

# Harness set-up and glider control

Dennis Trott stresses the importance of riser distance setting

Despite all my years of flying and teaching I am still amazed at

the lack of serious information the new - or even experienced - pilot has regarding personal safety. One of the most important issues is glider control associated with harness set-up.

An ill-fitting harness does little to enhance the way the glider responds and feels in flight. And a high proportion of pilots still seem to think that an open (and thus unstable) harness that allows excessive amounts of weight-shift steering is the way they should be flying. An open harness does permit the pilot a greater degree of weight shift control and this sometimes allows more efficient turns, but often to the detriment of safety.

Many new pilots visit our centre each year. Surprisingly, only a small proportion arrive with a correctly-fitting harness that's suitable for the glider they are flying.

When we were just starting out I'm sure many of us were guilty of buying the first harness we saw hanging in the showroom. We try it out in the shop: the colour is right, the price is not too bad and it's about the right size. Great! Sold to the new pilot.

Then, over a period of time, we learn that perhaps it wasn't such a great purchase. The fit is OK but it feels a bit sloppy in the air, and when conditions are rough it feels as if the glider has control of the situation rather than the pilot.

It isn't until we begin to learn more about harness set-up, and the influences the harness has on the way the glider feels, that we start to look around at what's on the market. The following words are not advice about what harness you should purchase, but what you should look for before indulging. Some of it is obvious... or should be!

Firstly we need to look at the harness itself. It needs to be the correct size for the pilot's height and girth. Quite a high percentage of visiting pilots we see have been sold a harness that is just the wrong size for them.

Trying a harness in the showroom is fine, but ideally it should be tried with all your flying gear packed into it. That includes the glider bag or bags, a filled water pack, spare clothing, lunch, wallet and anything else that you might fly with. These items should not be ignored as they can affect the way the harness and pilot are balanced when sitting below the glider. An inconsistently-packed harness can also upset the way everything feels in flight - try and pack the harness the same way each time.

## Personal adjustments

Basic adjustments should be made before clipping to the test rig. Standing upright with all the buckles secured, the shoulder straps should be adjusted so that the harness is comfortably sitting up on the pilot's back with the front edge of the seat base resting gently against the back of the thighs. The harness should be pulling lightly downwards on the shoulders, nothing more.

Once in the rig, adjustment of the lumbar straps will set the vertical back position so the pilot has a comfortable and supported back angle. Basic and intermediate harnesses are not normally very comfortable when set in a supine or laid-back position, and can be very unstable when poorly adjusted outside the parameters they were designed for.



Correct carabiner distance is usually found on the certification label

Most intermediate harnesses are designed to be flown in a fairly upright position, not in a supine racing style with open straps allowing masses of weight-shift steering. If you are wallowing, oscillating, rolling or sliding about in your harness you won't have full control of your glider. If you want to fly supine, wait until you have a harness that is designed to be flown that way (race harnesses are another subject!).

## Setting the distance between the risers

All gliders are designed and certificated with a set distance between the carabiners. Reference to these settings should be found in the glider manual. Details can also be found in the glider's test pages on the LTF or EN certification websites.

Glider need a reference when tested, and this is a fixed distance between the risers. If the glider is flown outside these settings then it will not behave as it did when it was certificated! Glider test reports should detail the make and size of harness used during testing and the distance set between the risers.

### What should this distance be?

Generally small gliders would have a between-riser distance of 38cm. A medium glider would have a riser distance of 42cm and a large glider 46cm. These measurements have a rough allowance of plus or minus a couple of cms, but that's about all. The definitive



This is the measurement you are looking for

answer can be found in the manual, on the certification label or in the online certification data.

These settings are relevant to the harness size. It is assumed that a small glider is flown with a small harness, a medium glider with a medium harness and so on. On nearly all certificated harnesses full closure of the chest strap sets the harness to the required riser distance. Thus a small harness would fully close to 38cm, a medium harness to 42cm and a large harness to 46cm. It's well worth checking these distances on a test rig before flying or purchasing the harness.

## Where to find out more about glider/harness set-up

It's useful to study the certification or test report of the glider before purchase. The results will give a very clear idea of how a glider is expected to handle with a particular harness. Read the manual and the reports, and don't just buy and fly a glider/harness combination on the hearsay of others. Amazingly, many pilots have never seen the test report for the glider they have purchased.

### Too wide is too wide

I am quite surprised to see just how many pilots have their chest straps dangerously wide, and that's just the pilots who visit us. We invariably have to reset their harnesses for their own safety and comfort.

We are constantly surprised at the lack of information new pilots receive during their initial training: notably with reference to these important points of harness settings and the way this can affect the glider's handling and certification. This may not be so important when flying an LTF1 or EN A-certificated training glider, but it does become an issue on higher-rated gliders. Experienced SIV instructor Jocky Sanderson has reported that having the chest strap just 10cm wider than the certified setting usually results in significantly worse recovery behaviour.

### Too wide is too unstable

One visiting pilot had his chest strap set unreasonably wide - and stitched up so he couldn't adjust it. He had been complaining that the glider felt unstable and that he was getting loads of collapses! The worrying thing was that he had been sold the second-hand harness in that condition by a reputable school and was none the wiser. Fortunately we were able to assist him.

Adjusting this pilot's harness made a huge difference to his sense of well-being. His flying and confidence instantly changed. He said he had really been struggling with the glider to the point where he was ready to give up the sport. It really is the responsibility of the vendor to ensure that all equipment is up to scratch.

### Too wide is dangerous - and hard work too

An open harness will produce better weight-shift steering to the detriment of the glider's stability, safety and recovery from closures. Asymmetric closures commonly occur when the pilot loses some control of the glider as it rolls and pitches.

Active flying, which should have been stressed during your training, is all about keeping the glider flying sweetly overhead. An open harness that's unstable often leaves the pilot struggling in rough or windy conditions, just when they require maximum control.

### The ideal setting

The pilot should simply adjust the harness to its best setting for safety and security - the setting the glider was tested at. If a pilot requires lots of weight shift they should choose a harness that allows this within certified measurements. There are harnesses available that have seat height-to-carabiner adjustment that allows an easy weight-shift style, without the need of flying with an open chest strap that may well invalidate the certification!

### My ideal harness

I look for a harness that fits well, has good back protection and good storage. It won't have too many external support straps that contribute to unstable handling. I like to be able to respond to the glider's every request, and I expect it to answer instantly to the smallest of brake inputs.

In lively, thermic conditions a sloppy harness with too many bits and straps will often flex and twist, allowing the glider to go off course before my brake input has control. This makes the flying experience uncomfortable and inefficient. When I weight shift I expect the glider to respond, and this doesn't happen with a sloppy, ill-fitting, badly-adjusted harness. Don't spoil your prized possession and endanger yourself with a rubbish harness set-up.

*Dennis and Gillian Trott run the Alpine Flying Centre, a BHPA school based in France ([www.flyers-lodge.com](http://www.flyers-lodge.com)). The above article can be downloaded as a podcast from <http://alpineflyer.com/airplay-5/>.*