

APPI PPG

LECTURE 9:

GENERAL

PARAMOTORING

INFORMATION (UK)



Introduction:

The following information sums up what you have been through during the course however there is also new information about certain other aspects of the sport which have not yet been covered:

Wing Information:

- Those new to Paramotoring should only choose beginner wings which have been tested by one of the main Paraglider Testing organisations.
- There are a variety of different testing organisations, some of which no longer exist, including DHV and DULV, and others which still do, including LTF, DMSV, CEN and AFNOR.
- These rating systems define three or four levels of acceptable handling characteristics which can broadly be described as Beginner, Intermediate, Experienced and Competition.
- A test pilot will perform a series of manoeuvres on the wing to see how it responds. For example, the pilot will simulate an asymmetric deflation to see how long it takes to recover, how much it turns during the recovery process and whether it requires any pilot input.
- A beginner wing will recover quickly, with a minimal loss of height, very little turn and require no pilot input. Whereas an advanced wing will turn violently and take a lot longer to recover with more turn and height loss, while requiring pilot input.
- Similar flight tests are performed exclusively using a Paramotor, with and without thrust, and with trimmers opened and closed.
- Each testing organisation requires the canopy to be subjected to load and flight tests which simulate possible loads on the canopy in a deflation/re-inflation situation and explore the effects of high G-Loading on the wing.
- There are also certain line, cloth and stitching specifications which are designed to last for a certain period of time and use. The older a wing the more dangerous it will be to fly as they suffer from porosity, line shrinkage, UV degradation etc. These issues can increase the wing's recovery time in the event of a deflation. Most manufacturers therefore recommend line changes and a full wing service every 75-100 hours of airtime with a service centre such as The Loft or Aerofix in the UK.

Weight Ranges:

- It is very important you chose a glider that is correctly suited to your all up flying weight. If the glider is too large then you will not have sufficient weight to fully pressurize the wing. This causes the wing to fly a lot slower making it more susceptible to turbulence, potentially resulting in deflations. However, in light winds the wing will be easier to land and launch due to the slower speed and increased surface area.
- If the glider is too small then you will fly a lot faster and struggle to take off in light winds as well as burn more fuel in flight. The landings will also be a lot faster in light winds. However, due to the extra speed, the wing will cut through turbulence more effectively and be more resistant to deflations.
- It is therefore better to be in the middle of the weight range. Most Paramotoring wings show an all up weight range for free flight and powered flight. Paragliding wings on the other hand tend to only show free flying weight ranges and do not include the motor.
- It is still possible to Paramotor with the same wing one uses to Paraglide. This is due to the fundamental change in the wing's flight characteristics when under power, namely the fact that the pilot is being pushed ahead of the wing by the motor as opposed to hanging directly underneath it. Remember, when you kill the engine you add a further 30kgs of wing loading which will make the wing more responsive in flight and have a faster landing.
- Some Paragliding wings can be fitted with trimmers which are used instead of the speed bar to give the wing some extra speed. They can also be used to counteract the torque effect by making one side fly faster than the other. Remember to land and take off with the trimmers at neutral, otherwise you will have a fast take off and landing.

Wing Repair:

- Most gliders are made out of Rip Stop Nylon or in some cases, such as all of Apco's wings, Galvanor.
- You can repair minor rips, tears and holes yourself by using Rip Stop repair fabric. This is exactly the same kind of fabric used in the construction of the wing; however the difference is it has a sticky side which can be attached to the wing. If the area of repair is less than 6 inches big then you can repair it yourself.
- Simply cut 2 patches larger than the size of the area of damage and then round off the edges so they cannot lift. Using a solid object straighten out the wing, then carefully place the repair tape over the area, making sure that all edges are evenly pressed down. Do exactly the same on the inside of the wing.
- The repaired area of the wing will now be as strong, if not stronger, than the rest of it. However, make sure you continue to check any repairs you make yourself.
- In the event of a larger area of damage or line damage seek professional help from The Loft or Aerofix in the UK. Lines cannot be repaired and should be replaced as all lines have different lengths and strengths.
- It is recommended that you have your wing serviced regularly to check its porosity, line lengths and strengths. However to check the porosity yourself

simply hold the wing hold tight and attempt to suck air through it. If it is easy to suck air through the wing send it off for a full check as it may be nearing the end of its flying life.

- To check the fabric strength you can roll the fabric between your thumbs. If it tears easily then send it off for a full check. The lines can be checked by applying pressure to them; if they snap send the wing off for a check. If either of these situations occur there is a strong possibility your wing has come to the end of its flying life.
- One sign of an old wing is a white scale build up on the inside of the wing, normally on the top surface. This is a sign of excessive UV exposure and yet again shows signs that the wing is nearing the end of its flying life. To avoid UV exposure keep the wing out of the sun when not flying.
- If the wing gets dirty then you should clean it however only do so with water and a soft sponge.
- Finally, always check that the toggles are in the correct position according to the type of Paramotor you fly and securely fastened. For high hang point machines the brake lines need to be longer than those with low hang points. Always check that the toggles are fastened securely to the brake lines!

Paramotors

- Paramotors have already been covered in a lot of detail throughout the course however the following information may be of interest.
- High hang point Paramotors are inherently more dangerous than Low Hang Point Paramotors due to the fact that the pilot is further away from the wing. This means that the pilot is more susceptible to oscillating, rolling and twisting under the wing.
- High hang points do not allow the Pilot to weight shift under the wing. This means the pilot does not have any lateral stability which can be used to steer the wing by loading up a particular side of the wing. By loading up one side of the wing it is then very difficult to cause it to go into a flat spin by over braking.
- Low hang point Paramotors are derived from Paragliding harnesses and have proven to be a safer option due to the lateral stability they offer the pilot. The pilot is closer to the wing and the risers are fixed at a set distance apart; this means there is less chance of the risers twisting due to torque or gyroscopic progression.
- Low hang points also mean it is harder to become locked into a spiral dive because the pilot is closer to the wing and the risers further apart.
- Finally, always check that the toggles are in the correct position according to the type of Paramotor you fly. For high hang point machines the brake lines need to be longer than those with low hang points.

Reflex Wings

- Reflex technology was the brainchild of wing designer Mike Campbell-Jones who designed the Paramania range of Powergliders. Reflex wings open up the flying window due to their increased speed and resistance to collapses.
- Easing out the trimmers so they are fully off induces the reflex system. This kicks up the trailing edge thus creating an elevator. This elevator changes the airflow over the wing and causes the high pressure under the wing to attempt to flow into the low pressure above; thus forcing the elevator up and moving the centre of pressure forward to the leading edge.
- By moving the centre of pressure forward all of the pilot's weight is now supported by the A and B lines and there is very little pressure, if any at all, passing through the C and D lines.
- When using the Reflex System you should not use the brakes as it distorts the reflex system. Instead you should steer using weight shift and the B line wing tip steering system. Be aware that these wing tip steering lines can come loose so make sure you secure them correctly.
- The Reflex System makes the wing more stable in flight by moving the centre of pressure forward, making the wing fly faster and reducing its surface area. The speed bar should only be used when the reflex system is induced; which, unlike Paraglider wings, causes the wing to be even more stable in flight. Only experienced pilots who have had proper training should use the Reflex System.
- Some of the latest Reflex Wings designs now make it possible to steer the wing using the brake toggles however these are for experts only!

APPI PPG Safety Advice Document

- **Instructor Note:** Ask the student to get out the **APPI PPG Safety Advice** document and then go through it with them.
- The student must fully understand the Safety Concerns and Limitations as explained in the document as well as everything that has been explained to them in this lecture.

ANY QUESTIONS?

END OF LECTURE 9

END OF APPI PPG PILOT LEVEL LECTURES