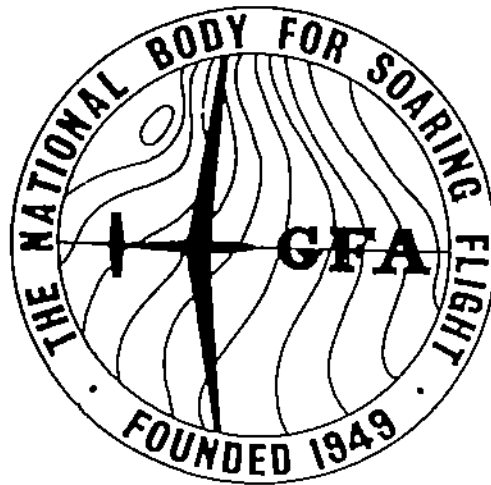


THE GLIDING FEDERATION OF AUSTRALIA



A, B AND C CERTIFICATES

**REQUIREMENTS, PRIVILEGES, LIMITATIONS AND ORAL
EXAMINATIONS**

Issue 2, April, 1997

"A" CERTIFICATE

Requirements

1. Minimum age 15 years.
2. GFA Medical Declaration (Appendix 1 to Ops Regs) signed (or doctor's signature obtained on Appendix 2 if unable to sign declaration).
3. Minimum of 5 solo flights with normal landings.
4. Satisfactory check flight, which must include the following as a minimum :-
 - (a) An awareness of pre-spin symptoms and a demonstration of the correct action to prevent a spin developing,
 - (b) An accurate circuit without reference to the altimeter,
 - (c) Correct handling of selected emergencies at the discretion of the checking instructor.
5. Oral examination on basic theory and flight rules and procedures.

Privileges and limitations

1. May only fly solo under the direct supervision of an instructor.
2. May carry out local soaring only.

"B" CERTIFICATE

Requirements

1. A total of 15 solo flights with normal landings, including at least one soaring flight of not less than 30 minutes duration. (Note: This means an overall total of 15 solo flights, not 15 solo flights since qualifying for the "A" Certificate).
2. Completion of post-solo training syllabus in accordance with the Instructor Handbook.
3. Oral examination on basic theory, flight rules and procedures (including GFA Ops Regs and MOSP) and basic airworthiness.

Privileges and limitations

1. May carry out local soaring only.
2. May carry out mutual flying, subject to the following conditions :-
 - (a) The other occupant of the glider also holds a minimum of a "B" Certificate.
 - (b) Each mutual flight is authorised by and carried out under the direct supervision of the Duty Instructor, who shall nominate the command pilot for the flight. The command pilot shall carry out the takeoff and landing.

"C" CERTIFICATE

Requirements

1. A total of 20 solo or mutual flights, including two solo soaring flights of at least one hour's duration each.

Notes:

- (i) This means an overall total of 20 solos/mutuals,
 - (ii) Only time in command of mutual flights can be counted towards this total.
2. Trained and checked in ability to carry out a safe outlanding.
 3. Received a "passenger awareness" briefing, using pages 8 to 12 of Part 2 of the GFA Instructor's Handbook as a reference.
 4. Oral test on basic theory, basic navigation, basic meteorology, airways procedures, outlanding hazards, post-outlanding actions and SAR requirements.
 5. Demonstrate satisfactory spin entry and recovery. This may be carried out dual or solo (observed from the ground) at the discretion of the supervising instructor.

Privileges and limitations

1. May fly cross-country at the discretion of the CFI or Instructor Panel.
2. May carry "family/friend" passengers (not for hire or reward and not Air Experience Flights) at the discretion of the CFI/Instructor Panel and under the direct supervision of the Duty Instructor.

Important notes on the basic gliding certificates

The operational functions of the GFA depend on a strong club-based structure. Each club has operational control of its members through the medium of its Operations or Instructor Panel.

The certificates provide the certainty of proper follow-up training after initial solo. That is their primary function. They also provide the basic qualifications for mutual flying (B certificate) and carriage of family or friend passengers and/or cross-country flying (C certificate).

These privileges may only be exercised on any given day provided that the pilot concerned is not only in current flying practice, but also meets the particular operational requirements of the club. Some clubs have special procedures and the periodic check requirements may vary considerably from one club to another, based on a number of factors.

It is not expected that any club will unnecessarily stand in the way of a pilot exercising privileges which have been rightly earned. On the other hand, each club reserves the right to exercise operational control over all its members and this applies to the holders of these certificates just as it does to all other club members, regardless of status or experience. As in life itself, common sense should always be the guiding factor in determining whether a given pilot should do this or that on any given day. If this is kept in mind, disputes should be infrequent and solutions to any such disputes easy to find.

"A" Certificate oral examination

Basic theory

1. How is "safe speed near the ground" calculated? Nominate that speed for the glider you fly.
2. What is the secondary effect of rudder?
3. What happens to the stalling speed in a turn? Why does it happen?
4. Define aileron drag and explain (a) how the designer compensates for it and (b) how the pilot copes with it.
5. Of the forces acting on a glider in flight, which one is used to turn the glider?
6. On a glider fitted with an elevator trim tab, which way will the tab move if the trim lever is moved forward?
7. Airbrakes are used on final approach to controlwhat?
8. If a wing drops at the stall, what is the correct action on the part of the pilot?
9. What is the correct recovery action from a fully-developed spin?
10. Define wind-gradient and explain (a) what is its effect on a glider and (b) what action does the pilot take to compensate for it.
11. What usually happens to a glider's airspeed when it flies into a thermal?
12. Which is the higher figure, the speed for minimum sink or the speed for best glide angle? nominate both figures for the glider you fly.
13. On a glider fitted with flaps, will downward deflection of the flaps improve the glide angle or make it worse?
14. What happens to the stalling speed when the airbrakes are opened?
15. What kind of stability does the glider have in the rolling plane?

Flight rules and procedures

1. What is the in-flight visibility required for flight in Visual Meteorological Conditions (VMC) - (a) Below 3,000ft AGL, (b) between 3,000ft AGL and 10,000ft AMSL and (c) Above 10,000ft?
2. If the speed falls to just above 1.3Vs on a winch-launch and is still falling, what action is the pilot required to take?
3. Who gives way when two gliders are approaching each other (a) head-on (b) on converging headings?
4. Assuming that the glider is not taking off or landing, what is the minimum height to fly over a built-up area?
5. What actions would a pilot take in the event of glider release failure on aerotow?
6. What is the minimum vertical and horizontal separation between gliders in a thermal?
7. Who establishes the direction of circling in a thermal?
8. What action would the pilot take on running out of height in the circuit? ,
9. What is the "gliding in progress" signal, to be located near the windsock at an airfield?
10. On which side does a glider overtake another glider (a) when hill-soaring, (b) at all other times?
11. Who is entitled to give a "Stop" signal at a launch-point?
12. What action is required of a pilot before flying in controlled airspace?
13. At what stage is the airbrake or spoiler control used on final approach?
14. What is the pilot's first priority immediately following a launch failure?
15. What action does a pilot take before carrying out intentional stalling or spinning, or before aerobatics?

"A" Certificate oral examination - answers

Basic theory

1. 1.5 times the stalling speed ($1.5V_s$).
2. Roll, caused by the increased angle of attack of the outer wing, which is a result of the wing's dihedral angle. This results in an increase in lift on the outer wing.
3. It increases, because of the increase in effective weight due to an increase in "G". This effectively increases wing-loading.
4. The downgoing aileron causes an increase in induced drag, resulting in a yaw away from the direction of intended turn (adverse yaw). The designer usually uses differential ailerons, with more upward travel than downward, to help fix the problem. The pilot ensures that enough rudder is used in coordination with the ailerons to eliminate adverse yaw.
5. Lift - tilted in the direction of turn when the glider is banked.
6. Up.
7. Rate of descent.
8. Stick forward. Use only enough rudder to prevent yaw.
9. Full opposite rudder, stick forward until glider stops spinning. Centralise rudder and recover from dive.
10. (a) Wind-gradient is the reduction in wind speed near the ground, caused by ground friction. Near the ground, the glider experiences a loss of airspeed as it enters the area of wind gradient. (b) The only cure is to carry extra speed during the whole approach in anticipation of the loss.
11. It increases momentarily.
12. Speed for best glide angle is higher than speed for minimum rate of sink.
13. Make it worse.
14. It increases by 2 to 5 knots.
15. Neutral.

Flight rules and procedures

1. (a) 5km, (b) 5km, (c) 8km.
2. Release immediately and obtain 1.5Vs in preparation for landing.
3. (a) Both turn right (b) the one which has the other on its right gives way.
4. 1500 feet.
5. Try again. If no success, move out to the left and await acknowledgement from tug pilot. Try again. If still no success, move back behind tug, then up into high tow. Try again. Tug pilot will release glider when it is established in high tow.
6. 200 feet.
7. The first glider in the thermal, unless local rules specify a particular direction near the airfield (e.g. comps).
8. Modify the circuit and select the best available landing area.
9. A double white cross.
10. When hill soaring, overtake on the downwind side, i.e. between the overtaken glider and the hill. At all other times, overtake on the right.
11. Anyone who sees a hazardous situation developing.
12. The pilot requires a clearance from Air Traffic Control and must comply with the terms of that clearance.
13. When a definite overshoot situation is seen to exist.
14. Ensure speed is set at 1.5Vs.
15. Complete the pre-aerobatic check.

"B" certificate oral examination

Basic theory

1. A glider wing always stalls at the same.....what?
2. What is lateral damping?
3. What kind of stability does a glider have in the yawing plane?
4. Define wing-loading.
5. What is meant by "laminar flow"?
6. What happens to the rate of descent in a turn?
7. What is meant by a "speed-limiting" airbrake?
8. Define aspect ratio.
9. What is the purpose of the short length of wool or string sometimes seen attached to glider canopies?
10. What effect do raindrops have on the wings of a high-performance glider and what action does the pilot take to compensate?
11. How does profile drag vary?
12. What causes pre-stall buffet?
13. What is the danger in banking too steeply near the ground in a strong wind?
14. What is a "stabilised approach"?
15. The longer a glider has been spinning, the longer it might take for recovery action to be effective. True or false?

Flight rules and procedures

1. What is the "break-off point"?
2. What is the recommended minimum height to clear an obstacle on final approach?
3. Who is entitled to give a "take up slack" signal?
4. Who has priority, a glider taking off or a powered aircraft landing?
5. To whom must a gliding club report an accident?
6. Should you fly a glider if you donated blood the day before?
7. By what height above the ground must all stalling, spinning and aerobatics be completed?
8. What action do you take if you abandon a take-off, pull the release twice but know or suspect that the cable/towrope has become entangled in the wheel or skid?
9. What does a rudder-waggle on aerotow mean?
10. Above what altitude must oxygen be carried and used?
11. What action do you take if you have mishandled the landing flare and the glider is starting to gain height?
12. Assuming you had a choice (i.e. airfield procedures or obstacles do not take precedence), on which side of the strip would you do a circuit in a strong crosswind?
13. Where should the pilot's left hand be during every takeoff?
14. Prior to every takeoff, what clearance must be obtained by the pilot?
15. When you join the circuit, you realise that you are too high and the angle to the strip is too steep. What action do you take?

Basic airworthiness

1. What aircraft document should be checked before flight and what information should be sought from it?
2. Where should the pilot look to find the glider's minimum and maximum weak-link strengths?
3. What action should the pilot take in the event of overstressing or overspeeding a glider in flight?
4. What is meant by "manoeuvre speed (V_a)"?
5. If flutter is encountered in moderate to high speed flight, (a) what immediate action should the pilot take, (b) what subsequent action after landing?
6. When checking a back-release, at approximately what downward angle should the cable automatically back- release?
7. What is " V_{ne} "? Is it the same at all altitudes?
8. A glider must never be pulled forward or backward by its wingtips. Why,not?
9. Every glider has a maximum and minimum pilot weight. Where can this information be found?
10. Under what circumstances can a pilot lighter than the permissible minimum pilot weight fly the glider?
11. Why is a weak-link fitted to a cable or towrope?
12. What is meant by the "manoeuvre envelope"?
13. What kind of inspection must be carried out on a glider after it has been rigged?
14. What is a Form 2 Inspection?
15. From an airworthiness point of view when must aerobatics NOT be performed?

"B" Certificate oral examination - answers

Basic theory

1. Angle of attack.
2. The tendency of a wing to resist movement in roll, caused by the increased angle of attack (and thus increased lift) on the downgoing wing.
3. Positive stability. The glider tends to return to its original heading when the rudder pedals are deflected then released.
4. Glider weight divided by wing area.
5. A smooth, streamlined flow of air, resulting in low drag around a glider wing, as distinct from a turbulent, high-drag flow.
6. It increases, because the lift is divided into two components, one acting upwards to balance out the weight, the other acting "inwards" to provide the turning (centripetal) force.
7. An airbrake which will not allow the glider to exceed its maximum permitted speed (V_{ne}). Most modern airbrake systems will limit the speed to V_{ne} in a 30 degree dive, but no steeper.
8. Wingspan divided by chord.
9. Usually known as a "yaw-string", it is more accurately described as an airflow direction indicator. Generally used to detect slip or skid in a turn.
10. They partly destroy the laminar flow of air past the wing, resulting in an increase in stalling speed and an increase in the rate of sink. The pilot should increase speed by 5 to 10 knots to compensate and should plan on a much higher sink rate than normal.
11. As the square of the airspeed. Twice the airspeed, four times the profile drag, three times the airspeed, nine times the drag, etc.
12. The turbulent airflow from the breakdown in flow over the top of the wing striking the tail.
13. The top wing is in an airmass of different speed to the bottom wing (wind gradient). At low level, turning into a strong wind causes the glider to overbank, vice-versa if turning downwind. The effect may be beyond the pilot's ability to prevent it occurring.
14. A glider going in the required direction at a constant airspeed and a constant rate of descent is said to be on a stabilised approach. The best landings result from such approaches.
15. True, but it will only recover if the CORRECT recovery action has been taken and the glider is within its CG limits.

Flight rules and procedures

1. The point at which upper-air exercises are terminated and full commitment made to the circuit. approach and landing.
2. 50 feet or about one wingspan.
3. Only the pilot, or someone definitely known to have been delegated this responsibility by the pilot.
4. ANY aircraft landing has priority over ANY aircraft taking off.
5. The Bureau of Air Safety Investigation (BASI) on the Australia-wide number 008 011034 and the RTO/Ops. The accident must be reported immediately.
6. No. The recommended recovery period is 24 hours.
7. 1000 feet.
8. Shout "Stop" (very loudly), open airbrakes fully and hold stick fully forward. If possible, apply wheel-brake.
9. Airbrakes/spoilers or tailchute extended. Check as appropriate.
10. Above 10,000 feet AMSL.
11. Close airbrakes. Stop the backward movement of the stick to prevent the glider "ballooning" any higher. If the balloon is a really bad one, slight (and momentary) forward movement may be required, but exercise great care with this. Carry out landing further down field.
12. On the downwind side.
13. Near the cable release.
14. "All clear above and behind".
15. Move out straightaway, then resume parallel track with strip further out. Airbrakes may be used if a gross error has been made, but beware of gliders underneath in the circuit joining area.

Basic airworthiness

1. Maintenance Release/ GFA Form 1. Check expiry date of MR, check minor and major defect pages and check that the Daily Inspection has been signed for.
2. On a placard in the cockpit.
3. Do not allow it to fly until inspected by a qualified person. Seek advice of authorised inspector. If none available, leave matters in the hands of the Duty Instructor. **DO NOT NEGLECT TO REPORT IT TO SOMEONE.**
4. Manoeuvre speed (V_a) is the speed above which full control deflection is not permitted. It is imposed to protect the structure. Over V_a , only one- third deflection is permitted on the ailerons and rudder, and use of the elevator is limited to the extent necessary to keep the glider within its permitted "G" loadings.
5. (a) Slow down, (b) ground the glider and report the incident, (c) change underpants.
6. At about right-angles to the fuselage. The important thing is that the cable does NOT have to be pulled backwards to actuate the back-release. If it needs such an extreme angle to make it work, there may be something wrong with it.
7. "Velocity Never Exceed", the maximum permitted speed of the glider in 'smooth air. It reduces with height because of reducing air density with height. Consult glider Flight Manual for details.
8. It puts too much strain on the wing-root fittings because of the long leverage.
9. On the cockpit placard.
10. Only when the required ballast is carried in accordance with the placard, and then only if the ballast is capable of being properly secured.
11. To protect the glider structure in the event of launch overstress.
12. The "envelope" of speeds and G loadings within which it is safe to fly the glider and outside of which damage or failure of the structure may occur.
13. A Daily Inspection.
14. The Annual Inspection for the revalidation of the glider's Certificate of Airworthiness.
15. In rough air

"C" Certificate oral examination

Basic theory

1. Assuming adequate entry speed, how much G is capable of being produced in a 60 degree banked turn?
2. If a glider is not fitted with an elevator trim tab, how is trimming carried out?
3. What is "ground effect"?
4. What is autorotation and what causes it?
5. If you blow lightly into the total-energy venturi of a variometer system, which way would you expect the vario needle to move?
6. You are in a gentle turn with the bank slowly increasing and the stick coming steadily back at a constant nose attitude. What is likely to happen if the stick continues to come back?
7. What is meant by a "balanced" turn?
8. What effect does aspect ratio have on induced drag?
9. A glider is flying at 60kts IAS into a 20kt headwind with a reading of 2kts down on the variometer. The airfield is 10NM away. What height will you have on arrival at the field if you set off home at 4,000ft?
10. What is the optimum angle of bank for minimum height loss in a turn at 1.5Vs.
11. Which is the best wing for the groundcrew to hold on a crosswind aerotow takeoff?
12. What is the effect of water-ballast on (a) stalling speed, (b) climb performance and (c) glide angle?
13. Why are TWO rings fitted to the end of a launching rope or cable?
14. What is the dominant control in incipient spin recovery?
15. In a crosswind landing using the crab method of approach, are the controls crossed when the glider touches down?

Flight rules and procedures

1. What is meant by the "non-manoeuvring area"?
2. Which way does the aiming-point move if the glider is overshooting?
3. When is a glider permitted to fly in the following areas: (a) Danger Area, (b) Restricted Area (c) Prohibited Area? On which chart will these areas be found?
4. What action must the glider pilot take if he loses sight of the tug during an aerotow?
5. At what height above ground must selection of an outlanding area be made on a cross-country flight?
6. What wind-indicators are available to assist a pilot on an outlanding?
7. What is the most common circuit-planning fault in early attempts at outlanding?
8. What are the five "S's" for choosing outlanding paddocks?
9. What are the minimum paddock standards for an aerotow retrieve from an outlanding?
10. What precautions are necessary when flying cross-country on days of total fire-ban?
11. What are the implications of landing out and failing to contact crew by radio or telephone by last light?
12. Name three basic precautions to take when giving an introductory flight to a relative or friend.
13. What extra equipment must a glider carry for operations in a Designated Remote Area?
14. What qualifications does a glider pilot need to communicate with Air Traffic Services?
15. What are the horizontal and vertical extents of an MBZ? What do the initials stand for?
16. Is it mandatory for a glider to carry and use radio in a CTAF? What do the initials stand for?

Basic soaring meteorology

1. At what rate (in degrees Celsius per 1,000ft) does a thermal cool as it rises in clear air? What is the name given to this rate?
2. What is meant by "atmospheric stability"?
3. What is "water vapour"?
4. What is "dew point"?
5. If a thermal is capped by a cloud, what does the cloud consist of?
6. What happens to a thermal inside a convection cloud?
7. What is "coriolis force" and what is its effect on a wind blowing from high pressure to low pressure?
8. In which direction does the wind blow around an anticyclone?
9. A cyclone is an extreme form of....what?
10. What is the effect of an increase in height on (a) air temperature, (b) air pressure, (c) air density.
11. Which is likely to generate the most hazardous weather for gliding, a warm front or a cold front?
12. In what kind of pressure pattern is subsidence likely?
13. What is the effect of subsidence on thermal development?
14. What is a "downburst" or "microburst"? Where are they likely to be found and what does a glider pilot do about them?
15. Are the conditions following the passage of a cold front likely to be good or bad for soaring?

"C" certificate oral examination - answers

Basic theory

1. 2G.
2. By an internal spring bias in the nose-up or nose-down sense.
3. The partial cancellation of wing downwash caused by proximity to the ground. This results in a reduction in induced drag and an effectively flatter glide-angle.
4. Autorotation is the tendency of an asymmetrically-stalled glider to rotate continuously in the rolling plane. Spinning is an autorotative manoeuvre with the nose pointing steeply down. It is caused in the first instance by the loss of lateral damping on a stalled wing.
5. Up.
6. The glider will probably spin.
7. A properly coordinated turn without slip or skid.
8. The higher the aspect ratio (i.e. the "skinnier" the wing), the lower the induced drag, because the wingtip vortices are less intense on a high aspect ratio wing.
9. 1,000 feet, calculated as follows. Effective glide angle over the ground is 1 in 20 (40 knots groundspeed divided by 2 knots rate of descent), therefore 10 nautical miles would take .5 of a nautical mile of height, which is 3,000 feet.
10. Theoretically 50 degrees, but for practical purposes 40 to 45 degrees.
11. The downwind wing, because it is easier to help a pilot out of a groundloop situation.
12. (a) It is increased, (b) It is degraded, (c) It remains the same but occurs at a higher airspeed.
13. To ensure that the pull exerted by the small ring on the hook is always straight and not at an angle.
14. The elevator.
15. Yes, to counter secondary effect of rudder when drift is kicked off.

Flight rules and procedures

1. The area of sky within which, if a launch failure occurred, the glider would be too high to land ahead within the remaining strip length and too low to manoeuvre to join a circuit.
2. Downwards in the canopy.
3. (a) Anytime with care (b) Only in compliance with specified conditions (c) Never. These areas will be found on Enroute Charts, Low (ERC(L)s) and Visual Terminal Charts (VTCs).
4. Release immediately.
5. 2,000 feet AGL.
6. Cloud shadows on ground, drift in circuit (Note: these two will give wind at height, which will be a useful guide but not quite the same as the surface wind). Wind-shadows on dams, dust behind cars on dirt roads, etc.
7. Too steep an angle, cramping the circuit.
8. Size, slope, surface, stock and surroundings. The latter check should pay particular attention to Single Wire Earth Return (SWER) lines.
9. Authorised Landing Area (ALA) standard, but in any case a minimum length of 600 metres.
10. Non-sparking skids must be fitted to gliders. No aerotow retrieves because of fire danger from tug exhausts. Retrieve cars confined to roads and not permitted in paddock, unless it is ploughed and then only with farmer's clearance.
11. The crew will be compelled to initiate SAR action.
12. No aerobatics or steep turns. Gentle thermal turns. Keep flights short on rough or very hot days.
13. An Emergency Locator Transmitter (ELT) or the portable marine equivalent known as an EPIRB (Electronic Position Indicating Radio Beacon). Equipment for a water-still.
14. Logbook endorsement as GFA radio operator.
15. 15NM radius, up to 5,000ft. MBZ stands for Mandatory Broadcast Zone.
16. No, but if it is carried in the glider, it is advisable to monitor the CTAF frequency and broadcast if necessary. The initials stand for Common Traffic Advisory Frequency.

Basic soaring meteorology

1. 3 degrees per 1,000ft. The Dry Adiabatic Lapse Rate.
2. A temperature structure in the atmosphere whereby a rising thermal will tend to reach temperature equilibrium with its surrounds and therefore stop rising.
3. The invisible moisture present in the atmosphere to some extent at all times.
4. The temperature at which water vapour condenses into visible water droplets in the atmosphere.
5. Visible water droplets (NOT water vapour).
6. It increase its rate of ascent due to the release of latent heat when water vapour changes its state to visible water droplets at the dew point.
7. The effect of the earth's rotation on wind, causing an otherwise straight flow of wind to turn into spiral patterns around areas of high and low pressure.
8. Anti-clockwise in the Southern Hemisphere.
9. Depression.
10. They all decrease with height.
11. A cold front (blustery winds, rain, possible thunderstorms).
12. An anticyclone.
13. It tends to inhibit thermal development.
14. An extremely strong downdraft, causing locally strong surface winds which are often hazardous. They are found on the edges of thunderstorms, often at a considerable distance from the storm itself. Glider pilots must avoid them at all costs; although the downburst itself may be invisible, they are sometimes marked by areas of rising dust where they reach the ground.
15. Good (unstable air with enough moisture to form cumulus clouds).