid any obstacle? \_\_\_\_\_

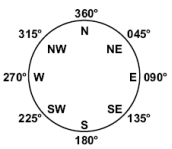
What is your procedure for landing into power lines? \_\_\_\_\_

What preparations should you be performing in the plane once on your knees? \_\_\_\_\_

**Using the Winds Aloft Chart, plan and draw an entire descent with altitudes.**

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	3000	300	04	-
	6000	280	09	6
	9000	290	05	0
	12000	310	12	-1



GS: \_\_\_\_\_

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



**Line of Flight** (Jump Run)  
 The Line of flight is the path that the plane is taking over the ground. It is important to determine the planes line of flight to ensure that you are going to climb out and exit the plane at the correct points.

While sitting in the door of the plane try to identify the line of flight over the ground by looking forward through the prop and down the side of the airplane and decide if the plane is flying straight over the ground or if the planes direction is slightly skewed in relation to the path over the ground.

Line of Flight = a line - Climb out point = "C" - Exit point = "E"  
 Opening point = "O" - Holding area = a square  
 Draw landing pattern with altitudes



# Student Jump Worksheet – 15 Sec #1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

Describe the Start, Coast, Stop Principle - \_\_\_\_\_

What should your initial heading be? \_\_\_\_\_

What should your heading transition to and why? \_\_\_\_\_

When should you check your altimeter? \_\_\_\_\_

What is your most important task in freefall? \_\_\_\_\_

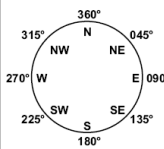
If you see your instructors parachute deploy, what should your response be? \_\_\_\_\_

If you look at your altimeter and you see 2.5k, what should your response be? \_\_\_\_\_

Why are Mid-Braked Canopy skills important to have? \_\_\_\_\_

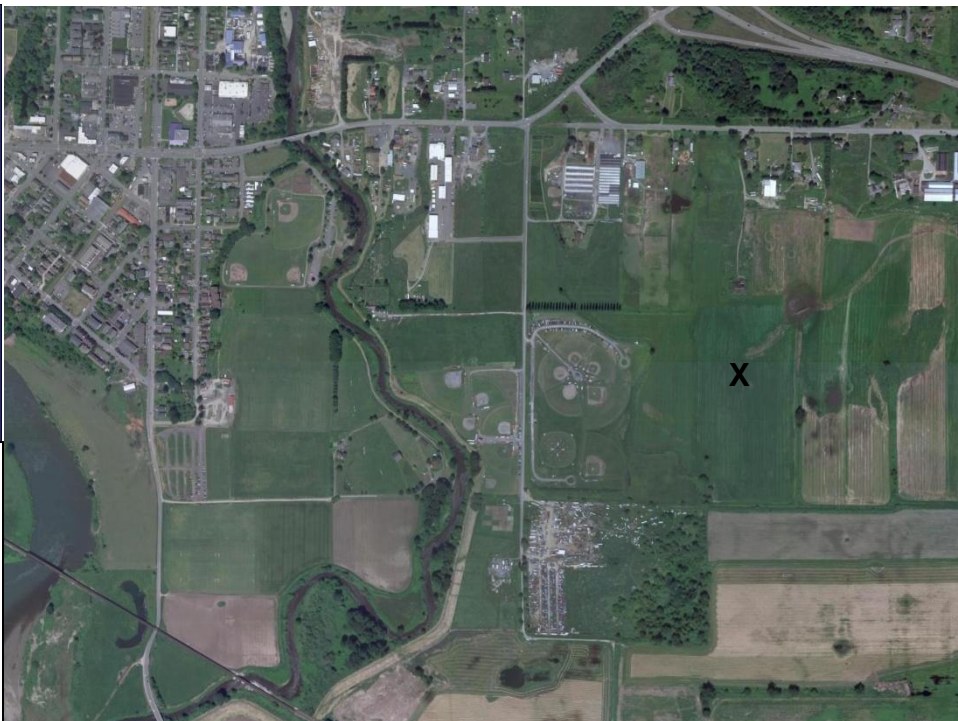
**Using the Winds Aloft Chart, plan and draw the climb out point, exit point, opening point and canopy descent with altitudes.**

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	<b>3000</b>	330	12	-
	<b>6000</b>	340	10	8
	<b>9000</b>	300	15	5
	<b>12000</b>	310	17	0

GS: \_\_\_\_\_

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



**Opening Point**  
 The point at which you deploy the parachute and are no longer in freefall is called the opening point. Prior to jumping, you will need to determine where you want to activate deployment in relation to the target area based on the current wind conditions. Your opening point should always be on the upwind side of the target. The distance away from the target will vary with the strength of the wind. The stronger the wind, the further upwind you want to open.

Line of Flight = a line - Climb out point = "C" - Exit point = "E"  
 Opening point = "O" - Holding area = a square  
 Draw landing pattern with altitudes



# Student Jump Worksheet – 15 Sec #2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

What should you inform the pilot of during the pilot briefing? \_\_\_\_\_

What should you do and when for In-Plane Preparations? \_\_\_\_\_

How far should you initially open the door? \_\_\_\_\_

What should you do before a turn in freefall? \_\_\_\_\_ After the turn? \_\_\_\_\_

What is the purpose of Deep Brake Canopy flight? \_\_\_\_\_

How should you respond if your parachute begins to stall? \_\_\_\_\_

Using the Winds Aloft Chart, plan and draw the climb out point (C), exit point (E), opening point (O) and canopy descent with altitudes.

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	3000	180	08	-
	6000	160	11	9
	9000	210	09	4
	12000	190	14	1

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



**Exit Point**

The exit point is the pre-determined location where you let go of the aircraft. To determine the exit point you must know where you want your opening point to be. Once you have determined the opening point, you will then need to estimate your drift in freefall. Take the winds that you will be falling through and average them, divide the average by 60 and this gives you the distance you would drift in one minute of freefall. Now decide where you should exit the plane, accounting for drift, so that you will be under canopy in the area of your pre-planned opening point. (Remember, your drift is directly related to the direction and speed of the winds at your freefall altitudes.) Please note that for freefall delays of 15 seconds or less, the exit point and opening point will be synonymous.

Line of Flight = a line - Climb out point = "C" - Exit point = "E"  
 Opening point = "O" - Holding area = a square  
 Draw landing pattern with altitudes





# Student Jump Worksheet – 45 Sec #1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

What are the cloud clearance requirements? \_\_\_\_\_  
 \_\_\_\_\_

Why is it important to leave the plane on "GO!"? \_\_\_\_\_

Draw a rough sketch of how your body should be positioned during a door dive in relation to the relative wind.

Why are barrel rolls useful?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 What initiates the barrel roll?  
 \_\_\_\_\_  
 \_\_\_\_\_

What is your pivot point when doing a center turn? \_\_\_\_\_

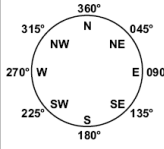
What is one possible alternative reference for freefall altitude? \_\_\_\_\_

How should you flare from a mid-braked position? \_\_\_\_\_

Using the Winds Aloft Chart, plan and draw the climb out point (C), exit point (E), opening point (O) and canopy descent with altitudes.

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	3000	270	10	-
	6000	290	12	8
	9000	280	08	6
	12000	280	12	5



GS:

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- #### Equipment Emergency Procedures
1. **LOOK** – Look down and to left for the silver emergency handle
  2. **REACH** – Reach and grasp the handle with both hands
  3. **PULL** – Pull handle slightly downward and forward to full arm extension
  4. **CLEAR CABLES** – While holding the handle with the left hand, sweep the cables clear of the container with a downward sweeping motion of the right hand
  5. **ARCH** – Return to arch position
  6. **CHECK** – Check over your shoulder to ensure reserve deployment

Line of Flight = a line - Climb out point = "C" - Exit point = "E"  
 Opening point = "O" - Holding area = a square  
 Draw landing pattern with altitudes



# Student Jump Worksheet – 45 Sec #2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

Review obstacle avoidance and landings and be prepared to answer your instructor's questions.

Describe the break-off sequence - \_\_\_\_\_

What is the purpose of Maximum Performance Turns? \_\_\_\_\_

What should you always do before you perform a maximum performance turn? \_\_\_\_\_

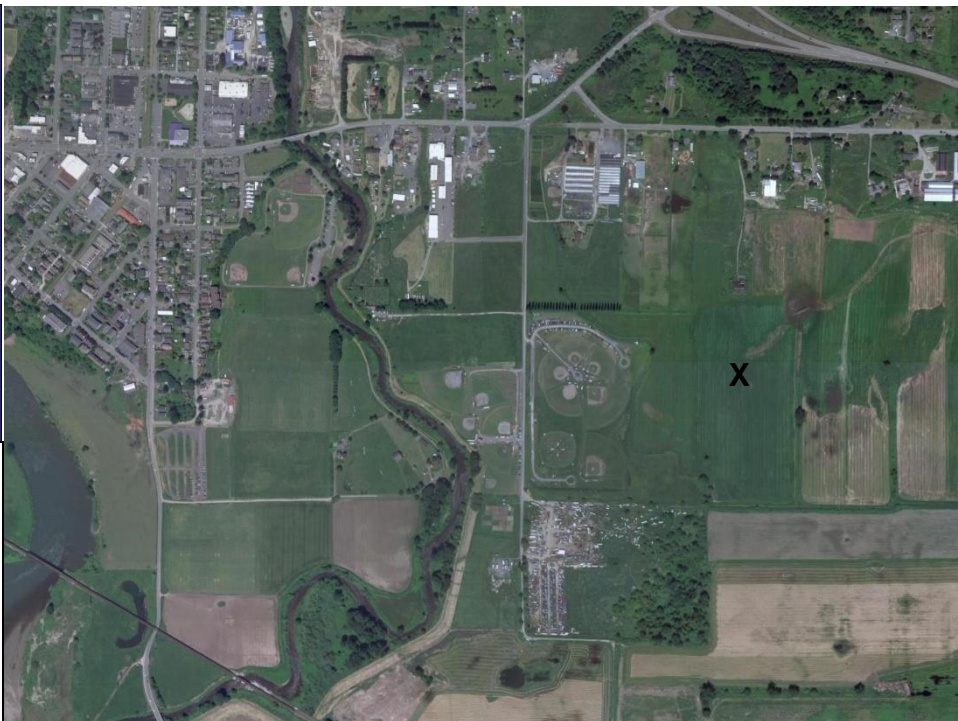
What are some dangers of doing maximum performance turns on smaller canopies? \_\_\_\_\_

Using the Winds Aloft Chart, plan and draw the climb out point (C), exit point (E), opening point (O) and canopy descent with altitudes.

### SKYDIVE SNOHOMISH WIND CHART

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	<b>3000</b>	<b>210</b>	<b>6</b>	<b>-</b>
	<b>6000</b>	<b>280</b>	<b>14</b>	<b>4</b>
	<b>9000</b>	<b>310</b>	<b>08</b>	<b>3</b>
GS:	<b>12000</b>	<b>240</b>	<b>18</b>	<b>-4</b>

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



- Landing Priorities**
1. **Wing Level** – Canopy is not turning or diving towards the ground; Overhead
  2. **Open Area Free of Obstacles**  
- Large open field free of obstacles
  3. **Flare a Minimum of Halfway**  
– Pull toggles to at least half flare position
  4. **PLF** - Perform a Parachute Landing Fall (PLF)

Line of Flight = a line - Climb out point = “**C**” - Exit point = “**E**”  
 Opening point = “**O**” - Holding area = a square  
 Draw landing pattern with altitudes



**Student Jump Worksheet – 45 Sec #3**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Jump #: \_\_\_\_\_

Describe Splitting the Spot – \_\_\_\_\_

What are the important aspects of promoting a smooth flow of traffic? \_\_\_\_\_

If on a collision course with another jumper, how should you respond? \_\_\_\_\_

What should you do immediately following a canopy collision? \_\_\_\_\_

What could hinder communication between two jumpers during a canopy collision? \_\_\_\_\_

How should you respond if on level with another jumper flying S-1 at a wing loading of 0.87? \_\_\_\_\_

How should you respond if you are at 2,500 feet under canopy there is a licensed skydiver 200 feet above you? \_\_\_\_\_

**Using the Winds Aloft Chart, plan and draw the climb out point (C), exit point (E), opening point (O) and canopy descent with altitudes.**

**SKYDIVE SNOHOMISH  
WIND CHART**

DATE: VALID TIL: SUNSET:	ALTITUDE	DIRECTION IN DEGREES	SPEED IN KNOTS	TEMP IN C°
	3000	90	5	-
	6000	160	8	9
	9000	180	14	6
	12000	170	16	1

DATE: \_\_\_\_\_  
VALID TIL: \_\_\_\_\_  
SUNSET: \_\_\_\_\_

GS: \_\_\_\_\_

MULTIPLY WIND SPEED IN KNOTS BY 1.15 TO GET MILES PER HOUR (EX. 20 KTS X 1.15 = 23 MPH)



Before practicing turns or maneuvers of any kind under canopy **you must clear your airspace.** Clearing your airspace means performing a thorough scan of the entire airspace you intend to use and see that it is clear of other traffic.

Line of Flight = a line - Climb out point = “C” - Exit point = “E”  
Opening point = “O” - Holding area = a square  
Draw landing pattern with altitudes

