N – PATTER NOTES

INTRODUCTION

These 'Patter notes' serve two purposes:

- to ensure that the patter, wherever used, is consistent.
- to ensure the relevant patter emphasises points of particular importance, and choice of words is appropriate.

Having to learn the patter may offend you. But experience has shown that learning the patter verbatim gives a base from which you can develop a more personal style, with a variety of words and phrases.

How Much?

A limited time is available, especially during some exercises such as winch launching or spinning exercises, so the patter must be concise and timed accurately to coincide with what is actually happening. In order to achieve coordination between the control movements and the patter it will normally be necessary to start with the patter slightly before the control movement. During your instructor training you will need to show that you not only know the words, but the principles involved - timing, emphasis and the right choice of words.

Practise the words and then attempt to match the actions to the words in flight - simulators are ideal for this. It is essential to fly in a two-seater with a Flight Instructor Coach who has been standardised. Expect them to be 'picky' about use of inappropriate words such 'push' the stick forward instead of 'move' the stick.

Terminology

Certain words used in an aviation context may be unintelligible to a lay person. It helps to have explained the terms to the trainee before the flight.

Some Examples:

Attitude: used to define the relationship between the nose of the glider and the horizon, as seen from the cockpit. Hence 'normal gliding attitude' implies the normal relationship between the nose of the glider and the horizon.

Altitude Why not use 'height'? Height is one's distance from the ground, and altitude is one's height above sea level.

Follow through: Meaning, 'place your hand and/or feet on the controls and when that control is moved do not resist (its movement).'

Pitch, Roll and Yaw. Use of terms such as *the nose rises* or *the nose goes down* are no less concise or explicit than *the glider pitches nose up* or *down*. Explain roll (movement around the longitudinal axis) and yaw, rotation round a vertical axis, and angle of bank – a steady state, not a movement.

Elevator, Aileron and Rudder You are familiar with the terms but they may not be clearly understood by the trainee. They must learn them and their use in the context of their effects.

Choice of Words

Move/Ease When describing control column movements, the word 'move' has been used. A common alternative is 'ease' which implies the need for gentle movements. This can be over-emphasised as in *ease the stick gently forward*, which may actively discourage positive use of the controls.

Pull/Push In contrast, push or pull may result in over-harsh use. 'Move' reinforced by a positive action during the demonstration should achieve the desired result.

Lowers/Goes Down versus Drops *The nose goes down* is interchangeable with *the nose lowers*. *Drops* would be a bad choice in the context of a control movement, having associations with falling or losing control. It might be appropriate in stalling exercises.

Centralise This does not accurately describe the actual movement of the controls but is used in the interests of brevity.

How much of the patter must I memorise?

It is advisable for new instructors to learn the first few exercise patter notes reasonably well to get into good practice using appropriate terminology. This applies particularly to parts of Exercise 5 (Effect of Elevator and Effect of Ailerons) and Exercise 8 (Turning). In these exercises there is a very precise sequence of control movements that need to be co-ordinated with their description. The words of the patter are carefully constructed to give all and only the significant points; it is unlikely you can better them with different wording. Make an effort to learn these exercises as given, and to make your demonstrations match what you say exactly. These exercises are fundamental steps in the trainee's journey to accurate flying and need to be conveyed clearly and succinctly. This is a stage when many trainees are having to concentrate particularly hard, as everything is unfamiliar. They may fly with several different instructors while mastering basic flying skills, and it is helpful if those instructors all use the same words.

Patter notes for a large number of other exercises have been given here as ***examples*** of appropriate patter – **you do not need to, and you SHOULD NOT, learn them all verbatim.**

LOOKOUT Ex 5	Remarks/Teaching Points
Patter	Good lookout is fundamental to survival; hence lookout is introduced before flying skill.
While flying, we must always keep a good lookout. Help me with this. Scan the field of view, pausing from time to time, looking both above and below the horizon as well as on it. Whenever you see another aircraft or glider, tell me. I'll do the same …	Introducing lookout from the outset should mean that by the time the trainee is taught turning they will be scanning effectively.

EFFECT OF ELEVATOR Ex 5	Remarks/Teaching Points
Patter	The general principle for these exercises are: Say what you are going to do Say what effect that has on the glider as you do it Describe the new picture
Now I will show you how the controls work. First, the elevator.	
Follow through on the stick.	
Look ahead over the nose and see the relationship between the nose and the horizon, or the amount of ground in view.	This covers conditions of both good and bad visibility.
It remains constant. This is the normal gliding attitude.	
When I move the stick forward a small amount	Say this **before** moving the stick.
… the nose of the glider goes down. More ground comes into view; the glider takes up a new attitude and the speed increases.	Not so much to alarm the trainee. Alter the attitude to give a speed change of about 10kt.The trainee will not be aware of the attitude/ speed relationship, but this should be introduced at the earliest opportunity. You might mention the change in the airflow noise.
When I move the stick back again....	
.... the nose rises, there is less ground in view, and we begin to slow down. You can hear that the airflow gets quieter. We are in another attitude.	But not to the point of stalling the glider. Again, you might mention the change in the airflow noise.
Now I'll return the glider to its normal attitude.	
The attitude is constant and the speed is steady. I'd like you to try that. You have control.	The trainee should be encouraged to respond I have control. Most will need to change the attitude a few times to get the feel of it.
I have control.	Remind the trainee to let go of the stick

Patter Notes

EFFECT OF AILERONS Ex. 5	**Remarks/Teaching Points**
Patter: Visual reference for level flight	
Now I'll show you the effect of the ailerons and how we roll the glider.	The trainee should have been briefed on these terms.
Look ahead and see that the cockpit edge is symmetrical with the horizon. The wings are level.	This wording is slightly clumsy but covers all aircraft. In a K21, say, you might say "...see that the top of the instrument panel is parallel to the horizon..." because it is conveniently flat.
If the wings were not level, then the view ahead would look like this.	Roll the glider using coordinated controls to about 30° angle of bank, but do not allow it to turn more than 20° or 30° from the original heading
Follow through on the stick.	But not on the rudder, to avoid distraction.
LOOKOUT	
Look right first.	Assuming a turn to the left
Make sure that it is clear to the left. look as far round to the left as you can.	Sufficiently far round to see the tailplane
Remember to tell me if you see any other aircraft.	Reinforcing the point made earlier. Alternatively, you can ask if they see any other aircraft.
Now look back over the nose.	
MANOEUVRE	
If I move the stick to the left, the left wing goes down.	Say this **before** moving the stick.
It continues going down until I centralise the stick.	The word 'centralise' is not accurate, but it is used in the interests of brevity.
The glider is now banked and therefore turning.	
To maintain the attitude, I need to apply a slight backward pressure to the stick.	Thus, introducing the requirement to coordinate elevator with aileron.
Coming out of the turn	
To come out of the turn we must first lookout. See that it is clear to straighten up, especially behind and below the upper wing	
To raise the wing, I move the stick to the right and centralise it when the wings are level.	In this instance 'centralise' is correct.
As the wings come level, I relax the backward pressure to maintain the correct attitude.	Further consolidating the need to coordinate ailerons and elevator.
Now you try. You have control, on the stick.	You must use the rudder to coordinate while the trainee moves the stick.
Trainee*: I have control.*	Ensure the trainee confirms they have control.

PRIMARY EFFECT OF RUDDER Ex. 5	Remarks/Teaching Points
Patter	
Now I'll show you what the rudder does.	
Follow through, feet on the rudder pedals.	But, to avoid confusion, not on the stick. Ask them to move the pedals a bit, so you know they have actually found them.
Notice that we are flying along this road (Line feature).	Any suitable into wind line feature.
If we press the left pedal the glider yaws to the left but, ***as long as I keep the wings level****, the glider continues to travel in the same direction.*	Introduces the term 'yaw.' -ensure the terminology is briefed before the fight. Emphasising keeping the wings level is important, because otherwise the glider will roll.
When I centralise the rudder, the nose returns back to point in the original direction.	
The rudder only yaws the glider and does not turn it.	Stress this point
Now you try. You have control, on the rudder pedals.	Keep the wings level while the trainee practices

PATTER FROM THIS POINT IS FOR FI(S) CANDIDATES ONLY

COORDINATED ROLLIING AND ADVERSE YAW Ex 6	Remarks/Teaching Points
Patter	
Now I will show you another effect of the ailerons and why we need to use the rudder.	
Follow through on stick and rudder.	
Because the glider will turn in this demonstration we will look out in that direction (left or right) then over the nose again.	This further reinforces 'lookout' and to help maintain the emphasis on looking out at all times.
Watch what happens when I move the stick to the left without moving the rudder.	
Which way did the nose swing?	To confirm that the trainee has seen it.
This is adverse yaw. It results from aileron drag. To counteract this, we need to use rudder in conjunction with the aileron. If we use left (right) aileron and rudder together the nose no longer yaws to the right (left).	
We always use aileron and rudder together, so it is stick and rudder to the left, or stick and rudder to the right.	Make two or three turns/ reversals without altering the heading by more than 20° or 30°.
Now you try. You have control.	At this stage, the trainee's coordination will be just a first approximation, giving them an idea of the amount of each control to use. Do not continue too long as the trainee's attempts may make both of you nauseous.

ASI & AIRSPEED MONITORING Ex 7	**Remarks/Teaching Points**
Patter	
You have control.	A demonstration is not appropriate.
Fly the glider in the normal attitude and note the ASI reading .... what is it?	Best to ask the trainee to say, so that you know they can read it. There could also be a discrepancy between the instruments in the front and rear cockpits.
Lower the nose to an attitude you think will give you a speed of 55kt.	..or whatever will give about a 10kt increase.
Glance at the ASI, while maintaining attitude, until the speed is steady. Notice that it takes some time to increase to the new value.	
If you haven't got the speed you want, make a further attitude correction. Wait, then check the ASI again.	

The trainee should learn to monitor the airspeed indicator and be required to fly within specified airspeed limits as soon as possible. However, use of the ASI must not be to the detriment of lookout.

If, as a result of the above demonstration the trainee tends to watch the ASI, continue with the following and, perhaps, cover the ASI.

AIRSPEED MONITORING - 'Chasing the ASI' demonstration	**Remarks/Teaching Points**
Patter	
If you try to select a new speed solely by watching the ASI then you may end up chasing the airspeed - let me show you. I have control.	
If I lower the nose until I get (say) 50kt … like this..... ...the speed eventually goes beyond that figure.	
If I now raise the nose until 50kt is indicated, then the speed will fall below that figure.	
The only way to control the glider is by setting the attitude, waiting for the speed to settle and if it is not right, adjusting the attitude again.	Chasing the airspeed may result in a phugoid oscillation which may get worse.

TRIMMER EXERCISE EX 7	**Remarks/Teaching Points**
Patter	
Now I'm going to show you how to use the trimmer. I have control.	Trim the glider correctly.
See that if I take my hand off the stick that the glider continues to fly itself and the speed is steady. The glider is stable.	Rough air may make this difficult to show.
Now you take control and continue to maintain this attitude.	Stress attitude.
I will alter the trim.	Usually move the lever forwards.
Keep the attitude constant.	Prompt.
You are having to apply a force to the stick. Tell me the direction.	Wait for the trainee's response.
Now you adjust the trim to reduce the stick load to zero. When you have done that, release the stick.	Either the trim is correct, or it is not. Use the appropriate patter as a prompt.
Good. The attitude hasn't changed.	
OR	
No. That's not quite right. Put your hand back on the stick and reselect the original attitude.	Possibly introduce at this stage a cross reference to the airspeed if you have not already done so.
*Check the airspeed. Yes, **kt will do fine... Sense the load on the stick. Adjust the trim again. Check by releasing the stick. Good. That's fine.*	At no time during this exercise does the trainee follow through on the controls, or the instructor demonstrate.
*Now increase the speed to **kt. Trim for that speed.*	
From now on, always fly the glider in trim.	Encourage them to trim whenever they are going to be maintaining that speed e.g. established in the turn or in the glide.

THE STRAIGHT GLIDE (& SCAN CYCLE) **Ex 7**	**Remarks/Teaching Points**
Patter	
Now I'm going to show you the straight glide and how to recognise and achieve it. Follow through on the controls.	
This is the normal gliding attitude. Look ahead over the nose and see the relationship between the nose and the horizon, or the amount of ground in view. We know we are flying in a straight line because if we pick a point x in the distance, we continue to move towards it	If there is a significant wind, then this is best done up or down-wind to minimise drift.
To keep the glider flying straight we need to keep the wings level. If the wings were not level it might look like this…	Select an incorrect attitude with one wing down.

.....we roll the wings level using the ailerons and rudder together, centralising the controls when the wings are level, and select the correct pitch attitude with the elevator.	At this stage ignore the fact that the glider has probably turned slightly off the original heading. Returning to a heading is covered after turning has been taught.
I will now put the glider into a different attitude, and I want you to return it to the normal wings level gliding attitude.	Select an incorrect attitude, with one wing down, as before.
You have control.	The trainee should respond with, *I have control and* return the glider to the normal gliding attitude.
Repeat the exercise when turning has been taught, this time focusing on heading:	
Look ahead in the distance and identify a point we are flying towards. Remember, we know we are flying in a straight line because we continue to move towards that point, and it stays in the same position in the canopy.	
If the nose has moved away from the original heading, then we roll gently back towards it. As we reach the original heading, we roll the wings level and check the correct pitch attitude.	For small heading changes do not use too large an angle of bank.
Scan Cycle	
I have control. I will now show you how to maintain the straight glide and carry out the scan cycle.	Before this part of the exercise the 'clock' system must have been covered in the pre-flight briefing.
The sequence of events is lookout, attitude, and then instruments.	The scan cycle.
Begin by looking directly ahead. Focus on the horizon, looking above and below it. *Move your head to approximately the two o'clock position. Focus on the horizon and then look above and below it.* *Move your head to the 3 o'clock position. Focus on the horizon and then look above and below it* *Now look back as far as possible. Then look directly upwards, above the glider.*	If you choose to look left first it will be approximately 10 o'clock and then 9 o'clock.
Look forwards again. Check the attitude. If it is not correct, level the wings with coordinated aileron and rudder and use the elevator to return the glider to the normal gliding attitude.	
Check the trim and adjust if necessary.	If trimming has been taught.
Instruments. Check that the yaw string is central.	
Variometer. Check the glider's rate of ascent/descent.	
Altimeter. Do we have enough height to stay on this course, or should we be starting our return to the airfield?	You are responsible for the glider remaining within easy gliding range of the airfield, but the trainee needs to learn what the safe gliding range looks like.
And now back to lookout, this time to the left.	Repeat the scan cycle, this time to the other side (left or right).
Now, you try. You have control.	Let the trainee practice and do not worry if the glider's heading changes.

TURNING Ex 8	**Remarks/Teaching Points**
Patter	
I have control.	
Now I will show you how to turn the glider using all three controls together.	
There are three stages to the turn; going in, staying in and coming out.	This helps to break up the exercise into manageable chunks.
We've been maintaining a good lookout. But before turning left, we look round and behind the right wing, then scan ahead of the aircraft, above and below the horizon, then to the left and as far back as possible.	Reinforcing points made earlier.
Look ahead over the nose.	Principally to monitor the attitude.
Roll the glider using the aileron and rudder together.	
At the desired angle, use the aileron to stop the angle of bank increasing, and reduce the amount of rudder.	
As the angle of bank increases, keep the attitude constant with a slight backward pressure on the stick.	
The glider is now established in the turn.	Pause here before continuing.
Now look out again.	
STAYING IN	
Notice how the nose moves steadily around the horizon.	
Continue the scan cycle and keep a good lookout - especially in the direction of the turn.	
Keep the angle of bank constant, making any necessary corrections with aileron and rudder together.	If there are no disturbances that require correction, alter the bank angle to reinforce aileron and rudder **together.**
COMING OUT	
To come out of the turn we must first lookout. See that it is clear to straighten up, especially behind and below the upper wing. Other gliders may have joined you.	
Roll the wings level with aileron and rudder together. Relaxing the backward pressure as you do so and centralising the controls. when the wings are level.	
There are three stages to the turn. Going in, staying in and coming out.	
You try that. You have control.	Break it into sections and practise one at a time before asking the trainee to perform the complete turn.

N.B. Whilst 'Going In', 'Staying In' and 'Coming Out' is the obvious way to approach the teaching of Turning, many trainees respond better if they are first asked to restore the glider from an established turn, followed by maintaining the turn and finally entering the turn. See 'Chapter 8 Turning', of this manual.

TURNING Ex 8 Slip and Skid	**Remarks/Teaching Points**
Patter	
Follow through on the controls.	Set up an under-ruddered turn.
I am using too little rudder. Notice that the yaw string is deflected towards the outside of the turn (the slip ball falls into the turn).	They should understand that the yaw string indicates where the relative airflow is coming from and that correcting means yawing in that direction.
I need to increase the amount of rudder to bring the yaw string back to the centre. At the same time, I also need to keep the angle of bank constant.	
Have a good lookout.	
This time I am using too much rudder. Notice that the yaw string is deflected toward the inside of the turn (the slip ball rolls to the outside of the turn).	
I need to reduce the amount of rudder to bring the yaw string back to the centre. At the same time, I need to keep the angle of bank constant.	

SLOW FLIGHT – Ex 9a	**Remarks/Teaching Points**
Patter	
Before we look at Slow Flight, we do a HASSELL check.	
Now I will show you the symptoms associated with slow flight. *If I raise the nose slightly above the normal gliding attitude;* *The glider slows down, the airflow is quieter and to maintain this state I need to hold the stick somewhat further back than usual.* *This is 'slow flying' and is very close to the stall. You may notice that the controls are less effective, so I am having to put in more input to keep the wings level.* *To recover I move the stick forward.*	Take care to patter **only the symptoms that occur.**
Flying too slowly is both inefficient and potentially dangerous.	
Now you try. You have control.	Unless carrying straight on to mush stall
STALL Ex 9b – a mushed stall **You can continue the slow flight exercise into a mushed stall**	**Remarks/Teaching Points**
We are now flying with the stick hard against the back stop, and the glider is stalled or 'mushing.' Look at the high rate of sink.	Draw the trainee's attention to the variometer when the sink rate is high.
Recover, as before. Move stick centrally forward. Regain flying speed and return to the normal flying attitude.	
Now you try. You have control.	They must reduce speed **slowly**.

STRAIGHT STALL Ex 9b	**Remarks/Teaching Points**
Patter	
Before I show you the stall and recovery, we do a HASSELL check.	
Now I will show you the symptoms of the approaching stall. Follow through on the controls. If the nose is raised even a little above the normal attitude .....the airspeed reduces, the noise of the airflow changes. It is quieter.	Only say that it is quieter if it actually is.
The effect of the ailerons may change …	Sometimes the ailerons are more effective, sometimes not. Leave this symptom out if short of time.
.... and the glider buffets.	The buffet may have started earlier. In which case, comment as it occurs.
In spite of my attempts to hold up the nose, it drops	You should aim to say the nose drops as it does so you may need to reverse the order of the phrases – i.e. *the nose drops in spite of my attempts to hold it up*
To recover, move the stick centrally forward, regain speed and return to the normal gliding attitude.	
Now you try. You have control.	Remember to re-clear below you at intervals, if doing several stalls.
WING DROP Stall Ex 9b	**Remarks/Teaching Points**
	Again, approach the stall, pointing out the symptoms
A wing may drop.	Induce the wing drop with rudder if there is no convenient gust
*Recover, as before. Move stick **centrally** forward. Regain flying speed, level the wings and return to the normal flying attitude.*	Stress unstalling the wings before trying to level them
Now you try. You have control.	

STALLING – Accelerated Stalls Ex 9b **Stall in a turn**	**Remarks/Teaching Points**
Before I show you the stalling in a turn, we do a HASSELL check.	
I have control - I'm putting the glider into a normal 30° turn - and slowing down towards the stall. *Note the unusual position of the controls required to maintain the attitude and angle of bank.* *Note the airspeed at the start of buffet - and the glider stalls.*	
*To recover – move the stick **centrally** forward. Regain flying speed, level the wings and return to the normal flying attitude.*	
Again, I'm putting the glider into a normal 30° turn - and slowing down towards the stall. *Note the start of buffet – but this time I relax the back pressure on the stick and the buffet goes away. This action reduces the angle of attack and prevents the stall.* *A stall can be prevented by moving the stick forward.*	Repeat the exercise but recover at the buffet stage by relaxing the back pressure on the stick. Explain that this action is to prevent a stall, not recover from it.
Now you try. You have control.	The trainee may have difficulty controlling the bank but if possible, they should experience this stall while on the controls themselves, particularly the recovery at the buffet.

STALLING – Further Stalling **The differences between stalling & reduced G**	**Remarks/Teaching Points**
Before I show you the stall and recovery, we do a HASSELL check.	
Now I will show you a particular symptom of the stall. Follow through on the controls. If the nose is raised noticeably above the normal attitude and held there ..... the glider stalls ..... and we feel light in our seats. *The elevator will not raise the nose. We are stalled. I must move the stick forward to recover.*	Conduct a stall with a clear nose drop. As the nose drops past the horizon, knock the stick against the back stop to show that the elevator is ineffective in the stall.
Now we will look at reduced G. *I am accelerating before pulling up into the climb. This time I lower the nose earlier to push over the top and the glider is not stalled.*	Slightly increase speed then gently pull up and push over. Push sufficiently firmly to produce the same amount of reduced 'g' felt in the stall.
Notice the same sensation, but this time the elevator is effective and air speed OK; *Stick back to recover to the normal attitude* *Note the similar sensation – but absence of other symptoms. Reduced G is not a reliable indication of stalling.*	Demonstrate the elevator is still effective raising the nose as it drops past the horizon.

SPINNING **The Spin**	**Remarks/Teaching Points**
Before we look at spinning, we do a HASSELL check.	
Describe a scenario in which you have got a little low and/or far away from the site and unintentionally fly slower than usual trying to stretch the glide.	
Notice that the nose is not high - only just above the normal flying attitude. Check height from the altimeter. *We are in a turn with a shallow angle of bank. The glider doesn't turn quickly enough so you try to bring the nose round faster with the rudder.* *This appears to work because the glider looks as if it is turning more quickly.* *Not wanting to increase the bank angle near the ground, we apply opposite aileron. The nose starts to go down. We try to stop it with the elevator, but even with the stick fully back the nose won't come up.* *We are now spinning.*	
Notice the low or flickering ASI reading (the needle has possibly gone backwards against the stop). *Notice the high rate of rotation. Notice the normal G.* *The stick is fully back but not raising the nose.*	Try to patter what actually happens. There is little hope that the trainee will absorb all this in one go. It will need to be demonstrated several times, so if there is not time to get all the words you want to say out, get them done across multiple demonstrations.
To recover we: • *Centralise the ailerons* • *Apply full opposite rudder* • *Move the stick progressively forward until the spinning stops* • *Centralise the rudder and recover from the ensuing dive.*	

THE SPIRAL DIVE	
Before we look at the spiral dive, we do a HASSELL check.	
Look, we are well banked, the nose is below the horizon and both speed and G are increasing. The rate of rotation is lower than when spinning. To recover: *Level the wings with coordinated aileron and rudder and* ***then*** *ease out of the dive.*	Try to make use of those occasions when the glider fails to spin and instead enters a spiral dive. Otherwise, do it as a demonstration Do not delay recovery too long.

SPINNING – Further Spinning **Changing Effect of the Rudder at the Stall**	**Remarks/Teaching Points**
Before we look at the changing effect of the rudder at the stall, we do a HASSELL check.	
I have control, please keep your hands and feet clear of the controls. *We are flying at a normal flying speed.* *I'm going to apply full left rudder, and I want you to tell me how much yaw and roll occur.* *How much yaw and how much roll was there?*	Hopefully, the trainee will reply with figures in the order of 30° yaw and 10° roll or 'lots of yaw and not much roll'.
OK, I'm going to repeat the exercise but note that we are now flying quite near the stall.	Fly the glider just above the stall. The glider may need to be 'on the buffet' for this to work.
I am going to apply full left rudder again and again tell me how much yaw and roll you see. *How much yaw and roll?* *Move the Stick centrally forward to unstall the glider* (Centralise the rudder).	Hopefully, this time the trainee will reply with figures in the order of 70° roll and 15° yaw or 'a lot of roll and not much yaw'. Emphasise that misuse of the controls near the stall makes the glider spin.

STALL & SPIN FOLLOWING A LAUNCH FAILURE	**Remarks/Teaching Points**
Part 1 *Take note of this attitude – we are flying at the normal attitude.*	
Do the HASSELL checks.	
I am increasing speed to 70kts just so I can pull the glider up into the full climb winch launch attitude. *The launch has failed!* *I am lowering the nose to the approach attitude and trying to maintain it.* *The glider has settled into a mushing stall.* *I lower the nose and recover*	After a short 'hesitation' recover to the demonstrated normal attitude, in a mush stall. This takes practice.
Repeat the HASSELL check and note the height.	
Part 2 *Again, I am increasing speed to 70kts just so I can pull the glider up into the full climb winch launch attitude.* *The launch has failed!* *I am lowering the nose to the normal attitude, trying to maintain it, and starting to turn.* *I am using the controls normally trying to correct the attitude.* *The glider has departed from controlled flight and is still stalled/spiral diving/spinning.* *Use the appropriate recovery action.* *How much height have we lost?*	Make the same recovery but this time turn.
Repeat the HASSELL check.	
Part 3 *Again, I am increasing speed to 70kts just so I can pull the glider up into the full climb winch launch attitude.* *The launch has failed!* *This time I 'm lowering the nose to the recovery attitude. More nose down.* *Now I wait, wings level, string in the middle and wait until I have my safe speed on the ASI.* *Then I look over the nose and ask myself the question: Can I land ahead?* *If the answer is yes, that's what I do.* *If the answer is no, then whilst maintaining my safe speed I turn in the nominated direction.* *I neither turn or use the airbrakes until my safe speed has been reached and the decision made.*	This time, recover immediately, with no hesitation.
Ask the trainee to repeat part 3 of the exercise, giving them control at the point of simulated launch failure.	

WINCH LAUNCH	Remarks/Teaching Points
Before we accept the cable, we make sure we have completed our checks and that the area ahead is clear both ahead and above the winch. *Ensure the cable is on the correct hook with the correct weak link.* *We make sure the cable is lined up with the glider and that we can anticipate any swing from a cross wind or the cable lie.*	
As the glider is rolling: *I keep the wings level with the ailerons and balanced on the mainwheel with the elevator.* *As we become airborne, I may need to check the stick forward to maintain the glider at or close to the take-off attitude.* *I note the airspeed increasing through the safe minimum (50kts on most gliders) and feel the acceleration, so I can then allow the glider to transition smoothly and steadily towards the full climb attitude.*	This patter is difficult to deliver exactly in time due to the speed of the launch, so may need delivering over several launches.
One the ground run, my left hand will remain on the release, so that if at any stage I cannot keep the wings level I will release immediately. *Look out to the sides to check the climb angle and monitor the speed. Continue to monitor the speed and the climb angle during the climb. Once we are in the full climb we use a steadily increasing back pressure to oppose the downward pull of the cable.*	If lay off is required – establish the layoff once you are in the full climb, with appropriate patter
At the top of the launch the nose will start to come down despite the back pressure. When you feel the power decrease bring the nose down to the normal attitude and the cable will back release. If you don't feel the cut in power, then lower the nose and release. *Pull the release to check the cable is gone.*	

AEROTOW	Remarks/Teaching Points
Patter	
During the ground run, I will steer the glider with the rudder, hold the wings level with the ailerons, and balance it on the main wheel with the elevator. *My left hand will be on the release. If at any stage during the ground roll the wing goes down despite the application of aileron I will release immediately.* *I will start the ground roll with the stick Back/Neutral because the glider sits on its Nose/Tail.*	Having completed the usual pre-flight checks, ensure the towrope is attached to the aerotow hook. Stick position is dependant on the glider.
As the rope pulls tight, note the vertical position of the tug in the canopy. This is a good first approximation to the correct vertical position of the tug whilst on tow.	
As we accelerate, I balance the glider on its mainwheel, then progressively move the stick forward to stay balanced on the mainwheel, until we become airborne.	
Once airborne allow the glider to climb very slowly until comfortably clear of the ground – like this. This the correct height above the ground whilst the tug further accelerates. *Maintain the gliders wing parallel to the tug's wing.*	5 to 10 feet above the ground is fine, but your trainee will not know what that looks like, so show them.

The launch failure options are….	During the initial climb-out note the changing launch failure options until sufficient height has been gained to re-enter the circuit. However, stress that our entire focus at this point is on the tug. The launch failure options are pre-briefed, known fields, or ones we are aware of in our peripheral vision.
Concentrate on maintaining the correct vertical position behind the tug. Until 1,000 ft agl, even to the exclusion of lookout.	
To establish the correct vertical position behind the tug, whilst keeping our wings parallel to the tugs, I gently lower the nose of the glider a small amount and the tug moves up the canopy. Can you feel the rough air?	
This is the tug's slipstream. So, I move the stick slowly back a little to the correct position. Note the vertical position of the tug on the canopy. This is the normal tow position.	.
If I lower the nose of the glider a small amount the tug moves up the canopy and we fly down through the slipstream. Notice the air is now smooth again. This is the low tow position. Look at the new position of the tug in the canopy. Note how high the tug is. This is the lowest position you should go on aerotow	
To return to the normal tow position, I raise the nose of the glider gently until the tug returns to its normal position on the canopy and then hold it there with the elevator.	
Now I will show you the maximum safe height on tow. If I raise the nose of the glider a little the tug starts to go down the canopy. *Note the new position of the tug in the canopy, notice how low it is. This is the maximum height that it is safe to go to. If you get any higher than this or i**f you lose sight of the tug, you <u>must</u> release immediately.*** *To return to the normal tow position, lower the nose of the glider gently and wait until the tug returns to the correct position on the canopy and then hold it there with the elevator. The glider will fly back in the normal tow position.*	Reinforce the importance of not getting too high or changing height behind the tug rapidly before and after this demonstration. Ensure that they understand the life of the tug pilot is in their hands.
In order to maintain position laterally behind the tug, we must keep the glider's wings level with the tug's wings. *If the glider's wings were not level with the tug's, the glider will move out to one side. Watch, if I allow the left wing to go down relative to the tug's wings, the glider moves out to the left of the tug. To move back into position behind the tug, I must level the glider's wings with those of the tug and not allow the inside wing to go down. The rope will now slowly pull us back behind the tug.* *As we get back in line behind the tug, I roll the glider slightly and briefly to the left in order to prevent overshooting and then level the glider's wings with those of the tug. We are now back in the normal tow position.*	
To follow the tug when it turns, we continue to do the same – keep our wings parallel to those of the tug and keep the tug on the same place on the canopy with the elevator.	
If we get out of position: Promptly stop any further divergence. Restore the gliders wings parallel to those of the tug, then slowly correct the vertical position by returning the tug to the correct position on the canopy.	
Before releasing the tow, it is vital to make sure it is clear in the direction we wish to turn, and all around. We then look back over the nose, pull the release and visually make sure the rope has separated from the glider. When you are certain the rope has released, slow down to gain separation from the rope. When you have separation, you may turn if you wish.	Emphasise the importance of being certain the rope has released.

