

Winch launches

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DON PUTTOCK Dartmoor
Gliding Society

NEXT

Winch launches

1. Section 1 Ab-intio brief
2. Section 2 Launch failures
3. Section 3 Technical

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Winch launches (section 1)

1. Overview
2. Objectives of launch
3. Preparation
4. Ground run
5. Acceleration/take off/transition
6. Full climb
7. Release
8. Cross wind

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Winch launches (section 1)

(overview)

Winches can vary considerably from site to site.

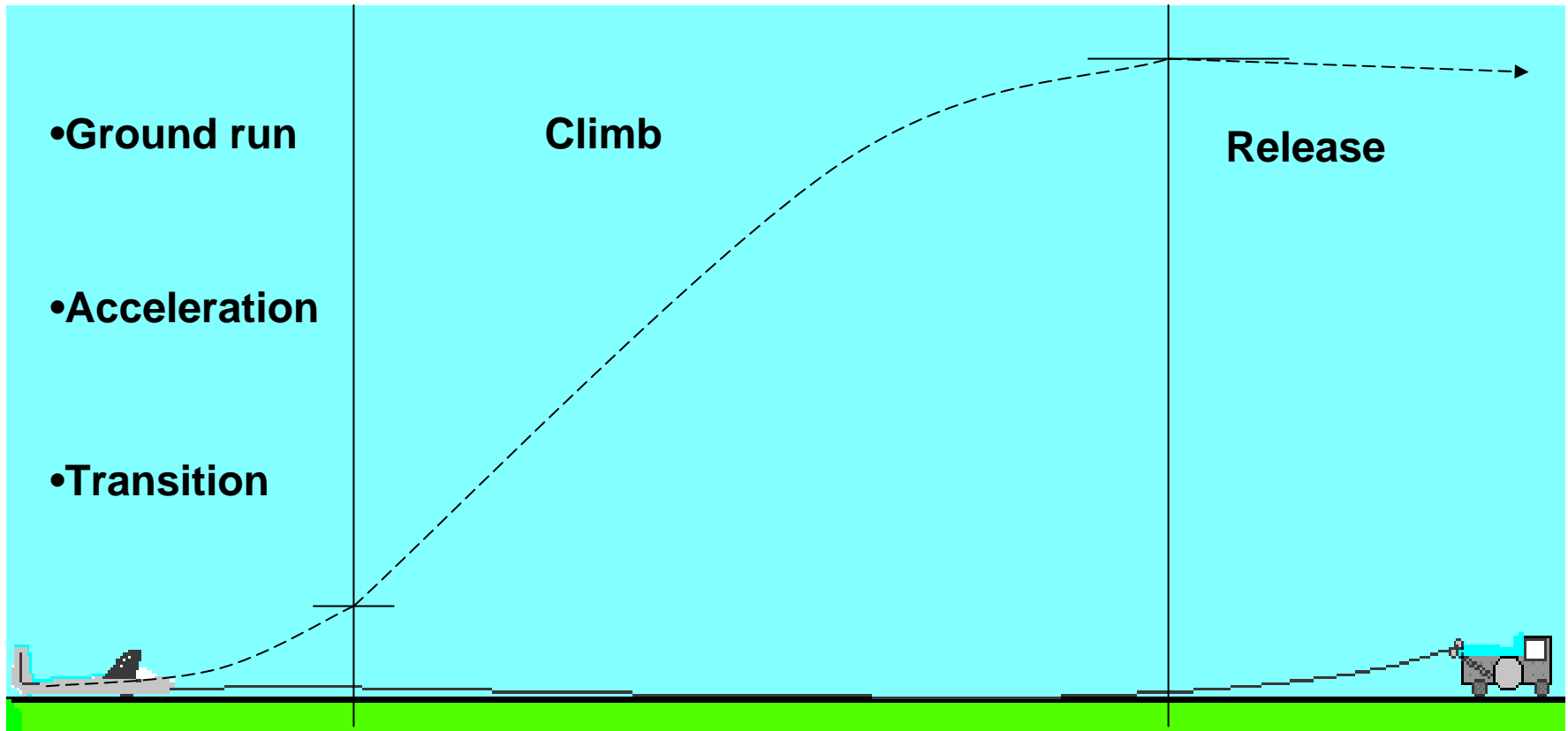


You will need to be able to cope with the differences in power and drive systems.

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Winch launches (section 1)

(overview)



NEXT

Winch launches (section 1) (objectives)

- Attain a 45° climb angle while being able to recover safely from any position within the launch profile.
- Maintain a safe speed throughout.
- Not put the glider, yourself or anyone else at risk from the launch or the cable.
- Achieve maximum height without compromising operations or safety.

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Winch launches (section 1) (objectives)

SAFETY is the concern of everybody,
but:-

- As the captain of the aircraft, you are in charge.
- If it goes wrong its your fault.
- If in doubt don't launch

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Winch launches (section 1) (preparation)

Do not use soft (compressible) cushions.

During the acceleration phase you may move back
and inadvertently bring the stick with you !!

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Winch launches (section 1) (preparation)

What is V_w (the maximum launch speed).

Remember that it is reasonable to exceed this speed during the first half of the launch. So don't panic.

Winch launches (section 1) (preparation)

Before take off.

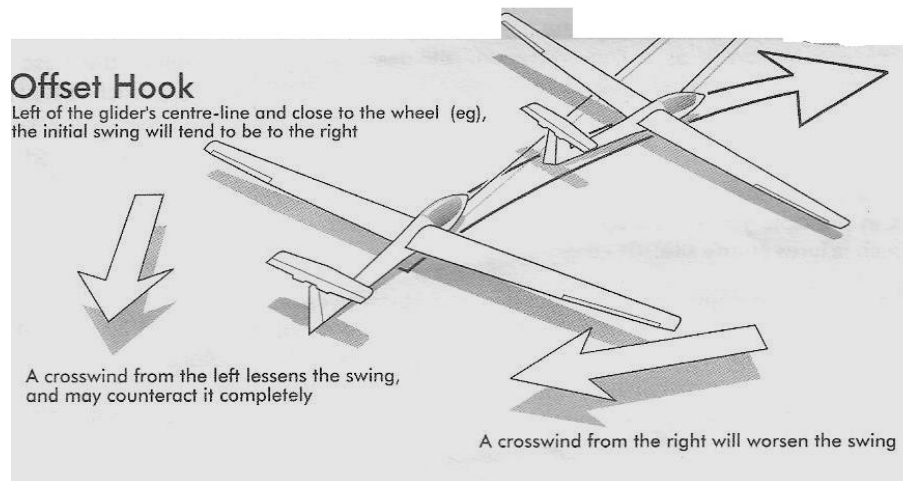
- Know where the Airspeed indicator is located.
- You may find yourself trying to figure out your speed using the wrong instrument!!



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Winch launches (section 1) (preparation)

Is your winch hook offset?



- Offset hooks can cause the glider to turn at “all out”, so be prepared.

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Winch launches (section 1) (preparation)

- Know where the Release knob is and put your hand on it.
- If you need it, you won't have time to go hunting.
- In this aircraft it is also possible to block access with the stick!!



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Winch launches (section 1) (preparation)

The trim setting is important.

Trim lever



The trim is set for landing.

NEXT

Winch launches (section 1) (preparation)

Think about eventualities.

What is your approach speed today?

If you cant land ahead, which way will you turn?

- These are the very last things you consider before connecting the cable.

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Winch launches (section 1) (preparation)

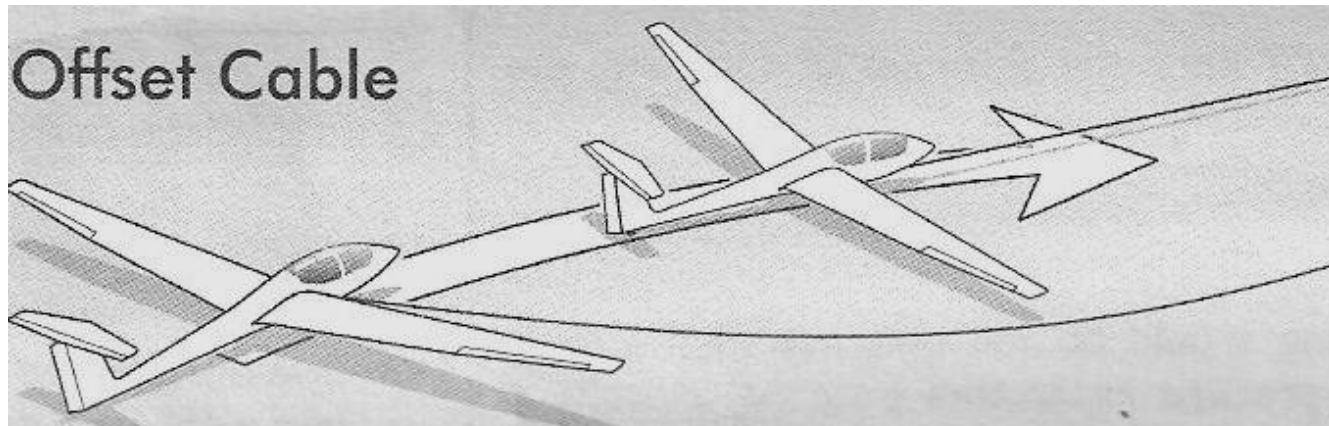
- Is the correct weak link being used, is it the correct hook?
- Remember you need to check, people can and do make mistakes..



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Winch launches (section 1) (preparation)

Is the cable laid out straight in front of you?



The glider will initially follow the line of the cable. If its not straight the glider will swing, and that might be dangerous.

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Winch launches (section 1) (preparation)

If you are ready to go.

Checks complete.

Issue the instruction to attach the cable.

- You have now authorised the launch crew to proceed.

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Winch launches (section 1) (ground run)

Waiting for “take up slack”

- Relax.
- Keep a good lookout
- Hand on release
- Hold stick firmly but lightly
- Rudder central

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Winch launches (section 1) (ground run)

“All-out”

- Keep the wings level with aileron.
- Steer with the rudder.
- Balance glider on its main wheel.

The controls will go from ineffective to very effective as you accelerate.

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Winch launches (section 1) (ground run)

If a wing goes down or touches the ground despite the application of aileron.

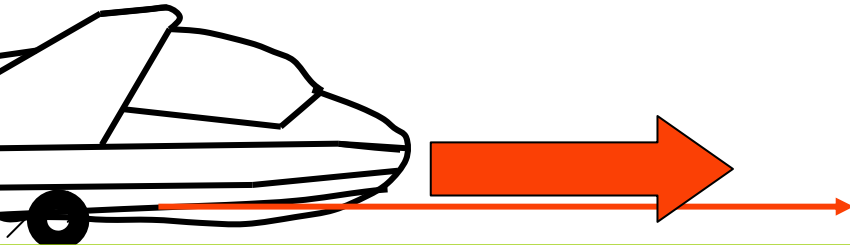
PULL THE RELEASE

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Winch launches (section 1) (ground run)

Keep the glider balanced on its main wheel

When the airspeed is there, it will lift off

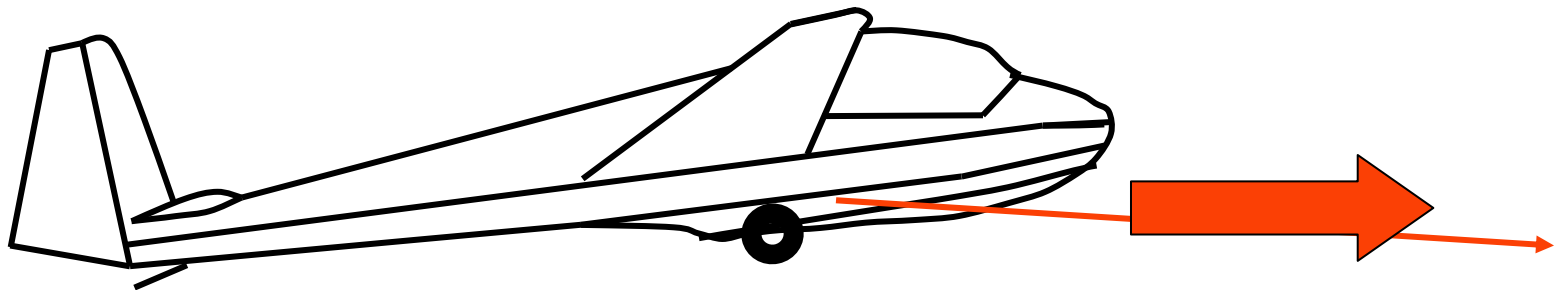


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Winch launches (section 1) (transition)

Keeping the stick neutral, monitor the rotation into the climb

Speed good and increasing

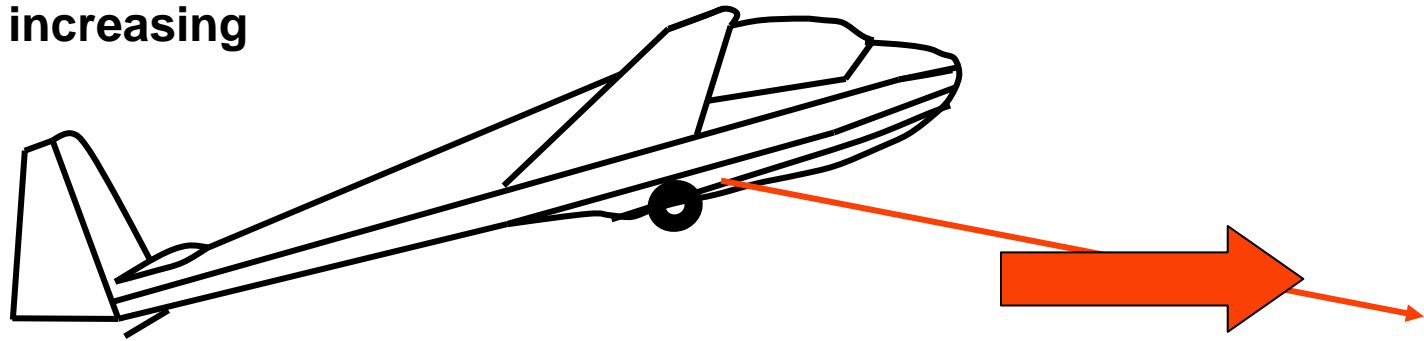


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Winch launches (section 1) (transition)

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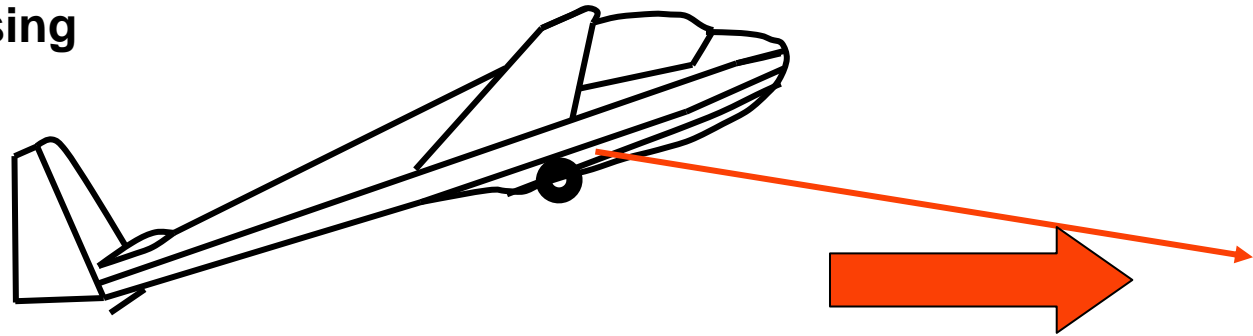


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Winch launches (section 1) (transition)

Keeping the stick neutral, monitor the rotation into the climb

Speed good and increasing

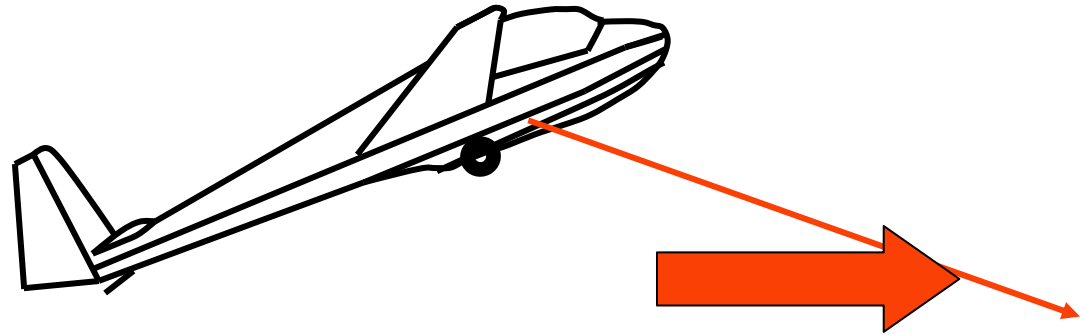


Winch launches (section 1) (transition)

Keeping the stick neutral, monitor the rotation into the climb

The speed is increasing because the aircraft is smoothly rotating into the climb

If the speed starts to decay in the transition phase, abort the launch

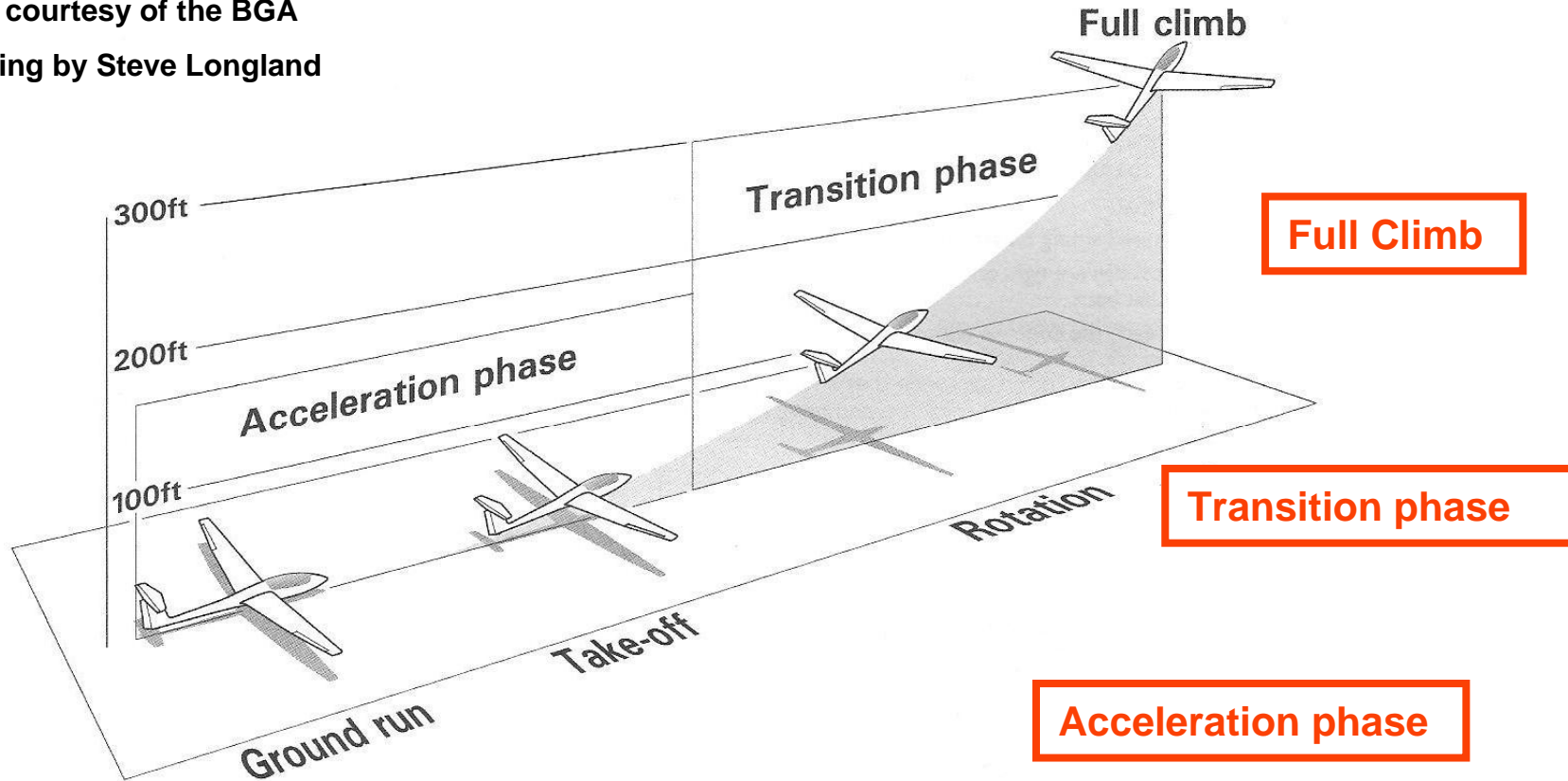


At every stage the glider is climbing but its attitude is never too steep to recover safely.

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Winch launches (section 1) (transition)

Slide courtesy of the BGA
Drawing by Steve Longland

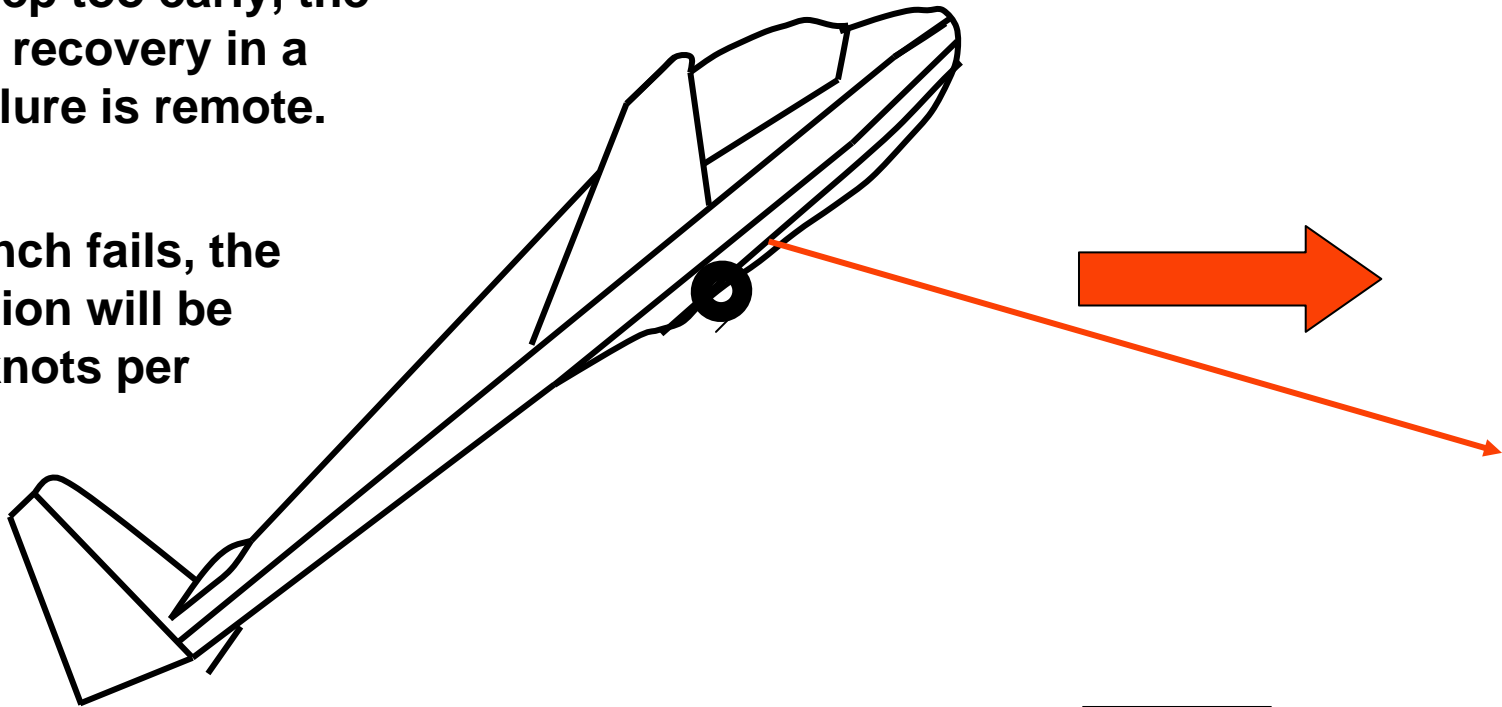


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Winch launches (section 1) (transition)

Rapid rotation means you will be too steep too early, the chance of recovery in a launch failure is remote.

If the launch fails, the deceleration will be about 8 knots per second!!

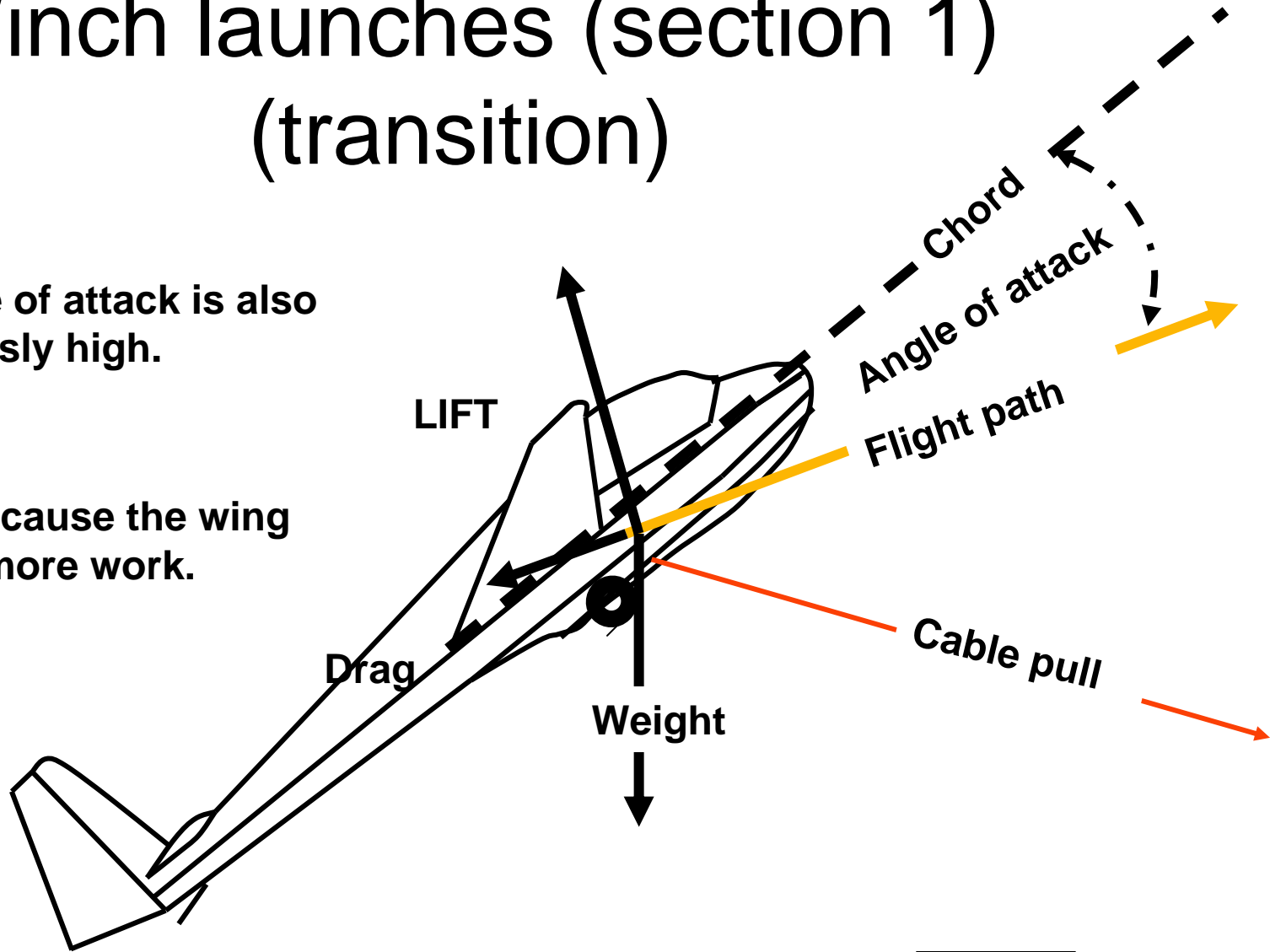


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Winch launches (section 1) (transition)

The angle of attack is also dangerously high.

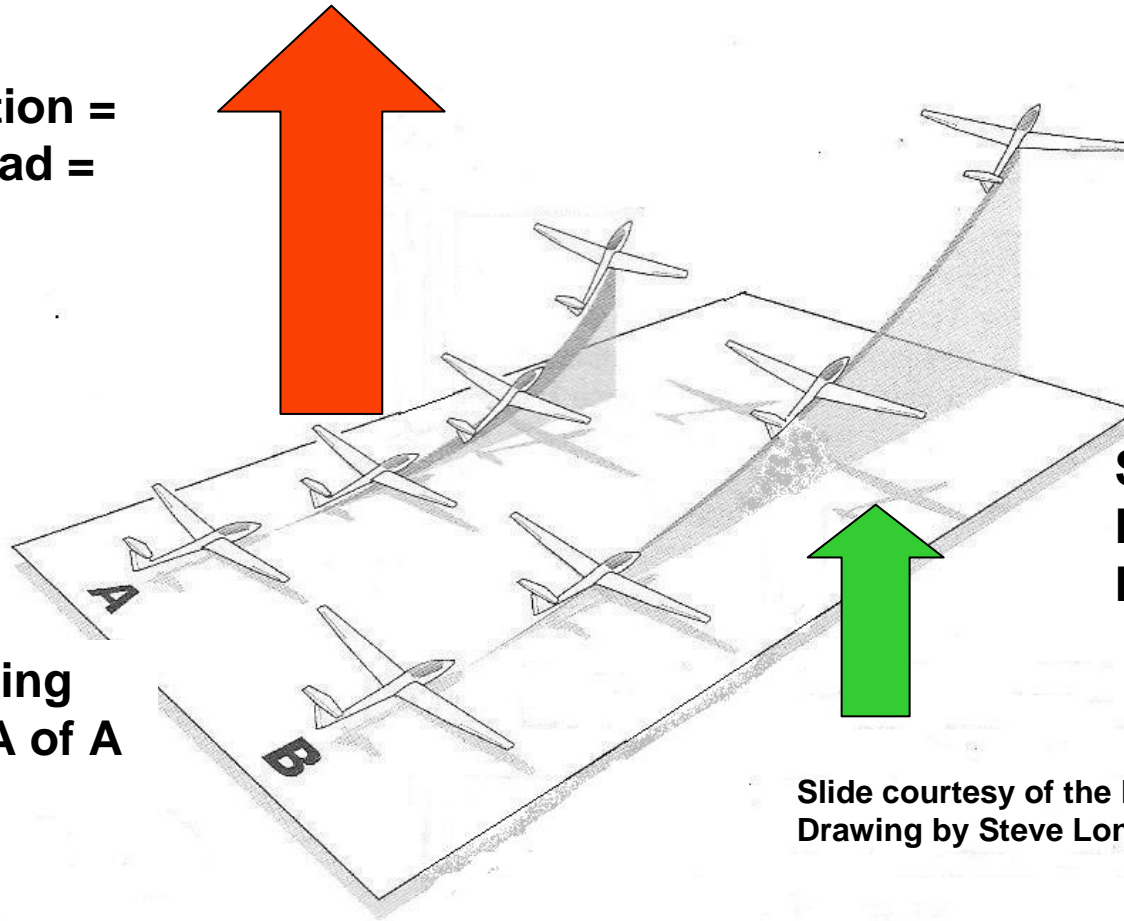
This is because the wing is doing more work.



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Winch launches (section 1) (transition)

**Swift rotation =
high lift load =
high AofA**



**Slower rotation =
Lower lift load =
Lower AofA**

**Darker shading
represents A of A**

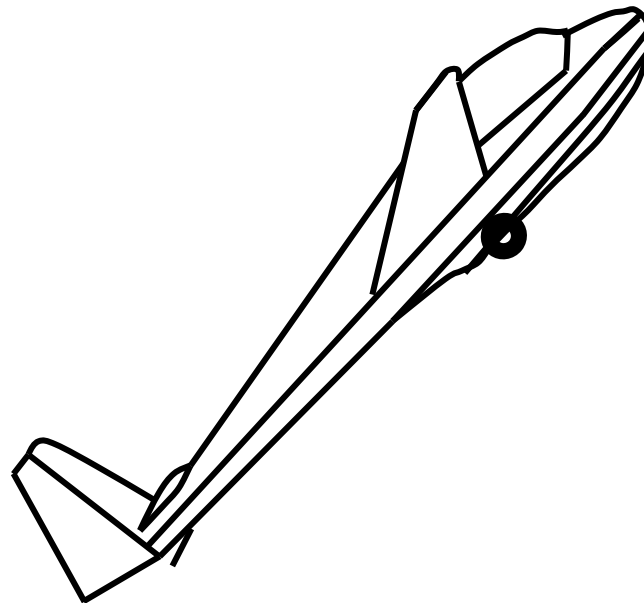
Slide courtesy of the BGA
Drawing by Steve Longland

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Winch launches (section 1) (The full climb)

Too steep:

- 1. Better climb**
- 2. Risk breaking weak link**
- 3. More difficult to recover**

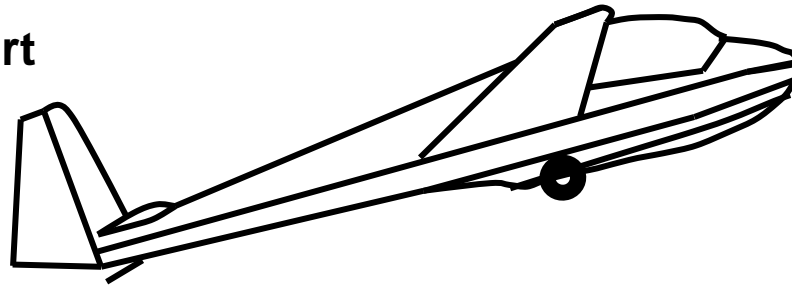


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Winch launches (section 1) (The full climb)

Too shallow:

- 1. Poor rate of climb**
- 2. Risk overspeeding**
- 3. Launch failures start lower and further into the field.**

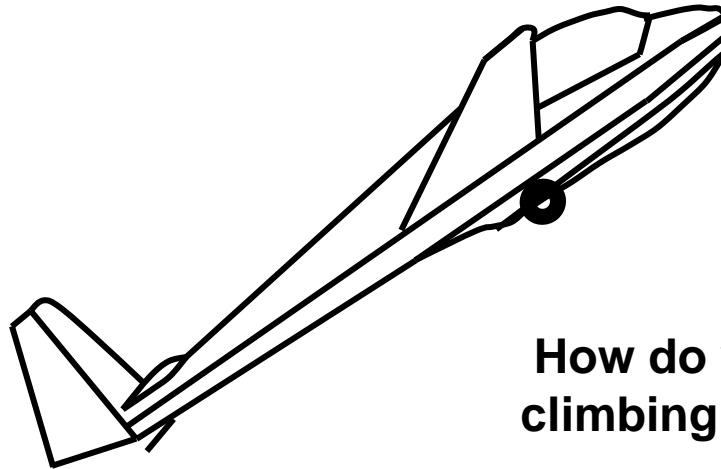


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Winch launches (section 1) (The full climb)

About 45°:

- 1. Optimum climb**
- 2. Safest recovery.**



How do you know you are climbing at 45° ?

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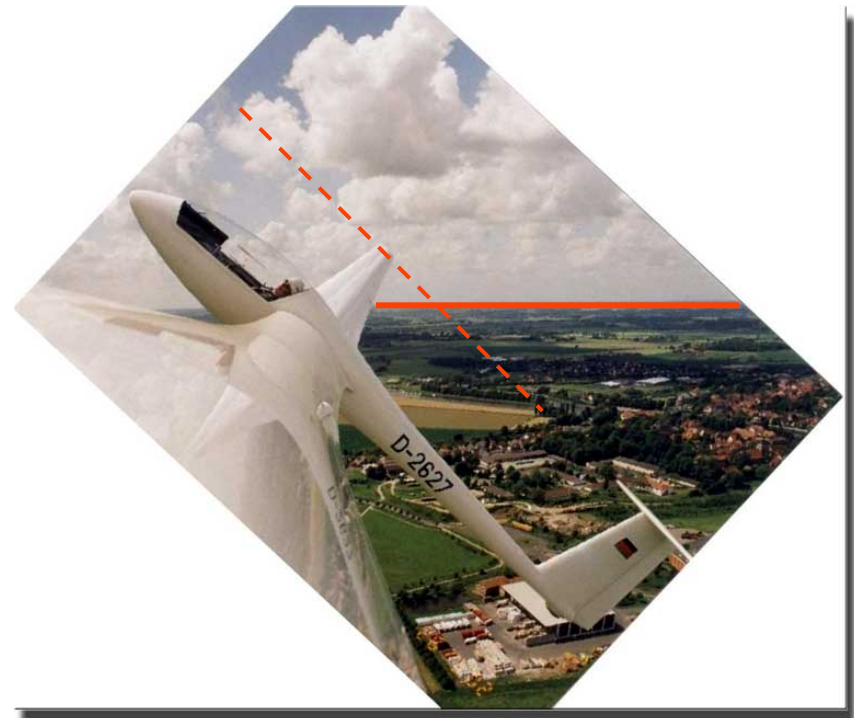
Winch launches (section 1) (The full climb)

During the launch we need to know:

1. Our airspeed.
2. Our angle of climb.

Airspeed trends are seen on the
airspeed indicator

Our climb angle is seen, by
assessing the angle with the
horizon.



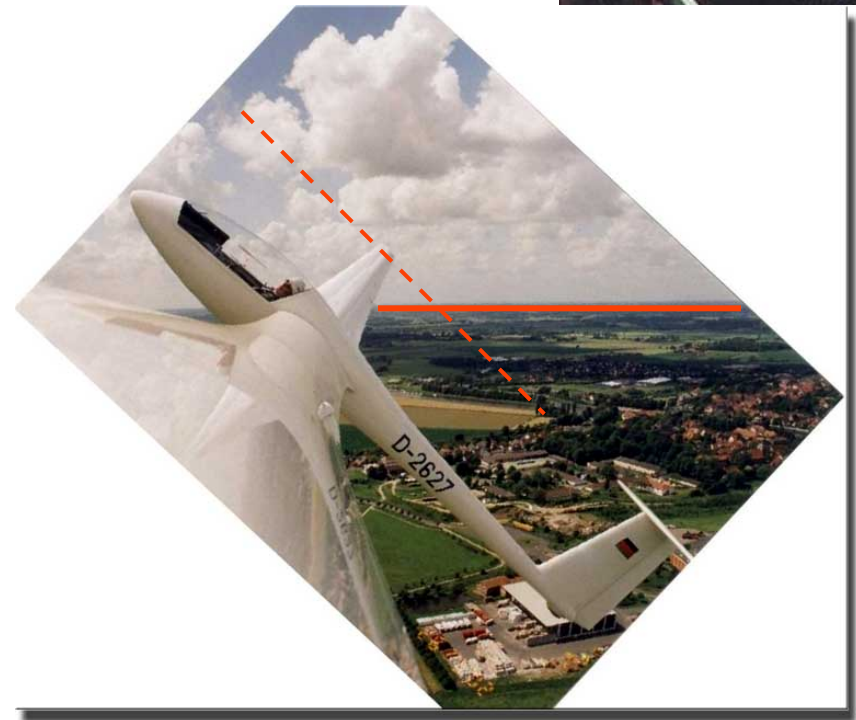
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Winch launches (section (The full climb)

During the launch we need to know:

1. Our airspeed.
2. Our angle of climb.

So we must continually scan
between the wingtips and the ASI



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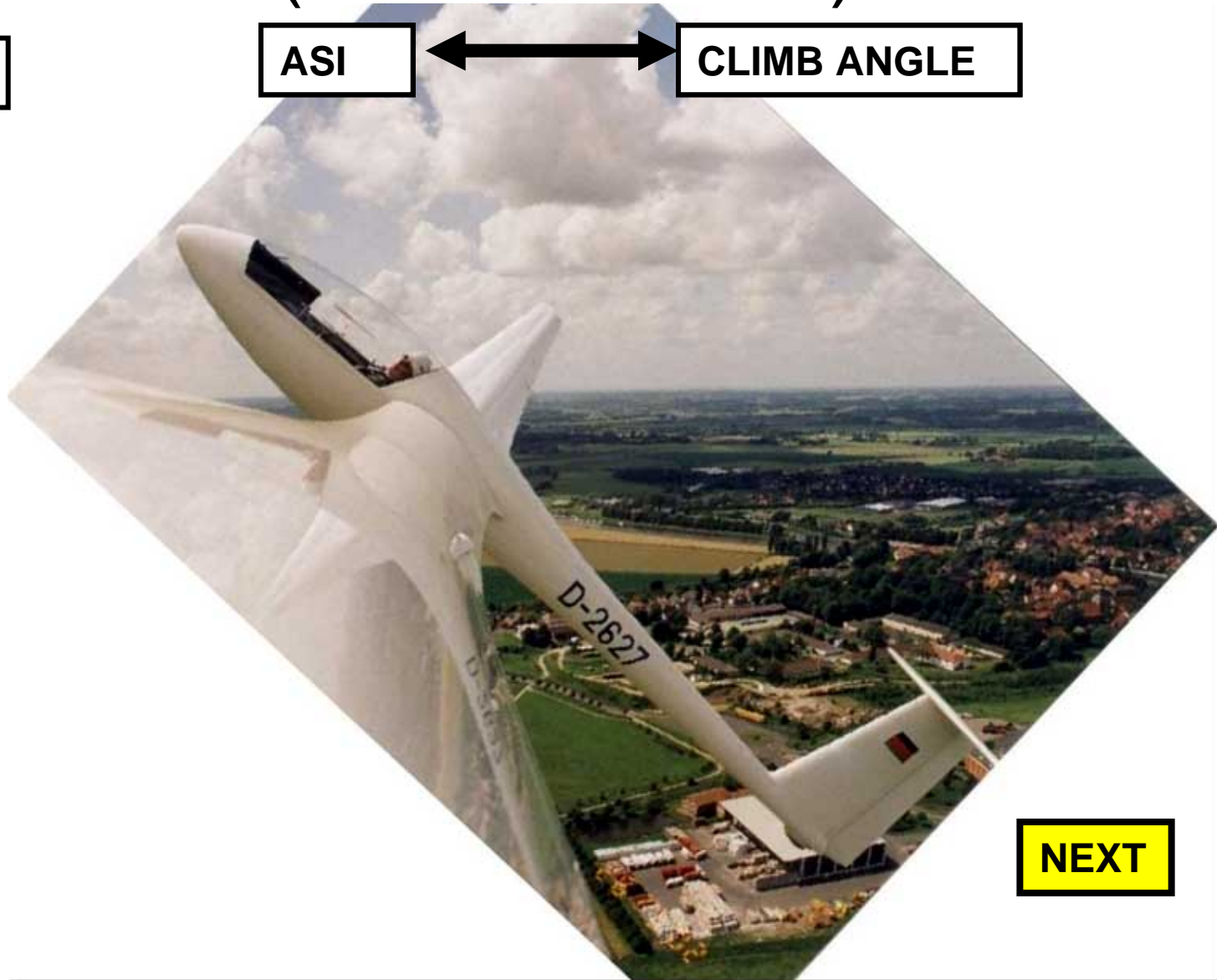
Winch launches (section 1) (The full climb)

SCAN

ASI



CLIMB ANGLE



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Winch launches (section 1) (The full climb)

Keep straight by:-

Keeping both wings equidistant above the horizon.

Pointing at a cloud straight ahead

Keeping the same amount of ground on either side of the nose.

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Winch launches (section 1) (The full climb)

If the speed starts to decay:

Progressively lower the nose until the speed returns.

If the speed does not return by level flight, pull the release and abort.

If the speed returns, cautiously return to the climb. Only accept one reduction in speed.

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Winch launches (section 1) (The full climb)

If the speed starts to increase:

Check your climb angle is correct.

Signal “too fast”.

If the speed exceeds V_w on the 2nd half of the launch, pull the release.

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Winch launches (section 1) (Too Fast)

If the speed starts to increase:

Give the too fast signal

End