

Flight Manoeuvres Flying School Emmetten & Titlis

Please return the card to the flight instructor after having done the manoeuvre

Steering with rear risers (01)

- Keep holding the brake handles and grasp the rear risers just above the small carabiners. Pull slowly and **with care** only one side of the rear riser 15 to 20 centimetres downwards. Weight shift your body to the inner curve side to ease the turning.
- Always just pull only one side. If the paraglider starts to stall asymmetrically (canopy deforms and the pulled side starts to fly backwards) immediately release the riser so that the canopy can return to its usual position.
- Steering with the rear risers is quite exhausting and must be carried out with care and feeling.
- When to apply: If there is a knotted or broken brake line or if the knot of the brake line with the brake handle is released, you may control the glider with the rear risers.

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Pitch - Swinging around lateral axis (02)

- During flying with trim speed, you pull both brake handles moderately rapid (within 2 sec.) to maximal 60%. The brake pressure increases, the speed decreases, the glider gains slightly height and the pilot oscillates due to the inertia forward.
- As soon as the pilot reaches the front dead centre of the starting oscillation, you release the brakes rapidly to 0%. The glider pitches in front (dive phase) and starts to gain speed.
- Let the glider accelerate to full speed and as soon as the pilot is vertical below the canopy, you brake again moderately rapid to max. 60 %.
- Repeat this procedure several times until you have found the right rhythm and the glider flies a wave movement. If the timing is optimal, the pendulum is self-energising and during the dive phase the leading edge may deflate a little bit.
- Attention: Do never brake more than 60% in the deceleration phase in order to avoid a stall situation.

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Roll - Swinging around longitudinal axis (03)

- This is a preliminary exercise to train wingover afterwards (see exercise 04).
- During straight flight, you weight shift rapidly to one side in order to start a curve without using the brake handles. You may support the weight shifting by putting one leg above the other to the inner curve side.
- Let the glider turn and as soon as the pilot oscillates below the canopy, weight shift to the other side and put the legs above each other in the other side. No use of brakes.
- Repeat this procedure several times until you have found the right rhythm. If the timing is optimal, the pendulum is self-energising and the roll angle increases. The more the angle increases, the more you let the glider turn away into the curve.
- Stopping: no weight shift anymore, pull the brake handles symmetrically to 30%.

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Wingover (04)

- Start to roll the glider by weight shifting (see exercise 03).
- In addition to the weight shifting, you increase the turning of the glider by pulling the brake to the inner curve side moderately rapid (maximal 40%-60%)
- Let the glider turn away and release the inner brake again to 0%.
- As soon as the pilot oscillates below the glider, weight shift again to the other side and pull the brake afterwards (maximal 40%-60%). Then release the brake again.
- Repeat this procedure several times until you have found the right rhythm. If the timing is optimal, the pendulum increases. The more the roll angle increases, the more you let the glider turn away into the curve.
- Attention: Due to the rolling of the glider, there is the possibility of a deflation of the outer leading edge in case of huge roll angles. This can be avoided by slightly counter-brake (=support) the outer canopy part in the highest point of the pendulum.

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Exam program: Double circles (05)

Two right turning circles in 20 seconds

- Always start the manoeuvre while flying straight ahead with headwind.
- In order to define the axis, notice remarkable objects as reference: e.g. mountains, buildings, streets, etc. in the distance (at Niederbauen: axis is main street of Emmetten, at Büelen: axis is main street/river).
- Weight shift your body to the inner curve side during turning. If the rotation gets too fast, you may control it by immediate use of outer brake to slow it down as much as necessary. In order to finish the rotation, you release the inner brake after app. 1 ¼ - 1 ½ circles (depending on the rotational speed) until the glider starts to come out of the rotation. At this moment, you pull the inner brake again (at least as much as you have pulled before exiting or even more) and after having done this, you release the inner brake continuously until you get smoothly to the axis. When having reached the axis, the release of the inner brake should be finished.

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Exam program: Figure "8" (06)

One left turning and one right turning circle in 25 seconds

- Always start the manoeuvre while flying straight ahead with headwind.
- In order to define the axis, notice remarkable objects as reference (see also manoeuvre "double circles")
- It is not necessary to stabilise between the left and right circle but the 360° turning must be clearly visible.
- Weight shift your body to the inner curve side during turning. If the rotation gets too fast, you may control it by immediate use of outer brake to slow it down as much as necessary. In order to finish the rotation at the end, you release the inner brake after app. ¾ circle (depending on the rotational speed) until the glider starts to come out of the rotation. At this moment, you pull the inner brake again (at least as much as you have pulled before exiting or even more) and after having done this, you release the inner brake continuously until you get smoothly to the axis. When having reached the axis, the release of the inner brake should be finished.

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Narrow Circles / Spiral dive (07)

- Start turning by pulling the brakes and weight shifting simultaneously. As soon as the paraglider starts to accelerate into the rotation, you pull the outer brake with care to control the rotation and to keep the glider in a rotation angle of app. 45°.
- Keep this rotation angle for app. 4-5 circles playing with the outer brake in order to prevent acceleration or deceleration.
- In order to finish the rotation, you release the inner brake until the glider starts to come out of the rotation. At this moment, you pull the inner brake again (at least as much as you have pulled before exiting or even more) and after having done this, you release the inner brake continuously until you get smoothly to a straight flight path. When having reached this, the release of the inner brake should be finished. The outer brake shall be released during the exit procedure and just be pulled smoothly to feel the canopy (trailing edge not pulled down)

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Big Ears (08)

- For paragliders with divided A-risers: Do not release the brakes, pull down the outer A-risers to which the outer line(s) is/are attached, until the canopy folds in on both outer ends.
- For paragliders with a help-system (e.g. Advance Alpha 3): While holding the brakes in your hands, raise the help-system as far as possible and then pull the individual lines clearly downwards with it.
- For all other paragliders: Turn the palms of your hands outwards and slide them between the outside first and second A-lines so that you can pull the outer line from both sides down to shoulder position (do not pull down the risers). This can possibly also be done with two lines each side.
- Steer the glider by weight shifting. **Do not do spiral dives** (extreme load on material).
- Reopen by simply releasing the lines and, if necessary, pumping gently on the brake lines to a maximum of chest position.

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Asymmetric Deflation (09)

- Without letting go off the brake handles, pull either the **left or right A-risers** (in case of divided risers pull both risers on one side) abruptly in the direction of the navel and
Variation 1: immediately release as soon as the glider collapses.
Variation 2: hold. Gently counter steer with the opposite brake and weight shift to the open side to stop the rotation.
Variation 3: hold. Let the glider turn between 45° to 90° before you start to counter steer gently and weight shift to the open side.
Unfold by releasing the risers, if necessary also pumping with the brakes (depends on the glider type)
- Large asymmetric deflations** can be done by taking the outer B-Line in combination with the A-risers and abrupt pulling on them.
- Always pull abruptly otherwise the canopy accelerates due to the undercutting and hefty reactions can occur such as with the acceleration system. Always grasp the lines above the small carabiners to avoid sliding of your hands on the lines.
- All variations can be done with and without weight shifting. Try it and feel the difference.

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Landing with rear risers (10)

- Repeat during the flight the manoeuvre No.1 (Steering with rear risers) and only do the landing with rear risers if you are able to do the landing procedure safely!
- During the downwind: Do not release the brake handles and hold the rear risers above the small carabiners.
- Pull always only one side in an **adequate** way. Note the increased turn radius.
- Start with the final nearer to the ground as usual because S-turns should be avoided and a symmetrically braked final is not possible (danger of full stall).
- The landing is executed by simultaneous pulling down the rear risers, but not before your feet are app. 30 cm above the ground. Otherwise the glider may stall too early.
- If large corrections are needed or if you feel not safe, immediately continue to steer with the brakes instead of the risers! Do not take risks!** You must not do a "braked" final approach with the rear risers. There is an increased risk of stalling, after app. 20 cm pull the airflow ceases!

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Big ears with speed system (11)

- Prepare the speed system (foot accelerator) by securing the bar under your feet but do not press it yet.
- Do not release the brake handles. Turn your palms of your hand outwards and pull down 1 or 2 of the outer A-lines, or alternatively with divided A-risers, the outer A-risers.
- Push the foot accelerator fully down to its end position (should be reached with stretched legs).
- Steer by weight shifting. No spiral dives (material overload!)
- Release the foot accelerator (bend knees) and then let the ears open by releasing the A-lines or risers. If necessary, lightly brake or pump if the ears do not open by themselves.

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Landing with big ears (12)

Attention: This exercise is challenging as in case of wrong manipulations (pulling the wrong lines, asymmetric collapse of the ears, etc) there is only small space to the ground and corrections must be done immediately. A safe landing technique and several successful big ear trainings up in the air are a prerequisite! Big ears without pushing the speed system increase the angle of attack of the glider and there is the danger of stall or parachutal stall in case you fly into a thermal near the ground.

- Repeat during the flight the manoeuvre No.8 (Big ears)
- Plan the downwind higher than usual.
- During the downwind fold in the ears. Turn from then on only using weight shifting. Pay attention to the larger curve radius and increased sink rate.
- Just before landing (app. 5-8 m above ground) release the A-lines or risers and pull down the brakes afterwards on the adequate height as usual. Depending on the glider type, the big ears may open directly after having released the A-lines/-risers or they open during the final flaring

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Accelerated asymmetric deflation (13)

- The speed system is activated max. 50% (elongated legs in the lowest step), the deflation is done with this increased speed. Immediately after the fold-in, the accelerator system is released and normal speed is regained.
 - Without letting go of the brake handles, pull either the **left or right A-risers** (in case of divided risers pull both risers on one side) abruptly in the **direction of the navel** and
 - Variation 1:** immediately release as soon as the glider collapses.
 - Variation 2:** hold. Gently counter steer with the opposite brake and weight shift to the open side to stop the rotation.
 - Variation 3:** hold. Let the glider turn between 45° to 90° before you start to counter steer gently and weight shift to the open side.
- Unfold by releasing the risers, if necessary also pumping with the brakes (depends on the glider type) Always grasp the risers above the small carabiners to avoid sliding of your hands.

Prerequisites of this manoeuvre are: Asymmetric deflation already done, speed system installed. Learning target: to see the reaction of a large deflation → never use the speed system near to the ground

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Landing on a slope (14)

- Do usual landing procedure (of course on the valley side), plan S-turns, if necessary, in such a way that you can stop the turns toward the ridge in time. Take a vertical body position in your harness!
- It is essential to land always along (parallel) to the ridge when landing on slopes.
- Always fly the final clearly braked (about 30% braking) and stand up in the harness (the landing place is less easy to plan)
- When landing in Gruob (Emmetten) do a normal landing procedure but fly significantly higher. Take your bearing from the landing point about half way up the slope.

Slope landings are mostly exceptional and are carried out when the weather changes (eg. fog, wind) or if you lose too much height during a distance flight.

Use the chance to practice a slope landing when we are landing in "Gruob"!

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Safety Instructions (15)

Tail wind landing

If the wind changes direction during the landing approach or is falsely estimated, it is possible to land with tail wind. In the final, it is essential to fly with full speed (released brakes). As an exception, pull down both brakes completely when you are approx. 2 meters above the ground (feet) and hold them down. The brakes should be pulled down not abruptly but continuously. Depending on the wind speed it may not be possible to stand when you land. In this case do a landing roll (legs together, roll sideways over your shoulder) or use the airbag. This manoeuvre is generally only discussed theoretically. An intentionally carried out tail wind landing, except in very small wind conditions, is too dangerous!

Use of rescue parachute

Pull the rescue parachute handle and throw it sideward to the back with power and let off the handle. In case of containers with big actuation force (due to big "Klett" closure), it may help to throw the parachute in two phases (1. Opening of the container; 2. Throwing it away). Afterwards, the paraglider should be stopped flying by wrapping the brakes several times around your hands and pull them to the chest in order to stall it. This manoeuvre is only trained over a lake within a SIV-training. Each time the rescue parachute is maintained and refolded (at least once a year!) you may take the chance to throw it on the ground.