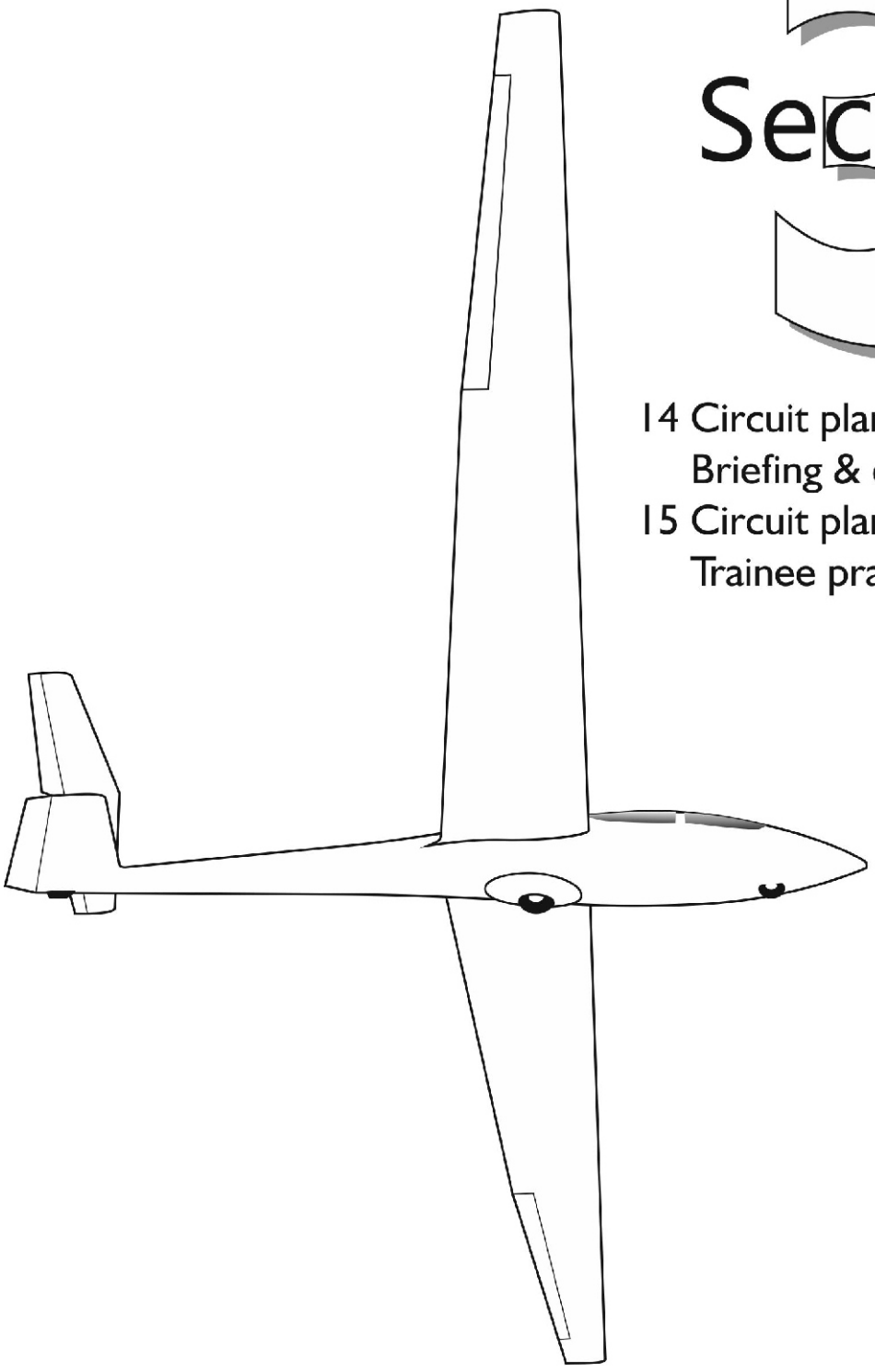
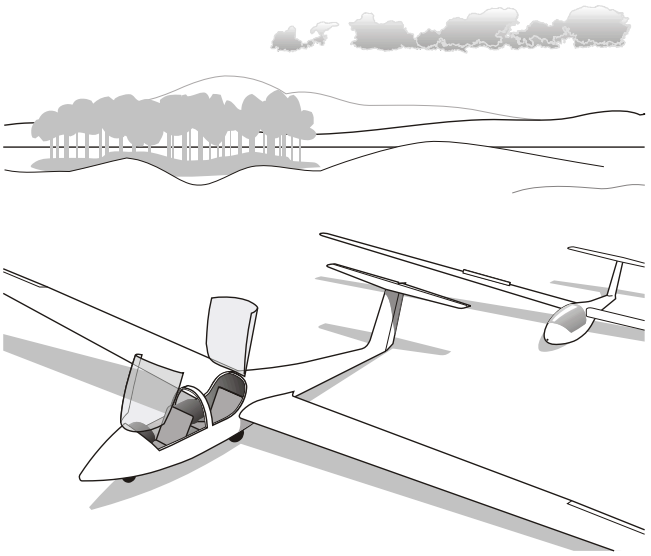
Section 3



14 Circuit planning 1
Briefing & demonstration

15 Circuit planning 2
Trainee practice



14 - CIRCUIT PLANNING (PART ONE)

Briefing and Demonstration

This exercise introduces the trainee to the Planning, Judgement and Decision making elements of flying.

Until now the instructor has taken responsibility for all these things while the trainee has concentrated on learning the basic handling skills. Before the instructor introduces this exercise, the trainee must have sound handling skills and be coping satisfactorily with the judgement aspects of the RP exercise. If these skills are deficient or missing, expect the trainee's handling of the aircraft to deteriorate as he takes on the extra tasks. An important point about circuit planning is that the technique taught should work in all likely situations, such as landing out in a field or at another site, and not be geared solely to arriving intact on the home airfield. We are training soaring and cross country pilots, not circuit bashers.

BRIEFING POINTS

Introduce the first demonstration of an idealised circuit with a briefing that explains what the circuit consists of, and why it is the way it is. Draw the circuit leg by leg, if possible, or use a copy of figure 1, on the next page. Work back from the landing, explaining the reasons for each part.

The PURPOSE OF THE CIRCUIT is -

- **to arrive at the final turn in the right place**
- **at a safe height and speed**
- **with safe alternatives always available.**

At an airfield it has the secondary purpose of setting up an orderly flow of traffic. Though **good lookout** is important during almost every phase of flight, emphasise its crucial importance in the circuit; where traffic density is likely to be high and everyone is heading for (and concentrating on) more or less the same place.

Reference Point (RP) selection

The RP is the point where the glider hits the ground if we don't bother to round-out. The exact distance between the RP and the point where the round-out begins, depends on the wind strength and/or the steepness of the approach

Starting from the place where we want the glider to stop, work back towards the round-out point, allowing for:

- the length of ground roll and float after the round-out; depending on surface condition, glider type, wind and approach speed).
- approach obstructions or curl-over, or anything that may preclude an ideal RP.

Approach path

The final approach is straight. Either use an imaginary line through the landing area from a distant object ahead, or a line parallel to the appropriate edge of the area. A successful and easy landing needs a straight approach from a final turn that is no lower than 300'. Turns below 300' can be dangerous, due to:

- the different effects of any wind gradient on the raised and lowered wings
- high workload
- reduced time on the approach.

Adjust the approach line as soon as possible after the final turn, if necessary, but always ensure a safe airspeed. Remember that:

- a long, braked approach is wasteful of height.
- a long, un-braked approach has few (if any) alternatives.
- a two thirds airbrake approach allows for adjustments and a good safety margin against undershooting.

Revise on the RP Technique (previous chapter) as necessary.

Approach speed selection

Choose an approach speed that gives a safe margin over the stall and spin. The choice should allow for any possible speed loss due to wind shear or gradient, give adequate handling in turbulence, and ensure sufficient speed for the round out. Stronger winds usually produce stronger wind gradients or shears.

Thermal activity or showers can cause large short term local shears, even on light wind days.

The approach speed can be chosen by rule of thumb, but reference should be made to the glider's flight manual. For most modern gliders approach at:

- **50kt**, when the risk of any speed loss is low
- **55kt**, when there is a risk of a small speed loss
- **60kt**, if there is a risk of a moderate speed loss
- higher speeds may be needed at hill sites, or in extreme conditions.

See the illustration on page 14-5. Note that the change in wind speed can take place through a larger or smaller height band than the one shown.

Final turn

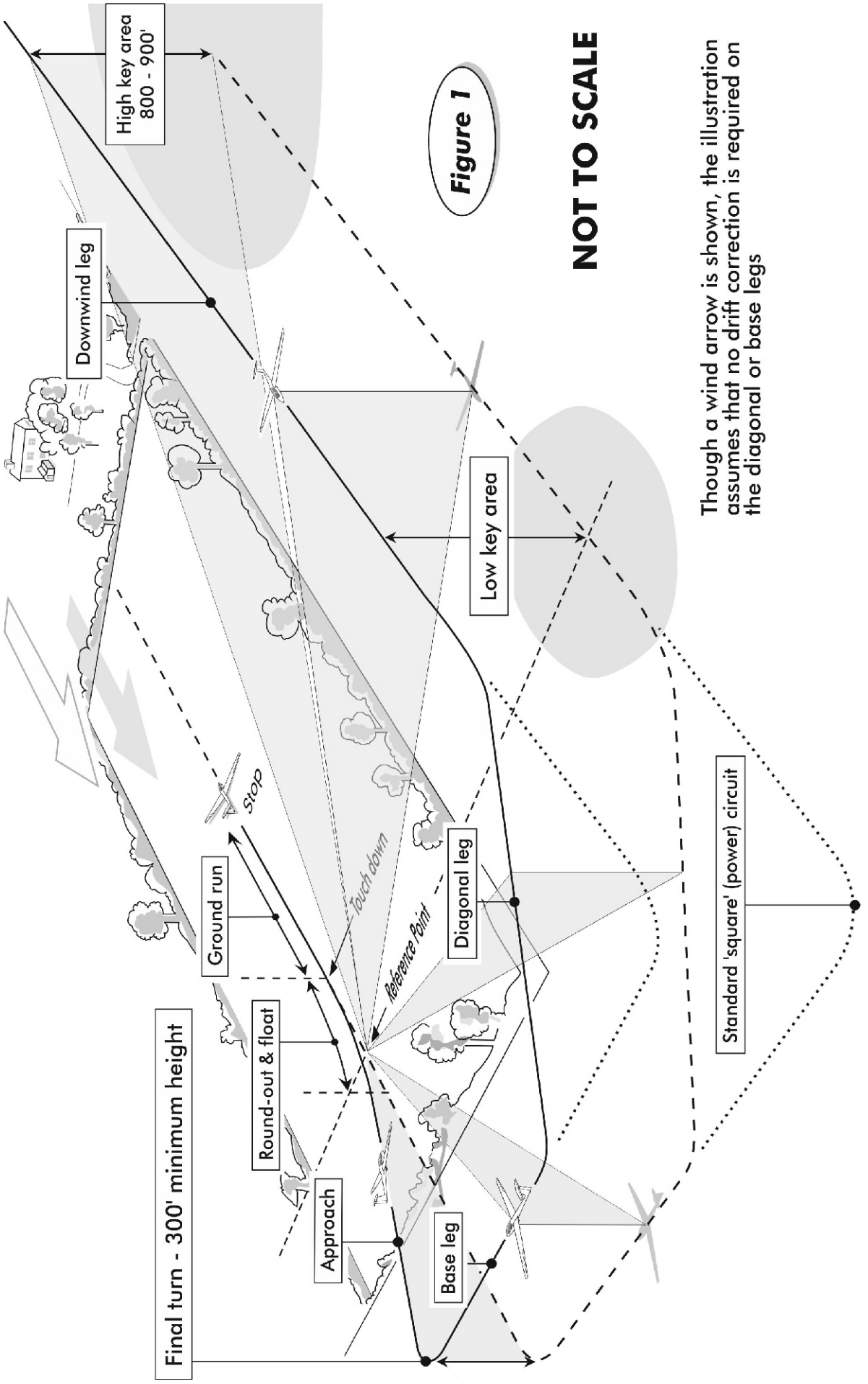
The final turn should be:

- positive and accurate, and with about 30° of bank
- flown at the approach speed
- completed at a 'safe height'; nominally about 300' (more in some conditions). Judge this height by reference to the apparent size of trees, pylons etc., and not by the altimeter
- positioned to allow for a two thirds airbrake approach to the RP, and adjustments to the approach angle.

The exact position will vary according to:

- the performance of the particular glider
- the effectiveness of its airbrakes
- the strength of the wind.

In stronger winds the final turn will be much closer to the RP.



Base leg

Position the base leg to avoid long approaches, and to allow time to judge progress and make adjustments to the flight path. Always have safe alternative approach paths available. Usually, the base leg is at right angles to the landing direction, but not necessarily. If there is any likelihood of 'running out of height', position it so that a safe final turn can be made to an alternative approach. The base leg may contain more than one straight section, not necessarily at right angles to the landing direction. Nevertheless, confirming the wind strength and direction and any drift corrections required, is easier if the the base leg is at right angles to the approach.

Diagonal leg

The glider arrives on the base leg after a turn of approximately 45° from the diagonal leg. The turn onto the diagonal leg is made soon after passing the low key area, and before the view of the landing area is obscured by either the wing of the glider or the cockpit edge. This leg allows the pilot to keep the landing area clearly in view, and ensures that at no stage in the circuit is the glider being flown directly away from it. However, though the tendency is to look only at the landing area, don't forget to continue looking in other directions as well; for example, outside the circuit and directly ahead. The diagonal leg:

- cuts across the corner and joins the downwind leg to the base leg
- ensures that the landing area remains continually in view
- reduces the risk of turning onto the base leg too late
- ensures that the angle down to (or up from) the landing area remains roughly constant throughout the later stages of the circuit.

It's important that the trainee doesn't stick to a rigid circuit pattern defined by the 'spot heights' taught to power pilots, and understands also that the diagonal leg is flexible, and can be adjusted to put the final turn in a sensible position at a sensible height. Without this flexibility the trainee is unlikely to have much success in planning the circuit and approach, and little at ending up in a designated place (spot landing).

Downwind leg

We normally arrive on the diagonal leg by flying a downwind leg parallel to the direction of landing, but in the opposite direction. The downwind leg allows us time to judge our progress and make any adjustments, while always retaining safe alternative approach paths. It begins in the high key area at 700' to 800'; sometimes higher for busy circuits/airfields. Where the downwind leg passes opposite the landing area is called the low key area. 'Key' is used here in the sense of impending critical decisions.

Alternative approach paths

Alternative approach paths are necessary because:

- we are all fallible and can make mistakes
- we may fly into unexpected lift or sink
- the landing area may become blocked.

Always plan and fly the circuit with alternative approach paths to other landing areas in mind.

In general:

- obstructions along one side of the landing area reduce the alternatives if the circuit is to that side
- in cross winds a circuit on the downwind side of the landing area gives a better view of it, a lower ground speed on the base leg, and easier alternatives
- even narrow sites have the options of turning onto the base leg early to land further into the field or sometimes in the opposite direction to other traffic.

In discussing alternative approaches, introduce as much flexibility as you can. For example, it is usually preferable for landings to be into wind and in the same direction as other traffic, but they don't have to be.

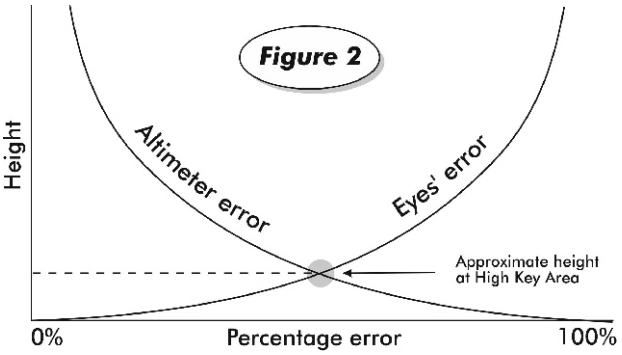
Point out to the trainee the range of options, and describe the factors that affect the decision, some of which may be:

- **height**. Is there sufficient to complete a normal circuit?
- **wind strength & direction**. Would it be safer to land directly into wind, or is a cross wind landing possible?
- **obstructions**. Is the normal landing area blocked, or about to be blocked by other traffic?
- **other traffic**. Will other traffic baulk a landing in the normal area, or even cut across our approach?
- **cables**. Would a landing in the chosen area cause us to run over cables that are being pulled out?
- **runway edges**. If we land in such and such a direction are we going to be running across the lip between grass and concrete, with possible damage to the glider?
- **slopes**. If we landed in this direction would we be landing up- or down-slope?

Effects of wind

The exact position of the high key area, the turn onto base leg and the final turn will vary with glider performance and the strength and direction of the wind. Because the glider's penetration and glide angle on the approach are reduced by the use of airbrakes (and flaps, if fitted), the base leg will usually be moved towards the landing area as the headwind on approach increases. In stronger winds the time on the downwind leg is reduced, so the high key area is usually moved into wind to maintain it. The whole downwind leg is moved towards any crosswind component to maintain the time on the base leg and retain safe alternative approach paths.

- each leg requires a glider heading which allows for drift due to crosswind
- in strong winds the final turn height and whole circuit will be higher to complete all manoeuvring above the stronger wind gradient and surface-induced turbulence.



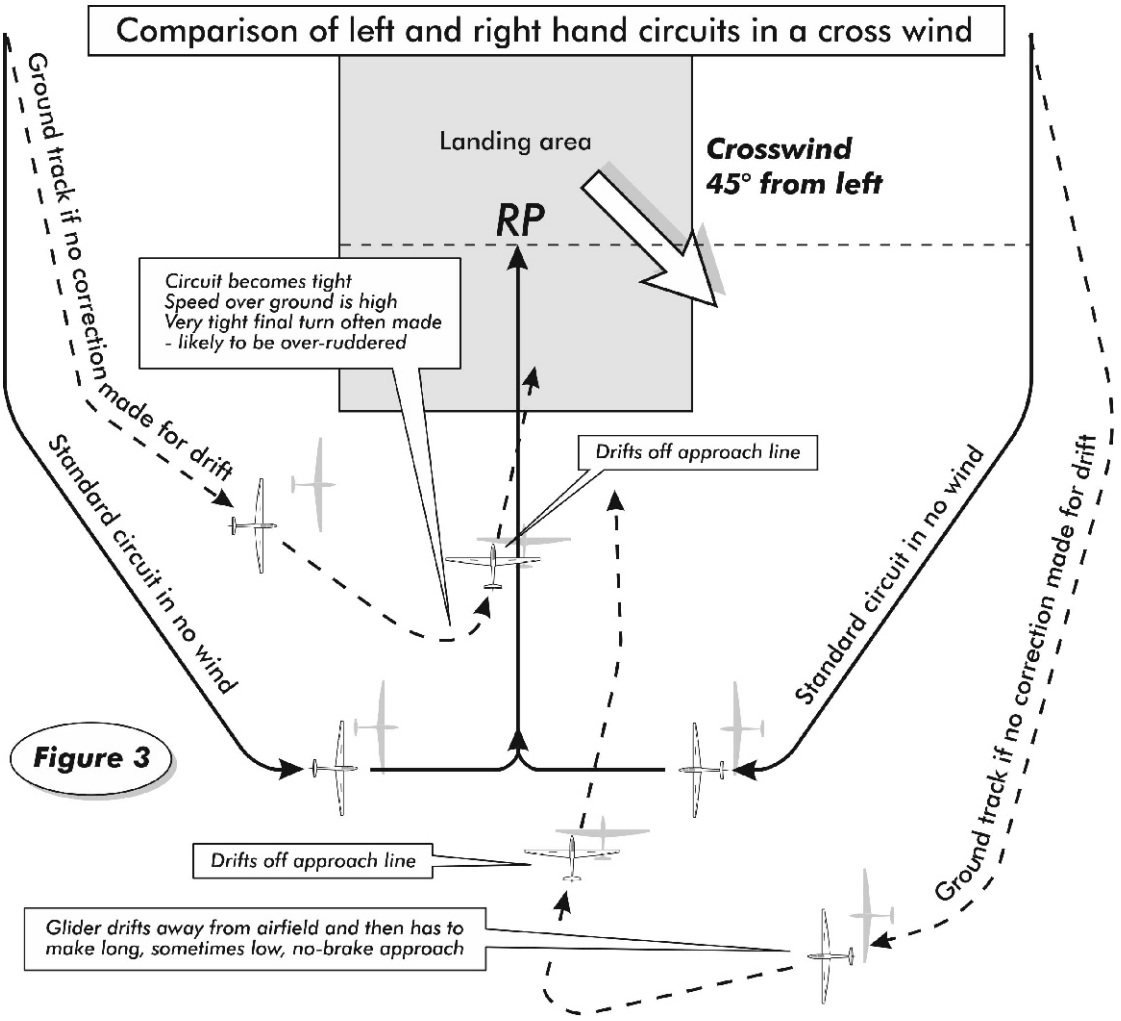


Figure 3

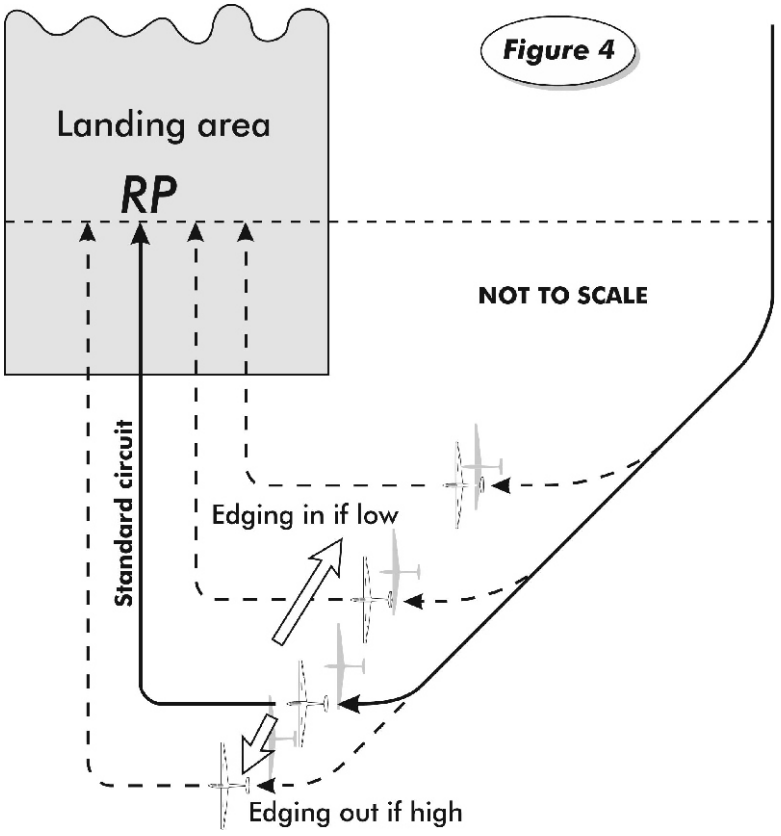
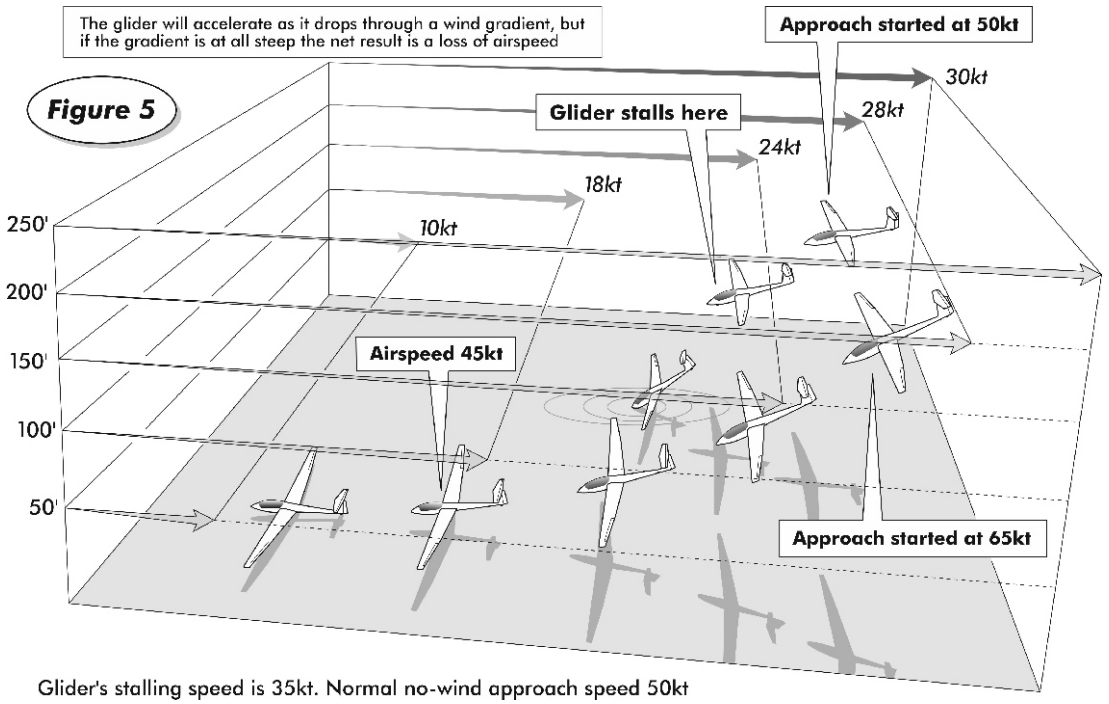
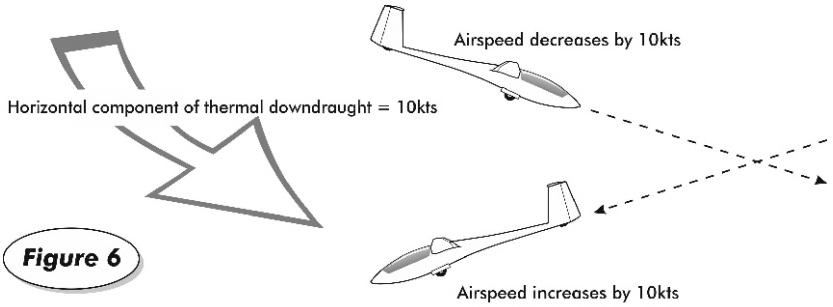


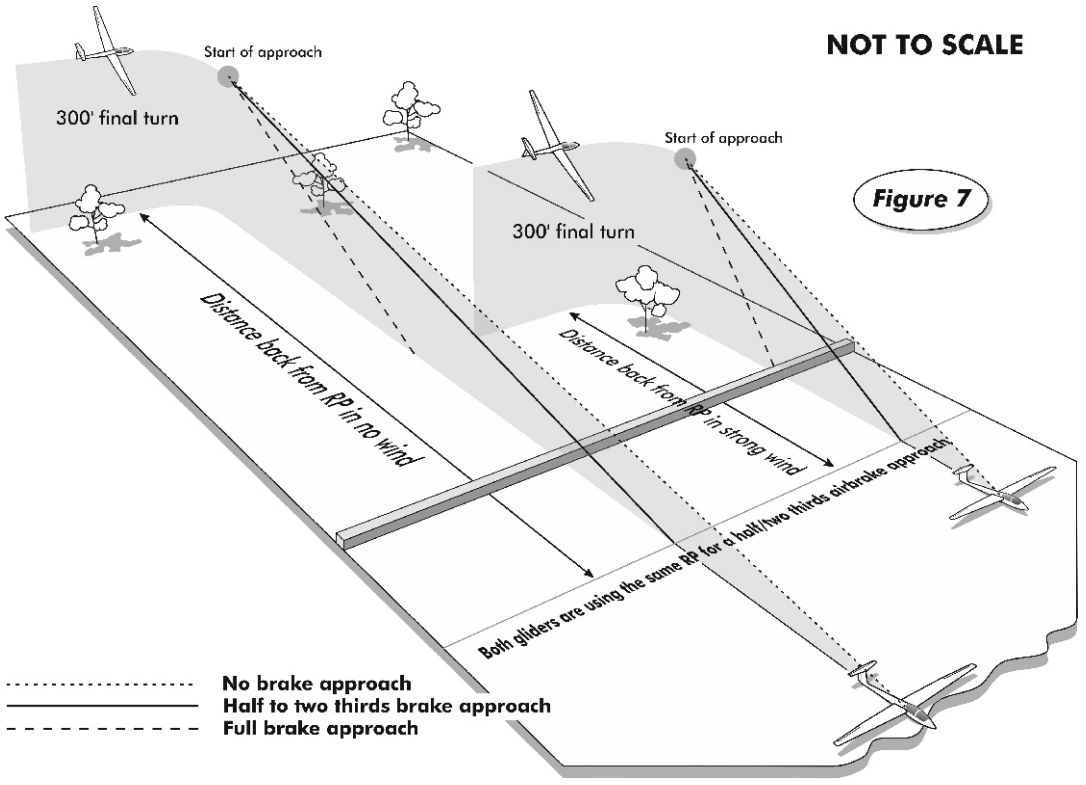
Figure 4



Glider's stalling speed is 35kt. Normal no-wind approach speed 50kt



Effect of horizontal gust on approach speed



The standard no wind circuit (left and right-hand) is shown in the illustration, as are the approximate paths over the ground if a crosswind circuit is flown with no allowance made for drift (i.e same headings as in the no-wind case).

Judging height

The altimeter doesn't indicate height above ground, only changes in pressure (expressed in feet) in relation to a baseline set by you on the altimeter subscale. It's unlikely that if you're faced with a field landing, you'll know the exact height of the ground beneath. Altimeter errors become more significant the lower you are (figure 2, 14:3), but the degree varies. Modern instruments can be very accurate, older ones less so - usually because of internal friction in the mechanism. As it happens, at approximately the correct height for the glider to be starting the circuit in the high key area, the eye and the altimeter have about the same degree of accuracy (all other things being equal). But, whilst the eye becomes increasingly accurate as we get closer to the ground, any altimeter error as a percentage of the actual height will increase. Because the training is geared, sensibly, to teaching pilots how to land anywhere, it is very important that judgement of height in the circuit is based on what the eye sees, not what the altimeter says.

Ground structures such as trees, houses, pylons, cars, etc. look bigger as we get lower, and below 500' or so, judging height by their apparent size works well [see illustrations of perspective changes at the end of chapter 25]. Use this method of assessment when judging the height of the final turn. The angle down to our chosen and alternative landing areas, combined with our distance from them, also helps in estimating height, and, more than any other clue, helps us assess how far we are can glide from that position.

Notice from the illustration that we have to use a combination of angle and distance from the landing area to be able to judge our height. Be warned that it is possible to see a steep angle across to, say, the RP, yet be dangerously low simply by being far too close. It's worth noting that if any two of the three criteria (height, distance and angle) are correct, the third one has to be as well.

During the circuit, regularly judge the angles to the landing area, and the alternatives, in relation to your distance from them.

The first demonstration is to show the trainee the angles and distances appropriate to the various parts of the circuit, while explaining to him the factors influencing your decisions and any actions you are taking. You want the trainee's full attention, so explain that you will do all the flying - don't even let him follow through on the controls. The second demonstration, using the zig-zag circuit, is to give the trainee an appreciation of some of the judgements considerations involved, in particular what the view from the wrong place looks like.

The first circuit demonstration should show the trainee, if he were solo, how the instructor would wish him to fly the circuit in the given conditions.

Before going to the high key area

☑ Throughout every flight we have to consider when to start heading for the high key area. We need to:

- choose a suitable landing area. The position of the high key area cannot be decided until one has been chosen
- assess the wind strength and direction (check the windsock if at an airfield)
- choose the circuit direction and the location for the high key area, upwind and to one side of the landing area. A stronger wind might need a high key area further upwind
- the effect of crosswinds on the circuit. A crosswind away from the airfield might mean a high key area closer in and a shorter base leg, whereas a crosswind towards the field would suggest a high key area further out and a longer base leg
- check the landing area. There is no point in starting a circuit to one that is unsuitable or blocked
- select an approach speed
- make a positive decision to join the circuit to land, and plan to arrive at the high key area between 700' to 800'. Prepare for landing by;
  - doing pre-circuit checks, if appropriate
  - making sure the straps are tight and deciding on a suitable approach speed. In gliders so equipped, dump any water ballast and lower the undercarriage
  - continuing to fly the glider at normal speed (i.e. best glide angle), but speeding up appropriately in any sink.

At the high key area

☑ Keep a good lookout, both inside and outside the circuit.

☑ Assess the height, and judge the angle and distances from the landing area. Check again that it is clear of obstructions.

☑ If far too high to begin the circuit, practice turns or fly away (to find a thermal?), aiming to arrive back at the right height.

☑ Begin the downwind leg at between 800' and 900', when the 'picture' of the landing area looks right. From this point onwards in the circuit the altimeter should not be used except as a rough guide at the high key area. Confirm the reading by your own judgement of the height.

☑ Set any drift correction needed.

☑ If low, fly a closer downwind leg, or choose an alternative landing area and re-plan the circuit.

☑ If slightly too high, fly the down wind leg further out or return to the high key area and start again when you are down to the appropriate height.

Downwind leg

Adjustments on the downwind leg consist of angling the leg in or out in order to shorten or lengthen the diagonal and base legs. Even with a very short base leg it may not be possible to reach the correct point for a safe final turn and approach to the normal landing area. In such cases, an alternative landing area (usually further into wind), perhaps even an alternative landing direction, should be selected. The position you are then in should be regarded as the starting point for the new landing area, and the normal circuit flown from there.

Having begun the downwind leg and made any necessary adjustments to it and the choice of landing area, continue to keep a good lookout, flying the glider at normal speed, i.e. best glide angle, but speeding up appropriately in sink. It is important to monitor the variometer, as a situation that was normal at the high key area may become something else if lift or sink are encountered.

- regularly assess height, angle and position

- take some note of what the variometer says - best if its an audio tone - as a predictor of likely height loss or gain
- check that the landing area is still clear of obstructions, look out for other aircraft ahead in the circuit and consider them as possible obstructions
- consider other aircraft which are anywhere nearby (behind, inside or outside the circuit, or ahead). Avoid obstructing them. Consider where they're likely to be in the near future. This might mean having to change your landing area or make other decisions.

Keep checking that your intended landing area is clear of gliders and other obstructions- cars may drive across it towing gliders, people may wander out in a leisurely fashion to the launch point etc. Take into account any circuit traffic ahead of you that may clutter the landing area just before you arrive. Always have a contingency plan in case your first choice of landing area becomes obstructed. If it is obstructed, it's usually best to make the first part of the approach with the airbrakes closed. Rather than landing in or through a very narrow gap, or attempting to stop before the obstruction when the room available is marginal, land past it. Good airmanship would also dictate that you position your landing to avoid making life difficult for following aircraft.

- set your approach speed and re-trim as you approach the low key area.

Low key area

Again assess height, position, angle and make any necessary alterations to the circuit. The altimeter should not be used here. Instrument errors (altimeter 'stiction' - [see figure 2, 14:3]) can be bad enough to render the instrument completely useless, if not dangerous.

At this stage, possible adjustments to the circuit are:

- shortening or lengthening of the base leg, turning directly towards the position of the final turn or widening the circuit
- shortening the downwind leg by turning early onto the diagonal leg, usually combined with displacing the landing area into wind
- choosing a new landing area and/or direction, or using the airbrakes to get rid of any excess height. If the height is very excessive don't use the airbrakes to let down in a straight line as there could be another glider(s) underneath.

☑ Choose an RP, and consider how far back from it the base leg and final turn should be, given the prevailing conditions.

☑ Set your approach speed and if you haven't done so already, re-trim.

Diagonal leg

The turn onto the diagonal leg should be taken very soon after passing the low key area. In any event, this must be before your view of the landing area is obscured (remember that the trainee will be able to see it for longer than you). The turn should be normally banked and at the approach speed. Having started the diagonal leg, continue to assess your height position and angle to the landing area.

☑ Check the ASI every two or three seconds

☑ Identify and take hold of the airbrake lever. This normally should not be released until after the glider has come to rest

☑ Continually monitor height, angle and distance and make adjustments if necessary. The possible adjustments are:

- if too low or too far away, turn finals towards a new landing area and/or direction
- if a little low, turn onto the base leg
- if a little too close but sufficiently high, move the RP into wind - further up the field - or angle the diagonal leg further away from the landing area
- if on the high side, but at the correct distance, use the airbrakes.

Keep a good lookout at this stage, and fly the leg at the chosen approach speed.

Base leg

The turn onto base leg from the diagonal leg should be back from the landing area at a distance appropriate to the wind strength, or sooner, if the glider is getting low. If it's necessary to angle the glider into wind, the turn will need to be through a greater angle to compensate for drift. Drift on the base leg will always be away from the landing area if the landing is into wind. Correct for drift if necessary.

☑ Continue to check the ASI regularly. Check the landing area is still free from obstructions.

☑ Look for other traffic ahead on the circuit, joining from downwind, on long finals or on the base leg from a circuit in the opposite direction.

☑ Continue monitoring the height (not from the altimeter but the apparent size of buildings, trees etc), and the angle and distance. The only adjustments available on the base leg are:

- if you are too low or too far away make an early final turn. This may require the choice of an alternative landing area and/or direction
- if you are a little too far away but sufficiently high, angle in
- if a little too close but sufficiently high, angle out a bit
- if high, but at the correct distance, use the airbrakes with care.

Approaching the final turn

☑ Before the final turn the lookout should (unusually) be as careful outside the turn (for other aircraft on long final approaches) as inside [see 5:8]. Again, check for anyone on an opposing circuit.

☑ Decide when to turn, allowing for any head or tailwind component. Don't turn early as this can lead to under-banking, a lower turn completion and less time straight on the approach.

☑ Check the speed again and monitor it every two or three seconds.

☑ The final turn should be a normal (30°) banked turn, similar to the one onto the base leg. Then, with the wings level, line the glider up into the landing area and make an approach. Use the airbrakes as necessary to control the rate (angle) of descent. Because of the importance of speed control in the final turn it isn't usually a good idea to increase brake settings. If the glider is excessively high - and with the proviso that the speed is monitored carefully - open the brakes before the final turn, and keep them open during it. It isn't good practice to open the airbrakes during the turn. Be aware that judging height loss in turns is more difficult, so

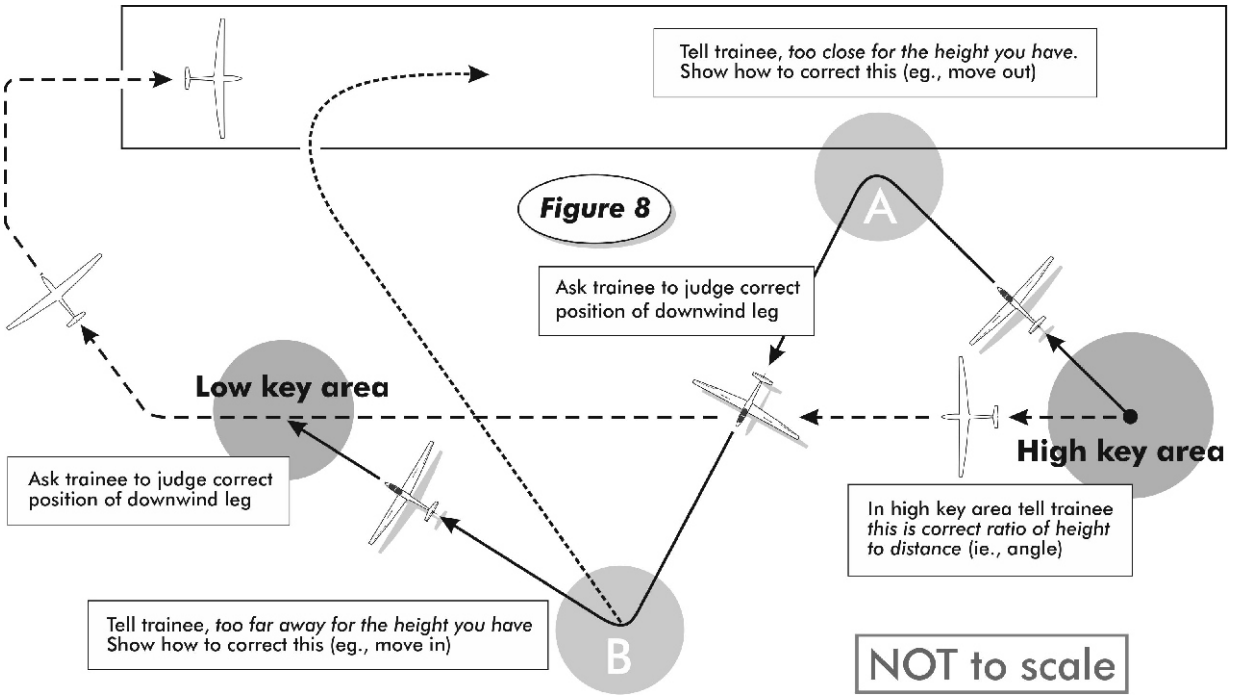


Figure 8

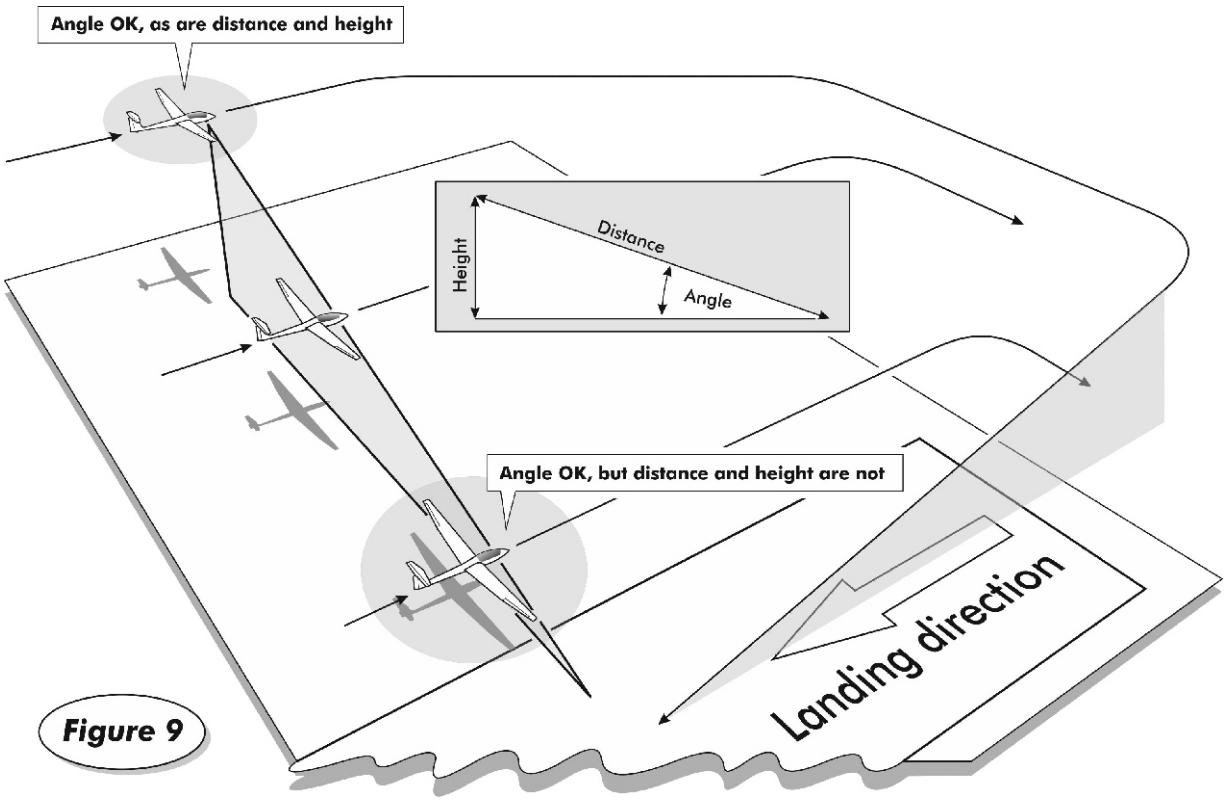


Figure 9

it's easy to inadvertently lose too much height, and as a result end up a bit low

☑ Depending on the particular procedure for a glider with flaps, adjust them during the base leg, or on the approach. Avoid adjusting them during the final turn.

Final approach

☑ Line up with a clear landing run and make due allowance for any drift.

☑ Check the speed!

☑ Judge whether airbrakes are needed or not using a combination of apparent RP movement and angle/distance required for a half/two thirds airbrake approach.

☑ Check the speed! Look left **and** right.

☑ Control the descent path with the airbrakes, and the speed with the elevator. Be prepared to close the brakes and land long to clear obstructions.

☑ Check the speed!

The Zig-zag circuit

While the previous circuit demonstrated what a good circuit should look like, the zig-zag (figure 8, opposite) is intended to demonstrate how things look if the glider is, (a), too close for the height in hand, and (b), too far away for the height at the time. As with the previous demonstration the instructor will be doing all the flying.

☑ Position the glider in the high key area at about 900'.

☑ Point out to the trainee that the height/distance/angle relationship is correct.

☑ Fly in towards position 'A', close to the run. Point out that the height/distance/angle relationship is wrong. The glider is too close to the landing area for the height available. You are not too high, but too close.

☑ Point out to the trainee that if he gets into this situation the correct action is to move out, away from the run. Move out.

☑ As you do so ask the trainee to judge when the glider is the correct distance out to join the downwind leg. Comment on his judgement.

☑ If height permits, continue out beyond the ideal position for the downwind leg until in position 'B'. Point out that the glider is too far away from the landing area for the available height and that the height/distance/angle relationship is wrong. You are too far away, but not necessarily too low.

☑ Point out that if the trainee gets into this situation, the correct thing to do is move in.

☑ As you move back in, again ask the trainee to judge when the glider rejoins the downwind leg at the correct distance from the run. Comment on the judgement.

☑ If getting low, cut the normal circuit short and land further up the field.

NOTE. When moving out to position 'B', remember that you are not trying to land out or just scrape in over the fence. Don't move out to your personal limits, or the performance limits of the aircraft. You are setting up a framework for the trainee so that when he sees that particular picture, he realises that he is too far away and moves in. You are not trying to scare the pants off him or yourself.

This exercise provides the instructor with feedback on how well the trainee has understood the idea of a correct height/distance/angle relationship, as well as showing him what he must do when it isn't correct. For this exercise it's best to cover the trainee's altimeter (or disable it - non-destructively!).

Fly the exercise just after the basic circuit demonstration. Remember that, as with the diagonal leg, the trainee's view of the landing area from a tandem two-seater is usually a great deal better than yours.

Deliberate circuit modifications to suit particular circumstances

Cutting the corner from the downwind to the base leg

This is called the diagonal leg and is considered to be part of the standard glider circuit. The circuit should always be organised so that, from the low key area, the glider is never in a position where its angle to the nearest landable part of the airfield is shallower than the angle for a normal, half-brake approach, in the existing conditions.

Higher or closer downwind leg plus use of airbrake on diagonal and/or base leg

This method should normally be used on sites that have only narrow landing strips, and where only one approach line is possible. If the base leg is approximately at right angles to the approach then it is not possible to shorten the distance to the final turn. If the glider happens to be low or in sink, a low final turn is inevitable. The only possible way to build in a safety margin is with extra height on the base leg. This can be progressively removed with airbrake along the base and/or diagonal legs. Circuits at hill sites in particular, may - in some wind conditions - need to be flown in relation to specific ground features such as a wall or hedge line, to avoid sink or turbulence associated with the topography.

☑ The main benefit of flying a standard circuit (that is, one containing a diagonal leg) is that:

- it allows time for progress to be judged, alternatives considered, and the necessary action to set up a good approach and complete a safe landing
- the pilot at all times maintains a good view of the airfield and landing area..

The standard circuit can help to create an orderly flow of traffic, but this particular notion of 'order' comes straight from power flying, and is too inflexible for gliding. The circuit is like a funnel, where the scope for error and alternative action gradually reduce as the circuit progresses.

Judgement of height in the circuit is based on the vertical angle towards the landing area or RP (figure 9), and the glider's distance from them. The height for the final turn is judged in relation to the relative size of trees, buildings, people etc. Don't ever feel pressured to land in the normal place on the airfield if it means doing a low final turn, or being too close to obstructions. Be flexible and be safe.

DE-BRIEFING

Ask the trainee some questions about what they saw and thought, and then discuss the following items-

- why the circuit was planned to be the way it was
- how were we judging our progress?

- on what did we base our decisions?
- if it wasn't quite right, what actions did we take ie., if we were low on the downwind leg, what did we do?
- what other actions were available if things weren't quite right, and what were their pros and cons?

Draw attention to anything important which you did not mention in flight due to lack of time, or simply forgetting.

ADVICE TO INSTRUCTORS

Say what is happening during the demonstration. If you are too low, too far out or whatever, then say so! Getting it wrong, and then describing how you are adjusting the circuit to compensate, is probably more useful than a copybook circuit.

Whilst Circuit Planning is the title of this chapter, it is the approach that's really important. The circuit is the flexible tool which helps make a good approach.

Lookout. The workload during the circuit is higher than normal and trainees are more likely to become obsessed here with the instruments than anywhere else, except when thermalling. The traffic density can be high and everyone is travelling towards more or less the same point on the ground, so the risk of collision is higher than normal (see chapter 5). Lookout needs emphasising, but the balance between doing it and getting everything else in at the same time is a fine one, and can up an ab initio's workload several notches. Don't avoid doing nor downplay lookout on that account. It's important.

Variometer monitoring provides early warning of a changing rate of height loss. While not suggesting that one should dolphin round the circuit, it would be inappropriate not to increase speed in strong sink.

Approach speed. Ideally, this is set on the downwind leg, before the low key area. The two most important reasons for this are:

- firstly; because recovery from an inadvertent spin within 500' of the ground is very unlikely, set the approach speed before the glider reaches 500'; certainly no later than just before turning from the diagonal leg onto the base leg
- secondly; height assessment is simplified, at least in relation to the angle down to the landing area, by removing the complication of angular change due to the swapping of height for speed (ie., lowering the nose to increase the speed). This is particularly important from the low key area onwards, after which options for adjusting the circuit are limited. The loss of height and time occasioned by an earlier increase in airspeed is small, but worth the extra safety margin it gives.

Downwind. Don't confuse the demonstration by introducing pre-landing checks as such. It's all there anyway, and the pre-landing checks should be carried out before starting the circuit. Reciting a mnemonic on the downwind leg is inappropriate, and in any case, being able to recite a check shouldn't be confused with an ability to plan a circuit.

Final turn position. A mental picture of how far back the final turn should be in the prevailing conditions helps in deciding when to turn onto the base leg. If this habit is established at an early stage it will make circuits and landings at unfamiliar sites, and into fields, easier.

Flaps differ so much in their circuit usage that all mention of them is omitted here. For guidance, refer to chapter 21.

Judging height. Notice that no numbers have been attached to the various angles around the circuit. Different people will choose widely differing numbers for the same angle. Almost everyone - even the most rational and scientific - grossly overestimate the angle when quoting it in degrees. For example, here's what the angles actually are:

- **high key**: 800' up/1,500yds (approximately 1 mile) out = just under 10°
- **low key**: 500' up/800yds (approximately 1/2 mile) out = just over 12°
- **final turn**: (1:6 approach, say) = just over 10°.

The only requirement is to make sensible assessments of whether the angle is correct, too shallow or too steep in relation to **this** glider's position, in **these** conditions.

The exact position of the high key area, the turn onto base leg and final turn will vary with glider type, and even more with conditions, particularly wind strength and direction. A different take-off and landing direction, or a different airfield or a field also means that the progress of the circuit can't be judged by reference to familiar features on the ground. In the case of a field landing, familiar ground features will either be missing, or what is rather worse, there, but in a completely different relationship to the ones at the home field.

Remember that we are training pilots to progress very quickly to cross country flying and possible (most likely inevitable) field landings. Even if trainees never go cross country, it is important to teach them to judge their position in the circuit by reference to the landing area, and not to fixed ground features (known as secondary reference points), except at sites where local features - such as pronounced lee slopes and the prevailing weather - may make that necessary. Even then, it is usually only necessary in certain wind conditions. Try to avoid teaching a circuit 'around the airfield'. Reference should always be made to the landing area.

