



Theory test before thermal flying

Version 11/22

This test is an internal check within our flying school. If you meet the criteria and understand the theoretical basics, completing the test will allow you to do thermal flights within the school. Before submitting the test, all of the practical aspects listed below must be accomplished. The test will be corrected by you yourself, using the solutions on the last page. If you have any remaining questions, discuss them with the flight instructor. You have to sign the test and hand it in; you will receive the corresponding entry (thermal stamp) in the flight log book and you will be allowed to thermal fly.

I confirm with my signature that I have solved and understood the test. I have also completed the following practical parts and fulfil all necessary conditions fulfilled (tick applicable):

- minimum of 25 flights, at least 10 of which with my own/current glider
- in addition to the pull-up technique with A & B risers, I have also tried the technique using the A risers only; I now use the one of them which suits me best.
- reverse launch
- big ears with / without speedbar
- asymmetric collapse (without speedbar + with 50% speedbar)
- tight circles
- 5 correct flights without radio instructions (radio is switched on, but instructor does not help)
- flying in valley wind > 15km/h (depending on season; not mandatory, but highly recommended)
- safe, independent landing technique

I have performed at least 1 of the following 3 exercises:

- Groundhandling (on your own or during one of our groundhandling days)
- Slope landing (e.g. at the landing field Gruob in Emmetten)
- Launch training (forward / reverse) with your own/current glider at the training hill (During our school's training hill sessions)

I have read and understood the following instructions in the manoeuvre manual:

- Instructions on landing with tail wind
- Instructions on deploying the rescue and emergency landings
- Hazardous situation: flying in rain

Other requirements:

- SHV-No. attached and valid liability insurance (mandatory)
- REGA-membership (highly recommended)
- I have bought and read the theory book and / or attended a theory course
- I have watched the DVD "Aktiv Fliegen" (cf. bibliography on page 2)
- My manoeuvre control sheet is up to date
- I am aware that it is impossible for the flight instructor to constantly observe me when thermalling and I take personal responsibility accordingly. I follow all of the flight instructor's instructions and I know the training regulations.

Last name: **First name:**

E-Mail: **Date:** **Signature:**

Basics, bibliography:

- Theory book (Lötscher-Zeller)
- Information and basic theory for beginners and advanced students (Welcome-/ Brevet-Set)
- DVD „Aktiv Fliegen“ (can be watched in the flight school or on YouTube):
Chapters (in German): YouTube Link:
 Perfekt Starten: <https://www.youtube.com/watch?v=12pWuq91IXA>
 Perfekt Landen: <https://www.youtube.com/watch?v=N0CuZ-Aa5so>
 Rettungschirm: <https://www.youtube.com/watch?v=saxBQFpWdZs>
 Aktiv Fliegen: <https://www.youtube.com/watch?v=c3wKx9fy5G4>
 Abstieghilfen: <https://www.youtube.com/watch?v=UeBLDDfTGcU>

A) General issues & administrative matters

1. How can you pause your booked training course free of charge due to illness/stay abroad/military etc. (max. 1 time, at least 1 month)?

..... notification before of the interruption.

2. When and how do you register for the theory exam?

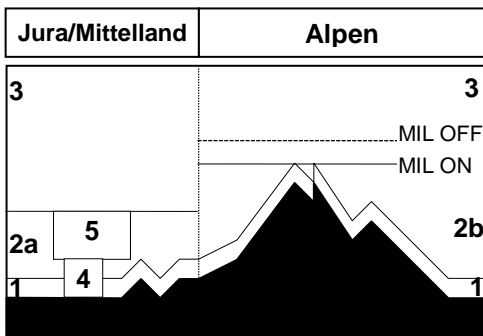
..... on the homepage as soon as the level of knowledge has been reached (note the multiple choice question collections on paper or as e-learning as a preparation aid)

3. When and how do you register for the practical exam?

Once I have passed the and have fulfilled the admission requirements for the practical exam (at least flights in at least flight areas,..)on the SHV homepage.

B) Air space

1. Fill in the table for the graphic of the general airspace structure in Switzerland:



	Class/ category:	Lower limit:	Upper limit:
1			
2a			
2b			MIL ON: MIL OFF:
3			18300 m AMSL (UIR)
4			
5			

2. An LS-R (red) is a Restricted Area. Entry is forbidden for paragliders during their active time. Similarly, there is also an LS-D. What is that and what are its consequences for your flight?

.....



3. The Beckenried landing field is inside the Buochs Control Zone (CTR). What do you do if you fly from Klewenalp (arrow) to Beckenried (black dot) or Emmetten (white dot) on a Thursday at 15:00 (as detailed as possible)?



Beckenried:

.....

.....

.....

Emmetten:

.....

.....

4. On a Saturday morning, you launch at Büelen. You fly above the landing field at the altitude of the take-off.

- a) In which airspace do you fly?
- b) What is the minimum distance to clouds and what is the minimum flight visibility?

.....

5. On a Friday morning, you launch at Büelen. If you gain altitude above the take-off:

- a) How high may you fly (without special permission)?
-
- b) In which airspace do you fly there? What is the minimum distance to clouds and what is the minimum flight visibility?

.....

6. LS-R for glider (green):

- a) Which advantages come with a LS-R for glider? (facts and numbers)
-
- b) When and up to which height is the LS-R for glider active at Büelen?

.....



7. a) What are the military flight times?

.....

b) When do you have to expect that a CTR or TMA marked with HX can be active?

.....

C) Airspace question during the practical exam

During the practical exam, the examination expert will ask you an airspace question before the 2nd flight. He points his finger to a point on the GLDK (glider chart; you don't need to bring a map with you, he will show it to you) and would like to know the maximum permitted flight altitude, airspace category/class, cloud distances, minimum visibility and special features.

If the knowledge you have presented is insufficient in the eyes of the expert, the launch preparation for the 2nd flight is considered negative. You will be given the chance to answer such a question again in the 3rd flight. If this is not sufficient either, the launch preparation is rated as negative once more and the exam will be rated negative overall.

Thus, it is absolutely necessary that you are well acquainted with the airspace regulations and the glider chart!

Example 1: Wednesday in June, 15:00, Fiesch (=1049 m AMSL, cf. GLDK image from question B6)

- a) Maximum altitude, corresponding airspace class :
-
- b) Min. cloud distance at 1000 m AGL:
- c) Min. visibility at 1000m AGL:

D) Thermal flying

1. Why do thermals develop?

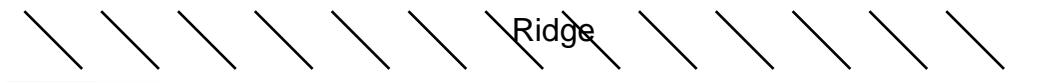
..... and/or air is lighter than cold and/or dry air. Thus, it as thermal updraft.

2. Name several triggers for thermals. What happens there?

.....

.....

3. Draw the process of ridge soaring in the sketch below!



You always turn the ridge!! Never turn the ridge!!

4. Right of way when ridge soaring: The pilot with the ridge to his has to towards

5. In which situations are you allowed to fly full 360 circles when thermalling/soaring??

.....

6. What are the lateral limits when thermalling at Niederbauen (Emmetten) and at Büelen (Wolfenschiessen)?

Niederbauen:

Büelen:

In addition, constant eye contact with the take-off and landing site must be guaranteed. The maximum allowed altitude gain above take-off ismeters. For safety reasons, the flight duration may not exceed minutes (tiredness, etc.). Also for safety reasons (turbulence), you are required to keep a safety margin of meters to the terrain when ridge soaring.

E) Hazardous situations

1. What is “active flying”? *Reacting to and flying with constant : if it decreases, I brake , if it increases, I brake*

2. Due to strong turbulence, the glider collapsed on one side! How do you behave?

- 1.
- 2.

3. During your flight, you suddenly no longer feel the wind in your face and you have the feeling that your glider is standing still. What could that be and how do you react??

.....
.....

4. In which situations do you immediately throw the rescue without hesitation?

- a. Collision
- b. The lines are twisted and, due to an asymmetrically pulled brake, which can no longer be released, the glider automatically enters a steep spiral.
- c. When clearly requested by the flight instructor
- d. Helmet buckle open
- e. Uncontrolled state of the glider in general, especially near the ground
- f. 30% asymmetric collapse

5. How do you throw the reserve?

.....

6. Which pilot mistake during thermalling can result in a spin? How do you recover from a spin?

.....
.....

7. Descent technique allow you to reduce unwanted thermal altitude gain. Which method increases the sink rate in straight flight while preserving a forward motion of the glider? How do you use it?

.....
.....

Solutions:

- A1** Timely the beginning
A2 Online registration SHV-Homepage
A3 theory exam 50 5online

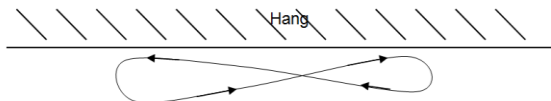
B1	Class/category	Lower limit:	Upper limit:
1	G	GND	600 m AGL
2a	E	600m AGL	3050 m (FL100)
2b	E	600m AGL	MIL ON: 3950 m (FL130) MIL OFF: 4550 m (FL150)
3	C	Above E	18300 m AMSL (UIR)
4	D (control zone=CTR)	GND	As stated in the GLDK
5	C or D (Terminal Manoeuvring Area=TMA)	Above CTR	As stated in the GLDK

- B2** Danger Area: e.g., military shooting; flying allowed at your own risk
B3 Beckenried: Before take-off or before I fly into the CTR, contact Tower Buochs by radio (119.625) (German) and ask for permission to enter the CTR. Emmetten: As long as I'm flying outside the CTR, no action is required.
B4a Class G (altitude difference between take-off and landing at Büelen is 560 m, G reaches up to 600 m AGL)
B4b Cloud distance: 1.5km horizontal, 300m vertical, 5km (horizontal) visibility;
B5a 3950 m (FL130), if no LS-R with lower limits are active according to the daily DABS
B5b Class E, no LS-R for glider, Cloud distance: 1.5km horizontal, 300m vertical
B6a Reduced minimum cloud distance, minimum of 50 m vertical, 100 m horizontal
B6b no LS-R for glider in the Engelbergertal, hence the 'large' cloud distances apply
B7a Mo-Fr 07:30-12:05 und 13:15 -17:05
B7b always (HX=no specific working hours), activation possible any time
C1a Max. altitude 3950 m (FL130)
C1b 50m vertical / 100 m horizontal (LS-R 32 for glider active)
C1c 1000m AGL above Fiesch = ca. 2050m , which is \leq 3050 m \rightarrow min. visibility 5 km

D1 Warm moist ... rises

D2 Vegetation lines, snow line, tree line, mountain ridges... the warm air rising parallel to the slope detaches itself from the ground and rises freely

D3 Process:



....away from ... towards

D4 .. left side... give way ... the right side.....

D5 In open air or when I have gained enough altitude already to circle above the terrain (slope / hill).

D6 Niederbauen: east \rightarrow ledge (Alp Tritt); west \rightarrow triple electricity line

Büelen: south \rightarrow cable car; north \rightarrow waterfall

...max. 400 meters ...max. 30 minutes.. ... 50 meters..

E1 ... disturbancesbrake pressure ...more...less

E2 1) I stop the glider from turning by shifting my weight to the open side and apply a little bit of brake.

2) If necessary, I open the collapse with a quick pump on the brake.

E3 These are signs of a parachutal stall. I pull on the A-risers or apply the speedbar.

E4 a, b, c, e

E5 Pull out the inner container by pulling the handle, then throw it forcefully to the side. Let go of the handle! If enough time remains: Stop the paraglider itself from flying by wrapping the brakes at least 5 times and pulling them to the chest.

E6 Turning at too little speed (brake position too low when turning), fully release brakes immediately

E7 Big ears. Pull the outer A-lines symmetrically on both sides so that the outer cells of the canopy fold inward. Can be combined with applying speedbar.