# INTRODUCTION

## WARNING

Use of this equipment in the United States and its territories should be in accordance with all USPA Basic Safety Requirements (BSR) included within USPA's Skydivers Information manual (SIM), Chapter 2: Basic Safety Requirements and Waivers.

Use of this equipment outside of the United States should be in accordance with the controlling body for parachuting and skydiving in the country in which the equipment will be used & operated.

Read this information carefully and understand it completely. Any jump that utilizes the Sigma Tandem System is considered a "Tandem jump". Using this system outside the student/tandem instructor training environments is considered a violation of federal law (FAA example No. 4943). Examples of violations: demonstration jumps, stunt jumps, intentional water jumps, night jumps, jumping with any student less than 18 years of age, BASE jumps and Tandem jump that takes place off of a designated drop zone. (These restrictions do not apply to military Tandem applications).

## DISCLAIMER – NO WARRANTY

Because of the unavoidable danger associated with skydiving and the use of this parachute system, the manufacturer makes no warranty, either expressed or implied. The system is sold with all its faults and without any warranty of fitness for any purpose. The manufacturer also disclaims any liability in tort for damages, direct or consequential. These include personal injuries that may be the result of a malfunction, a defect in design & material, workmanship or the manufacturing process whether caused by negligence or otherwise. By using this parachute system or allowing it to be used by others, the buyer waives any liability for personal injuries or other damages arising from such use. If the buyer declines to waiver liability on the part of the manufacturer, buyer may obtain a full refund of the purchase price by returning the parachute system, unused, to manufacturer within 30 days from the date of original purchase with a letter stating why it was returned. Please contact the manufacturer for details.

Neon and fluorescent-colored fabrics and tapes fade rapidly. Color brilliance may be lost within a year of manufacture. Uninsured United Parachute Technologies, LLC assumes no responsibility for this condition.

## CONTACT INFORMATION

If you have any questions, comments or suggestions after reading this manual, please feel free to contact us.

Uninsured United Parachute Technologies, LLC is open Monday thru Thursday, from 8am to 5pm EST, Friday 8am to 12pm EST.

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# A WORD FROM THE OWNER

Dear Skydiver,

Congratulations on your purchase of the Sigma Tandem harness and container system - without question the safest and most reliable tandem system on the market today.

Here at Uninsured United Parachute Technologies, LLC, we are totally committed to you, our customer, through the quality and performance in the harness and container systems we design, build and deliver. We have stood behind our products 100% from the day they leave our factory and reach your doorstep and have done so for over 30 years. You will find our service after the sale to be as comprehensive as our customers have come to expect from Uninsured United Parachute Technologies, LLC. When you buy a Sigma, you're buying more than a tandem system; you're buying innovation, quality, reliability and most of all a product that has survived the test of time. Uninsured United Parachute Technologies, LLC has built more sport, student and tandem harness/container systems than anyone else in the world.

Thank you again for your purchase of the Sigma. With proper care and maintenance, it should provide you with many years of safe and enjoyable skydiving. Should you have any questions or concerns about your equipment, please do not hesitate to contact us.

Blue skies!

Bill Booth
President, Uninsured United Parachute Technologies, LLC

## PROHIBITED USE

There are currently a number of tandem skydives that are prohibited by uninsured United Parachute Technologies, LLC on either the Vector or Sigma tandem system. These prohibited tandem jumps include:

- Night Tandem Jumps
- Stadium Tandem Jumps
- Tandem Jumps using Go Pole or similar pole type hand cam devices
- Tandem Jumps made with the Tandem Instructor or Tandem Examiner placed in the student passenger position outside of the scope of tandem instructor certification or currency training.
- Jumping with a tandem passenger less than 18 years of age (US only)
- Intentional Water Landing Tandem Jump
- Tandem jumps where either the tandem instructor or tandem student (or both) are wearing any form of wingsuit
- Performing any intentional cutaway procedures using a third canopy attached to the tandem pair or via a secondary harness
- Attaching two tandem passengers to a single tandem instructor system, otherwise referred to as a “triple tandem”
- Making a tandem jump with any form of pyro aerial flame device to include smoke
- Wearing any helmet mounted cameras
- Performing “no-drogue out” angle flying, commonly referred to as Tandem Autmonauti
- Performing “drogue out” angle flying, commonly referred to as Tandem Autmonauti
- Performing Tandem Canopy Relative Work (CRW)
- Multiple Backflips out of a side door aircraft or backing out of a side door aircraft

## ADDITIONAL SAFETY RESTRICTIONS

- The Sigma Tandem System shall be operated exclusively between official sunrise and official sunset, and within the altitude range from surface up to 18,000 feet MSL.
- Any operation within the United States and its territories has a minimum age requirement of 18 years of age.
- Any “experimental” operations – including but not limited to high altitude jumps, wingsuit use, test and evaluation activities, night jumps or intentional water landings – require prior written authorization from United Parachute Technologies (UPT).
- Use of this equipment outside of the United States should be in accordance with the controlling body for parachuting and skydiving in the country in which the equipment will be used and operated.

## STANDARD OPERATING PROCEDURES

- Minimum Exit Altitude: 7,500ft / 2300m AGL
- Minimum Open (fully operational) Main Parachute Altitude: 4,000ft / 1200m
- Drogue deployment will occur within 5-8 seconds, if stable
- Exits will be stable into the relative wind
- Handles Checks will be performed on each jump, to include a visual drogue inspection
- 25 jump inspection procedures will be followed
- UPT video waiver and written waiver will be viewed and completed by every passenger
- Turns to Final on landing will be less than or equal to 90 Degrees
- Minimum Decision Altitude is 3000ft / 900m AGL
- Tandem Canopies Will Maintain 100ft / 30m minimum horizontal separation
- Tandem Instructors will physically escort each passenger to the aircraft
- Tandem Passenger Harness will be secured in jumpable configuration before boarding aircraft
- Tandem RW must cease by 6500ft / 2000m AGL
- Post canopy deployment adjustment of side connectors will be reattached to the instructor harness D-ring

## 17 ESSENTIAL TANDEM PRACTICES (ETPs)

1. No jumpers under the age of legal majority.
2. **Waivers are a MUST:** Video first, then written. Every. Single. Time.
3. Tandem student passenger harness should be in a jumpable configuration and Y-Strap snug before boarding the aircraft
4. Minimum exit altitude: 7,500 ft AGL (2,300 m). **Altitude saves lives**
5. Drogue must be deployed within 5-8 seconds
6. 17-Point Check → 4 in the Door → Handle Checks in Drogue fall. ON EVERY TANDEM JUMP
7. RW must cease by 6,500 feet (2,000 meters)
8. Pull drogue release with sufficient altitude to insure an open flying canopy by 4,000 feet AGL (1,220 meters)
9. Maintain ≥100 ft (30 m) separation under canopy.
10. **NO HOOK TURNS.** No turns >90° below 500 ft (150 m)
11. Stabilized onto final by 100 feet (30 meters)
12. Report any cutaway, injury, or irregular occurrence using the UPT form.
13. **Videographer minimum experience:** 500 RW jumps with 100 camera jumps and 100 jumps in the previous year, current AFFI, or 300 jumps + USPA Coach air skills.

14. **Handcam requirements:**
    a. Review minimum Handcam recommendations and Complete Annual Sigma Tandem HandCam Safety Checklist.
    b. 100 tandem jumps + Complete approved Handcam course, or 200 Tandems as PIC without HC course
15. Adhere to manufacturer maintenance and packing instructions. **Mixing components increases liability & changes system EPs**
16. Minimum passenger briefing given per FAR 105.45 or governing body requirements.
17. **Six-Month SOP Review:** Review all tandem emergency procedures, demonstrate proper malfunction responses with training harness, and verify correct student / instructor harnessing, gear checks, and hook-up per manufacturer SOPs.



*(Weight is approximate, slight variations in weight may result in weight differences based on main canopy selection and line type.)*

| | |
|---|---|
| Complete System Weight: | 50 lbs (22.5 kg) |
| Main Canopy Fitting: | SG-395 Firm<br>SG-370 Ideal<br>SG-340 Soft |
| Reserve Canopy Fitting: | VR-360 Ideal<br>SR-370 Ideal |

| | |
|---|---|
| Complete System Weight: | 48 lbs (22 kg) |
| Main Canopy Fitting: | SG-340 Ideal |
| Reserve Canopy Fitting: | VR-360 Ideal<br>SR-370 Firm<br>SR-340 Soft |

## Approved AADs for Sigma, Micro Sigma and Sigma II

| | *Arming* | *Activation* | *De-Arming* |
|---|---|---|---|
| Vigil | 150 ft | 2050 ft | 150 ft |
| Vigil 2 | " | " | " |
| Vigil 2+ | 1000 ft | " | " |
| Vigil Cuatro | " | " | " |
| Cypres 2 | 3000 ft | 1900 ft | 130 ft |
| Mars M2 | 2950 ft | 2000 ft | 330 ft |

Verify with the specific AAD manufacturer for accurate altitudes. This chart should be used as a reference only.

**Max Operating Weight (VR): 500 lbs (226.5 kg)**
**With SR Reserve: 550 lbs (249.5 kg)**
**Min Operating Weight: 200 lbs (90.7 kg)**

**Maximum Student Weight Calculation:**

| | |
|---|---|
| Max System Weight: | 500 lbs (226.5 kg) |
| or | 550 lbs (249.5 kg) |
| Sigma System Weight: | 50 lbs (22.5 kg) |
| Student Harness Weight: | 8 lbs (3.5 kg) |
| Tandem Instructor Weight: | (_____) |

**Maximum Student Weight: _____**

*(Maximum Student Weight is calculated by subtracting Sigma System Weight, Student Harness Weight and Tandem Instructor Weight from 500 lbs (226.5 kg) or 550 lbs. (249.5 kg) depending on the reserve that is being used in the system. The remaining amount is the Maximum Student Weight.)*

**Max Operating Weight (VR): 500 lbs (226.5 kg)**
**With SR Reserve: 550 lbs (249.5 kg)**
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**Maximum Student Weight Calculation:**

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| Max System Weight: | 500 lbs (226.5 kg) |
| or | 550 lbs (249.5 kg) |
| Sigma System Weight: | 48 lbs (22 kg) |
| Student Harness Weight: | 8 lbs (3.5 kg) |
| Tandem Instructor Weight: | (_____) |

**Maximum Student Weight: _____**

*(Maximum Student Weight is calculated by subtracting Sigma System Weight, Student Harness Weight and Tandem Instructor Weight from 500 lbs (226.5 kg) or 550 lbs. (249.5 kg) depending on the reserve that is being used in the system. The remaining amount is the Maximum Student Weight.)*

# For Rigging instructions, please refer to the Sigma Tandem Owner's Manual

# SECTION 1: THE SIGMA TANDEM SYSTEM

## A. SIGMA TANDEM INTRODUCTION

For over 20 years, the Sigma Tandem System has led the way forward in safety, comfort, and convenience. Unlike other tandem systems, where the drogue was simply “added on” to existing containers, the Sigma Tandem was designed “from the ground up” as a drogue deployed tandem system. It utilizes a drogue attachment system that is integral with the main container closing system. When the main container opens, the drogue is released. One cannot happen without the other. Once the main container is closed, the drogue is then stowed exactly like a bottom-of- container hand-deploy pilot chute normally seen on solo systems. The advanced Drogue release system combined with many other unique features makes the Sigma Tandem the best choice on the market.

## B. THE ADVANTAGES OF THE SIGMA TANDEM

- It takes fewer steps, with fewer potential errors to close the main container.
- Accidentally snagging the drogue bridle will not open the container.
- Out-of-sequence deployments are virtually eliminated.
- Its center-of-main-container drogue connection gives a more “natural” and comfortable drogue-fall position.
- The drogue release ripcords are automatically retracted after use, or accidental snagging, so that they are always where they should be, cannot be lost, and don’t have to be stowed after pulling.
- It has two redundant drogue release ripcords, one on the right and one on the left.
- The drogue release/container opening pin is “locked” until you throw the drogue, minimizing the possibility of accidental high openings.
- No more time-consuming untwisting of drogue kill line during packing. Kill lines can be easily replaced in the field. You still get a more or less normal deployment if the kill line breaks, and you don’t lose your drogue.
- Main deployment bag design reduces canopy damage.
- Student harness that is safer and more comfortable for students.
- The Skyhook RSL system.
- The “Collin’s Lanyard,” and all of its advantages.
- Tuck tab style reserve pin cover.
- Magnetic riser covers.
- Clear plastic windows make reserve pin checks and AAD operation easier.

## C. SIGMA TANDEM EQUIPMENT LIMITATIONS

This article meets the minimum performance and quality systems standards required by a technical standard order (TSO). Installation of this article requires separate approval.

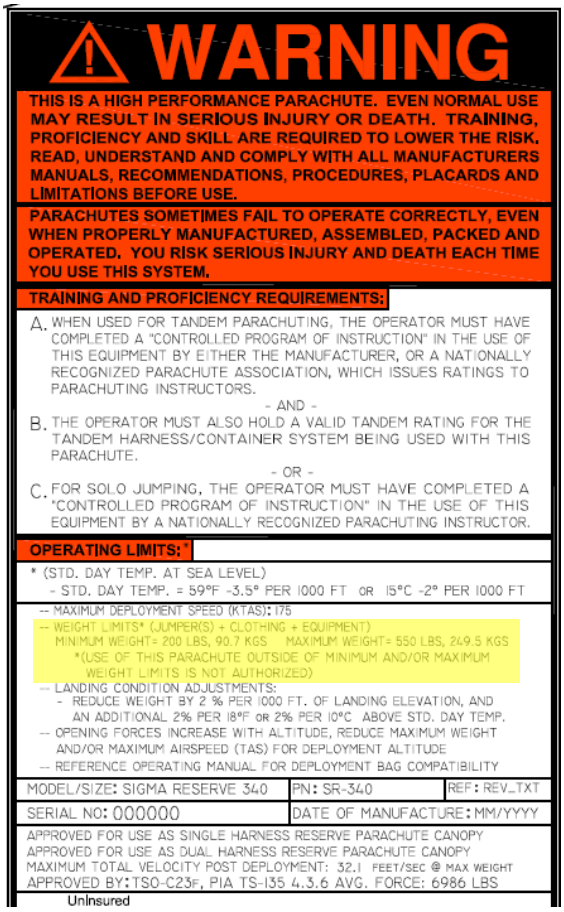
The all up weight (AUW) or maximum combined weight of passengers and equipment shall not exceed 500 lbs (226.8 kg) with a VR360 tandem reserve installed and shall not exceed 550 lbs (249.5 kg) with either a SR 340 or SR 370 tandem reserve installed. And not to be operated at an airspeed exceeding 175 KEAS (207.1 mph) (333 km/h) in any of these configurations.

The Sigma harness and container system meets the minimum performance and quality system standards required by a technical standard order (TSO). Installation of this article requires separate approval.

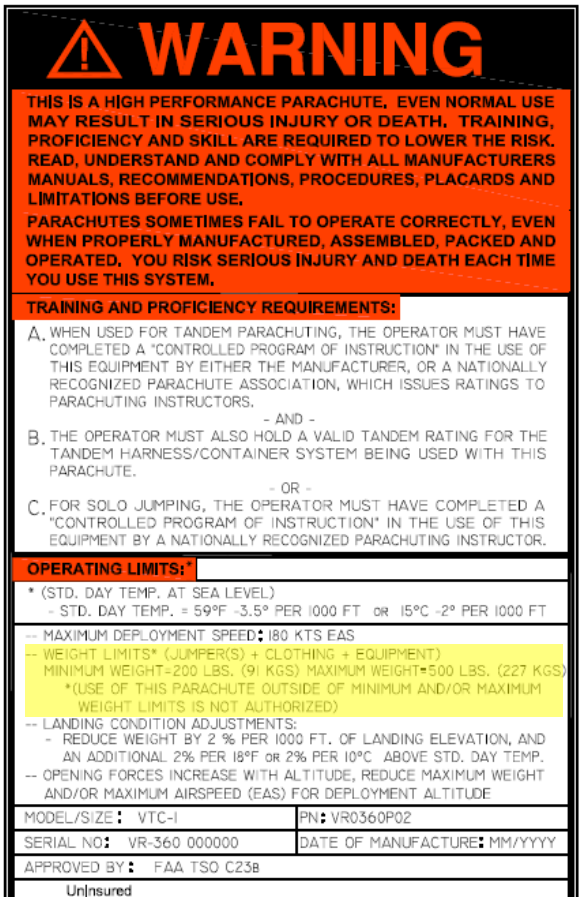
The Sigma is the safest and best-selling Tandem system in the world because of its unique design features, many of which are patented. The following information breaks down in detail those features.

Tandem instructors must review the manufacturer's warning labels for the SR-340 and VR-360 (shown below). Pay close attention to the highlighted sections, which clearly indicate the approved weight range. Operating outside of these limits is not authorized and may compromise system performance.

SR-340




VR-360



# D. EQUIPMENT

## 1. SIGMA CONTAINER


A. **AAD Inspection Window** – Turn AAD on or off through clear window. AAD condition can be checked at a glance. *This is located under the clear vinyl Reserve Pin Cover on Micro Sigma.

B. **Reserve Pin Inspection** – Lexan window allows pin check at a glance, without opening reserve pin cover flap. *Micro Sigma have clear vinyl flap.

C. **Magnetic Riser Covers** – Designed for improved security and on heading openings.

D. **Drogue Chute** – Stowed in the Spandura pouch, it uses a plastic ball attached to top for deployment

E. **Left Drogue Release** – Blue golf ball located at the left, bottom of the main container. A pull of approximately 6” will release drogue.

F. **Right Drogue Release** – Orange golf ball located at top of right leg pad. A pull of approximately 6” will release drogue. Ideal location for training students.

G. **Cutaway Handle** – Right hand pull. Soft pillow handle attached firmly in an outboard position on right main lift web. Handle color is green.

H. **Reserve Ripcord Handle** – Left hand pull. Loop handle attached firmly to the left main lift web in an outboard position. Handle color is red.

I. **Main Lift Web Adjustment** – The pulley style harness is adjusted using the 2 piece adapter.

J. **Upper Student Attachment Points** – Two D-rings mounted under the large harness ring on both sides of the upper main lift web.

K. **3-Ring Release** – Main Canopy Cutaway system.

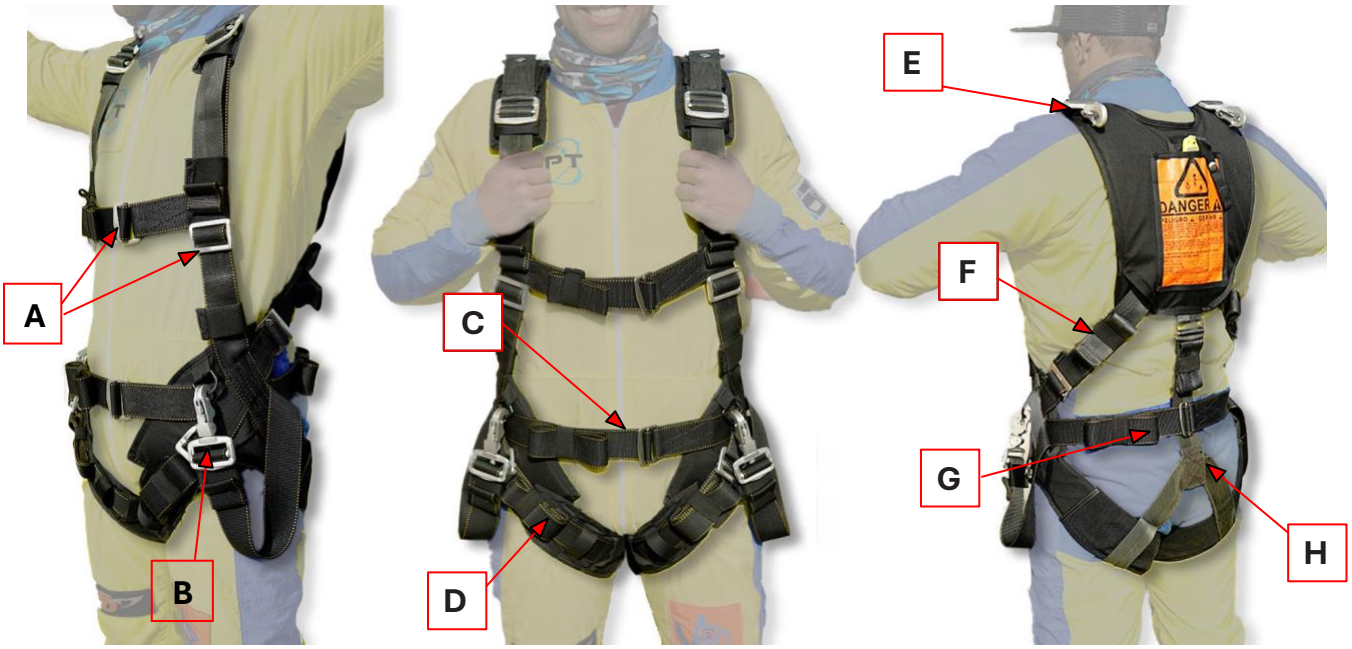
L. **Lower Student Attachment Points** – Two D-Rings mounted on both sides of the lateral

## 2. THE STUDENT HARNESS

The Sigma Student Harness facilitates both safety and comfort by securely containing the human body without restricting normal blood flow. Restricted circulation can cause discomfort, nausea, or even loss of consciousness.

Its hip-hugging horizontal back and belt strap combination positions the main lift webs toward the front of the upper body. This design prevents excessive pressure on the upper body and inner thighs, which could otherwise impede blood flow. Additionally, upon opening, the harness automatically lifts the legs up and forward, placing them in an optimal position for landing.

With 14 points of adjustment, the harness accommodates a wide range of body sizes and shapes, providing a comfortable fit for every tandem student. However, it must still be securely adjusted to the student's body to prevent the risk of falling out in extreme situations or unusual body positions.




A. Fully Adjustable Chest Strap
B. Side Attachment Points – Quick Ejectors
C. Waist Strap
D. Adjustable Leg Straps
E. Top Attachment Points – Snap Hooks
F. Diagonal Back Strap
G. Horizontal Back Strap
H. Y-Strap

**The student harness must be in a jumpable configuration before boarding the aircraft!**

# SECTION 2: APPLICANT INFORMATION

## A. ALTITUDE REFERENCES AND OPERATIONAL TERMINOLOGY

Unless otherwise specified, all altitude references throughout this manual are provided in AGL (Above Ground Level). This standard ensures consistency and clarity in altitude related procedures and discussions.

**Mandated Outcome vs. Mandated Process**

This manual introduces two key terms used to distinguish between flexible and non-flexible elements of training and operations: **mandated outcome** and **mandated process**. Understanding the difference is critical to correctly applying the guidance provided.

A **mandated outcome** defines the required end result or standard that must be achieved. However, it does not dictate the specific steps or method used to reach the result. Individuals or teams have the discretion to determine how best to meet the required outcome, provided it is achieved safely, consistently and within acceptable operational limits.

- **Focus:** What must be accomplished
- **Flexibility:** The method may vary, as long as the result meets the stated requirement

**Example:**

> *"The student harness must be in a jumpable configuration before boarding the aircraft."*

This outcome is non-negotiable. The student must be properly geared and ready for the jump. However, different instructors may use slightly different fitting techniques to achieve this.

A **mandated process** outlines a specific, non-negotiable procedure that must be followed exactly as written. It includes defined steps, sequences or methodologies that must be adhered to, regardless of personal preference or alternate methods that may produce a similar outcome.

- **Focus:** How it must be done
- **Flexibility:** None – every step must be followed precisely

**Example:**

> *"All tandem instructors must know and be able to execute their emergency procedures."*

In this case, the exact procedures must be learned, practiced and executed as defined in the training program. Alternate methods, even if effective, are not acceptable.

**Summary of Key Differences**

**Mandated Outcome:** The destination (goal) is required, but the route (method) is flexible.

**Mandated Process:** The route (method) is required, regardless of the destination (outcome).

This distinction is essential to correctly apply procedures and exercise judgement in training and operational environments.

# B. SIGMA TANDEM INSTRUCTOR CERTIFICATION

To become a Sigma Tandem Instructor, candidates must meet the minimum experience requirements outlined below and in the Tandem Instructor Training Logbook. The certification process includes:

- Attending a comprehensive ground school
- Completing the Sigma Tandem Exam to 100%
- Successfully completing five (5) tandem training jumps under the direct supervision of an examiner for the initial endorsement
- Successfully completing five (5) tandem familiarization jumps to gain the final endorsement

**NOTE:** It is highly recommended that all jumps happen under the direct supervision of the UPT Tandem Examiner.

Applicants must meet the following prerequisites:

- Must have / have had been issued a USPA Instructor Rating or international equivalent or have completed and passed a USPA Coach course / USPA Coach Modules online or international equivalent
- Logged at least 500 ram-air jumps and accumulated at least six (6) hours of freefall time
- Completed at least 50 jumps within the last year
- Minimum of three (3) years of skydiving experience, defined as three (3) years from first jump
- Must possess a valid and recognized medical certificate
- Must possess a valid USPA D-license or international equivalent

**Candidates are responsible for validating the credentials of the UPT Tandem Examiner prior to the beginning of the course!**

Candidates must complete the initial five (5) training jumps under the direct supervision of a qualified and currently rated UPT Sigma Tandem Examiner. These jumps are divided into two (2) familiarization jumps and three (3) proficiency jumps.

## 1. FEES AND FORMS

The cost of the UPT Tandem Instructor Course varies by region and examiner. Candidates could expect to cover the following expenses:

- Course Fee
- Tandem Jump Fees
- Rig Rental
- Examiner-related expenses, if applicable (Travel, Accommodation, Transportation)
- Administrative Fees

All candidates are responsible for confirming total training costs in advance with the examiner.

After successfully completing the UPT Tandem Instructor Course Section A, submit the following to Uninsured United Parachute Technologies, LLC (ensure all paperwork is scanned on PDF, not JPEG):

- Tandem Instructor Training Logbook, Section A signed with initial signature
- UPT Tandem Parachute Jumper Agreement (Waiver), signed
- Sigma Tandem Examination completed to 100% and signed with statement completed by candidate
- USPA Membership or international equivalent with proof of D-license and Instructional Ratings
- A valid and recognized medical certificate

After completion of Section B, (10 jumps):

- Tandem Instructor Training Logbook, final endorsement with jump 6 – 10 complete
- Any paperwork which was not submitted after initial training
- $50 fee for digital certification or an additional $15 (total $65) to receive a digital certification and physical card

## 2. CLASSROOM INSTRUCTION – PRESENTATIONS AND LECTURES

The classroom phase of the course typically lasts six to eight hours and establishes the foundational knowledge required for tandem operations. Instruction may follow the UPT Tandem Instructor Course PowerPoint in accordance with the UPT Tandem Examiner Manual and UPT supporting lesson plans. After each section, the examiner will lead a structured discussion to reinforce critical concepts and address candidate questions.

Ground school provides hands-on practice with the core skills required for safe and effective tandem skydiving. This phase aims to provide candidates with the classroom knowledge needed in practical scenarios before beginning in-air training.

Ground school will cover the following topics:

- Gear Familiarization / Inspection
    - Identification, configuration, and pre-jump inspection of the Sigma Tandem System and student harness.
- Donning and Adjusting Sigma Tandem System and Student Harness
    - Proper fitting, adjustment, and verification of both instructor and student gear.
- Student Briefing
    - How to conduct a complete, accurate, and standardized tandem student briefing.
- Aircraft Procedures / Aircraft Emergencies
    - Loading, seating, movement, and emergency actions specific to tandem operations.
- Exits, Freefall, Drogue Fall Procedures
    - Body positions, exit techniques, stability management, drogue deployment, and handles checks.

- Canopy Control, Landing Procedures, Hazardous Landing
    - Standard canopy flight patterns, flare techniques, hazardous landing scenarios, and risk mitigation.
- Emergency Procedures
    - Recognition and execution of all required emergency responses.
- Relative Work
    - Awareness and coordination with other aircraft occupants and jumpers when applicable.
- Currency Requirements
    - Review of UPT currency standards and recency-of-training requirements.

## 3. CERTIFICATION JUMPS

Each candidate must complete a series of supervised evaluation jumps for Section A to demonstrate proficiency with the Sigma Tandem System and tandem instructor procedures.

- Solo System Jump:
    - Each candidate must complete at least one solo jump using the Sigma Tandem System. If necessary, additional solo jumps may be required if the examiner determines more practice is needed for system familiarity.
- During one of the first two jumps, the candidate must ride in the student position as part of the required five total evaluation jumps.
- Instructor Position Jumps:
    - Candidates must complete a minimum of three jumps from the instructor position.

**Performance Evaluation**

The examiner has full authority to require additional jumps if a candidate needs further practice or does not yet meet performance standards.

If a candidate shows unsafe practices, poor judgment, inadequate skills, or difficulty completing required tasks, the examiner may recommend removal from the course.

**Logbook and Documentation**

- All certification jumps must be recorded in the Tandem Instructor Training Logbook.
- The examiner will observe the candidate’s main canopy packing during the course and provide corrective instruction as needed.
- Candidates will keep their Tandem Training Logbook and continue logging jumps until the required minimum of 10 entries (Sections A and B) are complete.
- A total of 15 post-course probationary jumps are required and must be logged in the instructor’s personal logbook

### *a) INITIAL (5) TRAINING JUMPS*

Candidates are allowed **eight (8) attempts** to complete the five (5) required jumps.

**Training Jump 1 or 2: Solo Jump**

**Jump Procedure**

- Exit at 7,500ft / 2,300m or higher
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check:
    - Check Drogue (visually)
    - Left Drogue Release
    - Right Drogue Release
    - Cutaway
    - Reserve
    - RSL
    - Altitude
- Maintain heading and complete:
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull (simulate pulling without removing from Velcro pocket)
- Pull drogue release handle by 5,500ft / 1,700m

**Training Jump 1 or 2: Candidate as Student Passenger**

The tandem instructor must be an examiner or a current tandem instructor acting as an evaluator. This jump is mandatory during the UPT TIC as it is **a critical learning experience**, providing candidates with a role modeled demonstration of proper tandem procedures. The purpose of this jump is for the tandem examiner / evaluator to model performance perfection, setting the standard for the candidate's expectations both during the course and as they go on to perform in the field.

**Jump Procedure**

- Exit at 7,500ft / 2,300m or higher
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
- Pull drogue release handle by 5,500ft / 1,700m

**NOTE:** Training Jumps 1 and 2 can be completed in any order.

**Training Jumps 3 – 5 are Proficiency Jumps**

For these proficiency jumps, the candidate will take on the role of Pilot in Command (PIC) for the Sigma Tandem System, acting as the tandem instructor. One of the approved individuals listed below will act as the student passenger in front. This student passenger must have been briefed in the operation of the Sigma Tandem or Tandem Vector by the examiner. (See correct student briefing procedure on page 2 of the Training Logbook.)

It is highly recommended that the student passenger be assigned in accordance with the following preferred order of priority:

1. Tandem Examiner
2. Tandem Evaluator (Tandem Instructor with a minimum of 100 tandem jumps participating in the entire course)
3. Tandem Instructor (Having been properly briefed on upcoming jump requirements)
4. Course Candidate

**Training Jumps 3 and 4**

**Training Jump 3 Procedure**

- Stable exit from above 7,500ft / 2,300m
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
- Maintain heading and complete:
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull
- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 100 meters of the specified target

Running or rollover landings require a repeat jump

**NOTE:** If accompanied by a videographer, wave off at 6,500ft / 2,000m and pull drogue release at 5,500ft / 1,700m.

**Training Jump 4 Procedure**

- Stable exit from above 7,500ft / 2,300m
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
- Demonstrate heading control by performing at least two (2) alternate 360-degree turns
- Maintain heading and complete:
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull

- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

Running or rollover landings require a repeat jump

**NOTE:** If accompanied by a videographer, wave off at 6,500ft / 2,000m and pull the drogue release at 5,500ft / 1,700m.

**Training Jump 5**

**NOTE:** On training jump 5, the student passenger must be a current tandem examiner or instructor

**Guidelines for the jump**

- A minimum of 3,000ft / 1,000m of drogueless freefall is required before setting the drogue

**Jump Procedure**

- Unstable exit from above 10,500ft / 3,200m and must regain control within 10 seconds
- Perform a full system handles check
- Stable free fall to no lower than 7,500ft / 2,300m
- Demonstrate heading control by performing at least two (2) alternate 360-degree turns
- Stable drogue deployment by 7,500ft / 2,300m and perform a full system handles check
- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

Running or rollover landings require a repeat jump.

If a candidate does not plan to complete Section B familiarization jumps with the examiner, the Section A paperwork must be submitted at this stage. The candidate will retain the original logbook and documents to continue logging future jumps, while the examiner will keep a copy of the Section A paperwork for their records.

### *b) SECTION B: POST-INITIAL ENDORSEMENT FAMILIARIZATION TRAINING JUMPS*

Once a tandem instructor candidate has successfully completed the initial five (5) tandem training certification jumps, they must complete an additional five (5) familiarization jumps as Pilot in Command of the Sigma Tandem System.

**Requirements for Jumps 6 – 10**

- Minimum Exit Altitude: 9,000ft / 2,800m
- Minimum Open Canopy Altitude: 4,500ft / 1,400m
- Perform a safe landing within 30 meters of specified target
- No Relative Work
- An experienced videographer may accompany the tandem pair, providing they meet the UPT minimum requirements for tandem videographers found in the Sigma Tandem Operations Manual

- The student passenger must:
    - Be an experienced jumper (minimum 100 jumps) and must receive a proper briefing on tandem emergency procedures (See Page 2 of the Sigma Tandem Instructor Training Logbook for correct briefing procedures)
    - Follow instructions for exit, freefall, drogue fall, deployment, canopy descent, and landing
    - Sign the logbook only when satisfied with the tandem instructor candidate's performance

If at any time during the training or probationary series jumps, 30 days pass without a tandem jump, the candidate must:

- Perform a solo tandem jump
- Complete a tandem jump with either a tandem examiner or current tandem instructor on the front who has been briefed on responding to tandem emergencies

Additional space has been provided on the Tandem Instructor Training Logbook for these currency jumps to be logged.

If the candidate wishes to qualify for the USPA tandem rating, the category A and B ground / air evaluations are mandatory. Training must be with a USPA Tandem Examiner following details outlined in the USPA Instructional Rating Manual (IRM).

### *c) SECTION C: POST COURSE PROBATIONARY JUMPS*

**Section C: Post-Course Probationary Jumps (Jumps 11 – 25)**

After successfully completing Sections A and B (Jumps 1 – 10) and submitting the completed application and logbook package, the tandem instructor candidate is authorized to conduct their first live tandem student jumps.

**Requirements for Jumps 11 – 25**

- Minimum Exit Altitude: 9,000ft / 2,800m
- Minimum Open Main Canopy Altitude: 4,500ft / 1,400m
- Student Size Restrictions:
    - Student should be of similar or lesser size than the tandem instructor
    - Maximum weight: 200lbs (90 kg)
    - Maximum height: 6'0" (182 cm)
- An experienced videographer may accompany the tandem pair, providing they can exit the aircraft and skydive without interfering with the tandem
- The student may be a first-time student
- Candidate must log these 15 jumps in a personal logbook, signed by a witnessing licensed skydiver

**NOTE:** If the tandem candidate has done additional jumps in Section A and / or B, they are still required to complete a total of 15 post-course probationary jumps.

## C. RENEWING CURRENT TANDEM INSTRUCTORS

All U.S.-based tandem instructor ratings must be renewed annually with USPA. While it is highly recommended, it is not required to renew with UPT.

To apply for renewal, the individual must:

- Have completed at least 25 tandem jumps in the preceding 365 days
- If the applicant is current – having completed at least one tandem jump within the preceding 90 days – but has not conducted 25 tandem jumps within the preceding 365 days, they must, under the direct supervision of a current UPT examiner:
    - Complete a full review of Emergency Procedures and Standard Operating Procedures
    - Conduct one (1) evaluation jump with an examiner or current tandem instructor acting as student passenger
- Review the Sigma Tandem Instructor Standard Operating Procedures (SOPs) and Emergency Procedures (EPs) before submitting renewal forms

Tandem SOPs and EPs shall be reviewed **twice per jump season**:

- At the beginning of the season
- Mid-season

**NOTE:** It is recommended that tandem instructors review SOPs and EPs every 30 days.

The renewing tandem instructor must complete the UPT Sigma Tandem Instructor Re-Certification form, with verification of logbooks and required jumps by a current tandem examiner. In addition to the re-certification form, the renewing Tandem Instructor must also submit the following:

- USPA Membership or international equivalent with proof of D-license and Instructional Ratings
- A valid and recognized medical certificate
- Annual Sigma Tandem Hand Camera Safety Checklist filled out, if Handcam is to be used
- $50.00 fee for digital certification or an additional $15 (total $65) to receive a digital certification and physical card

Any tandem jump performed without a current rating from UPT or USPA (on a USPA affiliate DZ) violates USPA BSRs as outlined in the Skydiver's Information Manual (SIM). Such violations may result in the suspension or loss of Sigma Instructor rating.

## D. RENEWING NON-CURRENT TANDEM INSTRUCTORS

In addition to annual re-certification, tandem instructors are expected to maintain currency throughout the year.

### 1. 90 – 180 DAYS

If a currently rated tandem instructor has not made a tandem jump in the past 90 days, they must complete a tandem jump with an experienced jumper acting as the student passenger before taking a live student.

The experienced jumper must meet the following requirements:

- Minimum 100 skydives
- USPA B license or international equivalent
- Proper briefing on tandem emergencies

The use of safety handles is recommended, but use is at the discretion of the student passenger.

## 2. 181 DAYS – 2 YEARS

If an instructor has not made a tandem jump in 180 days, they must complete currency training under the supervision of a current UPT Tandem Examiner before resuming student jumps. Currency training includes:

- Reviewing the Standard Operating Procedures (SOPs) and Emergency Procedures (EPs) content found in the UPT Tandem Instructor Course PowerPoint Presentation or Sigma Tandem Operations Manual
- Perform one (1) solo jump using a UPT Sigma Tandem System and one (1) tandem jump with an experienced jumper as the student passenger

The experienced jumper must be briefed on how to respond to tandem emergencies and safety handles is recommended, but use is at the discretion of the student passenger.

**Jump Procedures:**

- Exit Altitude: Minimum 10,500ft / 3,200m
- Set drogue within 5 – 8 seconds of exit
- Perform a System Handles Check:
    - Check Drogue (visually)
    - Left drogue release
    - Right drogue release
    - Cutaway
    - Reserve
    - RSL
    - Altitude
- Demonstrate heading control by performing at least two (2) alternate 360-degree turns
- Open by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

These jumps must be witnessed, documented and signed in the instructor's personal logbook by a current UPT Sigma Tandem Examiner.

## 3. OVER TWO YEARS OUT OF CURRENCY

If an instructor has not made a tandem jump in two years, they must complete a full UPT Tandem Instructor Course covering the classroom / ground school.

The jumping component consists of three (3) tandem jumps with a current tandem instructor or examiner acting as the student passenger. An additional solo may be added at the discretion of the examiner. The use of safety handles is recommended, but use is at the discretion of the student passenger.

**Tandem Training Jump 1 Procedure**

- Stable exit from above 7,500ft / 2,300m
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
    - Check Drogue (visually)
    - Left drogue release
    - Right drogue release
    - Cutaway
    - Reserve
    - RSL
    - Altitude
- Maintain a heading and complete:
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull
- Pull drogue release by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

**Tandem Training Jump 2 Procedure**

- Stable exit from above 7,500ft / 2,300m
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
- Demonstrate heading control by performing at least two (2) alternate 360-degree turns
- Maintain heading and complete
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull
- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

**Tandem Training Jump 3 Procedure**

The student passenger must be a current tandem examiner or instructor.

- Unstable exit from above 10,500ft / 3,200m
- Regain control within 10 seconds and perform a full system handles check
- Stable free fall to no lower than 7,500ft / 2,300m
- Demonstrate heading control by performing at least two (2) alternating 360-degree turns
- Stable drogue deployment by 7,500ft / 2,300m
- Perform a full system handles check
- Pull drogue release by 5,500ft / 1,700m
- Perform a safe landing within 35 meters of the target

These procedures can also be found on the Tandem Cross-Training Certification Form; however, the Tandem Instructor Re-Certification Form must be used for processing the rating with UPT.

All ground training and jumps must be conducted under the direct supervision of a current UPT Sigma Tandem Examiner. In the event that the objectives of a required jump are not met, the jump shall be repeated until a satisfactory level of performance is demonstrated. Should the objectives remain unmet, the examiner is responsible for conducting remedial training until the required standard is achieved.

# E. CROSS TRAINING TO SIGMA FROM OTHER TANDEM SYSTEMS

## 1. REQUIREMENTS

Instructors seeking cross-training to the Sigma Tandem System from another manufacturer's tandem system, an international federation tandem system, or military must meet the following criteria before attending the UPT Tandem Instructor Course:

- Must meet currency requirements on the other tandem system or under their national federation tandem rating
- Must provide evidence of initial rating
- Must have completed at least 25 tandem jumps using the tandem system or international federation tandem system they are cross training from
    - Must provide evidence of 25 tandem jumps via logbook entries, printed manifests from DZ, Burble, etc.
        - Logbook entries must be signed by a licensed skydiver
        - Manifests may be used as evidence, provided that the system being used is documented
    - If the candidate has fewer than 25 tandem jumps or is not current, they must complete a full UPT Tandem Instructor Course
- Must meet the minimum requirements of a new tandem instructor candidate

Several national federations issue their own Sigma-endorsed tandem ratings. However, these are not manufacturer issued ratings.

To obtain a UPT Sigma Tandem Instructor rating, candidates must complete the full cross-over certification course, including:

- The complete training program
- Three certification jumps on the Sigma system

Regardless of prior experience on the Sigma system in their home country, this requirement cannot be waived without the expressed permission of the UPT Tandem Program Director.

**NOTE:** Attempting multiple tandem ratings simultaneously is not recommended, as it may compromise safety and proficiency.

## 2. CROSS TRAINING PROCEDURES

Candidates must:

- Complete the classroom / ground school covering content from the UPT Tandem Instructor Course PowerPoint Presentation or this manual
- Take the Sigma Tandem Exam
- Sign the UPT Tandem Parachute Jumper Agreement (waiver)
- Submit all necessary forms and credentials listed on the Tandem Cross-Training Certification Form or found below in Fees and Forms.

Candidates must complete all necessary training under the direct supervision of a current Sigma Tandem Examiner. During the training, the following points should be emphasized:

**FAMILIARIZATION**

Candidates must become thoroughly familiar with the design features, harness adjustments, and handle placement of the Sigma Tandem System to operate the system safely and consistently. This is particularly relevant for individuals converting from other tandem systems.

**Handle Locations and Operation**

- Review all Sigma handle positions including drogue release, cutaway and reserve handles.
- Candidates need to understand how these differences affect deployment, malfunction recognition, and emergency procedures.

**Harness Adjustments**

- Review the design of the Sigma main harness and student harness, with a focus on critical attachment points.
- Emphasis will be placed on proper fitting and adjustment techniques to the harness for student safety, comfort, and correct body position throughout all phases of the skydive.

**Regulatory and Procedural Differences**

- Review how UPT Sigma Tandem System requirements differ from other manufacturers and national federation tandem systems
- Review differences in rules and regulations such as minimum age, cloud clearance, and operational limitations.

A clear understanding of these elements ensures a smooth transition from other tandem systems and supports standardized, safe operating practices throughout the training.

**PACKING**

The candidate shall demonstrate a thorough understanding with the packing process of the Sigma Tandem System, including proper closing sequence and drogue setting techniques. Proper packing is essential for reliable deployment and overall system performance.

**Main Canopy Packing**

- Follow the closing sequence as outlined in the Owner's Manual.
- Pay attention to line stows, bagging and tension management to prevent malfunctions.
- Verify all components are routed, stowed and secured according to manufacturer specifications.

**Drogue System Specifications**

- Become familiar with the Sigma drogue attachment and routing system, including bridle placement and kill line configuration.
- Unlike other tandem systems, the Sigma drogue collapses immediately when the drogue release handle is pulled.

Candidates shall demonstrate all packing procedures under the direct supervision of a UPT Tandem Examiner who will monitor for accuracy, consistency and meeting of manufacturer standards.

**EMERGENCY PROCEDURES**

Emergency procedures for the Sigma Tandem System may be very different from other tandem systems. Candidates must clearly understand these differences for appropriate responses in critical situations.

By adhering to these Sigma-specific procedures, tandem candidates can achieve an effective response in an emergency.

**PASSENGER HOOK UP**

Passenger hook-up procedures can vary significantly between tandem systems. Candidates must understand these differences and apply a consistent method with the Sigma Tandem System.

**Standardized Hook-Up Sequence**

- Instructors who jump multiple tandem systems should establish a uniform attachment sequence to minimize confusion and prevent procedural errors. Maintaining the same sequence promotes consistency and enhances muscle memory.
- Always start by attaching the lower connections first before securing the upper connections

**Verification of Fit and Security**

- 17 Point Check
- Double-check all attachment points before exit (4 at the Door)
- Confirm proper strap adjustments to prevent excessive movement during freefall

Standardizing the hook-up process helps maintain safety, efficiency, and consistency for instructors transitioning between different tandem systems.

**SYSTEM CHECKS**

Candidates shall develop a thorough working knowledge of the Sigma Tandem System before making their first jump. This will be achieved through structured ground training and repeated practical hands-on practice.

**Drogue Practice**

- Candidates will wear the Sigma Tandem rig or dummy rig and perform repetitions of throwing the drogue. This involves locating and extracting the drogue and going through the complete drogue setting motion.
- While the drogue handle may differ in shape and location from other systems, the extraction and throw technique remains the same
- The drogue release handles on the Sigma system are positioned differently than on many other systems. Repetitive practice locating and operating both release handles will help to build accurate muscle memory for deployment.

**Reserve Static Line (RSL) Familiarization**

- The RSL is positioned on the opposite side compared to some other tandem systems. Candidates must be able to identify its location during handles checks and emergency procedures.
- It serves as a backup reserve ripcord, making it vital for candidates to understand its function and proper use.

**Practice Pull Sequence**

- A system check is a USPA BSR. Candidates must memorize and execute the entire practice pull sequence on every tandem jump, not just certification jumps.
- This sequence reinforces muscle memory and aims to solicit a proper emergency response in actual jump conditions.

**Training Duration**

- In addition to the classroom session, ground training typically lasts 6 – 8 hours.
- Larger classes may require extended training to ensure each candidate achieves full proficiency before making a jump.

**TRAINING JUMPS**

A tandem instructor currently rated on another tandem system or by a national federation must complete a minimum of three jumps on the Sigma Tandem System.

**Jump Requirements & Currency Check**

- Candidates must be current on the system they are transferring from, provide their tandem instructor credentials and logbooks verifying their currency and jump experience.
- Since some tandem ratings do not expire, the examiner will determine whether additional training is necessary.
- If a candidate has not done a tandem jump for a long period, more than three jumps may be required to ensure proficiency

In some cases, a solo jump may be necessary before carrying a passenger to better understand system differences.

**Jump Procedures**

**Training Jump 1**

- Stable exit from above 7,500ft / 2,300m
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
    - Check drogue (visually)
    - Left drogue release
    - Right drogue release
    - Cutaway
    - Reserve
    - RSL
    - Altitude
- Maintain heading and complete:
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull
- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

**Training Jump 2**

- Stable exit from above 7,500ft / 2,300m
- Set drogue within 5 – 8 seconds after exit
- Perform a full system handles check
- Demonstrate heading control by performing at least two (2) alternate 360-degree turns

- Maintain a heading and complete:
    - Three (3) practice drogue release pulls
    - One (1) practice reserve ripcord pull
- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 50 meters of the target

**Training Jump 3 (Student passenger must be a current tandem examiner or instructor)**

- Unstable exit from above 10,500ft / 3,200m
    - Must regain control within 10 seconds
    - Perform a full system handles check
- Stable free fall to no lower than 7,500ft / 2,300m
    - Demonstrate heading control by performing at least two (2) alternate 360-degree turns
- Stable drogue deployment by 7,500ft / 2,300m
    - Perform a full system handles check
- Pull drogue release handle by 5,500ft / 1,700m
- Perform a safe landing within 35 meters of the target

**SKILLS EVALUATION**

- Examiners may request additional maneuvers to evaluate skill level and comfort with the Sigma Tandem System
- If a candidate fails to meet competency standards, they must repeat jumps as needed

## 3. FEES AND FORMS

The cost of cross-training varies by region and examiner. Candidates could expect to cover the following expenses:

- Course Fee
- Tandem Jump Fees
- Rig Rental
- Examiner-related expenses, if applicable (Travel, Accommodation, Transportation)
- Administrative Fees

All candidates are responsible for confirming total training costs in advance with the examiner.

**Required Documentation**

The following forms and credentials must be scanned and submitted as PDF files (JPEG formats are not accepted).

- Tandem Cross-Training Certification Form, signed
- Uninsured United Parachute Technologies, LLC Tandem Parachute Waiver Agreement (Waiver), signed
- Sigma Tandem Examination completed to 100% and signed with statement completed by candidate
- USPA Membership or international equivalent with proof of D-license and Instructional Ratings
- A valid and recognized medical certificate
- Annual Sigma Tandem Hand Cam Safety Checklist, filled out (if intending to use)
- Copy of 25 logged jumps (with signatures) as pilot in command, using the tandem system transitioning from
- Certificate of completion or proof of training from manufacturer or federation transitioning from
- $50.00 fee for digital certification or an additional $15 (total $65) to receive a digital certification and physical card

## F. MILITARY TANDEM INSTRUCTORS

Military Sigma Tandem Instructor ratings fall under a specialized category intended for military operations. These ratings do not authorize individuals to perform civilian tandem jumps unless they obtain a separate civilian tandem rating.

### 1. REQUIREMENTS

To qualify for a civilian tandem rating, candidates must first meet the minimum requirements outlined in the beginning of Section 2B.

As part of these requirements, candidates must present a valid and recognized medical certificate. However, active military personnel may substitute their military airmen's medical certificate. Examiners must also verify that candidates are personnel qualified and current, ensuring they have gained and maintained the necessary skills and experience to perform tandem jumps safely, as many military tandem instructors are also Military Tandem Tethered Bundle (MTTB) qualified. If the candidate is only MTTB qualified, the candidate must complete the full UPT Tandem Instructor Course.

### 2. TRAINING PROCEDURES

In addition to meeting the minimum requirements, candidates must complete the following training:

- Complete the classroom / ground school covering content from the UPT Tandem Instructor Course PowerPoint Presentation or the Sigma Tandem Operations Manual under the direct supervision of a current Sigma Tandem Examiner
- Study the most current edition of the Sigma Tandem Operations Manual
- Complete the Sigma Exam
- Sign the UPT Tandem Parachute Agreement (waiver)

- Perform a minimum of three (3) satisfactory tandem jumps under the direct supervision of a tandem examiner

Jump procedures are detailed on the Tandem Cross-Training Certification Form, which candidates must use to log their jumps.

## 3. FEES AND FORMS

Once the crossover training is complete, the following forms and fees must be scanned and submitted as PDF files (JPEG formats are not accepted):

- Tandem Cross-Training Certification Form, signed
- Sigma Tandem Examination completed to 100% and signed with statement completed by candidate
- Uninsured United Parachute Technologies, LLC Tandem Parachute Jumper Agreement (waiver), signed
- USPA Membership with proof of D-license and Instructional Ratings
- Military Tandem Instructor Certificate of Completion, if available
- Copy of a valid and recognized medical certificate
- Annual Sigma Hand Can Safety Checklist, completed (if intending to use)
- $50 fee for digital certification or an additional $15 (total $65) to receive a digital certification and a physical card

Before submission, the examiner must notate on the form that the candidate holds a military tandem rating. Once all forms have been submitted, the examiner’s notation in the logbook will serve as a temporary license until the official license is issued.

# SECTION 3: EQUIPMENT AND DONNING

## A. IMPORTANT

The Sigma Tandem System differs significantly from solo sport skydiving equipment. It features additional handles, each positioned in locations distinct from those on solo gear. Notably, the cutaway and reserve handles are mounted outboard to remain accessible and unblocked by the student. As such, no amount of experience on solo equipment can adequately prepare a jumper for operating a Sigma Tandem System.

Tandem skydiving introduces additional responsibilities and stressors, making strict adherence to established procedures absolutely essential. Regardless of experience level, every Tandem Instructor must consistently practice handle location drills—both on the ground and during actual jumps. It is required that, during drogue fall on every tandem skydive, instructors physically reach and touch both drogue release handles, the cutaway handle, the reserve ripcord, and the RSL. This practice reinforces muscle memory, enhances situational awareness, and allows early identification of issues—maximizing the time available to respond appropriately.

We strongly recommend gripping each handle as if intending to pull it, to build accurate and instinctive recall under pressure.

## B. VERTICAL SUSPENDED DRILLS

Due to the unique differences between tandem and solo skydiving systems, we strongly recommend conducting vertical suspended harness drills as part of your preparation. Repetition of emergency procedures in this setting helps ensure the actions become second nature and instinctive under pressure. Pay close attention to the handle locations while in the suspended position, as their orientation differs from a solo system. In the event of a malfunction, this hands-on training may be essential in enabling you to respond quickly and effectively.

For information on custom Vertical Training Systems  for the Sigma Tandem System, please contact UPT directly.

The following sections will outline special operational requirements of key components on the Sigma Tandem System. Components that will be explained are:

- Reserve activation
- Main Activation
- Canopy brakes and steering system
- The Student Harness

## C. RESERVE ACTIVATION

The cutaway and reserve handles on the Sigma Tandem System are positioned differently and are secured more firmly than those on solo rigs. Due to these design differences, it is **mandatory** that all Tandem Instructors perform repeated handle deployment drills on the ground. These handles are designed to peel away in specific directions. Using improper pulling technique can make them significantly more difficult to pull and may delay a critical emergency response. For proper activation of both the cutaway and reserve handles:

- Peel the handle upward first
- Then pull downward to full extension

This technique must be practiced repeatedly on the ground with correct technique to gain familiarity and prevent delays during an actual emergency.

Candidates shall perform complete emergency procedure sequences by:

1. Locating and pulling the cutaway handle
2. Ensuring separation of risers
3. Locating and pulling the reserve handle

Repetitive practice of this sequence will ensure the motions become instinctive and automatic, reinforcing the ability to quickly respond during a malfunction.

**NOTE:** It is recommended to substitute the emergency handles with training or “mock handles” during practice to avoid unnecessary wear on equipment.

# D. MAIN ACTIVATION

## 1. INTRODUCTION TO THE DROGUE

Before learning the procedures for setting the drogue, it's important to first understand its function. The primary purpose of the drogue in tandem skydiving is to **reduce freefall velocity**, not to provide stability.

When fully inflated, the drogue creates enough drag to slow the tandem pair to a terminal velocity of approximately **120 mph**, similar to that of a solo jumper. Without a drogue, a tandem pair can accelerate to speeds of approximately **170 mph**. This significantly increases the risk of hard openings, canopy damage, and injury. It also complicates freefall photography and compromises overall safety.

Always remember this critical point when operating the Sigma system: **NO DROGUE – NO MAIN!**

## 2. DEPLOYING THE DROGUE

- Reach for the handle with palm facing towards the rear and thumb extended out.
- With the hand in the same position, firmly grasp the handle or drogue canopy just below the handle. The force needed to extract the drogue may be significant, especially with a new drogue pouch. Aggressively pull the drogue out of the bottom of container (BOC). If necessary, place your elbow against the side of the rig for additional leverage during extraction.
- Deploy the drogue using one continuous, sweeping motion of the arm.
    - Fully pull the drogue out of the pouch in an arc.
    - Throw the drogue at the end of the arc as your arm reaches full extension at shoulder height.
- Turn your head as you set the drogue and visually confirm inflation. Full inflation typically takes about 2-3 seconds.
- Do NOT hold onto or wave off with the drogue. The bridle is long and must deploy after the drogue. Early deployment of the bridle can lead to an entanglement or other deployment issues.

### 3. DROGUE RELEASE HANDLES

During drogue fall, the position of the drogue release handles may shift, making regular practice in how to locate and operate these handles essential.

- Start by gearing up in the Sigma Tandem System and practice both setting the drogue and pulling the drogue release handles. This training should be performed in both standing and prone (belly to earth) positions.
- Following each drogue deployment, switch between the left and right drogue release handles to establish balanced muscle memory and ensure proficiency with both handles.

Consistent repetition of these drills reinforces accurate handle recognition for quick, automatic responses during actual tandem operations.

## E. CANOPY BRAKES & STEERING SYSTEM

**Main Canopy Deployment & Brake Release**

After main canopy deployment:

1. Conduct a visual canopy inspection
2. Deal with any minor problems
3. Preform canopy control check with the primary toggles
4. Immediately perform a canopy control with both primary and secondary toggles
5. If desired, seat the secondary toggles into the keeper and continue to fly on primary toggles

To release the primary brakes:

- Pull up to disengage the snap.
- Then pull downward to fully release the brakes.

**Double brake system for the Sigma canopy (340,370 & 395)**

The Sigma Tandem System is equipped with a Double Brake System, designed to reduce toggle pressure, allow for a quicker response during normal flight and supply increased stopping power in low wind conditions. Each side of the canopy contains six upper control lines, divided between the primary and secondary toggles. In operational use for normal flight and turns, use the primary toggles only. For landing, use both primary and secondary toggles together to achieve full brakes and maximum flare performance.

**Main Canopy Flight & Landing**

The primary toggles alone may be used to control normal flight from canopy opening altitude down to no lower than 1,000 ft (300 m). When preparing to land, grasp both the primary and secondary toggles.

**Toggles familiarization**

Practice releasing the toggles with the rig outstretched on the floor and in a vertically suspended harness. Also practice correctly reassembling and stowing the toggles with the rig laid out on the floor.

# F. DONNING AND ADJUSTING SIGMA TANDEM SYSTEM AND STUDENT HARNESS

Candidates will learn the correct procedures for donning and adjusting both the Sigma Tandem System and the Student Harness. This includes ensuring a proper fit and adjustment of all straps and components to maximize safety and comfort for both the instructor and student.

**SIGMA TANDEM SYSTEM**

- Don the tandem system
- Legs through leg straps
  - Ensure there are no twists
- Thread the chest strap
  - Ensure there are no twists
- Adjust the main lift web
  - Ensure the base ring of 3-ring system is even with the collarbone / pocket of the shoulder
- Tighten the chest and leg straps, stow excess

**SIGMA 2 TANDEM SYSTEM**

- Waist Strap
  - Route the waist strap of the Modular Comfort System (MCS) through the hardware.
  - Pull to snug the strap, then stow any excess in the keeper.

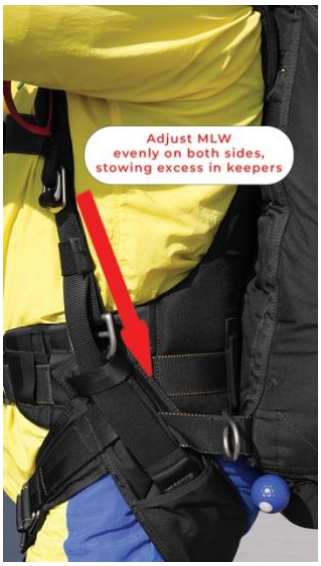

- Chest Strap
  - Align the chest strap webbing, ensuring there are no twists.
  - Route the chest strap through the hardware, then stow excess webbing in the keeper.

**NOTE:** A chest strap in the ‘quick release’ configuration is strictly prohibited. (i.e. The running end not correctly routed through the friction adapter.)


- Leg Straps
  - On one side, pull the rear leg pad toward the front leg pad while tightening the leg strap.
  - Route excess strap through the keeper.
  - Repeat on the other side, ensuring both leg straps are adjusted to equal lengths.



- Main Lift Web (MLW)
  - Adjust the MLW evenly on both sides.
  - Stow all excess webbing in the keepers.




**NOTE:** It is highly recommended to stow excess leg straps through a permanent keeper.

Regardless of how the instructor dons the tandem system, the **mandated outcome** is that the system is correctly adjusted and jumpable prior to boarding the aircraft.

## STUDENT HARNESS

Before harnessing the student passenger, the Tandem Instructor must check that the student is properly equipped with all the personal equipment they may need. This may include:

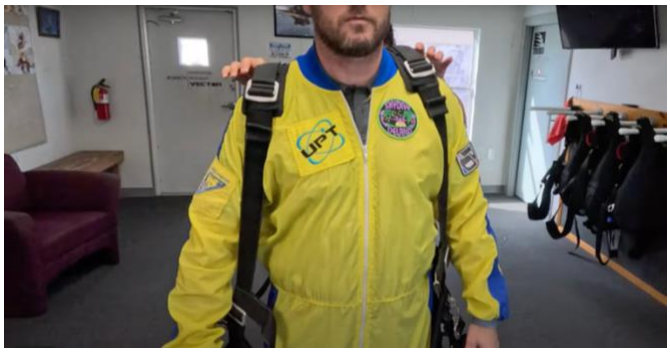
- A proper, tight fitted jumpsuit
- A soft helmet
- Goggles that fit snugly and securely
    - Students who wear contact lenses should use goggles with minimal venting
- An altimeter
- Gloves

The use of open-toe shoes, open-heel sandals, or flip-flops is strictly prohibited under all circumstances.

Instructors must know the proper techniques for donning the student harness, ensuring proper positioning and secure attachment of all connection points. It is essential to know how to adjust each component to provide a fit that is not only comfortable for the student but ultimately secure throughout the skydive. The example provided illustrates one method of harnessing a student; however, regardless of technique, the **mandated outcome** is that the student harness is in a jumpable configuration prior to boarding the aircraft. This means the harness is correctly fitted, securely fastened, and appropriately adjusted in accordance with manufacturer guidelines.

## ONE METHOD OF DONNING AND ADJUSTING A STUDENT HARNESS

1. Open the harness to allow the student to step into the leg straps. Guide the harness above the knees and place it on the student like a jacket.

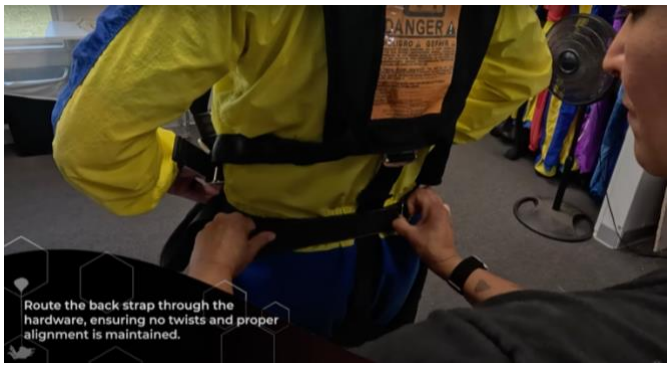
2. Position the leg pads on the hips and have the student hold them in place.

3. Route the waist strap through the hardware, ensuring there are no twists and proper alignment is maintained. Stow excess webbing in the keeper.

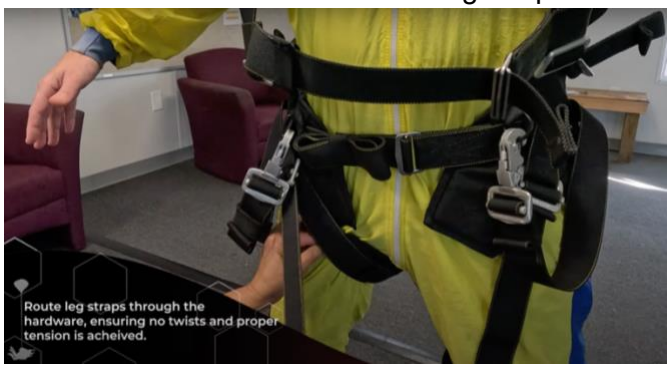


4. Route the back strap through the hardware, checking for correct alignment and no twists. Stow excess in the keeper.



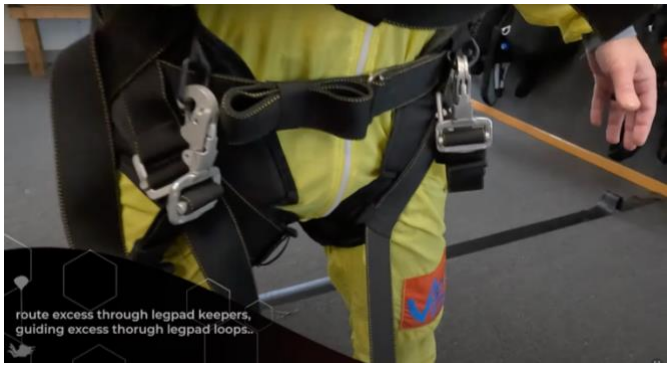


5. Route each leg strap through the hardware, maintaining proper alignment and tension. Confirm even tension and fit on both leg straps.





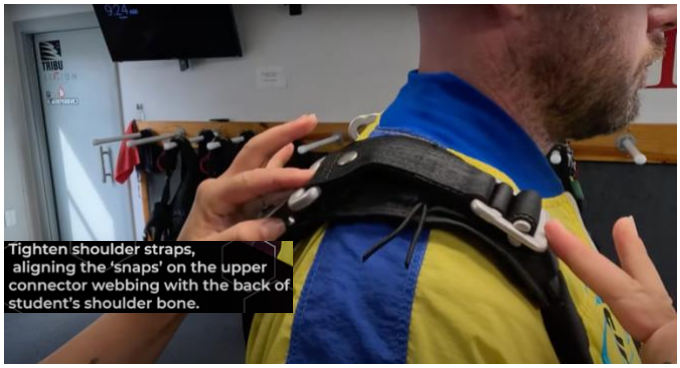
6. Route excess through the leg pad keepers, guiding it through the leg pad loops, then stow any remaining excess toward the student in the keeper.





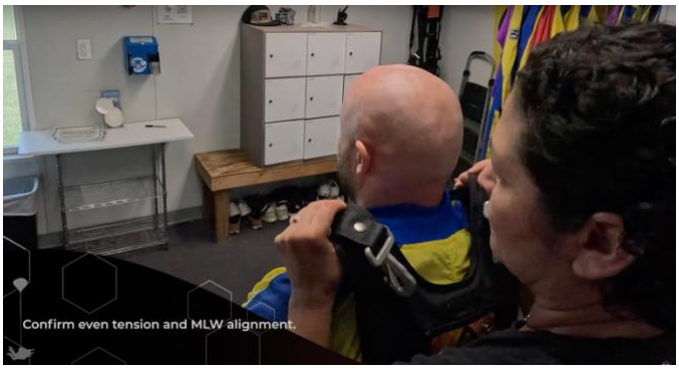
  

7. Tighten the shoulder straps, aligning the snaps on the upper connector webbing with the back of the student's shoulder bone.

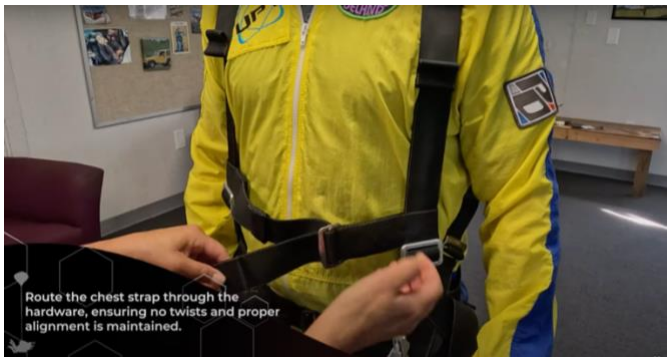



8. Snug the lateral adjustments evenly, then route the webbing through the elastic keepers and stow any excess into the harness back pad.


9. Confirm even tension and main lift web (MLW) alignment.



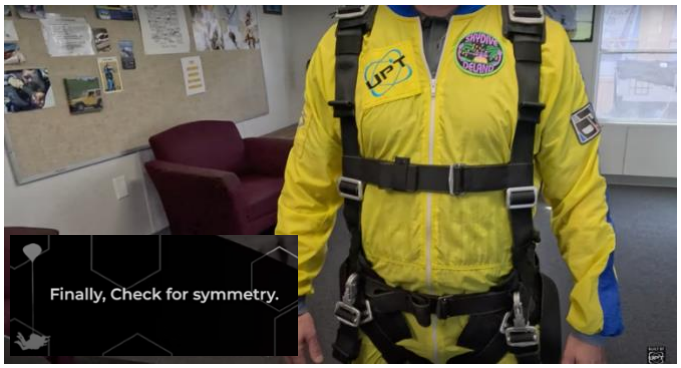

10. Route the chest strap through the hardware, ensuring there are no twists and proper alignment is maintained. Stow excess in the keeper.




11. Distribute the Y-strap evenly over the center of the rear leg pads, snug the Y-strap to engage the recoil elastic by up to 1 inch, and stow excess in the keeper over the back strap.

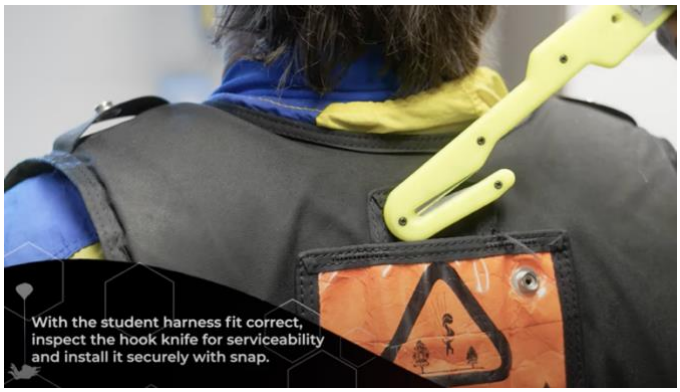


12. Perform a final symmetry check to ensure the harness is correctly fitted and evenly adjusted.




13. Once the student is fitted correctly, inspect the hook knife for serviceability and install it securely with the snap.

**NOTE:** On every tandem skydive, the tandem instructor **must** be equipped with a readily accessible hook knife.




While harnessing a student, maintain professional and deliberate hand placement at all times. Be mindful to avoid unnecessary contact and position hands in a manner that reduces any possibility of causing discomfort or making the student feel uneasy. This ensures both the student's comfort and the instructor's professionalism throughout the process.

To view the video of the example above, go to our YouTube channel, @UPTSigma.

# SECTION 4: STUDENT & INSTRUCTOR TECHNIQUES

## A. STUDENT TECHNIQUES

A USPA Cat A or B student passenger or international equivalent may be taught the following items for using tandem as a training method.

- Exit and freefall
- Canopy flight
- Equipment
- Emergency training, where appropriate
- Rules and recommendations
- Spotting and aircraft

All lesson plans and dive flows are to be taught in accordance with the governing body. If the student passenger is allowed access to the drogue release, the must have additional training prior to the jump.

- The student must be issued an altimeter and trained how to use it
- The student must perform a minimum of three (3) PRCPs with full gear on

## B. INSTRUCTOR TECHNIQUES

The following minimum criteria must be met before any tandem skydive is conducted. These requirements aims to ensure the safety of the student, the tandem instructor, and the integrity of the tandem program. They are divided into two categories:

- Personal Requirements
- Geographical / Operational Requirements

### 1. PERSONAL REQUIREMENTS

**Instructor Physical Size and Strength**

The physical demands of being a tandem instructor require strength, endurance and control. The Sigma Tandem system alone approximately weighs 50lbs, and managing both the equipment and a tandem student under various conditions can be physically challenging.

Individuals of smaller stature and / or strength may struggle with the demands of tandem jumping, including:

- Carrying and managing the weight of the system
- Controlling the parachute and student in freefall and under canopy
- Handling emergency procedures effectively

Regardless of individual abilities, the tandem instructor must be capable of safely and effectively performing every phase of a tandem skydive.

## 2. STUDENT PASSENGER ELIGIBILITY

Before conducting a tandem jump, it is the responsibility of the tandem instructor to ensure the student passenger meets the following criteria:

**Age**

- The minimum age for tandem skydiving for UPT is 18 years old

**Physical Condition**

- Student passengers should be in good general health
- Individuals with severe / debilitating medical conditions may not be suitable for tandem skydiving
- When in doubt, request medical clearance before proceeding

**Weight and Size**

- Minimum system exit weight: 200 lbs (90.7 kg).
- Maximum combined exit weight:
- 500 lbs (226.5 kg) with VR-360 reserve
- 550 lbs (249.5 kg) with SR-340 or SR-370 reserve .
- The maximum student weight is calculated by subtracting the Sigma system weight (approx. 50 lbs / 22.5 kg), student harness (8 lbs / 3.5 kg), and the instructor's body weight from the applicable maximum system limit .

**The Tandem Instructor must be confident in their ability to:**

- Control the student in freefall and under canopy.
- Flare and land the canopy safely without assistance from the student.

**Waiver and Risk Acknowledgement**

Every student passenger must do the following prior to a tandem skydive in this order:

- View the UPT Assumption of Risk Waiver Video
- Complete and sign the Uninsured United Parachute Technologies, LLC Tandem Parachute Jumper Agreement (Waiver).

Completion of these steps is mandatory and must occur prior to training and boarding the aircraft.

## 3. GEOGRAPHICAL REQUIREMENTS

Geographical and environmental conditions directly impact tandem operations. Factors such as weather, temperature, terrain, and field elevation. The Tandem Instructor is responsible for determining whether conditions are suitable for tandem skydiving and whether a specific tandem pairing can be conducted safely under those conditions.

## WEATHER ASSESSMENT

### Wind Limits

High winds increase risk for all jumpers and may compromise:

- Canopy control
- Landing accuracy
- Overall student and instructor safety

Extremely low or no-wind conditions also present added risk during tandem operations. Notably, heavy students or those with physical limitations that prevent them from running or supporting their own body weight should not be taken in no-wind conditions due to the increased likelihood of hard landings and injury.

Tandem Instructors must continuously evaluate wind conditions and apply conservative judgment when determining whether tandem operations can be conducted safely.

### Cloud Cover and Visibility

Within the United States, all tandem operations must comply with FAR 105.17 and applicable USPA Basic Safety Requirements (BSRs) for minimum visibility and cloud-clearance.

A Tandem Instructor shall never initiate an exit from the aircraft without first verifying that:

- Visibility meets or exceeds all legal minimums
- Cloud clearance is within regulatory limits
- Overall conditions meet regulatory requirements and manufacturer operational limitations

Verification of these conditions is a mandatory pre-exit responsibility and is critical to safe tandem operations.

## TEMPERATURE AND DENSITY ALTITUDE

**Cool Air**: Cool, dense air provides improved canopy performance, increased lift, and stronger flare capability.

**Warm / Hot Air**: Warm or hot temperatures is less dense and reduces canopy performance. Landings in these conditions may be noticeably faster and harder.

**Density Altitude**: High temperature and high humidity increase density altitude, causing the canopy to perform as though the landing area were at a much higher elevation. For example, on a hot, humid day, a sea-level drop zone may experience canopy performance similar to operating at approximately 6,000 ft (1,800 m) above sea level.

## TERRAIN ASSESSMENT

Proper selection of the landing area is critical to safe tandem operations. When planning a tandem jump at an unfamiliar location, the Tandem Instructor must visually inspect the landing area before the jump. Identify all primary and alternate landing areas, and note the location of obstacles such as buildings, tree lines, power lines, and terrain features.

Turbulence generated by tall obstacles can affect canopy flight up to ¼ mile (400 m) downwind. These effects must be considered when evaluating wind direction and spotting.

The instructor must continuously think ahead, anticipate changing conditions, and plan conservatively to for a safe and controlled landing under all conditions.

**ALTITUDE**

When operating at drop zones above sea level, reduced air density will result in decreased flare effectiveness and altered canopy performance. Tandem Instructors must account for these performance changes when planning landings.

When first jumping at higher-elevation locations, instructors should begin with lighter students to become familiar with the canopy's flight and flare characteristics under those density-altitude conditions before progressing to heavier student loads.

## C. STUDENT BRIEFING

For most student passengers, a first-time tandem skydive is a significant and memorable experience. It is the responsibility of the Tandem Instructor to establish confidence early by providing clear, accurate, and motivating information in a calm and professional manner.

Before boarding the aircraft, the student must understand what will occur during the skydive and what is expected of them. The briefing must be clear, concise, and structured to reduce anxiety and build confidence without overwhelming the student with unnecessary technical detail. The guiding principle for all briefings is: **K.I.S.S.S. — Keep It Short, Simple, and Specific**.

This briefing is a **mandated outcome** process and must include the following required topics:

- Confirmation that the student has:
    - Viewed the waiver video
    - Signed the required waiver
- Movement to and around the Aircraft / Aircraft Procedures
    - How to board the aircraft safely
    - Seating arrangement
    - Aircraft Emergencies
- Exit procedures
    - Practice sequence of hooking up, moving together and exiting
    - Demonstrate and practice exiting the aircraft
    - Proper body position
- Drogue fall procedures
    - Body Position
    - Tap on shoulders to extend arms
- Canopy control / landing procedures
    - Sit Back Drill
    - Legs up for landing
- Actions on emergency scenarios

- Take all instruction from instructor

Additional items the instructor could provide are:

- Approximate exit altitude
- Expected freefall duration
- Estimated canopy ride time

These details help the student form a clear mental picture of the skydive and promote positive anticipation. By keeping the briefing focused on these required elements and delivering the information in a short, organized format, the instructor ensures the student is properly prepared, confident, and less susceptible to information overload.

On subsequent tandem jumps, additional preparation time may be devoted to more detailed instruction, particularly during canopy flight and landing phases. Under this program, tandem jumps are used as a structured training tool.

# D. PRE-FLIGHT GEAR CHECK

## 1. PERSONAL EQUIPMENT

Before conducting the gear check, the Tandem Instructor must select and properly fit all necessary personal equipment, including:

- Jumpsuit
- Helmet
- Altimeter
- Goggles
- Any additional approved accessories

Footwear: No open-toe, open-heel sandal or flip-flop footwear is allowed in any tandem operation.

Jumpsuit Selection: Choose a jumpsuit with looser arms and legs to increase drag. Increased drag improves the stability with students and helps reduce rocking or “potato chipping” during drogue fall.

Altimeter: A serviceable visually accessible altimeter must be worn on all tandem jumps.

## 2. SIGMA TANDEM SYSTEM PRE-DONNING GEAR CHECK

Before donning the Sigma Tandem System, the tandem instructor must perform a thorough, methodical, and repeatable gear check. The tandem instructor is responsible for completing a full gear check prior to every jump on the system they are about to use. Always begin at the same starting point and progress in a consistent sequence to ensure no component is overlooked. A suggested sequence is:

- Start at the reserve data card
- Continue to the drogue pouch
- Move up the back of the container
- Then proceed down the front of the system

The following items must be verified during every gear check:

**Release Handles**

- Confirm that both the drogue deployment handle and drogue release handles are fully accessible.
- When a handle is checked, grasp it as if you intend to pull it to confirm proper engagement and access.

**Main Pin Closing, Bridle Routing**

- Check that the main closing pin is correctly oriented in accordance with the diagram on the main closing flap.
- Ensure the bridle is properly routed and secured beneath the right-side main container flap.
- Confirm that the safety pin is fully seated through the main closing pin.

**Reserve Pin, Closing Loop, and RSL Routing**

- Open the reserve pin cover and verify that the reserve pin is properly seated.
- Inspect the reserve closing loop for condition and wear.
- Do not push the reserve pin too far into the loop, as this may cause a twist and improper pin orientation.
- Verify correct RSL routing.

**3-Ring Assembly**

- Confirm that the rings are hooked up in the proper sequence.
- Inspect the loop for fraying or damage.
- Verify correct routing:
    - Loop passes through only the small ring
    - Then through the riser grommet
    - Then through the housing grommet
    - Secured with the yellow cutaway cable

**RSL Shackle and Collins Lanyard**

- Verify that the RSL shackle is properly secured
- Ensure that the long-side cutaway cable passes through the Collins lanyard.

**Cutaway and Reserve Handles**

- Confirm that both handles are securely seated.
- Ensure the Velcro is fully mated.
- Position the handles as close to the housings as possible to minimize exposed yellow cable.

**Main Lift Web (MLW)**

- Adjust the MLW to the correct length for proper fit.
- Verify left and right sides are symmetrical.

**Riser Covers and Container Flaps**

Confirm the following are properly closed:

- Reserve pin cover
- Main disc cover
- Riser covers

**NOTE:** Ensure the main risers are fully protected and correctly stowed. Exposed risers increase the risk of snag hazards, especially when moving inside smaller aircraft.

**Automatic Activation Device (AAD)**

- The AAD must be on prior to boarding the aircraft and remain on for the duration of the jump.
- The AAD must be either a dedicated TANDEM AAD or in TANDEM mode, if using a multi-mode device.
    - Refer to the manufacturer's documentation for proper configuration and verification.

By following a consistent gear check process, the Tandem Instructor maintains operational readiness and safety prior to every tandem skydive.

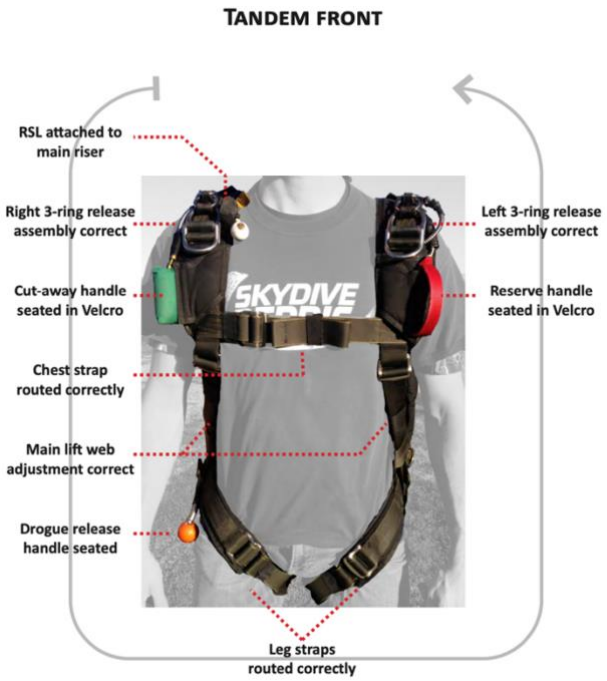
## 3. PRIOR TO BOARDING AIRCRAFT GEAR CHECK

The Tandem Instructor must have another qualified instructor conduct a secondary gear check of their system before boarding the aircraft. This additional verification is a crucial form of redundancy to confirm proper equipment configuration, handle security, and overall system readiness for flight.

**SIGMA TANDEM GEAR CHECK**

FRONT – Top to Bottom to Top

- RSL attached to main riser
- Right 3-ring release assembly correct
- Cutaway handle correctly seated in Velcro
- Chest strap routed correctly
- Main lift web adjustment correct
- Drogue release handle seated
- Leg straps routed correctly
- Reserve handle correctly seated in Velcro
- Left 3-ring assembly correct



BACK – Top to Bottom

- AAD turned on
- RSL assembly correct
  - Skyhook and RSL lanyard attached
  - Collins Lanyard routed correctly
- Reserve pin seated
  - Seal and loop intact
- Main pin seated
  - Bridle cocked and routing correct
  - Safety pin in place
- Main ripcord routing correct
  - No twists
- Drogue release handles seated
- Drogue in place


**SIGMA II TANDEM GEAR CHECK**

The gear check for the Sigma II tandem system follows the standard procedure, with the additional requirement to verify that the MCS waist strap is routed correctly and free of twists.


## E. AIRCRAFT PROCEDURES / AIRCRAFT EMERGENCIES

Knowing and understanding proper aircraft procedures is essential for ensuring a quick and effective response to any potential aircraft emergency.

**AIRCRAFT PROCEDURES (EXAMPLE ONLY)**

- Pre-Taxi – Seat Belts for TI and Student
- 1,500ft / 500m – Remove Seat Belts / Attach Lower Connectors (Optional)
- 5,000ft / 1,600m – Review Exit and Free Fall Procedures
- 8,000ft / 2,400m – Hook Up Procedures
- 10,000ft / 3,100m – “17 Point” Check and Second System Check

- Red Light – Goggles
- Pre-Exit – Four at the Door
- Green Light – Spot and Exit

**NOTE:** If the aircraft door is to be opened before hook-up procedures are complete, the instructor must secure the student using at least one attachment point prior to the door being opened.

## 1. HOOK UP PROCEDURES

All four student attachment points must be securely connected to the instructor. Lower laterals should be snug, as overtightening can cause de-arching and discomfort and leaving them too loose can cause student lateral shift, involuntary turns, rocking or buffeting. After all straps are adjusted, the instructor must ensure that all running ends are properly stowed and that no potential snag hazards remain. The specific order in which the attachments are connected is at the discretion of the tandem instructor, as this is a **mandated outcome**; however, the instructor should use the same consistent hook-up sequence on every tandem jump to reduce the risk of errors, missed connections, or incomplete attachments.

## 2. 17 POINT CHECK

After the student passenger has been fully connected and adjusted to the Tandem Instructor, a complete harness and system verification must be performed. The 17-Point Check is an on aircraft check for the instructor and student and is a **mandated outcome** procedure. It is designed to confirm that all student attachment points are secure, all operating handles are properly seated and accessible, and no snag hazards or misrouted components are present.

1. Student Chest Strap
2. Student Waist Strap
3. Student Leg Straps
4. Bottom Right Attachment Point
5. Bottom Left Attachment Point
6. Upper Right Attachment Point
7. Upper Left Attachment Point
8. Drogue
9. Left Release
10. Right Release
11. Cutaway
12. Reserve
13. RSL
14. 3 Rings Left Side
15. 3 Rings Right Side & RSL
16. Chin Strap
17. Seatbelt Disconnected

## 3. AT THE DOOR (FOUR AT THE DOOR):

Prior to setting up or committing to the door, the following must be checked:

- Upper Connectors
- Drogue
- A Drogue Release Handle

This final check is the last opportunity for the Tandem Instructor to confirm that the student is properly attached and that the drogue remains securely stowed in the pouch after all movement inside the aircraft. Successful completion of this verification is required before initiating exit setup.

## 4. AIRCRAFT EMERGENCIES

- Below 1,500ft (450m) – Stable flying aircraft, engine out
    - Stay with the aircraft and follow pilot instructions
    - Ensure the tandem pair is seated and wearing independent seat belts
- Below 1,500ft (450m) – Catastrophic aircraft failure
    - Hook up top left to student (minimum)
    - Hold student with right arm
    - Exit aircraft / Scissor student's legs
    - Pull reserve
- 1,500ft – 4,000ft (450m – 1,200m)
    - Hook up top left to student (minimum)
    - Hold student with right arm
    - Exit aircraft / Scissor student's legs
    - Pull Reserve
- 4,000+ft (1,200+m)
    - Hook up top right to student (minimum)
    - Hold student with left arm
    - Exit aircraft
    - Set drogue
    - Drogue release

**STUDENT REFUSAL IN AIRCRAFT**

- Move forward in aircraft to a safe space
- Disconnect student
- Seat belts
- Descend with aircraft

**NOTE:** If it is safer to exit the aircraft rather than attempting to return inside, the tandem pair should exit.

By mastering these aircraft procedures and emergency protocols, tandem instructors will be prepared to handle any situation efficiently and with confidence.

# F. EXITS

Understanding the different types of exits and exit positions allows tandem instructors to adapt to various aircraft and student needs for the safest aircraft departure. While exit procedures may vary based on the aircraft, the fundamental principles remain unchanged. Exit instability commonly results from improper set up, launch or flyaway, incorrect harness fit and poor presentation. The tandem instructor must maintain full control of the student throughout the exit and freefall, prioritizing stability and safety at all times.

- The instructor must maintain total control of the student during the exit. Proper positioning into the relative wind will help the tandem pair stabilize quickly and aid in a smooth transition from the aircraft.
- Tandem Instructors must aim for a proper exit setup, a strong and deliberate launch, and establish a stable and controlled flyaway. Achieving stability before setting the drogue is essential for maintaining control.
- The tandem instructor should actively “fly” their body through the entire exit, using their body to guide the student’s movement into the freefall.

## 1. TYPES OF EXITS

**Poised Exit:** The tandem instructor is in a head high, neutral body position when leaving the aircraft. This method gives the TI greater stability during the transition from exit to freefall to drogue fall.

**Diving Exit:** A deliberate, forward moving exit, in which the instructor initiates a controlled, head-low transition to freefall. May be performed from kneeling, sitting or standing positions, depending on aircraft type and door configuration and minimizes time in or near the door.

**Exit Positions**

- Hanging or Standing
- Seated
- Kneeling

**Time at the Door**

- Minimize time spent near or outside the aircraft door immediately prior to exit.
- Move into the exit position smoothly and commit to the launch without hesitation.
- Backing out of a side door aircraft is strictly prohibited.

**Student Hand Placement**

The student must maintain a secure grip on their own Main Lift Web (MLW). A student with uncontrolled or free hands increases the risk of interference and instability.

The recommended hand position is:

- Thumbs placed underneath the MLW on each side of the harness with uncrossed arms
- Arms must be uncrossed as this promotes de-arching
- A light but secure grip on the webbing

**Student Body Position**

Before initiating the exit, the student must be in the correct body position, with:

- Head back
- Body in a relaxed, arch position
- Feet together

**Aircraft Considerations**

Tandem Instructors must never assume that all aircraft have identical exit techniques. When operating from an unfamiliar aircraft, it is mandatory to practice the exit position and exit procedures on the ground prior to flight.

Instructors must also seek guidance from the Drop Zone Owner (DZO), Chief Instructor, or an instructor experienced with that particular aircraft. This preparation is essential to ensure a controlled, stable, and predictable exit during actual operations.

**HandCam**

The use of a hand-mounted camera (HandCam) must not affect, delay, or compromise proper exit technique. Student control, exit stability, and equipment safety always take priority over camera operation or video capture.

## 2. ALTITUDE RECOMMENDATIONS AND REQUIREMENTS

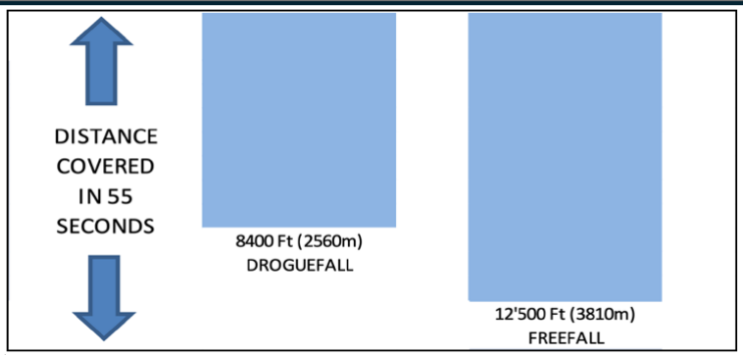
**Exiting the Aircraft**

The minimum authorized exit altitude is 7,500ft (2286 m) and any exit conducted below this altitude is strictly prohibited. Tandem skydives require sufficient altitude for instructors to recognize, assess and respond to abnormal or emergency situations. Typically, instructor candidates underestimate the rate of speed and altitude loss during unstable freefall without a deployed drogue. Abnormal conditions such as a drogue in tow or delayed drogue inflation can consume critical altitude rapidly.

**Drogue Deployment After Exit**

The Tandem Instructor must make every effort to achieve stability and deploy the drogue within 5 - 8 seconds of exiting the aircraft. If stability is not achieved after 10 seconds, the instructor must set the drogue. Delaying drogue deployment beyond this point allows the tandem pair to approach tandem terminal speeds in excess of 170 mph, making altitude awareness increasingly difficult. During stabilized drogue fall, the tandem pair descends at approximately 1,000 ft every 6 seconds. Without a deployed drogue, descent increases dramatically to approximately 1,000 ft every 4 seconds. If the drogue is not deployed until after tandem terminal speed is reached, it will require approximately 2,000 ft or 10 seconds to decelerate back to normal drogue fall speed.




**Canopy Deployment Altitudes**

Due to the increased complexity of the tandem system, a higher opening altitude is required compared to solo sport parachuting.

**Main:** The minimum fully open main canopy altitude is 4,000ft (1,219 m) AGL

**Reserve:** The minimum decision altitude for reserve is 3,000ft (890 m) AGL

## G. FREEFALL

Freefall starts from aircraft exit until drogue deployment. In this phase, the instructor, being the primary factor in achieving and maintaining stability, must apply a strong, deliberate arch and actively fly the relative wind upon exit to establish control of the tandem pair. The drogue must never be used as a primary stability device. Stability must be achieved through proper instructor body position. It is both unnecessary and unacceptable for a poor exit, defined as any exit resulting in a combination of uncontrolled loops or rolls immediately after exit.

The instructor must also anticipate and continuously assess the student's body position, as unpredictable reactions are common during the first seconds of freefall. If the student remains de-arched or folded, additional corrective input may be required.

Physical manipulation of the student is a last-resort technique only, to be used when proper instructor body position and relative-wind control are ineffective.

- Guide the student legs by sweeping to the rear  to adopt the correct body position
- Grasp only between the elbow and wrist to reposition arms

This technique must be applied with extreme caution, as it increases the risk of the student grabbing the instructor and interfering with handle accessibility.

## H. DROGUE FALL

**DROGUE DEPLOYMENT PROCEDURE**

Drogue fall is the phase between drogue deployment and main canopy deployment, during which the drogue chute slows the tandem's descent and aids in stabilizing the tandem pair. The tandem instructor must be disciplined when setting the drogue as any pause while holding onto the drogue could cause the drogue bridle to extend and possibly cause an entanglement with the instructor or student.

- **ARCH**
- **REACH**

- **LOCATE** the drogue handle and grasp firmly using proper technique
- **PULL** drogue from pouch and throw aggressively to the side at full arm extension
- **LOOK** over shoulder to visually check drogue

Once the instructor has set the drogue and checked for inflation, the instructor must go through the **mandated process** of the system handles check.

- Left Drogue Release
- Right Drogue Release
- Cutaway
- Reserve
- RSL
- Altitude

The drogue's drag maintains the tandem pair in a specific pitch attitude. Excessive changes to this pitch can cause instability, resulting in a rocking motion known as the "potato chip" effect.

**4 Ways to Minimize Rocking**

- Correct Tandem Instructor Body Position
- Correct Student Body Position
- Jumpsuit Selection: The tandem instructor should wear a loose-fitting jumpsuit while the student should wear a more form-fitting one
- Ensure the lower laterals are snug and comfortably tight. Loose straps can lead to rocking

**ARM EXTENSION (OPTIONAL)**

Once the drogue is set, the Tandem Instructor may signal the student to release their grip on their MLW and extend their arms into a neutral freefall position. Do not reach around and physically pull the student's arms into position, as this increases the risk of the student grabbing the instructor's arms and interfering with control or handle accessibility.

If the student does not release their grip when signaled, the instructor may:

- Allow the student to maintain their hold, or
- Apply gentle pressure at the elbows and guide the arms upward and away from the body

This technique will typically prompt the student to release their grip while maintaining instructor control and minimizing risk of the student grabbing the instructor's arms.

**DROGUE RELEASE**

The drogue can be released at any point during drogue fall to deploy the main canopy. To initiate deployment, pull either the drogue release handle located at the bottom left corner of the main container, or the handle positioned on the right leg strap.

**Considerations**: If the tandem instructor is training a USPA Cat A or B student or international equivalent, outside video may accompany the tandem pair but extra caution must be taken into consideration should the student have an untimely drogue release.

**Drogue Release Procedure:**

- Wave
- Reach
- Grasp
- Pull
- Release
- Check

**Trap Door Effect**

The “trap door effect” refers to the brief moment of acceleration as the drogue collapses and the main canopy inflates. This process takes approximately ¾ of a second. The tandem instructor should maintain a neutral body position and guide the tandem pair smoothly through the deployment process. If this sensation is not felt, it may indicate that the drogue did not properly release.

## I. CANOPY CONTROL AND LANDING

**CANOPY CONTROL**

To facilitate a safe and predictable canopy flight, the following rules of flight must be adhered to:

- Do not perform 360° turns below 2,500ft (800m) AGL
- Restrict canopy flight to predictable flight modes below 1,000ft (300m) AGL
- When flying through turbulent wind; if possible, maintain flight heading in full flight in order to pass through the turbulent area as quickly as possible
- Always maintain altitude, position, traffic and situational awareness when under canopy

**POST DEPLOYMENT PROCEDURES**

Once a successful main canopy deployment has been confirmed, the Tandem Instructor must complete the following sequence to check for full system integrity:

- Canopy Check and Release Toggles
    - Ensure full canopy pressurization and free of damage
    - Release primary toggles
- Identify and turn onto proper heading
- Controllability Check
    - With just the primary toggles – flare canopy, perform a 90° left and a 90° right
    - With both primary and secondary toggles – flare canopy, perform a 90° left and a 90° right

- While maintaining airspace awareness:
    - Check main link and risers
    - Check 3-ring system
    - Check top student attachment points
    - Check cutaway and reserve handles
    - Check Altitude
- Adjust Student
    - Chest Strap – Extend in 1-inch increments to reduce pressure on the sternum
    - Waist Strap – Extend in 1-inch increments to reduce pressure on the stomach
    - Leg Straps – Reposition forward under the hamstrings to increase comfort and allow greater range of motion for leg lift during landing (**Sit Back Drill**)
    - Laterals – Release one side, fully lengthen and must reattach to instructor harness. Repeat on the other side.

**Penetration Check**

The penetration check is performed to evaluate the canopy's ability to make forward progress into the wind.

- Turn canopy into the wind and let it fly at full flight
- Maintain heading for approximately 10-15 seconds to assess performance
- Observe ground movement to determine whether the tandem pair is moving forward, stationary, or backward relative to the ground.
- If backward movement is observed, remain well upwind of the intended landing area and adjust the flight plan accordingly.
- The distance traveled forward is an average distance which may be used when turning onto the base or cross wind leg of the approach pattern, assuming similar winds during canopy descent.

Once post deployment procedures and the penetration check are finished, the primary toggles may be handed to the student passenger, at the discretion of the instructor. Instruct the student to grasp the lower loop only. Once the student has a correct grip, the instructor may release their hands.

**Student Nausea**

If the student feels nauseous, the tandem instructor can do the following actions to minimize the chances of the student being sick:

- Keep turns to a minimum.
- Instruct the student to focus on the horizon and breathe normally.
- Assess chest strap tension and slightly loosen if necessary to improve comfort and breathing.
- Reposition the leg straps or leg pads, if needed, to relieve pressure.
- Provide an airsickness bag, if available.

**LANDING PROCEDURES**

During canopy flight, the tandem instructor must prepare the student for landing through physical rehearsal and verbal coaching. Emphasize that the student's feet and knees must be together and forward, with knees slightly bent. The student can reach under the knees and lift upward with their hands to make it easier to raise their legs higher.

- Prior to entering your downwind leg
    - Gain control of your secondary toggles
- Downwind Leg
    - At 1,000ft (300m) to 600ft (180m) AGL
    - Assess surface winds to refine final approach
    - Avoid prolonged flight in a braked configuration to prevent arm fatigue prior to flaring
- Base Leg
    - At 600ft (180m) to 300ft (90m) AGL
- Final Approach
    - Final turn should be made no lower than 300ft (90m) AGL
    - Make MINOR adjustments as needed

Canopy turns at or below 500 ft AGL are limited to 90° or less, in accordance with USPA Basic Safety Requirements (BSRs).

**NOTE:** A "stall surge" or braked approach is not recommended for normal tandem landings. Depressurizing the tandem canopy with toggle inputs may increase the likelihood of unfavorable results in turbulent conditions.

**3 Types of Tandem Landings**

Regardless of the landing type, the objective is for the instructor to have a **safe landing**, defined as a soft landing on target and compliant with landing priorities. Always select the method that promotes the safety of both instructor and student, based on current conditions and student needs.

- **Seated Landing:** This is the preferred and highly recommended landing method for all wind conditions. The instructor sits back in the harness during the flare and continues into a seated slide, preventing instructor rollover onto the student. When performing a seated landing, ground contact should occur in the following order:
    - Instructor's feet
    - Instructor's butt
    - Student's butt
    - Student's feet
- **Stand Up Landing:** A proper flare should result in little to no forward ground speed. The student must maintain sufficient leg tension to support body weight.
- **Walking Landing:** Both instructor and student must take several steps after touchdown. The student must maintain leg tension and proper leg position; failure to do so may result in a loss of

balance and the tandem pair to fall. This is the most technically demanding landing and requires thorough student preparation.

## J. HAZARDOUS LANDINGS

Hazardous landings are an inherent risk in skydiving, and while proper training and precautions significantly reduce the chances of injury, they can still occur. Understanding and practicing the correct emergency procedures is essential for promoting the safest possible outcome in the event of an unexpected or dangerous landing scenario.

By consistently reviewing safety protocols, staying physically prepared, and maintaining situational awareness during descent, instructors can improve their ability to react effectively, supporting the **mandated outcome** of minimizing potential injuries and increasing their overall safety.

**Tree Landing**

- Keep goggles over eyes
- Turn canopy into the wind and attempt a vertical descent between trees
- Protect face with forearms
- Keep feet and knees together and prepare to execute a PLF
- If suspended in a tree and cannot climb down, wait for assistance

**Water Landing**

- Attempt to land close to shore
- Disconnect RSL
- Reconnect lowers to student harness
- Have student inflate their flotation gear (if worn)
- Instructor unfastens chest strap and friction adaptor of the MCS (if worn)
- Have student get into legs up position, in case water is shallow
- Flare and land into wind
- If winds are high, release main canopy after landing
- Disconnect student top snaps
- Push student away
- Instructor swims out of harness
- Instructor inflates their flotation gear (if worn)

**Power Line Landing**

- Disconnect RSL
- Parallel wire in a braked position in order to achieve a vertical descent through the wires, if passing through wires is unavoidable, be prepared to execute a PLF
- If contact with the ground is made, cut away the main canopy and move away

- If suspended in the wires, remain motionless until the power is cut off. Avoid contact with others and do not cut away unless it is possible to clear the entanglement before making contact with the ground

**High Wind Landing**

- The RSL may be disconnected below 1,500ft to include disconnecting on the ground
- Upon landing, hand toggles to catchers
- If no catchers are available, sit down landing
    - Release one toggle and pull other toggle hand over hand until the canopy collapses
    - Pivot in direction of the pulled toggle
    - Attempt to contain the nose of the canopy
    - If unable to collapse canopy, attempt to disconnect RSL (if not already disconnected), pull cutaway handle

**Dust Devils**

- If overtaken by a dust devil upon landing, gather as much canopy as possible and lie down on it
- If unable, disconnect RSL and cutaway

**Obstacles**

- Do not get target fixated
- If contact is imminent, make contact with both feet and execute PLF

By adhering to these procedures and maintaining strict situational awareness, tandem instructors can conduct a safe and controlled descent, landing, and emergency response when necessary.

# SECTION 5: EMERGENCY PROCEDURES

**For tandem skydives, the exit altitude is no lower than 7,500ft / 2,300m AGL. The minimum for a fully open main canopy is 4,000ft / 1,200m AGL. In the event of a malfunction, the minimum decision altitude is 3,000ft / 1,000m AGL. Should the pilot in command (PIC) encounter any catastrophic failure below this altitude, it may be advantageous to conduct EP's above 1,500ft / 500m AGL. Below 1,500ft / 500m AGL the PIC must add fabric by pulling reserve and be prepared to deal with a dual canopy scenario.**

Malfunctions are an unfortunate yet inevitable aspect of skydiving, as no equipment is entirely immune to failure. While modern parachute systems are designed with multiple redundancies to enhance safety, issues such as canopy malfunctions, deployment failures, or entanglements can still occur.

In these critical moments, a skydiver's ability to react swiftly and correctly can mean the difference between a safe resolution and a life-threatening situation. This is why knowing emergency procedures instinctively is essential. Rapid, decisive action minimizes response time, allowing a jumper to execute necessary measures such as cutting away a malfunctioning main canopy and deploying the reserve canopy without hesitation.

Regular emergency drills, in-depth malfunction recognition training, and maintaining mental composure under pressure all contribute to effective crisis management in the sky. By ingraining these procedures through practice and repetition, instructors can maximize their chances of successfully handling malfunctions and a safe landing – in alignment with the **mandated process** for emergency response.

**Reserve Canopy Operations**

Control and steering of the reserve parachute are generally similar to the main canopy; however, the following critical differences and operational considerations apply:

- Reserve toggles are configured for Tandem Instructor control only. The student does not assist with reserve canopy flight.
- There are no secondary toggles on the reserve system.
- On the VR360 only:
    - The reserve canopy will open in a deep brake configuration and rocking will likely occur
    - Releasing the brakes immediately after opening will alleviate the rocking

**NOTE:** Newer reserve models may not exhibit the same "rock and roll" tendency.

**Reserve Canopy Malfunctions**

Although reserve malfunctions are extremely rare, they can occur. In the event of a reserve canopy malfunction:

- The Tandem Instructor must immediately attempt corrective actions, which are the same as those used for a main canopy malfunction:
    - Release the brakes
    - Perform a full controllability check
- If the malfunction cannot be corrected, the instructor must focus on achieving the slowest, softest landing possible.

- Parachute Landing Falls (PLFs) may or may not be appropriate. It is at the discretion of the tandem instructor to assess the situation and make the most appropriate landing decision for the situation.

## A. FOUR CATEGORIES OF EMERGENCY PROCEDURES

Emergency procedures are divided into four categories. The specific response required is determined by the type of malfunction encountered. Actions performed prior to formal emergency procedures are classified as immediate action drills and are intended to stabilize the situation before full corrective procedures are initiated.

**Total Malfunction:** The parachute container remains closed

- Look-Grab reserve handle
- Arch
- Peel/Pull reserve handle
- Check for deployment
- Check altimeter

**Partial Malfunction:** The deployment process has been initiated, but the canopy does not fully or properly deploy

- Look-Grab cutaway handle
- Look-Grab reserve handle
- Arch
- Peel/Pull cutaway handle
- Ensure separation of risers, physically assisting if necessary
- Peel/Pull reserve handle
- Check for deployment
- Check Altimeter

**Open Container with Drogue Issues:** Safety pin and main pin have been removed from the main closing loop. The drogue cannot be deployed or the drogue does not extract the main deployment bag.

- Disconnect RSL
- Look-Grab cutaway handle
- Arch and continue to fly body
- Peel/Pull cutaway handle
- Ensure separation of main risers, physically assisting if necessary
- Look-Grab reserve handle
- Peel/Pull reserve handle
- Check for deployment

- Check altimeter

**Third Party Entanglement:** This is when an outside parachutist becomes entangled with your drogue or drogue bridle

- Disconnect RSL
- Look-Grab cutaway handle
- Arch
- Peel/Pull cutaway handle
- Release drogue with either handle
- Ensure separation of main risers, physically assisting if necessary
- Gain horizontal separation
- Look-Grab reserve handle
- Peel/Pull reserve handle
- Check for deployment
- Check altimeter

**NOTE:** Be aware that a tandem pair will accelerate to terminal velocity much faster and your decision must be made quickly and correctly.

**ENSURE SEPARATION**

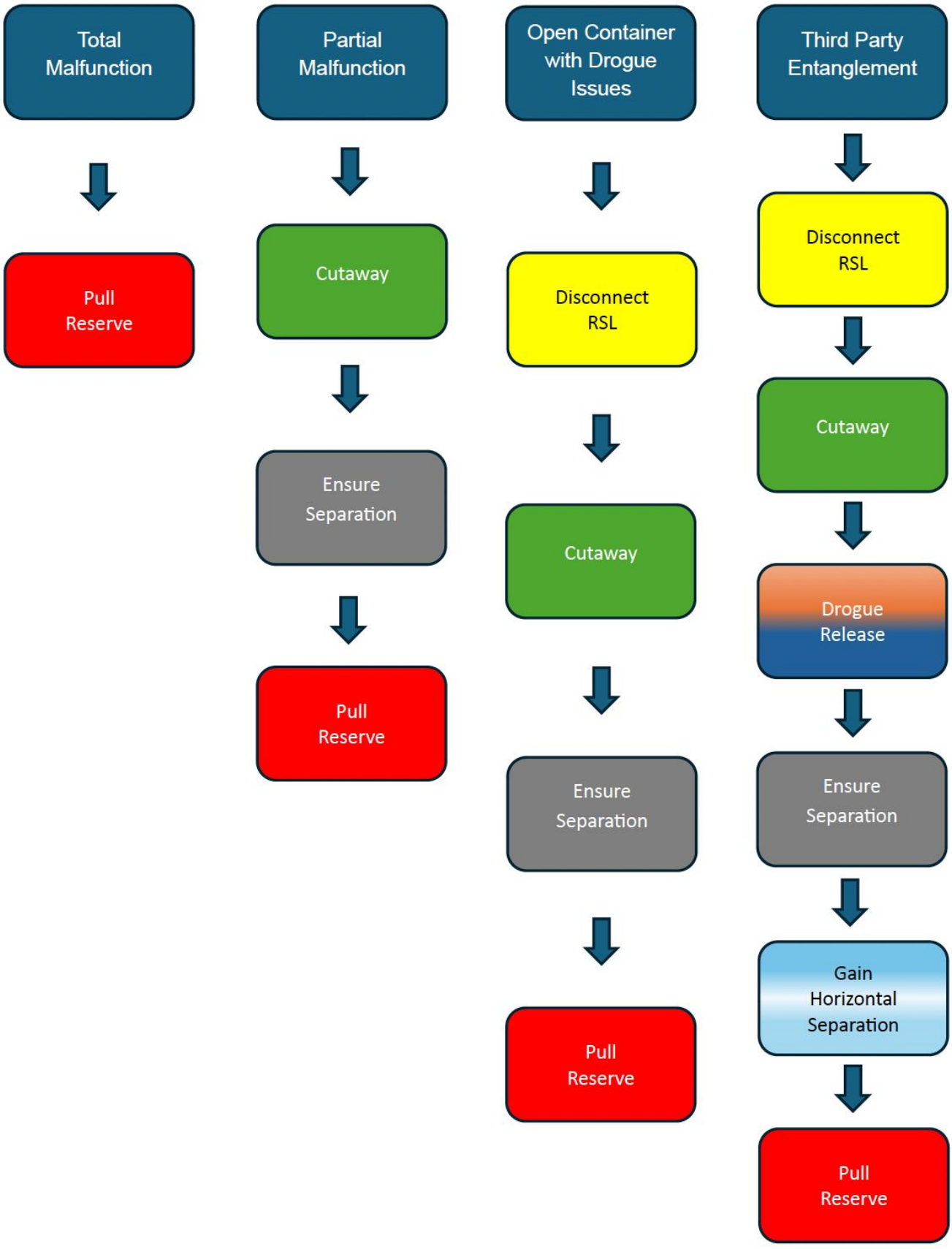
There are three methods used to confirm complete separation from the risers. Instructors should use all applicable cues necessary to verify that the main risers are fully clear:

**Sensory:** Feeling separation from the main canopy and risers.

**Visual:** Looking to verify that full separation has occurred and that no components remain in proximity.

**Physically:** Actively aid in removing of the main risers from the base ring.



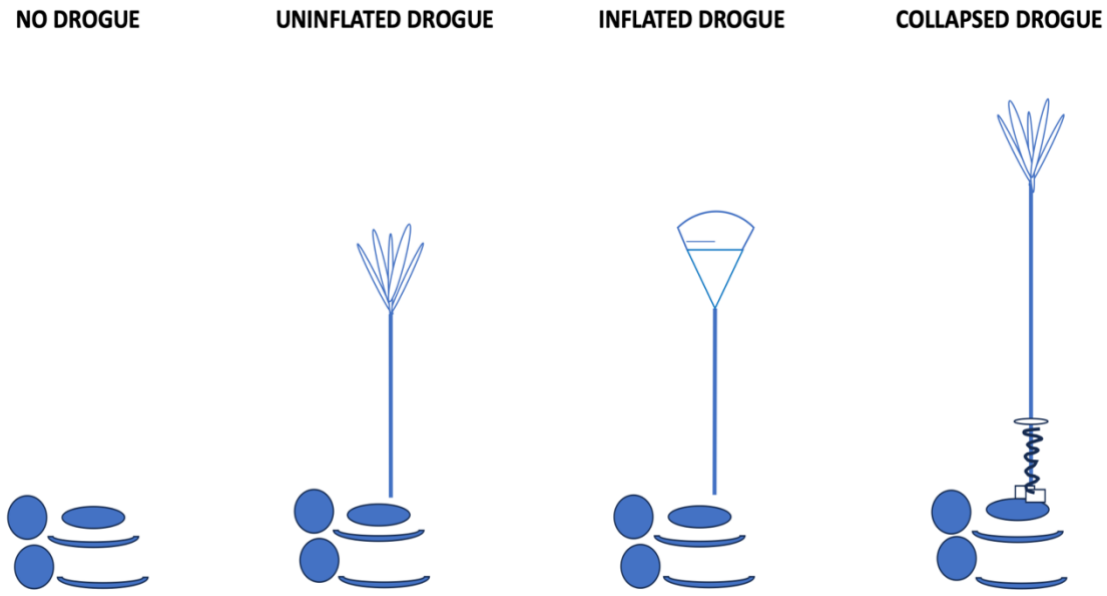
## B. FOUR DROGUE CONFIGURATIONS

**No Drogue:** Tandem is in freefall and has not or cannot set drogue. The drogue is in the BOC and the container is closed.

**Uninflated Drogue:** The drogue is not inflated, and the container is closed

**Inflated drogue:** The drogue is inflated, and the container is closed

**Collapsed Drogue:** The container is open, the disk has been released




## C. FREEFALL EMERGENCIES

**Unstable Exit**

- Attempt to regain stability
- Set drogue after 10 seconds
- If unable to set the drogue, execute Total Malfunction EP

**Side Spin**

- Bring the student's arm in; tandem instructor grasps student's wrists and place them at their hips
- Straighten out body (tracking position)
- The side spin should slow and allow you to roll belly to earth
- If you are unable to fix the side spin within 10 seconds
    - Set drogue if you are drogue side up
    - If you are drogue side down, conduct Total Malfunction EP

**Open Container Before Set Drogue**

- Set drogue
- If unsuccessful, conduct Open Container with Drogue Issues EP

**Cannot Locate Drogue**

- Make a second attempt to locate drogue
- Check for drogue deployment
- If no drogue, Total Malfunction EP within 10 seconds

**Hard Pull (Drogue)**

- Make a second attempt with elbow against the pack tray for leverage
- If drogue cannot be deployed, conduct Total Malfunction EP within 10 seconds

**Premature Drogue Deployment**

- Perform system check
- Continue jump

**Left Arm Incapacitated (No Drogue)**

- Set drogue
- Check drogue
- Release drogue
- If the main malfunctions and left arm is still incapacitated
    - Pull cutaway handle
    - Deploy reserve with RSL
- If you're unable to release the drogue with your right hand
    - Use RSL to deploy reserve

**Right Arm Incapacitated (No Drogue)**

- Conduct Total Malfunction EP

**Student Grabs Both Arms (No Drogue)**

- Free one arm
- Follow left or right procedures

## D. DROGUE FALL EMERGENCIES

**Drogue Release Handle Pulled Before Deploying Drogue**

- Set drogue

**Uninflated Drogue After Drogue Set**

- Wait 6 seconds to see if drogue will inflate
- If drogue does not inflate
    - Release drogue
- If drogue does not extract deployment bag from container, conduct Open Container with Drogue Issues EP

**Blown Drogue**

- Wait 6 seconds to GAIN SPEED
- Release drogue
- If drogue does not extract deployment bag from container, conduct Open Container with Drogue Issues EP

**Detached Drogue**

- Conduct Total Malfunction EP

**Drogue Deployed but Not Visible (Stuck in Burble)**

- Reach back to confirm drogue has been deployed
- If empty, reach above main container pack tray to feel for drogue canopy / bridle
    - If located, grab material and throw into relative wind vigorously
- If unsuccessful, dip right shoulder
    - If unsuccessful, repeat process by lowering left shoulder
- If still unsuccessful after 10 seconds, conduct Total Malfunction EP

**Parachutist Entangled in Your Drogue**

- Take a deep breath
- Give the entangled parachutist a few seconds, altitude dependent, to free themselves
- Conduct Third Party Entanglement EP

**Drogue Entangled with Instructor / Student**

- Make one (1) attempt to free entanglement
- Drogue clears
- Systems check
- Unable to clear drogue
    - Total Malfunction EP

**Left Arm Incapacitated (Drogue is Out)**

- Release drogue with the right drogue release
- If main malfunctions and left arm is still incapacitated
    - Pull cutaway handle
    - Deploy reserve with RSL
- If you are unable to release the drogue with your right hand
    - Use the RSL to deploy reserve

**Right Arm Incapacitated (Drogue is Out)**

- Release drogue with the left drogue release
- If main malfunctions and right arm is still incapacitated
    - Deploy the reserve
- If you are unable to release the drogue with your left hand
    - Deploy the reserve

**Both Arms Incapacitated (Drogue is Out)**

- Free one arm
- Proceed with left- or right-side procedures

**Spinning or Buffeting**

- Arch
- Attempt to correct the student body position
- Outfly the student
- Maintain altitude awareness
- Release drogue if stability cannot be achieved

**Premature Deployment**

- Determine which parachute is deployed
- Conduct canopy control check

**Lost or Broken Altimeter**

- Look for other tandem jumpers, release drogue when they pull
- Unable to locate other jumpers, wave off and release the drogue

**Falling Through Clouds**

- Stop all movement
- Maintain altitude awareness
- Wave off and deploy at the designated altitude even if still in the cloud

## E. DEPLOYMENT EMERGENCIES

**Pull Priorities**

- Deploy
- Deploy at designated altitude
- Deploy while stable

**NOTE:** Never sacrifice altitude for stability

**Cannot Locate Drogue Release**

- Attempt to locate the other drogue release handle
- Cannot locate, conduct Total Malfunctions EP

**Hard Drogue Release**

- Make a second attempt by
    - Pulling the opposite drogue release handle
    - If unsuccessful, pull both release handles at the same time
- If the drogue does not release
    - Total Malfunction EP
- If your second attempt collapses the drogue, but does not extract the deployment bag
    - Conduct Open Container with Drogue Issues EP

**Collapsed Drogue in Tow**

- Conduct Open Container with Drogue Issues EP

**Non-Collapsed Drogue During Deployment**

- Prepare for hard opening
- Inspect canopy for any damage

**Drogue Bridle Detaches on Drogue Release**

- If this happens the container will be open and the deployment bag may or may not be in the container. This malfunction can be prevented by proper maintenance on the parachute system.
- This will likely be solved by clearing your burble. Allowing clean air to pass over your back will catch the deployment bag and pull it out to line-stretch

- If clearing the burble does not work, conduct Open Container with Drogue Issues EP

**Bag Lock**

- Perform Partial Malfunction EP
- If the RSL hangs-up, sweep with your right hand to clear it

**Streaming Main Canopy**

- Grab rear risers
- Pull down simultaneously to bring the slider down (max 2 attempts)
- If unsuccessful, conduct Partial Malfunction EP

## F. POST OPENING EMERGENCIES

**50% Rule**

- If canopy requires greater than 50% opposite toggle input to fly straight, conduct Partial Malfunction EP
- If canopy stalls prior to 50% flare input, conduct Partial Malfunction EP

**Drogue Entanglement with Main Canopy**

- If drogue entanglement hinders main canopy opening or controllability
    - Conduct Partial Malfunction EP

**Line Twists**

- Keep hands out of the risers while twists are being generated
- Maintain altitude awareness
- Grasp the risers thumbs down and either pull them apart or push them together
- Kick your legs in a manner which will generate momentum in the direction you need to turn
- Do not un-stow brakes until line twists are clear
- Be prepared to conduct Partial Malfunction EP

**Rips or Tears**

- Bottom Skin
    - Conduct an aggressive Canopy Control Check
    - If tear gets bigger or uncontrollable
    - Partial Malfunction EP
- Top Skin
    - Partial Malfunction EP

**Premature Brake Release**

- If the control line releases during opening
    - Unstow all control lines
    - Conduct a canopy controllability check
- If uncontrollable conduct Partial Malfunction EP

**NOTE:** You will be in a left or right turn if this happens

**Broken Control Line**

- Will behave like a brake release
- Unstow all control lines
- Canopy controllability check
- Determine stall point with rear risers
- Land utilizing rear risers

If the main canopy cannot be safely landed conduct Partial Malfunction EP

**Broken Suspension Lines**

- Aggressive canopy controllability check
- 1 or more A-lines, conduct Partial Malfunction EP
- 2 or more B / C / D, conduct Partial Malfunction EP

**Hung Slider / Closed End Cells**

- Pull both toggles down to the full brake position, hold for 3-4 seconds, let up slowly
- After 2 attempts, conduct canopy control check
- If uncontrollable conduct Partial Malfunction EP

**Line Over**

- Release brakes
- Attempt to clear line over by performing a steady, even flare with both primary toggles
- If unsuccessful, conduct Partial Malfunction EP

**Tension Knots**

- Identify affected line group
- Pull down firmly on corresponding riser
- Dynamically release riser while under tension
- If unsuccessful after two attempts, conduct Partial Malfunction EP

**DUAL CANOPY**

**3 Basic Configurations**

- Side-by-Side
- Bi-Plane
- Down Plane

You are going to deal with these much the same way you would as a solo jumper. The biggest difference is that it will be more difficult to control because of increased riser pressure

- Determine if they are entangled (100% certainty)
- Match the toggle configuration of both canopies

**Dual Canopy – Fully Deployed**

Attempt to place the canopies into a side by side or bi-plane configuration

- To steer a side by side, steer the canopies into each other (i.e. if you want to turn left, use the left rear riser on the right canopy to turn the right canopy to the left. This will keep the canopies together
- To steer a bi-plane, make small gentle turns on the dominant canopy; this will usually be the front canopy
- If the canopies are in a down plane, Cutaway main canopy if the risers are not entangled
- If landing both canopies, pick a large open area and PLF

If you are certain the parachutes are not entangled and want to cut the main away:

- Grasp the left most rear riser of the left canopy with your left hand (Left of the Left of the Left) and separate the canopies
- Once the canopies are separated, pull the cut away handle with your right hand
- Conduct a canopy controllability check
- If the canopies are in a down-plane, simply pull the cut away handle

**Dual Canopy – Partially Deployed**

- If one canopy is inflated and the other is still in the deployment bag, keep the brakes stowed and attempt to slow the canopy to prevent the other canopy from inflating
- If the reserve is inflated and the main is still in the deployment bag, clear any entanglements and pull the cutaway handle
- If the main is inflated and the reserve is in the deployment bag, carefully reel in the reserve ensuring the suspension lines and risers do not become entangled with you or your equipment
- If the second canopy starts to inflate, give it a clear path and let it inflate, Follow the Dual Canopy Procedures

- Keep the brake stowed or fly slowly to reduce air speed and prevent canopy from being pulled from the deployment bag
- If the canopy is not inflated, clear the entanglements and cut away
- If the canopy begins to inflate, make sure that suspension lines or risers do not become entangled with you or your equipment
- Let the canopies settle into a configuration, remembering to inspect for entanglements
- Follow procedure for that configuration
- If reserve is still in deployment bag, carefully gather and coil suspension lines in one hand while lifting the bagged canopy until deployment bag is in hand, student passenger can assist and hold the bag
- Steer with harness turns or with one hand
- Be prepared to PLF

**Entering A Cloud**

- Go to half brakes
- Slow right turn to avoid collisions and maintain position

**Dust Devils**

If flying through a dust devil or turbulence in inevitable:

- Remain in full flight to maintain airspeed and canopy pressurization
- Fly straight through the dust devil
- Attempt to control your canopy
- Be prepared to flare and PLF

**Note:** Dust devils travel with the wind, avoid flying into the predicted flight path of the dust devil.

## G. ENTANGLEMENTS

**LOOK AWAY, STEER AWAY**

- Maintain at least 100ft / 30m of separation
- Lower jumper has the right of way
- Avoid body to body contact
- Brief all other jumps
- Turn right to avoid other jumpers

**Imminent Collision Procedures**

- Turn right to avoid other jumpers
- Assume modified spread eagle position (protect your handles)

- If entanglement did not occur, check handles, check self, check canopy control, check equipment and continue as planned
- Be prepared to deal with a malfunction

**Note:** Only use positive terms to communicate

**Entanglements with another jumper**

- Turn right to avoid other jumpers
- Lower jumper has the right of way
- Assume modified spread-eagle position (protect your handles)
- Attempt to bounce off
- Attempt to free yourself
- Positive communication and altitude awareness are critical to successful disengagement

**Entanglements with Another Jumper Above 3,000ft / 1,000m AGL. – 1 Good Canopy Flying**

- Higher jumper attempts to clear the entanglement
- If the entanglement is cleared, the canopy should re-inflate within 150-200ft / 45-60m
- If the entanglement cannot be cleared, at 3,000ft / 1,000m AGL or above, the lower jumper will execute cut-away procedures

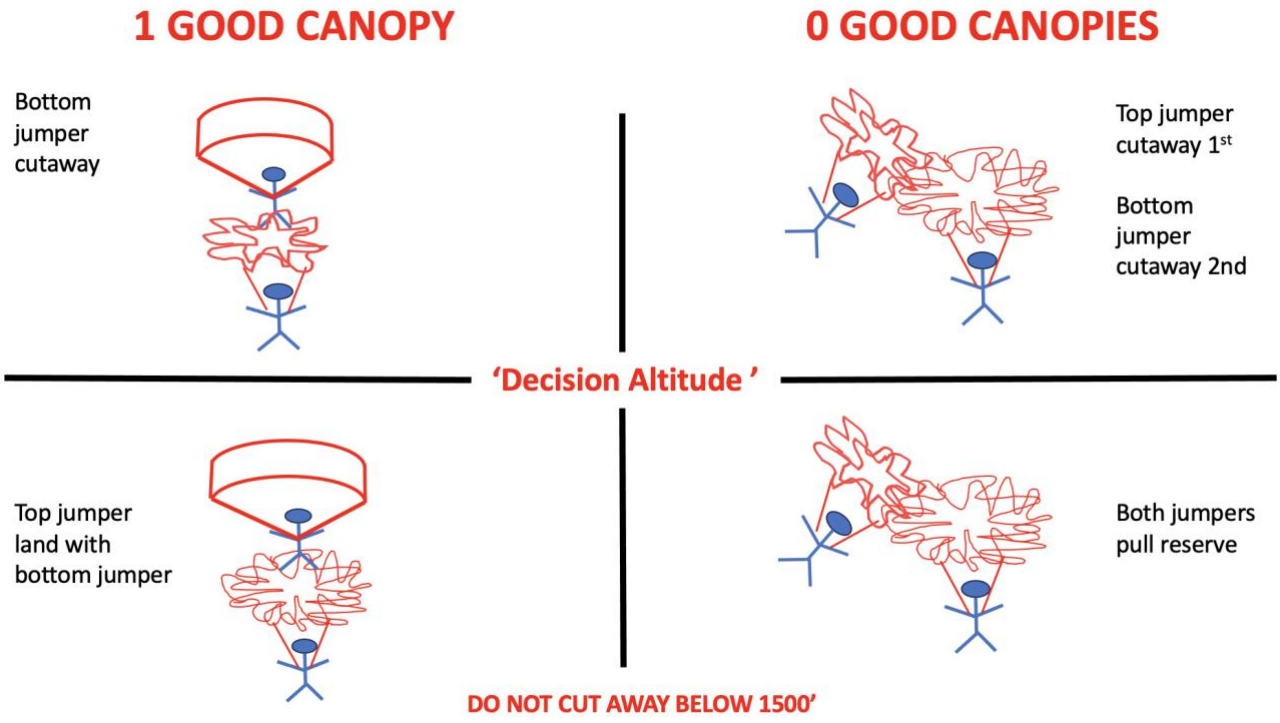
**Entanglements with another jumper below 3,000ft / 1,000m AGL. – 1 Good canopy flying**

- Lower jumper will land with the higher jumper
- Higher jumper will make every effort to maintain control of the lower jumper's canopy
- Higher jumper will fly the final approach and land at half brakes
- ALL jumpers will PLF

**Both jumpers are entangled and neither have a good canopy**

- Higher jumper has cutaway priority
- Jumpers should free themselves of entangled lines and execute cutaway procedures, altitude permitting
- Lower jumper should cutaway after the higher jumper, altitude permitting. The higher jumper may be fatally engulfed in the lower jumper's canopy if the lower jumper cuts away first
- If impact with the ground is imminent, both jumpers should deploy their reserve canopies in attempt to slow their descent




## RELATIVE WORK (RW)

Skydivers must meet the following experience and rating requirements:

- Minimum of 500 RW jumps and must be either a current tandem instructor or current AFF instructor

  **OR**

  300 RW jumps and have a USPA coach rating
- Made at least 100 RW jumps in the last year
- Cameramen must have the above qualifications plus at least 100 camera jumps

Skydivers must adhere to the following RW briefing guidelines:

- Remain clear of the drogue deployment
- Never fly over or under the tandem pair
- Always approach slowly and from the front
- If taking grips, always take the grip on the student's arm, never the instructor
- Must clear airspace of tandem pair prior to main canopy deployment
- Minimum of 1,000ft (300m) vertical separation to avoid collision situations
- RW must cease 6,500ft (1981m) AGL
- RW skydiver must be briefed on EP "Third Party Entanglement"
- Minimum of 100ft (30m) under canopy at all times

- RW is not permitted when the student has access to the drogue release and has been briefed how to use it

## HAND CAMERA GUIDELINES

- Minimum 200 tandem skydives as the Tandem Instructor
    - Alternatively, tandem instructors with a minimum of 100 tandem skydives may use a handcam if they have successfully completed the USPA Handcam Training Program
    - International tandem instructors may also use a handcam under the approved USPA Handcam Training Program, provided it is approved by their governing body
- First tandem skydive made after a seasonal layoff as a tandem instructor should not be made with a Handcam
- Tandem instructor should demonstrate and practice on the ground EP's with a mock student attached and full gear donned
- Before taking a student with a Handcam, the TI should make 2 jumps with a current TI
- The TI must still perform handles check
- Use of helmet mounted cameras, telescopic poles or any fixed camera pole is forbidden

# AMENDMENT LIST

| REV # | CHANGES | DATE |
|---|---|---|
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