

BRITISH PARACHUTE ASSOCIATION

5 Wharf Way, Glen Parva, Leicester LE2 9TF
Telephone: Leicester 0116 278 5271 Fax: 0116 247 7662
E mail: skydive@bpa.org.uk Website: www.bpa.org.uk



WING SUIT (WS) TRAINING (FIRST FLIGHT) MANUAL

WING SUIT FLIGHT and HOW TO TEACH IT

1. INTRODUCTION

This Manual is designed for Wing Suit (WS) coaches to teach experienced skydivers how to wing suit safely, fully educating the new wing suit pilot with every thing they need to know to keep themselves and those around them safe. This Manual is not all the new wing suit pilot needs, they must also have instruction from a wing suit coach.

1.1. Wing Suit Coach's main objectives

Safety. As a wing suit coach one of your main objectives is to ensure and promote the safety of your student, others in your group, the aircraft and also other jumpers on the load, i.e. Tandems and students who may be pulling higher than normal.

Ensure intended learning takes place. It is very important that your student learns all the necessary skills to complete a safe jump. It is not a question of showing how much you personally know about the suits or flying techniques, it is about making sure the student learns and understands what they need to know to have a fun safe flight, whether you are next to them during the flight or not.

Professional attitude. As a wing suit coach you are bringing people into a new aspect of the sport that has many added difficulties. Therefore be professional, as you may also be representing your DZ.

Fun. The whole idea of being a wing suit coach is to help safely introduce experienced skydivers into a new form of skydiving. For some this is an extremely scary type of jumping. You need to make training fun and enjoyable, so they can feel at ease and enjoy the whole experience, making them want to continue.

1.1. What is Wing Suiting?

Wing suiting is the ability to fly your body horizontally at greatly enhanced speeds while substantially reducing your vertical fall rate. By using a Wingsuit suit you are able to travel vast distances from your actual exit point and easily double or more your freefall time. A proficient sky flyer is capable of reaching horizontal speeds between 60 – 145mph (90 – 235km/h) and just 30 – 80mph (50 – 100km/h) vertically. You are able to fly anywhere from 1 – 3 minutes from 13,000ft (4,000m) before deploying your parachute.

1.2. Who should Conduct a First Flight Course?

It is recommended that only a BPA Wing Suit (WS) Coach or a wing suit coach, acceptable to the Club CCI, from a reputable wingsuit manufacturer/organisation teaches a wing suit first flight course.

2. FIRST FLIGHT COURSE (FFC) REQUIREMENTS

2.1.FFC Minimum Requirements

To fly a wingsuit the BPA states that a skydiver must be an FAI 'C' Certificate parachutist with at least 500 descents, or has at least 200 freefall descents within the previous 18 months and must demonstrate (in a belly to earth position), the ability to:

Control fall rate.

Control horizontal movement (forwards, backwards and sideways).

Achieve 'docking' techniques.

Turn in place.

Dive to approach a target.

Note: Ideally FSI (Grade) qualified.

Complete at least one jump using a training wingsuit/tracking suit, if the parachutist has less than 500 descents.

The first flight should be one on one with a wing suit coach wherever possible. Skydiver with 500+ current freefall jumps may fly solo on their first flight, after being fully briefed and signed off after a First Flight Brief from a wing suit coach.

The wing suit coach always has the right to refuse to train someone or jump with them. If for example the wing suit coach was not convinced the student had fully understood or was ready to make their first flight safely, or the wing suit coach was not happy with the equipment being used by the student on their first flight.

Note: Qualifications for becoming a BPA Wing Suit Coach can be found on BPA Form 134E.

2.2.Recommended Equipment

This has several sections and we will work through each section individually in the following order:

- Rig and deployment system.
- Canopy.
- Altimeters, visual and audible.
- AADs.
- Extras.

Rig and deployment system. The rig must be secure in the same way you would expect a rig to be secure for free flying, and must only have a BOC throwaway pilot chute with a kill line.

Bungee pilot chutes are not recommended, as with the slower speeds involved with wing suit flying it is possible that the bungee will not have enough airflow to open the pilot chute and allow it to deploy the main. A bungee pilot chute has a bungee inside the material of the pilot chute rather than a kill line that runs from the apex of the pilot chute right down to the deployment bag. If you pull the top and bottom of a bungee pilot chute it will stretch and return to a collapsed state.

NO leg mounted pilot chutes can be used for wing suiting as they will be concealed inside the wing suit when it fitted and impossible to get hold of.

Pull-out deployment systems are also not a good idea. With the extra burble the arm wing creates and the length of the small bridle between the handle and the pin it is very hard to get the pilot chute into clean air. As well as this, when the pin is pulled the main container is opened, allowing the main deployment bag to freely bounce down the leg wing, potentially causing a malfunction.

Ripcord deployment is also not recommended for the main parachute used in wing suiting unless they have been specifically designed for use with wing suits, as a wing suit creates a much larger burble behind the jumper and also more often than not the spring loaded chutes used for main canopies are not as strong or have lost some of their power compared to those for a reserve.

Canopy. The main parachute that will be used for the student's first flight should be relative to the student's experience, currency and the canopy they normally jump. More important is being comfortable with the canopies characteristics and openings. If the student wants to jump a highly loaded elliptical or X braced canopy, ensure that they will be comfortable with the possible consequences!!

A larger more docile canopy, preferably square and not elliptical, is a good idea, 7 cell canopies are also known for more consistent openings.

Remember as a Wing Suit Coach you have to right to refuse to jump with them if you are not happy with their equipment.

Altimeters Visual and Audible. Visual wrist or hand mounted altimeters work best. A chest mount altimeter may read up to 1000ft (300m) off because of the different airflow and speeds over the body.

Wrist visual altimeters and gloves should always be put on first, before the wingsuit arm loops for safety reasons. This is so that if needed, the loops can be taken off under canopy.

Most audible altimeters will sound as normal although some may need there setting changed to slow flight.

AAD's. If the student has an AAD, they must be informed that it may not activate if he / she is in full flight at firing altitude. In full flight the descent rate can easily be slower than the activation speed of the AAD. For example a Cypress activates at 78mph (35m/s or 125km/h) descent rate and at an altitude of 750ft (225m). This means that in full flight at 750ft (225m) or less the Cypress would assume you have opened your canopy and would NOT fire the reserve, however if you were unconscious and or tumbling, this is much more likely to give you a fall rate high enough to activate the AAD.

Extras. There are a few Optional extras that can be done to help with the deployment when wing suiting. A slightly larger Pilot chute can help to grab a little more air because of lower freefall speeds. Along with this a longer bridle can help to get the pilot chute into cleaner air and out of the burble helping to create a cleaner faster deployment.

Some people prefer to pack the deployment bag into the container with the bridle and grommet at the top rather than by the base of the reserve container.

And finally cut out corners of the main tray on the container can help the deployment bag leave the container more cleanly. Many container manufactures now offer this as an option. These extra options are just additional ways to help and not a necessity.

Note: Only those qualified should modify parachuting equipment.

2.3. Recommended Qualities for a Beginner Suit

For beginners and first flights in a wing suit it is important to choose a suit with the following features and characteristics.

- The suit should be stable and easy to fly suit, not twitchy.
- The wings must not be of a size that they can easily cover the main deployment handle preventing the student from pulling.
- The wings must have a cut away system that allows quick access to steering toggles, or be of a design whereby the student can reach the toggles or return to a normal freefall position if not happy during the flight.
- A leg wing cut away is an option, but highly recommended.
- The cut away and reserve handles must not be able to be 'sucked into' the wing suit.

2.4. Wingsuit Fit Criteria

A demo suit does NOT have to be a perfect fit, but there are a few comfort and safety issues to consider.

Fit to the body: Is the suit too tight or too loose? A suit that is too tight is uncomfortable and you run the risk of a zipper failing under the added pressure. A suit should not be so loose that the material flaps all over the place in flight. However, its better to have a suit that is a little too loose than too tight.

Arms: The arm length should not be so long that the thumb loops do not stay on the hand. Arm zippers must be able to be locked at the bottom of the wrist so that they will not open in flight. The arms should not be so long that its difficult to undo the zippers when needed.

Legs: If the legs of the suit are too long or short the booties can be folded under. Don't let a student fly a suit if the legs (more importantly the tail wing) are way too long. It is safer for a student if the leg wing is too short rather than way too long.

Emergency Handles: The rigs emergency handles (cut-away and reserve) must not be covered by the suit. Its is possible for some suits after opening to 'suck' the handles into the suit making them impossible to use.

Laterals: The laterals on the rig are the parts that go from just above the leg straps on the front of the harness to the container just around your hips.

When threading up the wing suit onto the rig there should be some space above the lateral, this way there will be no excess pressure on the thread loops of the wing suit. If there is no excess space it can damage the wing suit.

3. THE FIRST FLIGHT COURSE (FFC)

3.1. Requirement Checks

Ensure the students meets the recommended minimum requirements for the FFC. As in section 2.1.

The Wing Suit Coach must make his / her own judgment, if you are not happy with the qualifications of the student you have the right to refuse to train them. If you feel that the student needs some more jumps, maybe working on their tracking skills, or a training wingsuit, help them out and send them off with some skills to work on prior to doing the FFC.

Even if you feel that the student is going to be beyond your own personal abilities to fly with or train don't be afraid to say so.

3.2. Equipment Check

You must check the student has suitable parachute equipment, see section 2.2. for the recommended equipment. If you are not happy with what they have then try to find other equipment that is more suitable, maybe a larger canopy or BOC throw away pilot chute. Be careful not to change too much, for example, a main handle placement change would not be a good idea when they will already be in a slightly more stressful situation.

Also, now is a good time to make sure that the wing suit your student intends to jump fits them well enough. See wing suit fit section 2.4.

3.4. The Training Sequence

Now with all the formalities out of the way, explain how the training will proceed for the student, this will help to eliminate any questions that are not connected to what you are currently teaching. This will also help the student stay focused on what you're teaching, as they will have an idea of what is coming next. This should not take more than a minute or so but will cover every thing from manifesting and talking to the pilot to the flight its self.

3.5. Fitting the Suit to the Rig and Putting On

Lay the suit out on the ground or table and go through the suit with the student, talk about the surface area that will be added to their body, and have a closer look at the wings, size depth and construction with ribs and cross port venting just like a canopy. Spend time to look at the cut-away system on all wings that have it. The slots for the leg straps to go through, Thumb loops and knife pockets, and of course the zippers, poppers or magnets for the legs after opening and the system for locking the zippers at the bottom of the leg. All these things will give the student more knowledge of the suit, 'knowledge dispels fear'.

Once the suit has been examined help fit the suit to the rig, maybe you do one side whilst the student copies the same for the other side. The thread to miss will depend on the rig, the suit, and the size of the student more can be found on this in section 2.4.

Brief the student on the best way to put the rig and suit on. Let them choose between standing or seated techniques. Once they are comfortably in the rig and suit have them wear it just like they would for there first flight, leg straps tightened, all zippers closed, booties and altimeter on.

Go over the importance of:

- Leg straps always tightened before closing chest zippers, an important habit to get into, even if you have a long call.
- Chest strap tight but comfortable. Check that the harness will not slide down the shoulders during flight.
- Zippers locked down so they will not open in flight.

- Thumb loops over the altimeter and gloves so that under canopy they can remove the wing to reach toggles. Hand or wrist mounted altimeters only.

*Note: Emphasize the importance of putting the legs **through** the leg straps!!*

3.6. **Handle Placement and Pull Familiarization**

One of the first things that will be on the students mind is how do I pull? You will find that most people as soon as they have the whole suit on start doing practice touches of their handles. So straight away put your students mind at ease by showing them how to save their life before continuing with your instruction. Emphasize that the wings will not stop them from using the main or emergency handles.

Now make sure whenever they touch the main or emergency handles the student has their legs firmly locked together, get this engrained in there mind right from the very beginning. Now you can start to teach them the complete technique for pulling in a wingsuit.

Once you have explained and demonstrated the pull technique get the student to practice the main pull only until you are satisfied they can do it consistently well. Get them to do several practices and actually throw the main pilot chute.

Note: Keep emphasising the importance of the legs been locked firmly together.

Let the student know that you will cover the wave off and pull technique in more detail later in the instruction.

Briefly explain the emergency handle placement is also not an issue with the wings and that wings DO NOT need to be cut away before commencing emergency procedures. But again you will be going over this in more detail later on.

Go over the placement of the new handles, Wing cut-aways, have the student get used to where they are located and practice a few times with there eyes shut. Then the LQRS (leg quick release system) if applicable.

Reasons for using the wing cut-aways:

- To get to risers or toggles faster than un-zipping arms, (line twists).
- If uncomfortable with the wings during their flight (freefall).
- If a zipper has failed or jammed in place.

3.7. **Exit**

Before jumping, the pilot and manifest must know that you are intending to make a wing suit flight, the pilot may need to know which direction you intend to fly so that he doesn't fly through your path during his own descent. Manifest may need to know so that if they are counting open canopies they can expect a time delay before you open.

Thoroughly train the student on the aircraft you will be exiting from. Also for their future knowledge, briefly tell them how to exit from other aircraft, maybe the aircraft at their home DZ or other aircraft they are likely to encounter. (Many FFC's take place at boogies with larger aircraft but the student will hopefully want to continue at their home DZ).

Demonstrate the exit, and then have the student practice until the exit is being performed correctly for a multiple of times.

Different aircraft have different exit techniques but the following applies to almost all jump aircraft:

- Head high exit, chest and hips on to the relative wind.
- Hop out with legs together (try not to step out because this opens the leg wing).
- Arms by the side for a second or so to clear the aircraft's tail.

Note: Explain why on all aircraft except a tailgate you need to have your wings closed for a second or so to clear the tail. (Safety Issue).

- Look at the aircraft just after exit to help hold a heading on the line of flight.
- Arch.
- Open all 3 wings symmetrically.

If a loss of heading or instability occurs on exit (botched exit) arch, relax, check heading / spot, open wings and fly back on the original flight path.

Flat spins. If a flat spin happens from a botched exit or at any time during the flight there are a couple of things you can do to regain stability:

- Dive out, it is sometimes possible to dive out of the spin, but not always.
- Curl Up into a ball. This can initially speed the rotation up but will eventually stall out.
- Cut-away the wings, This will allow you to use normal turn techniques to stop the spin and take away some of the surface area that is contributing to the spin.
- Pull, if all else fails, Pull, you may well get twisted lines but you can deal with that at a slower speed than in freefall.

Of course its much better to not get into a flat spin in the first place, so there are a few things that can help prevent this:

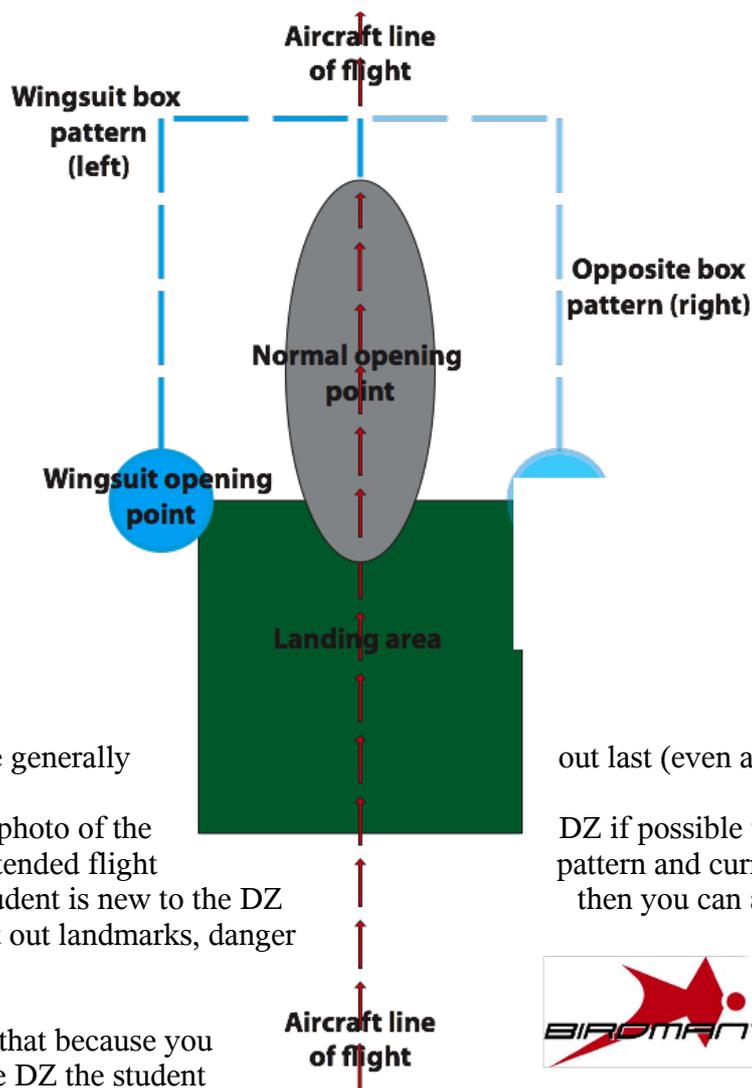
- Always have good presentation on exit.
- Only try new moves at the beginning of the flight when you have more altitude.
- Always know your altitude

Emergency Exits. This can depend on the height you need to exit at and if you are already fully zipped up or not.

If at a lower altitude but not yet zipped into the suit just do the zips up 2/3 s, this way you can exit in a normal freefall position still able to reach risers and toggles but it also reduces flap from the wings.

If higher exit as normal flying away from the other parachutists and deploy no later than your planned altitude.

3.8. **Flight Pattern**



Wingsuit's are generally

Use an aerial photo of the student the intended flight spot. If the student is new to the DZ photo to point out landmarks, danger possible outs.

Make it clear that because you away from the DZ the student first 90-degree turn when they feel even if they have not yet seen you.

out last (even after Tandem).

DZ if possible to help show the pattern and current jump run and then you can also use the aerial areas and any



will exit furthest should start their they need too,

Go over the 90-degree box pattern and explain to the student why wing suit jumpers must plan their flight pattern.

Wingsuiters have a lot of forward speed and will not be falling straight down, you need to fly a pattern to ensure you get back to the DZ as well as staying clear of other jumpers and or aircraft.

Note: *Many people think that because you are flying a wing suit you are more likely to land off the DZ, this is actually totally the wrong attitude. We actually have no reason to land off! We can have the worst spot and should still be able to fly back to the DZ. The only real reason for landing off in a wing suit is a lack of attention during the flight to your navigation.*

Cover these safety issues:

- Checking the spot before exit, if jump run changes you may have to create a new flight plan or improvise while in the air. Also checking for other aircraft.
- Do not exit if you cannot clearly see the DZ because of cloud.
- Do not fly through thick cloud if you can help it, you will not be able to see others in your group, you will not be able to spot high opening canopies and your navigation will become very difficult. Try to fly around if possible without going into the aircraft line of flight.
- Stay clear of the line of flight, never fly near the line of flight as this is where other canopies will be.
- Tandems and students may be open at a similar height to where the student's will be opening, you may well see them under canopy whilst you're still in flight. But NEVER fly near them.
- Looking out at 45 degree for other canopies as this is more like the angle you will be flying at.

Note: Remember it is not permitted to fly further than 1.5 miles from the centre of the DZ in any direction.

3.9. **Flying the Suit**

Demonstrate a good body position to the student, you can then ask them to lay on the ground or a table to help work on their body position.

Arching. Arching will act in the same way as normal freefall, it will help with stability and increase fall rate, de arching will slow the fall rate but is a little more unstable. Remember on the first flight we are not after the best speeds or times in free fall possible, we are only looking to fly the suit safely and get comfortable with it.

Arms. Arms should be parallel with the body, shoulders rolled and palms to the sky, this will help to produce a good leading edge of the wing creating more lift from the arm wing. The altimeter should be easy to read with a twist of the wrist and a glance on the eye. Only hand or wrist mounted altimeters should be used. This arm position can be different for different makes of suit.

Legs. Legs should be straight with the knees locked, toes pointed and legs apart to the size of the wing. With the legs out straight this will create more forward speed, the more forward speed we have the more lift is possible giving us slower fall rates and more time in flight. It's very common for people to fly with bent legs but think they are out straight because of the extra pressure on their legs from the booties and the leg wing itself.

Side slipping. You should NEVER go face to face with another wingsuiter or aim straight at them, the closing speeds of two head to head wingsuits could be as high as 200mph (300m/h), only side slide to join your wing man.

Relative to the earth you should be flying horizontally, The head and the feet should be at the same level, if the head is lower than the feet then check the arms as they are probably

getting lazy or tired and not supporting the top half of the body, this will also increase the forward speed because you will be diving at the ground.

Turn techniques. Even the smaller wingsuits are very responsive to minor changes in body position. Because of the larger surface area turns are more sensitive than they would be if you were just tracking, sometimes just looking in the direction you wish to go can be enough.

Whilst the student is laying down place your hands under their wings and lift them slightly to simulate the pressure from the wind.

Potato Chipping or Buffeting. This normally happens because of too much tension in the muscles and being too ridged. Relax, arch and then start again.

3-D awareness. 3D awareness is most important during the flight, the normal skydiving body clock will be all out of sync, so you must check your altimeter regularly as well as checking your position over the ground, (spot). Try to always know where your wingman is so that you don't have any collisions.

Also. Remember the wings need to be able to inflate, so they should not be too tight nor should they be to lose.

The student should self-check their body position, especially on the last stretch of the flight heading back to the DZ parallel with the flight line. An easy way for them to do this is the 1-2-3 check list:

- 1- Arms are parallel to the body
- 2- Hips are slightly de arched
- 3- Legs are out straight.

3.10. **Practice Touches**

The practice touches will be carried out after the first 90-degree turn whilst flying off the line of flight.

The purpose of the practice touch is to feel the main handle and experience the pull body position before actually doing it for real. This will give the student a lot more confidence. This is a practice touch not a practice pull.

There is no real need for the wave-off yet, it is more important to get the pull technique right at this time.

Demonstrate the practice touch technique and then have the student practice until it is being performed correctly multiple times. This drill can be practiced standing up as well as laying down. Make sure to correct any mistakes as they happen.

Practice touch technique:

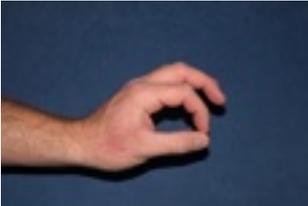
- Arch.
- Close leg wing by LOCKING the knees and ankles together, legs remain extended.
- Arch.
- Reach back with both hands to the bottom of the container and touch the main handle.

- Recover by opening the wings symmetrically, with the arm wings a fraction before the leg wing. This just helps to prevent a head low attitude.



At least two practice touches should be carried out, checking the altimeter and spot between each one. If the student is not happy they can always try another one, although they may need to make the next 90-degree turn first.

Likewise if you feel they should do another then give them the Practice touch signal to try another.



3.11. The Second 90 degree Turn

Having done the two practice touches it should be time to make the second 90 turn, to fly back to the DZ, off, but parallel with the line of flight.

If needed this is a good time to do another practice touch, or time to start really flying the suit. To help with really flying the suit, see section 3.9.

3.12. Hand signals

In air communication is vital for quicker progression and gives the student better value for money.

As long as both the instructor and student know what a signal means, the signal could be anything. However many people will be used to some signals which you could call industry standard throughout skydiving. Here are some of the most common signals.

Practice Touch

A full fist can be a good signal for practice touches OR you can do a Practice touch, along side the student to remind them.

Legs out

Legs out is a commonly used signal, there will be a lot more pressure on the students legs than they may be used to, the extra pressure from the booties, if they are not used to using booties and the extra pressure from the leg wing.



De-arch

Although this is normally used in AFF for Arch, we can adopt this for wingsuiting to become De-arch.



Altimeter or CoA

Altimeter and or Circle of Awareness (CoA), also from AFF, this is useful if you have not seen the student check their altimeter or need them to check their altimeter and position.

Arms

This kind of looks like arms and a chest so can be good for check the arms, the problem is that there are a few things that can happen with the arms and just asking a student to check there arms is not always enough. If you have been working with the same student for a few jumps and they have a common problem that's always the same with the arms its perfect, as you and they will know when they get this signal it's the same old problem and they can correct it.

However if the student has lazy arms (arms folding back behind them but still out to side) then sometimes a flap of your arms (a little like a bird!!) will tell them to work harder with the arms.



If the arms are tucked in by their side then maybe a push out of your arms (tensioning the wing and back in) will tell them to push their arms out more.

Relax

A loose hand wave or wrist rotation is a common signal for relax, but tell your student if you give this signal to take a deep breath in through the nose and out through the mouth to make a physical change to their body and actually relax rather than just going OK!

Pull

This is always worth having there no matter how experienced your student may be, On their first flight there are a lot of new things they will be thinking about and their body clock will be thrown off, so just in case they do loose altitude awareness you can give them a pull signal, or if maybe some bridle was starting to come out of their rig and its safer to pull rather than carry on. Even if you were too far from the DZ you could tell them to pull higher so that you can all fly back under canopy. If this signal doesn't work then if the Wing Suit Coach pulls that can be a big wake up call to the student.



But remember, this is not AFF, the student is an experienced sky-diver, they are ultimately responsible for their own safety, you are only there to help as much as possible with out putting yourself in danger.

Turn Signals



Can be done by a full hand in the direction you need them to go in, remember do NOT point in the direction as you may find you student pulls in place!!! Or you can nod with your head in the direction you need them to fly.

If your student has an unusual position don't be afraid to come up with another signal that you both will know means correct this position.

Learning to give the correct hand signals for the right body correction can take time, if you are not used to giving hand signals, don't be afraid to go and do some jumps with a friend so that you can practice giving the correct signals. Some times the brain can have trouble communication with your hands! you know what signal you want to give, but the hand struggles to give that signal.



3.13. Wave-off and Pull

Wave off, is just as important when wing-suiting as in any other skydiving discipline. However the one main difference is we do it with our legs. If we were to wave off with the arms, firstly it would not be so obvious

because of the limited movement (how far we can bring our arms out) and it can create more instability or a head low attitude just prior to pull time. The wave off will also tell anyone nearby you are about to deploy your parachute giving them time to get out the way.

Start the wave off at 5500ft (1700m), don't rush the wave off, remember we have more time because of slower fall rates when wing suiting. The wave off is done by closing and opening the leg wing twice and then on the third time of closing going for the pull. The idea is to have the student pull at 5000ft (1500m).

If the student wobbles they have a little time to settle, Emphasise that the student should have nearly double the time they are used to on a normal skydive, Relax and think.

Wave off technique:

- Check air space is clear.
- Pick a point on the horizon.
- From full flight (arms wings open) Arch and close legs and feet together three times.

The Pull will be the same as the practice touch only this time the student will throw the pilot chute. Demonstrate the wave off and pull to the student and have them practice until they can perform it correctly multiple times. Correct any mistakes as they happen, the student really should be open no lower than 4000ft (1200m).

Pull techniques:

- On the third time of closing legs and feet together, Arch.
- Lock the feet and knees together.
- Symmetrical bring the hands to the bottom of the container and the main handle.
- Throw the Main handle and pilot chute vigorously to arm extension, (this helps to get the pilot chute out into clean air and not get stuck in the burble).

- Then close the arms to decrease the burble.

***Note:** If the wing covers the main deployment handle, bring both hands to the bottom centre of the container so that the hands are touching, then work out again until the student can feel the main handle.*

Try breaking down the wave-off and pull sequence into an easy to remember sequence, demonstrate the full sequence whilst saying this:

TAP - TAP - LOCK IN ARCH- THROW- CLOSE

By using this it can help the student remember the sequence even if they are nervous at pull time.

Go over the most critical parts of the wing suit pull:

- Pulling (at the correct altitude).
- Symmetry.
- Aggressive throw.
- Legs together.

3.14. **After Pull Drills**

Explain the wing suit deployment angle and the swing your student may feel after deployment, this can be minimised by holding the arch for just a second prior to throwing the pilot chute.

There are a few things that should be done after the parachute is fully open:

- Look up and check the main parachute, once happy with the canopy.
- Make sure the air space is clear.
- Use the harness to turn to face the DZ.
- Un-Zip the arms all the way using the thumb loops to hold tension on the zippers.
- Use the risers to turn and face the DZ.
- Un- Zip the legs, It is very important to have at least one leg fully free from the suit for landing, use the LQRS if needed and available.

The leg wing will trail between the legs but should not be a problem on landing or some suits have poppers or magnets to keep the legs up.

Make sure the student practices fully unzipping both arms and both legs in the order they will do under canopy.

Quiz the student on what to do in the case of line twists or a malfunction.

Finally tell the student where you want to meet them after the jump, so that you can debrief them.

3.15. **Pre Flight Equipment Checks**

Your student is hopefully planning on continuing to wing suit. So it's important to teach them how to do an equipment check on someone else and themselves prior to boarding the aircraft.

If the FFC is taking place at a boogie, there may be plenty of other wingsuiters to check them out, but when they return to their home DZ they might be the only wingsuiter there.

Treat the check in two stages:

Firstly, the life saving equipment (the rig!) including hidden areas like leg straps.

Secondly, the extra equipment (wing suit!).

The equipment is the same as a normal gear check but make sure you check the leg straps have the legs through!! and are tightened as they will be hidden under the suit.

The wingsuit check, you will be looking for:

- General fit.
- The wings are threaded properly and evenly on both the front and back.
- There is enough room for the laterals to move up after opening with out damaging the wing suit, see section 2.4.

3.16. **Freefall Emergencies**

Discuss emergency situations with the student. **DO NOT** change their emergency procedures, just make sure that if they do have a cut away they understand that:

- The student **MUST** deal with the malfunction first before cutting away wings.
- Legs are closed tight before cutting away and pulling the reserve. If they have line twists they can pull the LQRS to free one leg and help kick out twists.

IMPORTANT NOTE: *Remember your student should be trained to the point at which they could safely make the flight even if you were not there.*

4. **MANIFEST AND DIRT DIVE**

4.1. **Time to Prepare**

The key here is to make sure your student has plenty of extra time.

Manifest with plenty of time to rig up the wing suit if it is not already, Run through a dirt dive and kit up.

When manifesting don't forget to let manifest know you will be wing suiting, some DZ's count the canopies after opening, it will be a lot less stressful for them if they know in advance that there will be a delay between every one else and then your self.

Kit up with more time than normal, we all know its possible to get ready on the five minute call, but now there is more than the student will be used to dealing with, so start getting

ready on at least the fifteen minute call, this means they can kit up in a more relaxed manor and still have time to run through a final dirt dive of the flight.

4.2. Final Dirt Dive

Once the student is fully kitted up, get them to run through the jump, demonstrating the Exit and then talking through and showing you what they will be doing at each stage of the flight, again demonstrating the practice touches, then the self body checks they will make on the final leg back to the DZ, and of course not forgetting the wave-off and pull sequence. If time still permits it might be a good idea to check what the spot and jump run will be, ask the student to show you their intended flight pattern on an aerial photo of the DZ. Make sure you give your student a full gear (and wingsuit) check.

5. IN AIRCRAFT PROCEDURES

5.1. Boarding Area

It is ok to walk to the boarding area with the arms and legs un-zipped. Many people have the legs done up before they walk to the boarding area, this can wear out the booties much faster than necessary.

Once you are at the boarding area, depending on aircraft type make sure your student is ready to get on board, Some aircraft require that at least the legs are zipped up prior to boarding as there is just not enough room inside when every one is in for you to move around or stand up to do up your legs.

The student should always ask in the boarding area if anyone is planning on pulling high. This should be factored into the flight pattern and making alterations if necessary.

It can also be extremely annoying for other jumpers, pilots and DZ owners if you get in and then start doing up your legs and preventing everyone else from either getting on board or sitting down, Remember if the aircraft is running its costing money! So get ready before getting on board.

5.2. **Briefing the Pilot**

Briefing the pilot should only take a few seconds, normally this will consist of a quick hello, we are wing suiting, our flight pattern is to the left / right, and there will be one person open at 5000ft (1500m). Keep it as brief as possible but with the essential information.

If you require a different jump run or spot, then try and speak to the pilot prior to your load, maybe at the start of the day, during a refuel, or whilst the pilot is having a break. This can save confusion and time on the aircraft when its turning and burning.

5.3. **Preparation to Jump**

Make sure that your student is fully geared up ready to jump with plenty of time.

In an aircraft that climbs quickly or where space is limited we should be well prepared, normally we can get ready around the one or two minute call and still have plenty of time, now there are extra things to think about and the student may well be nervous it's a good idea to get ready with extra time. Maybe 4000ft (1200m) before exit.

5.4. **Final Gear Check**

Once the Student is ready give them a final gear check, again checking the rig and wing suit.

6. **BACK ON PLANET EARTH**

6.1. **De Brief**

Once you have landed congratulate the student on their first flight, If you have not already then tell them where you want to meet them for the de brief.

The de-brief is an import part as this can help the student progress much faster. When de-briefing focus on the positive aspects of the flight, but make sure you give corrective help that will improve their future flights and body position, Especially if it's a safety issue.

The student should have accomplished the three main safety criteria to pass and for you to clear them to fly on their own safely:

- Over all Stability.
- Good Navigation.
- Safe PULL at the correct altitude.

If these three things are not met then it may be necessary for corrective training and another jump with a Wing Suit Coach.

6.2. Log Book Endorsement

Sign the students log book with your Wing Suit Coach number and right up the jump with corrective notes to help them remember for next time.

Some places will want to know who trained and when the student jumped so signing the log-book clearly is very important but will also make the students life easier to continue wing suiting when they go back to their home DZ or other DZ's. Present the student with the First Flight Certificate if you have one. Then see if they would like to jump again.

Final Important notes:

There is no need to land off, we have a better chance of landing ON then any one!!

Wing Suit Coaches always have the right to not teach some one if they are not happy with equipment, learning or their own ability.

Remember your student should be trained to the point at which they could safely make the flight even if you were not there.

WING SUIT 1 & 2 JUMP SEQUENCES

WS1

(FFC) Flight 1

1. Objectives

The objectives of the First Flight are discussed and taught during the FFC.

The main criteria are:

1. Fly in controlled manner with overall stability.
2. Deploy the main in a safe wingsuit manner.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Demonstrate the correct post opening procedures on all qualifying descents.
6. Land within 50m of the target.

2. **Jump Sequence**

Before the Jump don't forget to:

Manifest with plenty of time, Kit up with extra time to put the suit and rig on. Dirt dive, correcting any mistakes and confirm all hand signals.

Be ready at the boarding point. Booties on if necessary.

This jump sequence is the FFC plan:

1. Check Spot and with coach, 'OK' exit count, (student does exit count).
2. After exit student starts flying the suit and checks flight pattern.
3. When ready the student initiates the first 90-degree turn.
4. When ready the student does 2 practice touches, checking altitude and position between them.
5. When needed the student makes the second 90 degree turn.
6. Whilst flying back to the DZ the student may either start really flying the suit or do more practice touches if needed.
7. At 5500ft (1700m) the student starts the wave-off.
8. At 5000ft (1500m) the student starts the deployment.

3. **Debrief**

1. Student's version of the flight.
2. Coach's version of the flight.
3. Then look at the video.

4. **Corrective training**

Give any tips on how to improve body position or flight pattern to prevent bad habits.

5. **Logbook**

The student should complete their logbook. This should include as much info as possible, The coach may then add any further points of relevance that will aid the students progression. The coach must recommend whether the student should **progress** further or **repeat** the jump. Sign and print name with coach number.

WING SUIT 1 & 2 JUMP SEQUENCES

WS1

(FFC) Flight 2

1.Objectives

This is a similar plan to the first flight but the practice touches can be left out or if the coach or student would prefer then they can stay in the plan:

1. Fly in controlled manner with overall stability.
2. Deploy the main in a safe wingsuit manner.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Demonstrate the correct post opening procedures on all qualifying descents.
6. Land within 50m of the target.

2. Jump Sequence

Practice touches need only be done if the coach feels it will benefit from the first jump or the student feels they want to do more.

1. Check Spot and with coach, 'OK' exit count, (student does exit count).

2. After exit student starts flying the suit and checks flight pattern.
3. When ready the student initiates the first 90 degree turn.
4. If required the student does 2 practice touches, checking altitude and position between them. If not the time can be used to improve body position.
5. When needed the student makes the second 90 degree turn.
6. Whilst flying back to the DZ the student can work on improving body position.
7. At 5500ft (1700m) the student starts the wave-off.
8. At 5000ft (1500m) the student starts the deployment.

3. **Debrief**

1. Student's version of the flight.
2. Coach's version of the flight.
3. Then look at the video.

4. **Corrective training**

Give any tips on how to improve body position or flight pattern to prevent bad habits.

5. **Logbook**

The student should complete their logbook, This should include as much info as possible, The coach may then add any further points of relevance that will aid the students progression. The coach must recommend whether the student should **progress** further or **repeat** the jump. Sign and print name with coach number.

WING SUIT 1 & 2 JUMP SEQUENCES

WS1

(FFC) Flight 3

1.Objectives

Again this is a similar plan to the first flight but the practice touches can be left out, If the coach or student would prefer then they can stay in the plan.

1. Fly in controlled manner with overall stability.
2. Deploy the main in a safe wingsuit manner.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Demonstrate the correct post opening procedures on all qualifying descents.
6. Land within 50m of the target.

2. **Jump Sequence**

1. Check Spot and with coach, 'OK' exit count, (student does exit count).
2. After exit student starts flying the suit and checks flight pattern.
3. When ready the student initiates the first 90 degree turn.
4. This time can be used to improve body position.
5. When needed the student makes the second 90 degree turn.
6. Whilst flying back to the DZ the student can work on improving body position.

7. At 5500ft (1700m) the student starts the wave-off.
8. At 5000ft (1500m) the student starts the deployment.

3. **Debrief**

1. Student's version of the flight.
2. Coach's version of the flight.
3. Then look at the video.

4. **Corrective training**

Give any tips on how to improve body position or flight pattern to prevent bad habits.

5. **Logbook**

The student should complete their log book, This should include as much info as possible, The coach may then add any further points of relevance that will aid the students progression. The coach must recommend whether the student should **progress** further or **repeat** the jump. Sign and print name with coach number.

WING SUIT 1 & 2 JUMP SEQUENCES

WS2

Level 1

If, and only if the coach and student are in agreement and happy, the deployment altitude can now be brought down to 4000ft.

No more work/ break off should be at least 1000ft above deployment altitude.

It's a good idea for the coach to watch the deployment if possible but always staying clear and not behind the student.

1.Objectives

1. Stable exit.
2. Control fall rate using the wings and arching and de-arching.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Deploy the main in a safe wingsuit manner.
6. Demonstrate the correct post opening procedures on all qualifying descents.
7. Land within 25m of the target.

2. Jump sequence

1. Exit so that both coach and student are close together.

2. When settled and close together almost with a grip the coach moves down 5-6 ft then the student moves down to match by arching.
3. When together again the coach moves Up 5- 6 ft student follows by de-arching.
4. Now Repeat but using the wings. When settled the coach moves down 5-6 ft then the student moves down to match by collapsing the wings.
5. When settled the coach moves up 5-6 ft and the student follows by tightening the wings.
6. At 5000ft the student initiates break off.
7. At 4500ft the student starts wave-off.
8. At 4000ft the student starts deployment.

Note: The break off and deployment height may vary slightly.

3. **Debrief**

1. Student's version of the flight.
2. Coach's version of the flight.
3. Then look at the video.

4. **Corrective training**

Give any tips on how to improve body position or flight pattern.

5. **Logbook**

The student should complete there log book, this should include as much info as possible, the coach may then add any further points of relevance that will aid the students progression. The coach must recommend either progress further or repeat that jump. sign and print name with coach number.

WING SUIT 1 & 2 JUMP SEQUENCES

WS2

Level 2

1.Objectives

1. Stable exit.
2. Maintain control whilst flying suit at its best and least effective capabilities.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Deploy the main in a safe wingsuit manner.
6. Demonstrate the correct post opening procedures on all qualifying descents.
7. Land within 25m of the target.

2. Jump sequence

1. Exit in the appropriate way for the exit chosen.
2. Whilst both flying along side each other the student should collapse all wings whilst maintaining control.
3. Return to a normal flying position along side each other again.
4. The student should then gradually start to max out the suit by tightening all wings and totally flattening the body position and maintain control.
5. At 5000ft the student initiates break off.
6. At 4500ft the student starts wave-off.
7. At 4000ft the student starts deployment.

3. Debrief

1. Student's version of the flight.

2. Coach's version of the flight.
3. Then look at the video.

4. **Corrective training**

Give any tips on how to improve body position or flight pattern.

5. **Logbook**

The student should complete their log book, this should include as much info as possible, the coach may then add any further points of relevance that will aid the student's progression. The coach must recommend either progress further or repeat that jump. Sign and print name with coach number.

WING SUIT 1 & 2 JUMP SEQUENCES

WS2

Level 3

1. **Objectives**

1. Dive and approach a target.
2. Control of horizontal movement, forwards backwards (slowing down relative to others) and sideways movement.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Deploy the main in a safe wingsuit manner.
6. Demonstrate the correct post opening procedures on all qualifying descents.
7. Land within 25m of the target.

2. **Jump sequence**

1. Coach exits 1st with the student waiting at least 2-3 seconds in the door.
2. Student exits and swoops to the coach assessing the closing speed along the way.
3. Student settles on level before moving in close.
4. The coach can then move off to the side about 6-10ft, then the student closes the distance by side sliding.
5. The coach can now move 6-10ft to the other side of the student. The student closes the distance by side sliding.
6. At 5000ft the student initiates break off.
7. At 4500ft the student starts wave-off.
8. At 4000ft the student starts deployment.

3. **Debrief**

1. Student's version of the flight.
2. Coach's version of the flight.
3. Then look at the video.

4. Corrective training

Give any tips on how to improve body position or flight pattern.

5. Logbook

The student should complete their log book, this should include as much info as possible, the coach may then add any further points of relevance that will aid the student's progression. The coach must recommend either progress further or repeat that jump. Sign and print name with coach number.

WING SUIT 1 & 2 JUMP SEQUENCES

WS2

Level 4

If, and only if the coach and student are in agreement and happy, The deployment altitude can now be brought down to 3500ft.

No more work/ break off should be at least 1000ft above deployment altitude.

It's a good idea for the coach to watch the deployment if possible but always staying clear and not behind the student.

1.Objectives

1. Unstable exit and recovery continuing the flight back on the correct flight path.
2. Control of horizontal movement, forwards backwards (slowing down relative to others) and sideways movement.
3. Fly a pre determined pattern.
4. Altitude awareness.
5. Deploy the main in a safe wingsuit manner.
6. Demonstrate the correct post opening procedures on all qualifying descents.
7. Land within 25m of the target.

2.Jump sequence

1. Student does an unstable exit for a few seconds and then recovers, locates themselves and then starts flying on the correct flight path. The coach follows.
2. Once together the coach moves forwards of the student by 6-10ft, Then the student closes the distance.
3. Then the coach slows down relative to the student by 6-10ft, The student then slows to match the coach.
4. This can then be repeated or side sliding can be added.

5. At 4500ft the student initiates break off.
6. At 4000ft the student starts wave-off.
7. At 3500ft the student starts deployment.

3. **Debrief**

1. Student's version of the flight.
2. Coach's version of the flight.
3. Then look at the video.

4. **Corrective training**

Give any tips on how to improve body position or flight pattern.

5. **Logbook**

The student should complete their log book, this should include as much info as possible, the coach may then add any further points of relevance that will aid the student's progression. The coach must recommend either progress further or repeat that jump. Sign and print name with coach number.

Note:

A nice drill dive or good way to test all the horizontal movement skills here is for the coach to fly a solid base speed and the student to fly along side, then on the key the student flies forward, across the front, drops back, across from behind and then back into the original slot. Essentially flying a BOX around the coach.