

Paragliders Association Singapore

Ground Handling (v1.4)

1. Disclaimer

This advisory note is issued by Paragliders Association Singapore (PGSG). Note that PGSG is not responsible for any injuries/damages arising from reference to this note, neither the use of any sites within or outside Singapore. This advisory is not instruction manual or substitution for paragliding training.

2. Safety Aspects

Training in Singapore

There are currently no licensed Paragliding instructors in Singapore, and the association therefore recommends that full paragliding training course is undertaken by those who wish to take up the sport with one of our recommended instructors in Asia, and Australia.

Some of our members have graciously volunteered to help teach ground handling aspect of paragliding to students in, in order to help these would be pilots to become familiar with the sport. This note outlines the recommended procedures and safety guidelines for such teaching.

It must be stressed however, that such teaching by members is not professional training. The trainee must therefore:

- Be notified that they are not undergoing professional licensed training,
- Must sign a waiver that releases the Paragliders Association of Singapore and it's members, of any responsibility during the course of such training.
- Be notified that several people have been injured ground handling in Singapore, particularly at the Drive 17 site.
- Be notified of the risks associated with ground handling.

It must also be stressed that ground handling is only one aspect of the sport, and before a pilot takes to the skies, it is strongly recommended that a full training course should be undertaken by a licensed instructor.

Before Ground handling

It is recommended that the trainee pilot read the book "The art of paragliding" by Denis Pagen, (or similar) before starting ground handling training to familiarise themselves with all aspects of ground handling, and the risers and wing configuration.

Ground Handling Site Selection

A ground handling site should have the following features for a beginner:

- Be flat or gently sloping facing the prevailing wind direction
- Have no obstructions upwind or downwind (motorways, buildings, large trees etc)
- Have relatively laminar wind flow (no rotor of buildings/obstacles upwind).
- Ideally have wind from the sea or a flat plain

3. Ground handling Sites

There are two general sites used for ground handling in Singapore, East Coast Park, and Tanjong Rhu. Both of these sites are used when the wind is from south, or south East.

All ground handling facilities are public spaces in Singapore that are a center of many recreational and family activities. We must be considerate, protect the environment not endanger ourselves or the public. Make sure you:

- Keep the site clean
- Be a responsible park user. Bring along a plastic bag to clear our own garbage (and others we see along the way)
- Please be kind and remove trash left by others
- No smoking near to, or upwind of paraglider equipment. Do not litter the grounds with cigarette buds and dispose them properly in the trash cans available in the park
- Mimosa Pudica (含羞草) have hooks that could damage our gliders. Weed them out while para-waiting. This plant has damaged gliders before at some ground handling sites.

Public and personal safety comes first. Any accident with a member of the public – especially small children and elderly will bring negative image to the sport and might lead to the closing of the site for any paragliding activities. In addition to that, the site tends to get crowded on weekends with pilots taking off from various points of the hill.

Please note that the public does not differentiate between members and non-members of Paragliding Association of Singapore therefore everyone that is attempting paragliding Activities at any sites should follow the guidelines outlined in this document.

Drive 17

Drive 17 is not recommended for ground handling due to:

- It's proximity to the Sembawang Military Airbase. CAAS have NOT given permission for us to use this site.
- Proximity to the SLE highway
- Wind gusts due to upwind obstructions
- The number of injuries sustained at this site
- Flying is discouraged at this site

Tanjong Rhu

This site is located between the water's edge and Marina Bay Golf course, to the east of Marina Barrage.

Suitable for winds from the south to south east. To ensure the safety of the public and of the pilots, the following rules are to be observed on the Woodlands Drive 17th launch site:

- Be wary of rocks, tree trunks, drains, bollards and lamp posts.
- Wear boots or footwear that support ankles as the ground is uneven in some places.
- If the wind is tending towards the north east, only ground handle to the east part of the site, to ensure you do not end up in the sea should a gust come through.

East Coast Park - Sunset Cafe

East coast park ground handling area is next to carpark designator F2. It is a small area that often has high volumes of foot and cycle traffic. In addition, there is the Sunset café downwind and the area is also within the Changi airport control zone. This site has numerous obstructions, such as trees & street lights.

Extensive communication & negotiation with CAAS and the National Parks Board has been required to allow this area to be used for ground handling of Paragliders. The area has the following conditions of use:

- Only Paraglider Association of Singapore Members can ground handle in this location.

- A waiver must be signed by PAS members to confirm that any damages that may arise as a result of ground handling in this (or any other) location will be transferred from our PAS club to the member(s) who cause any such damages or costs.
- All activities must take place at a height of less than 18m from the ground.
- A designated on-site safety officer must be present at all times. This safety officer can be any club member, but must:
 - o Have a Paraglider license level equivalent to ParaPro 3 or greater.
 - o Not be ground handling themselves.
 - o Place themselves in such a position as to be able to help anyone who is struggling to kill a wing.
 - o Make sure that no members get within 15m of the café or pedestrian/bike path.
 - o Be vigilant; watch the water for wind gusts before they hit land.
 - o Not use phones or tablets when ground handling activities are taking place.
 - o Monitor conditions and stop ground handling activities should the wind or gust strength increase beyond appropriate levels for the Pilot and the site.
 - o Cease activities if thunderstorms are building, or are already active (these can cause unexpected wind gusts).
 - o Ask any member to stop kiting should they be endangering themselves or others.
 - o Fine any pilot (\$20) who does not obey the rules (proceeds to go to PAS).
 - o Register themselves as the safety officer by placing a note in the club whatsapp group.
 - o Display a prominent PAS tag in their harness containing ID photo, Serial number and ParaPro level.
 - o Have read and understood this document fully.

Note that the responsibility of the safety officer can be transferred between ground handling pilots (so that everyone gets a turn) during a single ground handling session as long as the above rules are followed.

Training or coaching of pilots / students who have not achieved ParaPro3 is prohibited at this site. Non members / guests from other countries are also prohibited.

4. Weather Factors

The weather forecast should be checked from a number of sources to make sure that strong winds or gusts are not predicted.

Wind gusts are a problem in Singapore, more so than other places. Singapore is a dense metropolitan area which can give rise to thunderstorms, or towering cumulus cloud formations. In addition, the high humidity in the air promotes instability.

Unless the day is perfectly stable, gusts from thermals will be present. In order to avoid the worst of the gusts from thermal activity, choose times when thermals are not usually present – i.e. early morning or early evening/late afternoon. Ground handling between 11am to 4pm should be avoided.

Special care should also be taken during seasons of high wind in Singapore – usually January and February.

Wind speed

It is recommended that ground handling for beginners should not be performed when the average wind speed is above 20Km/h on a normal sized wing, with absolute maximum wind gusts not exceeding 25 Km/h.

Higher speeds can be tolerated with mini wings, but ground handling with average wind speeds over 30km/h should not be undertaken **under any circumstances** with beginners.

This is due to the force on the wing being proportional to the wind speed squared, and the fact that the wind gusts increase dramatically with the average wind strength, especially downwind of obstacles due to rotor effects.

5. Protective Gear

The following protective equipment is recommended when ground handling:

- Helmet with hard outer shell
- Boots with a high top for ankle protection
- Long sleeve pants, e.g. thick denim for protection against abrasion
- Harness with continuous impact protection (i.e. foam type)
- Knee and elbow guards (optional)
- Light gloves if windy

6. General Safety Notes

- Quit ground handling if you feel that the conditions exceed your experience and you cannot control your Paraglider.
 - Don't launch or inflate the glider if there is turbulence and wind conditions that you are not prepared to deal with.
 - Do not ask for assistance from people that do not know how to help you.
 - In strong wind, it is better to let someone grab your leading edge from the center.
 - Hold the back risers while you wait to launch in unstable conditions.
 - When ground handling in strong wind will tend to push us unknowingly backwards (we'll step forward) and higher into the ridge line. Know that the higher you are, the stronger the wind is.
 - If you pushed up by the wind, always gather your wing and walk down lower rather than try your luck in conditions that are out of your expertise and control.
 - When you are over-powered by glider (in strong condition), walk towards the glider instead of fighting it. Fighting it will create more drag and even lift off.
 - When being lifted from the ground during reverse launch, consider holding on to rear risers (to stabilize and avoid twisting forward) and apply pressure on these risers to land gently. Know that the tension will be strong and unlike brake inputs, one should not pull down too much to avoid causing a stall. (Note: Steering with rear risers require training).
 - Timeliness to apply flare during landing is crucial. (Too late will cause hard-landing and too early will cause stalls). Seek advice or be guided (on clue) if you are not sure.
 - Do not fly-down when wind is gusty (wind speed changes of 10km/h within 10s). Watch for other pilots and do not attempt to launch when everybody else is waiting for gust to subside.
 - When being lifted from the ground during reverse launch, consider holding on to rear risers (to stabilize and avoid twisting forward) and apply pressure on these risers to land gently. Know that the tension will be strong and unlike brake inputs, one should not pull down too much to avoid causing a stall. (Note: Steering with rear risers require training)

7. Providing Ground handling assistance

A person showing others the skills of ground handling should be present at all times when unlicensed member(s) are in control of a Paraglider. This person must:

- Hold a valid paragliding license and have 50+ flying hours, and over 100 launches.

- Know what wind speeds are suitable for ground handling
- How at what point wind gusts are not tolerable for a beginner
- Be able to predict gusts by looking at indicators upwind
- Be able to kill a wing in any situation, including when a person is being dragged, and where to position themselves to achieve this.
- Know the instructions to give the unlicensed member if they are unexpectedly lifted into the air by a gust, in order to keep the paraglider flyable, and land safely.

8. Recommended Ground handling skills for new pilots

The following is guideline only for those who are helping out members of the club who are new to paragliding.

Briefings

Before a teaching session begins it is recommended that a briefing be given to the student on what skills will be learnt during the session.

Clipping in

It is recommended that the trainee be taught how to clip into a harness the same way, so that they do not learn bad habits. The “between the leg” (often marked as red) strap should be done first, followed by the leg, and then waist straps, and finally the chest strap (if present). Each strap buckle should then be tested to make sure it is secured by pulling and “jiggling” (technical term) at the same time.

Clipping the glider onto the harness should be done initially with the pilot facing forward, as this is less likely to cause a riser twist configuration.

Brakes

A student should always be taught to have a hold of the brakes at before they are attached to a harness which is attached to a wing. Should the wing be caught by an unexpected gust, this allows the trainee to at least have some control over the wing.

Wing kill

Before launching practice, a trainee should first be taught how to “kill” or place the paraglider on the ground. This is usually achieved by the following methods:

- Pulling the brakes (and taking wraps on beginner wings)
- Pulling in any line you can get a hold of, until you get a hold of the wing fabric (emergency)

The student should also be taught how not to slam their (or the clubs) gliders into the ground to avoid damage by controlling the drop speed with brakes or body movement towards or away from the wing. Note that to assist a pilot being dragged, it is more efficient to catch/close the inflated canopy rather than pulling the pilot/lines.

Reverse Launch

There are several methods to perform a reverse launch:

- **Straight arm A riser pull (light wind conditions)**
- **A and C riser pull (strong wind conditions)**
- Crossed Arm A riser pull
- Cobra (advanced)
- Others (what Ivan does ;-)

It is recommended that the **straight arm A riser pull** is used in light conditions, and the **A and C riser method** is used in strong wind conditions.

The brakes should be taken before initiating a launch in such a way that the trainee does not have to let go of the brakes when he or she turns around to face forward. The recommended

procedure for grabbing the brakes without brake line twists is the “follow the D riser” technique.

The student should be taught to turn in one direction only (for consistency), but either direction can be used.

Centering

Centering under the wing is the quickest way to get the glider over your head, and may be taught before using the brakes/C's to move the glider overhead.

The A and C Reverse Launch

The technique for the A and C riser Launch is explained below for those not familiar with it:

- Build a good wall first by pulling on the A risers and the C risers alternately.
- Lean back on the risers so that they are all tight, then pull gently on the A risers to guide the glider up into the air.
- As the glider comes up you should walk sideways towards the centre of the glider if it does not come up exactly straight (centering).
- Also use the A and C risers to correct the glider if it starts to come up unevenly. To do this, move the A and C risers left and right to control the direction of the glider. For example, if the wing is coming up with the right side higher than the left, move the A risers right, and the C risers left. Vice versa if the wing is coming up with the left side higher.
- If it is windy the glider may want to shoot up violently. The lift generated by the wing coming up quickly followed by the use of brakes to stop it, can lift a pilot into the air unexpectedly. To avoid this, pull (towards you) on the C risers to control the speed that the glider comes up.
- Now the glider is up, it can be controlled overhead using the C risers or brakes. Alternatively you can turn and launch. As you turn make sure that in lighter winds you turn and step forward at the same time otherwise the glider may tend to overtake you.
- Note that the brakes should always be in the hand or be around the wrist.

Forward launch

A forward launch often carries more risk than a reverse, as the pilot has less chance to see the wing and lines, before he/she is flying underneath it.

Here, launch preparations are **critical**. The wing must be laid out carefully, with the centre of the wing further away from the harness in a slight 'V' shape.

Each line must be checked to make sure it is not tangled with another, or something on the ground, that the risers are not twisted, there are no foreign objects present.

The wing must also be checked to see that there are no “lines over” the leading edge of the wing. **This is absolutely critical**. This should be achieved by manually checking the entire leading edge of the paraglider with ones hand. A line over is not able to be fixed when in flight, and usually causes an unrecoverable spiral shortly after takeoff.

Once a pilot is 100% sure that the lines and the wing are perfectly laid out, only then should they clip into the harness, ready for launch practice.

The recommended method for forward launches is to have the A risers in the hands, with the other risers lying over the forearm, brakes in hand.

The run should be progressive, not overly aggressive. The student should be taught to look at the wing as it comes overhead to make sure all is well **before** committing to a potential launch.

The student should also practice the forward launch technique lots of times until they can determine by the feel on the harness straps whether the wing is coming up straight or not. This takes hours of practice.