

Exercises 41-43 (Solo) Checking out on single-seater

Aim of the exercise

- . To be checked out on a single-seat glider

Before the flight

Depending on what type of single-seater you will fly, together with your instructor, you go through the characteristics of the glider type. If your club does not have access to a suitable single-seater, you can fly a two-seater. You should have studied the type manual of the glider and learnt by heart its flight limitations (speeds and weights).

Before the flight you should have made yourself feel at home in the cockpit. Practise the functions of all levers and handles. Check the load carried. Remember that tail-heavy machines have bad stall characteristics. At least 15 kilo above lowest permitted load is recommended.

Notice that the machine reacts more quickly to control movements than a two-seater. If you get into elevator oscillations, lock the stick against the knee. After release retract the landing gear and trim out the machine. To see how big aileron drag the machine has, make a few wing waggings.

When you report "down wind", report also "landing gear out and locked". This means that you should always get the landing gear down before you report down wind.

During the flight

Remember

- . Check the load carried.
- . Keep a good look out for other machines.
- . A single-seater is much lighter on the controls than a two-seater.
- . Particularly the elevator is much more sensitive
- . Fly gently, with the wool string in the middle.
- . Be on the alert during the landing phase.

Exercise 44 (Dual) Thermal flying, flying according to range diagram, precision landing

Aim of the exercise

- Continued training in thermal flying.
- To learn the performance of the glider in different wind conditions and at different ring settings.

Before the flight

Read again through the text on thermal centering, McCready-flying and "the funnel".

Range

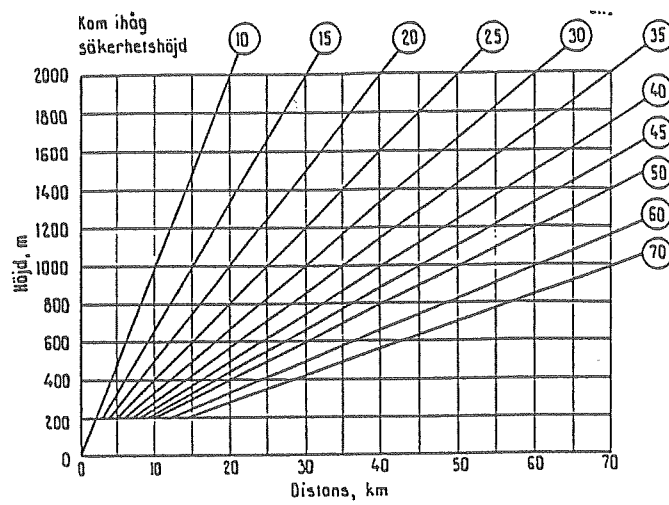
In order to be able to calculate your range, you must know what glide angle corresponds to a certain McCready setting. The glide angle also depends on whether you have a tail-wind or a head-wind, and how strong the wind is.

In reality you must have some aid to be able to calculate the range. The aid can be a table, a diagram, a special slide rule, a programmed calculator or a gliding computer. The initial figures for this aid come from the polar curve of the glider. With the aid of this curve, you can make a glide angle table, such as the one given below for gliders with performance similar to that of a Bergfalke.

In this table you can find your glide angle. With this figure and the diagram in Figure 50.1 you can get your range. Remember always to add a safety margin. Normally, when flying in the funnel, set it at 400 metres. As you can see from the table, the range will be greater if you turn the ring up in a strong headwind. This agrees with what you learned in Exercise 35.

Remember safety height

glide angle



Distance, km

FIG 50.1 Diagram for goal flying. From this diagram, together with a table of the glide angles of the glider type, at different combinations of climb and wind (according to the table below) you can see what height you need for different distances.

Range table for Bergfalke

Räckviddstabell för Bergfalke

Vind/Stig	0	0.5	1.0	1.5	2	3 m/s
-40 km/h	14	15	15	15	14	13
-20	21	22	21	19	18	16
+0	28	28	26	23	22	19
+20	35	34	31	28	26	22
+40	42	40	36	32	30	35

- Example 1:

We have set the McCready ring at 11 m/s and have a headwind of 20 km/h. What is our range from 1400 metres?

We start by subtracting our safety height. Then we have 1000 metres at our disposal. The table will show us that our glide angle is 21. We then look at the diagram (Figure 50.1) and read 21 km.

- Example 2:

We are 20 km from the field. The ring setting is 1 m/s and we have a tailwind of 10 km/h. How much height do we need to get home? The figure cannot be taken straight from the table. At zero wind, the glide angle is 26 and at 20 km/h it is 31. 10 is halfway between zero and 20 and we choose the glide angle as being the average of 26 and 31, i.e. 28 (round figure). We then go into the diagram and read roughly 700 metres. To this height we should add our safety margin of 400 metres and we get 1100 metres.

During the flight

Remember

- always to keep a good look out for other machines
- to compare your glides on the range diagram
- to fly according to the McCready ring
- to practise centering thermals.

Exercises 45-47 (Solo)

Thermal flying, precision landing

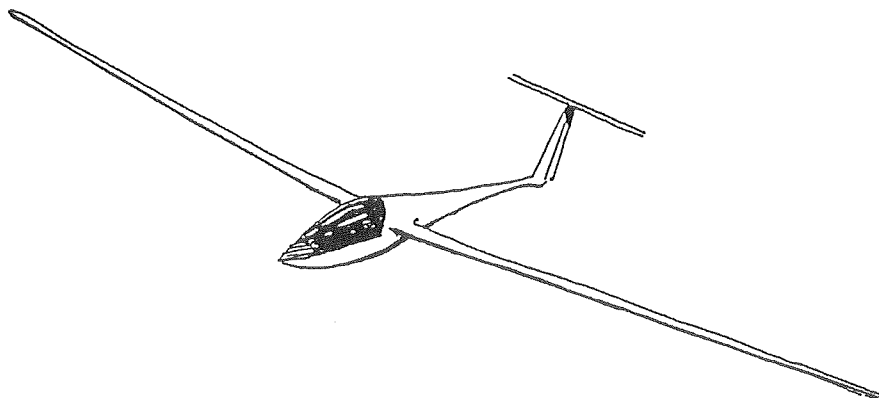
Aim of the exercises

- To practise thermal and range flying in the funnel.

Before the flight

Remember

- to keep a good look out for other machines
- to search for thermals upwind
- to centre the thermals
- to fly with the ring set at 1 m/s and practise flying according to the range diagram
- that you should be in the KP-sector not lower than 300 metres
- to plan very carefully where the touchdown will be.



Exercise 48 (Dual) Flying with air brakes out, crosswind landings

Aim of the exercise

- To fly with the air brakes out.
- To learn the effects of flying with air brakes out during aerotow.
- To learn crosswind landings.

Before the flight

- Familiarization with the use of the air brakes at different speeds and heights. The aim is to be able to make a quick height reduction in combination with 90° turns.
- The instructor will point out to you the greater safety in field landings when you can use the air brakes.
- You will also be informed about certain characteristics when on aerotow, using the air brakes, about the reduced climb, heights lower than normal, etc.
- You should be aware of the wind direction as early as possible during the flight. Make it a habit to check the windsock, etc.
- Different techniques when landing in a crosswind will be discussed with your instructor, for example:
 - turning into finals later when there is a headwind on base leg
 - turning into finals earlier when there is a tailwind on base leg
 - countering the crosswind by banking the machine slightly against wind, etc.

During the flight

- You will be shown flying with air brakes out during the aerotow.
- You will practise flying with air brakes out.
- Before the landing, you are expected to explain to the instructor how you plan to land, considering existing crosswind on finals, and also how you are going to fly the downwind leg, after which you carry out the landing yourself.

Instruction

Follow me through on the controls. We are now on aerotow and I open the air brakes. Note how the climb is much lower than usual and that we have a much lower height at than we usually have.

You have the controls.

I will now fly with the air brakes open. Follow me through on the controls. I open full air brakes and at the same time I move the stick forward - like this. I stabilize the speed at 110-120 km/h. I am going over to normal flight attitude. I raise the nose to the normal attitude - 90 km/h - and I retract the brakes.

You have the controls and do the same thing.

Open full brakes and move the stick forward. Mind the nose attitude! Resume normal flight attitude.

We are now going to do the same exercise again and at the same time we make a 90° turn. Follow me through on the controls. Brakes out - high speed - brakes in - normal speed - turn 90° - brakes out - high speed - brakes in - normal speed, etc.

You have the controls and you do the same thing. Brakes out ... etc. When you have 300 metres, you should be in the KP-sector and then you can explain how you plan to do the landing.

Carry out the landing and touch down inside a given area.

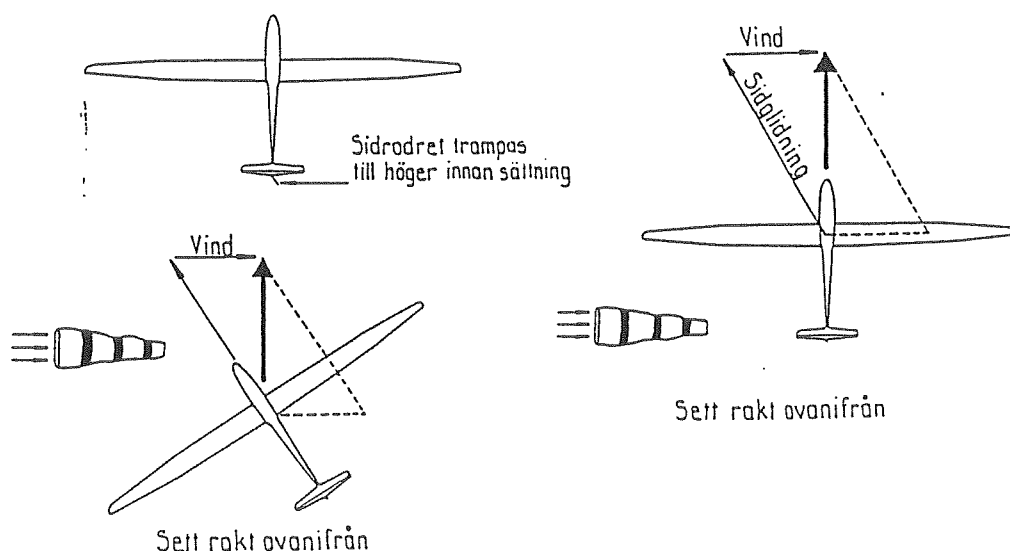


FIG 57.1 Crosswind landing
a) you compensate for the crosswind (with rudder)
b) you keep the windward wing low

Exercises 49 -51 (Solo)

Thermal flying, precision landing

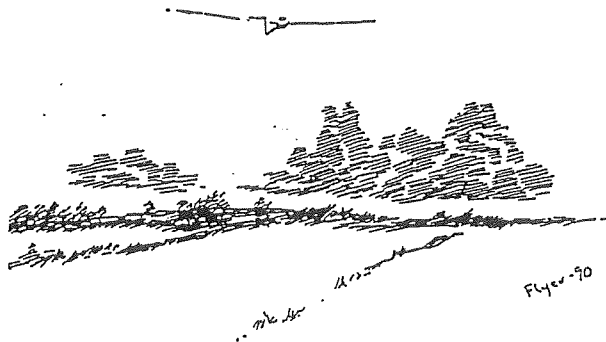
Aim of the exercises

- To practise thermal and range flying in the funnel.

Before the flight

Remember

- to keep a good look out for other machines
- to search for thermals upwind
- to centre the thermals
- to fly with the ring set at 1 m/s and practise flying according to the range diagram
- that you should be in the KP-sector not lower than 300 metres
- to plan very carefully where the touchdown will be.



Exercises 52 (Dual) Revision - Air space classes

Aim of the exercise

- Revision and checking of your flying skills
- Together with the instructor, to revise and practise flying turns and making precision landings.
- To be able to explain how the air space is made up and what rules apply for flying in different air space classes.
- The flight should be the basis for the issuing of a glider pilot's licence.

Before the flight

In connection with this flight you should be able to explain how the air space is made up. In the first place, you must know the local air space and the rules that may possibly apply to flying in "your" funnel.

The air space is continuously changed. No matter what is said in this book, it is always AIP (Aeronautical Information Publication) that applies. As a licence holder, it is your duty to be familiar with the contents of the AIP.

Flying rules VFR-IFR

All flying is carried out according to one of two main rules. We glider pilots and most sport pilots usually fly according to the Visual Flight Rules (VFR). This means that we fly with reference to what we see outside the aircraft, that is, the horizon, the ground, etc. We navigate mainly with the aid of map, watch and compass and we avoid collision by keeping our eyes open and, according to certain traffic rules, we keep clear of other aircraft if needed.

All airline traffic, taxi-flying etc., and also part of General Aviation fly according to Instrument Flying Rules (IFR). This means that you fly with reference to the instruments of the aircraft, you navigate with the aid of radio beacons, etc. Collision avoidance is mainly supervised by Air Traffic Control.

Different rules apply for VFR and IFR flying, for instance for flying in different types of air space classes. There is no "middle way" between the different flight rules - you fly either VFR or IFR.

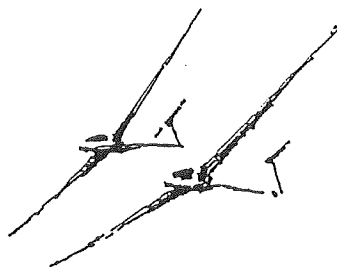
During the flight

Remember

- always to turn with constant speed and bank
- always to fly correctly
- that the most important message of the McCready principle is to increase the speed in sink areas and to slow down in up areas
- not to chase the McCready ring, but to fly gently
- to hold the stick with both hands if you fly at a speed above max. manoeuvring speed
- always to be in the KP-sector not lower than 300 metres.

In principle, this flight is a revision of everything you have learnt during your flight training. It is not a question of a "checking out" flight but rather of polishing up on all the small details. Nevertheless you may feel it as a kind of examination and be extra alert. This is OK.

You will be towed up to 900 metres or you release in a thermal. After that you fly independently or according to the instructor's directions.



Exercise 53 (Dual) Precision landing, landing without the altimeter

Aim of the exercises

- To learn to land without the altimeter.

Before the flight

During this flight the altimeter will be covered. In other words, you will have to make a landing only with the aid of outside references.

In a field landing, it is necessary to be able to make a precision landing without the aid of the altimeter, as the elevation of the field is unknown.

During the flight

Remember

- You yourself decide when to begin the landing procedure.
 - The landing circuit should be normal.
- Sida 132 av originalet

Exercise 54 (Dual) Precision landing, covered instruments

Aim of the exercise

- To learn to land without instruments.

Before the flight

During this flight, the instruments will be covered. You will make a landing, in a right-hand circuit, only with the aid of outside references.

During the flight

Remember

- that you must keep correct speed only with the aid of the horizon.
- that you decide yourself when to begin the landing procedure.

Exercise 55 (Dual) Field landings

Aim of the exercises

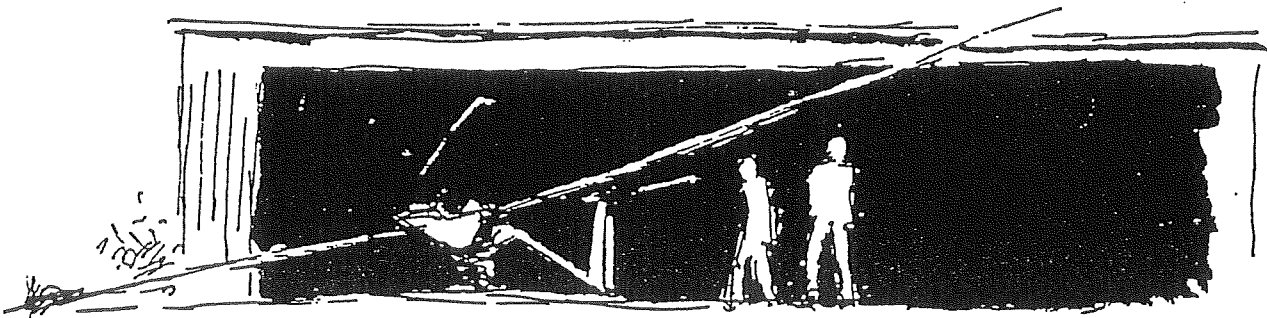
- You will make a field landing.

Before the flight

Field landings

A field landing is to be made just like an ordinary landing 2 x 90 on the home field. One important point is to get references in good time. You cannot completely trust the altimeter so that you can plan the KP-sector, downwind leg, etc. Just as at your home field, you must be in the KP-sector not lower than 300 metres.

The difficulty when making a field landing is to choose a suitable field. The field should be of ample size, be in the wind direction, have a free approach, and have suitable ground. The most important factor when choosing a good field is to stop looking for thermals in time, so that you can choose a field while you still have enough height.



Advice when making field landings

- During the whole flight, look for suitable fields. Stop in time, go for the biggest possible field in the area and land in the middle of it. Avoid landing at a right angle to a road or in standing corn. Be careful about fields near lakes, because they most often slope down towards the water.
- Study the field carefully. How is the surface? Are there ditches or other obstacles? Look out for electric cables and fences. They are difficult to see from the air. Look in adjacent fields for electricity poles.
- Remember that the choice of a new field, very low, often ends in a wrong decision.
- Land against the wind. Try to estimate wind strength and wind direction with the aid of drift, smoke, flags and other things. However, quite often you have got to land in a crosswind. This means a longer landing distance.
- Be prepared for sink areas and turbulence, especially on the lee side of hills, clumps of trees and bushes. It is especially dangerous in a strong wind. Keep the speed up!
- Prepare a landing 2 x 90, exactly as you do on your home field (possibly in a right-hand circuit).
- Make no 360 degree turns on the lee side of the intended touchdown point and absolutely not on the base leg or the finals.
- Get help from the first people to arrive at the landing spot, to move the machine to the field boundary. (Did you bring the securing spikes?) This will give room for others who may want to land. Try to keep all curious people away from the field. They are the ones who will spoil the crops, for which the glider pilot later may have to pay!
- Contact the landowner. Ask him about compensation for crop damage. (In most cases he will be generous about this and quite often, to boot, he invites you for a cup of coffee!) If you do not get hold of the landowner, ask his neighbour to come and have a look. Get the telephone number of the owner and phone later. Give your own name and address through the neighbour.
- Contact the club and your instructor. Make sure to give detailed information about where the landing place is. Do not forget to give the telephone number where you can be found. Pay for the telephone call!
- Do not drive on to the field with car and trailer! The landowner might be furious!

To think about beforehand

- Get familiar with the de-rigging and rigging of the machine and also with the function of the trailer.
- How can you see if the crop on the field is high or short? How do you find the wind direction?

During the flight

- Stop your flight in time!
- Find the wind direction
- Choose the biggest field in the wind direction
- Check the approach. Trees, cables, etc.
- Assess the field carefully. Check the surface. Avoid landing in high-standing corn.
- Make a normal 2 x 90 landing.

Exercise 56 (Dual) Passenger flying

Aim of the exercise

- To make a passenger flight with the instructor as a passenger.

Before the flight

Pilot responsibility

The pilot-in-command always has the final responsibility for his machine. He or she has a duty to follow the traffic rules that apply. The responsibility of the pilot-in-command also applies if somebody else, temporarily, flies the machine, e.g. when dual instruction is carried out.

The responsibility of the pilot-in-command applies, no matter whether you happen to be flying a jumbo jet or a sailplane!

When a machine is flown in uncontrolled air space, it is always the responsibility of the pilot-in-command to avoid collision. Naturally this means that he must keep a good look out during the flight.

Flying with a passenger means that you carry the responsibility not only for your own person but also for the passenger. Thus, you must be in good flying trim to fly with a passenger.

Remember that the important thing about passenger flying is that the passenger has a nice flight and that he or she thinks so also after the landing. If the passenger is not used to flying, it is extra important that you fly gently and make no steep turns. Should your passenger be airsick, stop the flight immediately! Remember to bring a plastic bag, just in case. Do not talk about the risk of becoming airsick!

During the flight

Remember

- to inform the passenger about what is happening
- to fly gently
- not to make any steep turns
- to check all the time that the passenger is feeling all right.



