

## *Derek On Instructing – The Landing*

By Derek Piggott  
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A beginner will find the work load very high while trying out the controls and making simple turns and it is important to remember this and, if it is so, not to keep them at it for more than 10-15 minutes before finding descending air and returning for a landing.

On any early flight I usually get the person to make turns down to about 600ft by which time I make sure that I am well out to one side of the landing area so as to be able to make a good long diagonal and base leg.

I try not to let them attempt to fly straight for more than a few seconds because it is demoralising for them to try and find it so difficult. Most beginners think that this should be the easiest, not the hardest thing to do and are worried when they can't do it. So make sure you have told them ahead of time that straight flying is the hardest thing to do in a glider. (This is because it requires instant corrections to any wing drop and perfect co-ordination of the stick and rudder to bring the wings level quickly without turning.)

Traditional instructing techniques suggest that it is necessary and desirable to synchronise the patten exactly with the flying and control movements. However, it is usually far better to give most of the instructions ahead of the action so the student has time to hear and absorb what is said and be prepared for the actual control movements. I refer to this as "pre-patten" and consider it particularly important when teaching landings. It also makes it much easier for the instructor.

Even on an introductory flight we can always start to teach the principles of making a landing. These are that we have to judge the height to start levelling off and try to be flying level within a foot or two of the ground. Then we try to keep the glider off the ground for as long as possible. So our aim is to keep it flying until it sinks to the ground in spite of trying to keep it off. Emphasise that we do not try to fly the glider on to the ground and that landing accurately at a chosen position comes much later once the landings are going well.

The important things to get across are the need to look well ahead, not just over the nose, and that the initial backward movement needed to level out is very, very small compared with most other control movements. This is because of the extra speed we are flying. Usually, although the student may have a hand lightly on the stick, they do not feel this initial movement to start the levelling off, but that just helps to emphasise the need to be very gentle at this time.

### *Pre-landing Checks An Added Complication*

It is a matter of opinion whether to introduce pre-landing checks on this first flight. It is an added complication which can be left until later. When to introduce it is usually dictated by club policy and what the other instructors are expecting the student to do. It can be left until we are achieving a consistent, good hold off and landing and are ready to introduce the operation of the airbrakes together with the planning and judgement's.

Preparing for the landing, you will notice that I do not attempt to explain anything about the positioning, the airbrakes or the instruments. This is to keep everything as simple as possible for the early landings. Imagine that we are now well off to the side of the landing area with ample height - this is the kind of instruction I use :- (italics are used to show when Derek is speaking to the student)

*I have control now, but watch how I make the landing and if you like, keep your hand lightly on the stick.*

*When we are preparing to land, because the air is usually more turbulent near the ground, we need a higher speed to give better control in the bumpy air. So I lower the nose to this new position a little lower than we had before and to make it easy to keep this position, I move the trim lever forward a little like this. This makes it easier to keep this more nose down attitude. We will learn about the trimmer and trimming on a later flight.*

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*Don't concern yourself with how we get into position for the landing, or with the use of the airbrakes, this blue lever on the left, that will all come later. I will be using it, but just keep your right hand lightly on the stick so that you can follow my movements.*

*Most important is to look about 100 yards ahead over the nose, not just over the nose at the ground close by. As we glide down towards the ground we will have to judge when to start to level out. (Flare, round out or make the initial check, what ever you like to call it, but keep the same terms if possible and explain all of them so that they will understand what other instructors say.) At about 20-30ft, (a deliberate exaggeration), we need a very tiny backward movement to start the glider levelling out, so that it is flying level a foot or two above the ground. Then all we have to do is to keep it off the ground for as long as possible.*

This is all what I call "pre-patter". By giving an outline of what we are going to do early on the base leg there is time for the student to absorb my instructions and be ready to feel the control movements when they actually take place. Then all I have to say is :- *starting to level out - now.*

If all the instruction is exactly synchronised with the action without any pre-patter, the student will usually miss the actual movements of the controls.

On demonstrations, it is best to start the levelling out and holding off a little higher than normal. If you level out a few inches off the ground and make a perfect landing, they will try to do the same and will always fly into the ground instead of holding off level several feet above it.

### *Touch Down At Low Speed*

We want to try for a fully held off touchdown unless we are flying a glider such as the Blanik, 232 and 233 which might be damaged touching down with the tailwheel or skid. In my opinion they are no longer ideal for teaching landings because the students cannot learn the best habits. All modern trainers and tail dragger gliders should be held off fully so that they touch down at low speed - most will bounce badly if allowed to touchdown prematurely.

*So look out well ahead, not just over the nose. I am just making the final turn into the approach now and we will be landing on the grass on the left of the runway well away from any obstructions or other gliders.*

*We keep gliding down, lower, lower, I'm starting the levelling out - gradually - n-o-w, so we are flying just above the ground. Now we try to keep it off the ground with a gradual backward movement gradually back on the stick, back, back, - keep it off - keep it off, and it lands itself. Then we keep moving further back on the stick to keep the glider off the nose wheel, or front skid. We have to keep the wings level and keep it running straight until we have stopped.*

*So the landing is easy. All we have to do is to level it out and then keep it about a foot or so above the ground for as long as possible until it lands itself. We don't try to get it down! This is really important because if you try to get the glider down on to the ground, you will never make a good landing.*

Ideally I like to spend a few minutes before getting out of the glider, but often we have to move it out of the way and cannot do this. This debriefing is one of the most important because we want to make sure there are no misunderstandings and also to show the passenger that we really care about them understanding what went on in the air.

*When we came off tow, the first thing I showed you was the correct attitude for normal gliding flight. This is very important because the attitude (ie the position of the nose in relation to the horizon) controls our airspeed. If that is correct then we fly efficiently and have good control response. If the nose is too high we fly too slowly and the glider tends to "mush" down losing height quickly. Then we have very little control because all our controls depend upon the speed of the airflow over the control surfaces. Low speed always means poor control. With the nose too low, we fly too fast and are diving down*

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*losing height rapidly. The airspeed is controlled by the attitude, the position of the nose in relation to the horizon. For our approach where we want very good control - we fly with the nose lower to fly faster for better control in the gustier air near the ground.*

*Then we tried the stick movements. Notice they are almost instinctive; easing forward pushes the nose down, easing back raises the nose. But we cannot glide with the nose high for long without running out of control and losing height.*

*Then with banking movements you just lean the stick the way you want to go. Over to the left to start banking over and turning left. It is important to understand that a small movement results in gradual banking movements which, if you wait, will result in a steep angle of bank. A larger movement will get you there much quicker. But the size of the movement sideways controls the rate of applying the bank and not the angle of bank.*

*So we start every turn, after looking right round first of course, by applying the sideways movement and then we have to stop the bank getting too steep with a counter move, or "check", by moving the stick to just past the central position. If we were to put the stick exactly central in a glider, we would find the bank slowly getting steeper. So in a steady left hand turn the stick is normally just slightly to the right of centre to prevent the bank getting steeper. If you move too far, the wings will begin to come level and the turn will stop. However, we don't have to look at the controls, we just make the movements necessary to get the result we want.*

### *Make Small Sideways Moves*

*In a turn it is seldom sufficient to hold the stick in a steady position. We have to make small sideways moves to keep a constant angle of bank and overcome the effects of any bumps tipping the glider into a steeper turn or tending to bring the wings level and stopping the turn.*

*If we are still sitting in the cockpit we can show the stick movements as we talk during this de-briefing.*

*So with the movements to apply the bank, we have to be alert and quick to make the check movement before the bank gets too steep. Turning steeply is not dangerous, but on the first few flights it is rather worrying for you. At the moment we are not in a great hurry to get into the turn and you will find it easier to keep to an angle of about 20 to 30 degrees.*

*We will be learning about using the rudder on the next flight, but you saw that the glider turned by just banking it over in the direction we wanted to go. This is the way all aeroplanes are turned.*

*I mentioned in flight that there is a tendency for the nose to drop during a turn, but with small angles of bank this is only slight. With steeper turns this tendency is more pronounced and more backward movement is needed or we soon start to gain speed and waste height. Turns are really made by banking over and easing back on the stick to pull the wing to a bigger angle to the air to get extra lift. We bank over and then use the extra lift from the wings to pull us round the turn.*

*On the next flight if you want to try one, we will be learning how we use the rudder to improve our turns. Whereas you soon found the stick movements almost instinctive, the rudder movements are not like any other vehicle. Eventually, we have to use the rudder automatically to help the stick movements whenever we are changing the angle of bank. This means forming the habit of using them together and habits take time to become established. Usually we are not using the rudder properly until we are close to going solo. So don't get worried if you are still having some problems with it after a number of flights. Using the ailerons and rudder correctly is necessary to fly the glider straight as well as for turns.*

*From now on I will be outlining the instruction for a student who has decided to learn to fly gliders.*