

Safety Guidelines for Tandem-Pilots Paragliding-hill, Paragliding-tow, Paramotoring and Powered-parachute

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General Introduction

Tandem joyride on a paraglider is a wonderful experience for those who do not wish to go through the process of learning to fly solo. A prospective student may also wish to go for a tandem-flight, before signing-up for the course. An experienced pilot may also wish to take his family members for a tandem-ride. Taking up passenger in a tandem glider is a rewarding experience for the pilot and at tourist destinations one can get to enjoy the wonderful view of the surrounding areas from high above.

Qualifications & Skill Level of Pilot

The Paragliding Association of India has a rating system wherein tandem-pilot are evaluated for their skill-level and certified for their experience and capability of conducting tandem-flights. Please get yourself evaluated and certified to Level 5 (P6) Sports Tandem for Paragliding and PPG3 for powered flying.

Limitations

Precautions should be taken by the tandem-operators to ensure that they do not risk their own or the passengers' life, while indulging in this sport. The three main limitations the pilot should evaluate before the flight are wind, weather and site limitations, equipment limitations and limitations of skill and experience of the pilot. Passengers generally assume that their pilots are professionals in the field. At tourist destinations, the pilots should put-up a notice-board on which the risks associated with the sport are clearly mentioned. An undertaking cum indemnity bond should also be taken from the passengers, as a proof that they have given their legal consent, and have knowingly and willingly accepted the inherent risks associated with the activity.

Pilot fatigue – In a span of one hour, a pilot should limit the maximum number of flights to 4 after which he should take a break before resuming further flying.

Section 1 - Considerations for the pilot-in-charge

1. TAKING RESPONSIBILITY

Are you qualified and certified to take a tandem? Are you familiar with all the equipment that you will be using? Have you flown at that particular site before? As with all aspects of flying, it's best to change only one variable at a time. You are responsible for the passenger and it is up to you to decide whether they are suitable to fly. Avoid getting into the situation where you feel pressured into flying because you're worried that you may disappoint someone. On the practical side of things, you must know their weights and establish whether your combined all-up weight is below the maximum permitted payload for the type of glider that you intend to fly.

Assess the fitness of your passengers. Ask them if they have any medical condition or disability. Do they suffer from fits, dizziness or a heart condition? If so, are they taking any medication? Explain to the passenger the sensations of flight and the effects of turbulence. You must stress that this is an 'adventure' sport and there are inherent risks. Make sure that he has signed the indemnity-bond. Have you informed him that insurance is available?

Make sure that your passengers wear suitable clothing and footwear, and have removed any sharp objects from their pockets. Even if your passengers are experienced pilots, in this instance, you are the pilot in command and their safety is your responsibility. Don't assume that an experienced pilot won't do something stupid: You are taking other pilots out of their familiar flying environment and are increasing the likelihood that they will overlook even the most basic things. CHECK EVERYTHING YOURSELF!!

2. EQUIPMENT REQUIREMENTS

Do your preflight checks meticulously. Make sure that your passenger's harness and helmet fit and are secured correctly. No matter how eager you both are to get airborne, you must spend time on the ground sorting out the relative flying positions that you'll adopt, once in the air.

Harness - The pilot should have a harness with a wide seat that allows him/her to easily spread his/her legs on either side of the passenger. The pilot's harness should also have a good back-protection to act as a cushion, in case the pilot falls backwards. If the passenger's harness has an emergency parachute in the back, it must be removed, as there is a risk that it could accidentally deploy when the two harnesses move apart in flight. Check that the passenger's leg-loops are not too tight and that they can get into a sitting position. If the passenger can't get into a sitting position, the leg-loops may dig in and restrict his blood circulation, causing him to lose consciousness.

Helmets - The pilot should wear a full-faced helmet, as the back of the passenger's helmet will be directly in front of the pilot's face and there is a very real danger of the pilot receiving mouth / chin injuries in otherwise very minor mishaps. The pilot must ensure that the passenger's helmet is of a suitable size and that the chin-strap is fastened before clipping-in.

Canopy - Only certified tandem-gliders may be used, with due regard to the correct weight-range and the manufacturer's recommendations. You must ensure that the carabiners used are adequately rated for dual loads. Most tandem-paragliders come with spreader-bars, as standard. Spreader-bars cause a cantilever between the pilot and the passenger. If they are used with a passenger who is much heavier than the pilot, the pilot will be positioned higher. If the passenger is lighter than the pilot, then the pilot's position will be lowered. Do a hang-check, if in doubt.

Emergency Reserve Parachutes – Tandem emergency-parachutes are much bulkier than solo ones and may not fit in the parachute container of some harnesses without modification. The container is of an awkward size to mount on the side of your harness or in front on your passenger's chest-strap. Consider the parachute-bridle for harnessing the attachment-point. If the emergency parachute is steerable, will you be able to reach the steering-toggles? How far below you, will the passenger hang, after deployment? If you attach the parachute to your harness, is the harness to spreader bar-attachment strong enough to hold the passenger during the opening shock? Be very careful if using harnesses containing solo emergency-parachutes. Any deployment (accidental or deliberate) of these will almost certainly lead to enough drag to stop the glider flying, but will then produce a descent rate that is not survivable.

3. THE SITE / AND WEATHER CONDITIONS

Most tandem-paragliders are noticeably less maneuverable than solo. Consequently, you use up much more sky. For this reason, you need a big open site. Takeoff and landing will both be more involved and, therefore, you don't want any additional complications. Pick a site with large, rotor-free takeoff and landing zones. In case of aborting a flight after startup run, you may end up landing on a slope. So, check that the area around is safe for this situation. Is there enough room to make a sensible approach? Check the forecast to ensure that there won't be an increase in wind strength. It is far more difficult to land a tandem in breezy conditions than for the solo. It is worth taking a test-flight on a solo-glider to get a feel for the conditions, and ascertain whether they are suitable for a tandem-flight.

Section 2 - Common Practice to be followed by the pilot

BRIEFING

A tandem-flight for a passenger with no experience of the aircraft is a fairly major event and is likely to create a good deal of excitement and anxiety. In this heightened state, the passenger is less likely to take-in a lot of new information. Therefore, for a briefing to be effective, you must Keep It Simple - KIS!

Your briefing should result in everyone understanding what their role is, what to expect and, how to respond, if things don't go as planned. Make sure that the information has 'sunk in' by using the instructor 'Question and Answer' technique. There is an awful lot of information that you could include in your briefing but it would probably get forgotten or confused, so it's essential that you focus on the key points necessary for a safe take-off, flight and landing. Much of the information on things such as the way a wing produces lift could be explained casually as you rig or do your preflight checks. The procedure for take-off must be clearly explained to the passenger, including what they can and can't hold on to, what to expect from the glider and how you want them to respond. Explain to the passenger that you will be able to talk to each other throughout the flight and you will remind them of what to do at each stage of the flight. 'Anchor-men' and 'Wing-tippers' must all be thoroughly briefed as to their duties; otherwise you could find them being more of a hindrance than help. Just prior to the takeoff, reiterate the main points of the take-off procedure again, so that they remain fresh in the passenger's mind.

IN FLIGHT

After the take-off, be very gentle while taking your first turn, as you have to get used to the glider. During the flight, explain to your passenger what maneuvers you are about to do and why, and then execute them gently. What may seem like a gentle turn to you could be very disconcerting to a first-time passenger, and could possibly cause him to feel airsick. If the passenger does complain of airsickness, try to get him to concentrate on something else. If it still persists, then land as soon as possible. You will be flying with restricted visibility, altered control and possible loss of concentration due to chatting. In addition, your glider will be covering a large distance, quickly. It is vital that you remain alert and compensate for these

limitations by executing all maneuvers cautiously. Obviously, you must only allow the passenger / student to handle the controls if you have plenty of height and are well clear of other pilots.

APPROACH AND LANDING

Brief the passenger for landing well in advance and get him into the position for landing, early. Do a fairly high circuit with a long straight final-glide into wind; putting in last minute turns at low level is asking for trouble. Make a good hard-flare for a one step landing. A fast-running landing, with two pairs of legs is likely to result in a fall. Once you have landed, unclip the passenger from the glider, first. Never leave the passenger clipped into the glider alone.

Section 3 - Techniques to be followed for different type of flying

PARAGLIDING - HILL

Get into your harness and attach the spreader-bars and canopy to yourself, first. Build a wall, check the canopy out and get ready to take-off. Lastly, attach the passenger. In general, use forward (alpine) take-offs for light-winds and reverse techniques for moderate-winds. For stronger winds, with the help of an anchorman, it may be easier to revert to a forward take-off technique, as you will be lifted-off the ground immediately, in a flying position.

Spend time selecting your launch-area. The most suitable area to launch from will consist of a gentle slope with a gradual increase in gradient. If you try taking off over a sharp edge, the passenger's weight comes off the ground first, pulling you and the wing forwards. This is extremely dangerous if the wing is not already flying properly.

On a steep slope, you may have to stand side-by-side along the slope, to take-off. If your passenger stands in front of you down the slope, you may not be able to stand up straight.

With all reverse take-offs, a good 'crossed-brake' technique is preferable, in order to keep the canopy under control at all times. Due to the position of the passenger, one riser is much further away from you than the other. You must compensate for this as you pull up.

Take-off has to be more precise because if the canopy does not come up straight, you cannot easily side-step to make a correction. Anticipate being pulled back a fair way before getting the canopy flying and make sure you have obstacle-free area all around the takeoff zone.

A heavier or taller passenger will still be running long after you are airborne. Take-off techniques can be divided into the following categories. They are all made easier by having well briefed helpers of sufficient skill available.

Be aware that, because the canopy attachment points are in front of the pilot when flying tandem, in the correct flying position the leading edge of the canopy will seem to be a lot further forwards than when flying solo. A common mistake on take-off is to let go of the risers too soon on the pull up.

Reverse take-off: The pilot faces the canopy, while the passenger faces downhill. This is probably the easiest reverse technique. The pilot does a reverse take-off procedure and, as the canopy comes up, turns to face forwards.

Advantages - the passenger is facing the direction of travel and just has to stay standing and run forwards. Also, the passenger can help brace against drag-loads, as the canopy is pulled up.

Disadvantages - The passenger has to be able to stay standing, whilst possibly being pulled backwards. The risers are not of equal length, making pulling canopy up difficult.

Forward take-off: *Advantages* - No complications of having to turn around.

Disadvantages - Good forward take-off technique needed. Some canopies are difficult to forward-launch without using correct trim-settings. The canopy will only be flying properly, when the canopy appears (relative to solo canopy) to be a long way in front of you.

Run side-by-side to reduce the risk of tripping each other up and kicking each other in the shins.

Landing

Brief your passenger for landing, well in advance. Ensure that your passenger gets out of the sitting position early and into a PLF position.

Remember that, due to stepped hang-points on the spreader-bars, the passenger's feet can be up to two feet closer to the ground than yours. You may find that the brake pressure on some tandems makes flaring very hard work. Sometimes, taking wraps can help. Know your canopy peculiarities before taking off. You must try to land into the wind. It is difficult to run out a down-wind landing with two pairs of legs!

For bottom or top landings, the circuit needs to be well planned, as there is little margin for error. It needs to be larger than for a solo canopy due to the lack of maneuverability. Normal field selection procedures are appropriate but take a longer landing run into account. Last minute changes must be avoided, as any late turns can result in a very fast and heavy landing.

The best method is to land side-by-side. If you normally collapse your canopy to the right, sweep your passenger over to the right with your right leg. Brief your passenger to turn around to his right to face the canopy immediately on landing

(tap him on the shoulder just to confirm direction). On landing, first turn to face the canopy yourself and then bring it down whilst running side-by-side, after it.

On landing, after getting the canopy safely collapsed, unclip your passenger. Never leave a passenger clipped to the glider on his own.

i) In light wind landings, your passenger must be ready to run. Sweep him to one side so that you land side-by-side or get him to run to one side, on landing. If you are going to land side-by-side, sweep your passenger over early, as it will cause you to swing about (not sensible when close to the ground, on finals).

ii) In mild winds without helpers, you must be able to turn around and collapse the canopy efficiently. It is difficult to stop a tandem-canopy dragging you if you get it wrong. Never try to bring the canopy down until both of you have turned around.

iii) In strong winds, making a controlled landing is almost impossible. You should never get into a situation where this becomes necessary. Remember your paramount legal duty to take care of your passenger!

PARAGLIDING – TOW (modern high performance canopy)

Tandem tow-launching should not be attempted if the wind is too strong to forward-launch, and certainly in no more than a 25 kmph wind. As for hill-launch, the passenger should be clipped-in only when the pilot has clipped-in.

The tow-line should be connected either:

1. to the canopy-risers just above the carabiners.
2. to the passenger's harness, at a point just below the harness carabiners.

Whichever release system is used, you must ensure that there is no chance of it becoming tangled or disappearing from view, during the tow. The passenger should be briefed on the operation of the release mechanism in the event that the pilot is unable to release. A second cord is threaded from the release, over the passenger's shoulder, allowing the pilot to operate the release.

During the passenger's briefing, the pilot should stress the need for him to keep running throughout the launch. The passenger should be made aware that you may shout directions to him during the launch, i.e. 'run right' or 'run left', so the pair of you remains beneath the canopy during the launch. The pilot will leave the ground first and should not be tempted to pull the passenger off the ground by pulling on the controls. The canopy must be 'flown' off the ground. The passenger must therefore continue to run, although this will probably become more like 'moonwalking strides'. During the first 60 ft. of the flight, it is important that the winch-operator does not apply too much power and should be thoroughly briefed on this. Following the release, the procedure for the flight and landing are the same as for hill-flying.

It is advisable to use an airbag-harness for the passenger, with an internal back-protector. The passenger should be briefed thoroughly on low-level line-break procedure (not enough height to pendulum through). **Handling emergencies** - Brief the passenger to put his legs forward on the 'legs forward' command, and then land them on the airbag. (This is only in case of emergency, normal landing is on legs.)

TANDEM-PARAMOTORING and POWERED-PARACHUTE – TRIKE

Tandem PPG or PPC should not be attempted, if the wind is too strong to launch and, certainly, in no more than 18 kmph wind (for PPC, it can be a bit higher). It is advisable to have experienced assistants to help in the operations. Just like in the hill-launch, the passenger should be clipped-in only when the pilot has clipped-in. Fuel level, leakages, propeller damage should be checked before every takeoff.

In order to provide appropriate protection to the passenger/ paying student, all tandem-flights must adhere to the following operational rules:

1. Prior to all tandem-flights, the passenger or student must be informed that such flights do have the element of risk. Indemnity-bond has to be obtained from the passenger. He should be made aware that insurance is available, if he wishes to cover the risk.
2. When present at a flying site, any tandem-pilot should personally ensure that all tandem-flying requirements and the site requirements are strictly followed. Flying with safe landing zone within gliding-distance, in the event of engine failure, should always be on your mind.
3. All tandem accidents/incidents/malfunctions must be documented by the tandem-pilot involved. Other tandem-pilots who witness an accident/incident/malfunction are encouraged to report their version.
4. Takeoff: There should be enough runway clearance for taxiing, before takeoff, as well as clear open space after lift-off, to gain height and turn back in case of emergency. There has to be a wind-sock on the field clearly visible to pilot, during the takeoff as well as the landing.
5. Inflight: After gaining sufficient altitude, the pilot should make sure that the passenger is sitting comfortably and relaxed. No aerobatic maneuvers to be executed. Make sure that you are flying with landing zone in your glide-ratio, which you can reach in the event of an engine failure.
6. Landing: Make sure that you can see the wind-sock and check the wind direction at landing zone. Make a long final-leg for landing and adjust the throttle to keep some speed at touch-down. If necessary, use little breaks to keep the nose up, till the rear wheels touch the ground. On touch-down, kill the engine and maintain the wing overhead, till the trike stops moving forward.

TANDEM-PARAMOTORING FOOTLAUNCH

Tandem PPG should not be attempted if the wind is too strong to forward-launch and, certainly, in no more than an 18 kmph wind. It is advisable to have experienced assistants to help in the operations. Just like in the hill-launch, the passenger should be clipped-in only when the pilot has clipped-in. Fuel level, leakages, propeller damage should be checked before every takeoff.

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3. All tandem accidents/incidents/malfunctions must be documented by the tandem-pilot involved. Other tandem-pilots who witness an accident/incident/malfunction are encouraged to report their version.
4. Takeoff: There should be enough clear space in front, in case some running is needed before liftoff, as well as clear open space after lift-off, to gain height and turn back in case of emergency. There has to be a wind-sock on the field clearly visible to the pilot during the takeoff.
7. Inflight: After gaining sufficient altitude, the pilot should make sure that the passenger is sitting comfortably and relaxed. No aerobatic maneuver to be executed. Even sharp turns can make passengers sick. Make sure that you are flying with landing zone in your glide-ratio, which you can reach in the event of an engine failure.
8. Landing: Make sure that you can see the wind-sock and check the wind direction at landing zone. A long final-leg gives more time to plan your landing. Adjust the throttle to retain some forward speed at touch-down. Remind the passenger that he has to run forward. If necessary, use little breaks to flatten the touchdown. On touch-down, kill the engine and maintain the wing overhead, don't allow it to fall behind. Turning around for collapsing the wing is always safer. Inform the passenger to brace himself, while the wing is being collapsed.

Note:

Refer to PAI Technical Manual for more detailed information about skill levels, safety, rules and regulations, guidelines for flying sites etc.