

The South African Model Aircraft Association



Proficiency tests for powered, fixed-wing model aircraft

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SECTION 1 GENERAL

This booklet deals with proficiencies for **fixed-wing powered aircraft**. Similar documents exist for proficiency tests for helicopters, gliders, control line, jets, multi-rotor, model parachuting, and other activities and types of model aircraft.

Introduction, Objectives, History.

In the interest of the hobby/sport of model aircraft flying, it is essential that first,

- an adequate standard be set before a **beginner** is allowed to fly on his own without a qualified instructor in attendance, and secondly,
- that further goals are set to challenge the model aircraft pilot to improve his flying skills.

With these two main objectives in mind, the SAMAA has produced, over the years, a number of proficiency tests.

The first set of proficiency tests introduced in the 1970s was the "Propeller" series, which was replaced in 1984 by the present proficiency system, which is represented by the four qualifications of Bronze, Silver, Gold, and Instructor, with a fifth, the Solo, being added.

The Bronze was regarded by SAMAA as the minimum requisite for a radio control pilot to fly a model aircraft on his own. In 2001, it was decided that a more forgiving (in terms of flying requirements) and more comprehensive (in terms of general safety knowledge) test be introduced. This test is known as the "Solo".

The purpose of this "Solo" test is to ensure a model aircraft pilot's ability to fly and control a model aircraft safely when other members are present and flying. It also ensures that the model pilot had been instructed on his club's by-laws, safety rules, the SAMAA Manual of Procedures, and that he has an understanding and working knowledge of the equipment and radio installation, and a basic understanding related to model aircraft safety, and aerodynamics.

Other changes to the present SAMAA proficiency regulations relate to:

- level of qualification needed to instruct or teach a beginner. (see club instructor)
- the level of competence required for a model aircraft pilot to be allowed to fly at an airshow held at his own club, with public present.

Also added to this Booklet is a teaching sequence for pupil or beginner pilots. This is a milestone-recorded and progress log, which should make it easier for club instructors to monitor the progress of a beginner or pupil.

SECTION 2 DEFINITIONS

For clarity, here are some definitions of the terms used in this booklet.

- *Pupil pilot* - a pupil pilot is a paid up SAMAA member who is learning to fly an R/C model aeroplane, and has not yet obtained any proficiency level. When flying with others present, he shall be accompanied by a SAMAA-qualified club instructor.
- *Pilot* - a member who can fly a model aeroplane and has achieved a proficiency level of Solo or better.
- *SAMAA* - the South African Model Aircraft Association, which is the coordinating and management body for aeromodeling in South Africa. All SAMAA rules and regulations are to be incorporated into, and complied with at all SAMAA-registered clubs.
- *Registered club* - field or flying site that has been set out for model aircraft flying, registered by the SAMAA. The club or site shall have a responsible committee elected by the members to manage and oversee all model flying activities.
- *Member* - means a fully paid-up member of the SAMAA who is in good standing with the Association.
- *Pilot box/Pilot area* - means designated area from which pilots fly their aeroplanes.
- *Frequency peg board* - the frequency control system used by the club to ensure effective management of all the frequencies which may be used at the field.
- *Pit area* - the area between the club house and the pilot boxes on the runway, nearest to the club house.

- *Run-up area* - an area off to the side of the taxiways where engines may be checked, without interfering with aircraft in the pit area, or the hearing of the pilots flying.
- *Transmitter control area* - the area at the back of the pit area where all transmitters are impounded in a switched-off state when not in use.
- *Transmitter* - a purpose-made, commercially available unit which shall operate on an ICASA-approved model aircraft frequency, and to comply with ICASA specifications, to operate within the specifications and power outputs defined by ICASA, for use in model aircraft control in South Africa.
- *Buddy box* - a system whereby the instructor has a "master" transmitter and the pupil pilot has the "slave" transmitter, and the instructor can assume control of the aircraft as required.
- *Simulator* - One of the best and cheapest methods to learn to learn the basic of model flying. In principle, it is an attachment to your computer which allows you to learn to fly a model aircraft on your computer screen (similar to a computer game).
- *Aircraft or aeroplane* - a conventional, powered, fixed-wing model aircraft. The final decision on the type of model aircraft that may be used for the flying test, remains with the judges (see item 8.2)
- *Frequency peg/marker* - the marker used to identify the radio frequency being used by the pilot at the field.
- *Rules and regulations* - these shall mean the SAMAA rules and safety regulations, the club rules and regulations.
- *Club instructor* - A person, who in the view of the club committee, is qualified to assist a beginner to learn to fly. A member who in their views, is proficient, or has obtained a proficiency level which makes him competent to instruct beginners. This means that, if circumstances dictate, i.e. the club does not have

the qualified members, a member with a Solo or Bronze and with at least 12 months practical flying could be appointed a club instructor. Unless there are special circumstances, a club instructor shall hold a SAMAA silver proficiency.

Any two club instructors with SAMAA silver or higher, can test a pupil pilot and award a "Solo" status. The club instructor is critical to the future of model flying. The teaching of beginners and pupil pilots in the club, and them achieving Solo status, is an essential service to the hobby.

- *SAMAA instructor*
 - A pilot who has satisfactorily obtained his SAMAA instructor proficiency and who has demonstrated to the SAMAA instructor judges that he has a good understanding of the safety rules, and comparative scoring system. He will be allowed to judge when accompanied by a second qualified SAMAA instructor, to test and award the SAMAA proficiencies for Solo, Bronze, Silver, or Gold.
- *SAMAA instructor judge*
 - After a pilot has obtained his SAMAA instructors proficiency, he could be appointed as a SAMAA instructor judge at SAMAA's discretion, provided he fulfills the following criteria:
 - (a) The applicant shall be a fully paid-up member of SAMAA, and be in good standing with regards to previous payments.
 - (b) He shall have a minimum of 7 (seven) years' involvement in model flying.
 - (d) He shall be mature, and shall be respected in the flying fraternity and at his club.
 - (f) He shall be entitled to judge, together with a SAMAA Gold proficiency pilot, any proficiency up to Gold.
 - (g) He shall be entitled to judge, together with another SAMAA instructor, a pilot for his Instructor rating.

It must be stated that it is SAMAA's decision as to how many judges they wish to appoint in an area region, and instructor judges will only be appointed

as and when the need arises, but with no limit of the number of instructor judges in a region/club.

Application must be made in writing, to the SAMAA Office, and must be properly motivated, signed or endorsed by the applicant's club chairman, and another committee member. This application is tabled at a SAMAA management committee meeting, for approval of the appointment. This instructor judge status may be revoked by the SAMAA, if the appointee becomes inactive, irresponsible, or does not perform the duties.

SECTION 3 STEPS OF TEACHING A PUPIL PILOT TO FLY

This section has been introduced to set down some guidelines for club instructors who have undertaken the task of teaching a new member to fly.

It is intended to outline the matters that a pilot should know. Its objective is to assist and remind the instructor of matters that he takes for granted and assumes others might know.

The duties of the club instructor are:

1. To check out the pupil pilots' aeroplane before the first flight, or after any repairs, by doing the pre-flight check set out in sections of this booklet.
2. To instruct the pupil pilot on SAMAA MOPs, the club's constitution, and flying procedures, and the club's safety rules and safety code.
3. To instruct briefly on a number of general subjects as outlined under "General Instruction" (see item 3.3).
4. To teach the pupil pilot to fly.

3.1 Check out the pupil/beginner's model aircraft

Every aircraft must be checked out structurally, and for the method and correctness of the radio, motor and equipment installation. For this purpose, it is suggested that the preflight checklist in Section 5 be used.

3.2 Field etiquette and safety rules

This is the instructor's second duty. Some clubs have not yet prepared introductory courses to cover the safety rules etc. as set out in this section and section 3.3, but it is hoped that in due course clubs will introduce lectures to ensure that pupil pilots and new members understand the rules

and the basics of how the hobby is structured. It is essential for the instructor to work through the following with the pupil pilot:

- (a) – Club rules and flying procedures
- (b) – Safety rules, safety code and procedures
- (c) – Bye-laws and special regulations.
- (d) – SAMAA rules.

3.3. General instruction

The instructor's third duty covers a fairly large scope. It is up to the instructor to give the pupil a thorough grounding in the following:

3.3.1 Theory of flight

- (i) basics (lift, weight, thrust, drag).
- (ii) speed/lift (basic Bernoulli principle of fluid dynamics).
- (iii) stalling.
- (iv) centre of gravity (forward = safe, rearward = unsafe).
- (v) the three axes (yaw, pitch, roll).
- (vi) control surface function.
- (vii) adverse yaw (coordinated rudder and aileron turns)
- (viii) air density and temperature.
- (ix) mass and wing loading.

3.3.2 Radio functions

- (i) very basic theory.
- (ii) actions and functions of the Tx.
- (iii) actions and functions of the Rx.
- (iv) checks, range, switch, frequency, antennae, batteries, etc.
- (v) maintenance and charging.
- (vi) receiver failsafe settings.
- (vii) buddy box use
- (viii) home flight simulator.

3.3.3 Frequency Control

- (i) Describe the system generally still used in South Africa, i.e. "PEG ON" in detail, emphasising discipline and consequences of failure to observe these frequency control rules.
- (ii) The system of "peg on" board before switching on transmitter.
- (iii) Transmitter impound system.

3.3.4 Pre-flight checks

- (i) Radio. Start-up. Mixture at high-low rpm. Mixture when aircraft is nose up. Reliable idle, etc.
- (ii) engine power limits, propeller size.
- (iii) control checks.
- (iv) taxi and runway discipline.
- (v) runway entrance, hold for landing aeroplanes, permission from other pilots flying.
- (vi) line up and delays.
- (vii) club local flying and safety rules.

3.3.5 Flying

- (i) power for height, elevator for speed.
- (ii) acquisition of stick "feel" – practice.
- (iii) simple turns and correction during manoeuvres.
- (iv) normal turns and manoeuvres.
- (v) disorientation - stick time.
- (vi) dangers of flying through the sun.
- (vii) basic aerobatics and correction.
- (viii) changing altitude.
- (ix) accurate positioning of aeroplane in the sky.
- (x) approach and landing pattern.
- (xi) landing.
- (xii) take-off procedures (use of rudder at lower speeds).
- (xiii) touch-and-go's.
- (xiv) identification of pupil's weaknesses, revision, and practice to improve.
- (xv) first solo flight.
- (xvi) Solo proficiency test.
- (xvii) one month check-up and correction of any problem.

3.3.6 Proficiency testing

Reasons and purpose of proficiency tests. (Refer to Section 1 and Section 8)

3.4. Take-off and flying

Now follows the hard work for the instructor, his fourth duty – teaching the beginner or pupil to fly.

NO PUPIL PILOT MAY FLY HIS AIRCRAFT WITHOUT AN INSTRUCTOR OR QUALIFIED PILOT IN ATTENDANCE.

Once the pupil has understood the above theory, he is now ready to fly, but again, only after having the instructor explain the following to him:

3.4.1 Pre-flight check procedure

1. Re-check control movements before taxiing.
2. Taxi
 - (i) explain holding up-elevator for a tail dragger
 - (ii) straight taxiing
 - (iii) torque effect.
3. Nose wheel effective.
4. Speed (i.e. enough power for take-off).
5. Refuel if necessary.
6. Explain aerial orientation (don't point aerial at aircraft).
7. Explain "stick towards the wing that is down"-theory of orientation when aeroplane is coming towards the pilot.
8. Explain stick movements, and use of trims and rates.
9. Explain position of hands and fingers on the transmitter. Lightly grip sticks between thumb and fore-fingers, or thumbs on top of sticks.
10. Explain to pupil to not "paddle" the sticks; give enough, but gentle movements.
11. Explain ill-effects of over-controlling.
12. Give commands to pupil and check his response to positioning aeroplane.

3.4.2 Flight checks

1. Take-off.
 - (i) more speed required than usual.
 - (ii) keep climb-out flattish until safe height is attained.
2. Check and adjust trims on transmitter.
3. Land immediately if trims are way out or aeroplane behaves abnormally or erratically.
4. After test flight, land and adjust trim on aeroplane, to re-centre trims on the transmitter.
5. Re-check trims in flight, re-adjust if necessary.

3.4.3 Teaching the pupil pilot to fly

Flying – Sequence of teaching

Each instructor has his own individual method as to how best to teach a pupil, but the basics throughout the world show that the norm is:

- Take-off by the instructor, either using pupil's Tx or Buddy Box, climb to a reasonable height, throttle back, do a 180-degree turn, and trim out the model aircraft for straight and level flight.

- Hand over transmitter to pupil (if applicable) who will do several hours of left turns, and right turns, squares, figure eight's, etc.
- Landing by instructor.
- The pupil learning to taxi, as this teaches him to use rudder and throttle.
- The pupil flying further hours of circuits, at gradually decreasing height above ground.
- The pupil's first landing.
- Further flying circuits, practising approaches and flight over runways.
- First take-offs.
- Practising take-offs, approaches, and landings, flying the solo test schedule of manoeuvres.
- Performing and passing the "Solo" test.
- Periodic check-ups.

The instructor's job is basically done.

Some of the points which must become part of the instructor's vocabulary:

- Is your peg on the board?
- When last did you check the batteries?
- Have you checked out your aeroplane?
- Have you fuelled up?
- Have you switched on, and selected the correct model?
- Be very careful of the spinning propeller.
- Have you extended the Tx aerial? (if applicable)
- Do not fly over the pits, club house, parking area, people.
- Get more height, but not too high where you cannot see the aircraft.
- Announce intentions to the other pilots on the flight line.
- Have you switched off after landing?
- Have you taken your peg off the board?
- Is your transmitter back in the Tx impound?

SECTION 4

Beginner's/pupil milestone log

4.1 Pupil's/beginner's milestones

This section now sets out the proposed learning – "achievement milestones" for teaching pupils. To help achieve uniformity, we have produced a Progress Log, and we suggest that these milestones become a club standard, and that any club instructor can see at a glance the status and progress of the pupil, and carry on instruction from that point.

A suggestion to clubs, is that a cardboard print of the Progress Log be issued to the pupil, and this card is then presented to the instructor before the pupil flies. This is then finally signed off by the instructor. The pupil pilot may then request to be tested for his Solo proficiency rating.

PROGRESS LOG
Pupil's status - Milestones

Member's name: Type of aeroplane:

Club name: SAMAA number:

Milestones achieved

Instructor's signature: Date:

<i>Item</i>	<i>Ground</i>	<i>Flying</i>	<i>Signature and date</i>
1	Instructor to demonstrate frequency peg system. Instructor to explain basic safety rules, and flying rules	Instructor to explain frequency control system, control functions, movement of sticks, and flying criteria to pupil	
2	Airworthiness checklist okay	Aeroplane thoroughly checked out, trims okay, flies okay	
3	Club safety, field rules and flying rules known by pupil	Pupil can ground taxi. Is able to satisfactorily and consistently perform left-hand and right-hand circles, as well as figure eight's at higher altitudes	
4	Safety procedures known and practiced by pupil	Pupil can do left-hand and right-hand circles and figure eight's at lower altitude, as well as trim out the aircraft, and do landing approaches, without actually landing	
5	Safety and flying rules and procedures are known by pupil	Pupil can do safe landings, from all directions, and combinations of turn directions. Pupil can do safe dead-stick landings	
6	Basic aerodynamics are known	Pupil can do take-offs	
7	Pupil has satisfied instructor on knowledge of safety, club rules, and basic aerodynamics	With enough confidence and experience, pupil pilot may undertake the Solo proficiency test, and if successful, is now qualified to fly solo at the club	

SECTION 5

Pre-flight check list

- 5.1** (a) The checks as set out in (Points 5.2 to 5.8), are general checklist items and must be used in entirety by all pilots, no matter how experienced they are, to check out their aeroplanes before the first flight of the day. It must be used in total by pupil pilots who are doing their Solo proficiency tests. The intention is that the pupil pilot will demonstrate to the judges that he has a thorough knowledge of his aircraft and the details which make for safe flying.
- (b) This same checklist must be used by the instructor to check out a beginner or pupil's aeroplane before its first flight. To assist the pilot, this section has been set out in a logical sequence so that each check, or set of checks, follows the previous one. The pupil must be present during the check, as he will be required, at a later date to perform this check for the instructor before obtaining "Solo" status.

5.2 Airworthiness

Here is the first of the instructor's duties.

It is a prerequisite that any new, **untried**, or **repaired** aeroplane be properly checked before its first flight. The check-lists which follow are brief but reasonably comprehensive and, if in the views of the instructor, the aeroplane is not airworthy or is unsuitable for a pupil, now is the time to say so. It is pointless for a pupil to try to fly an unsuitable aeroplane which he will crash and which will demoralise him.

If the aircraft is deemed not airworthy, it should be grounded until such time as the alteration, modification, or replacement is done to the satisfaction of the instructor. A list of the defects, if not fixable at the field, should be given to the pupil by the instructor. A copy of this same list must be given to the safety officer, with the pupil's name, the type of aeroplane, and his reasons for not allowing the aeroplane to be flown, clearly documented thereon.

Checks to be done by the instructor, must include the following:

- Explain to the pupil, during the checkout of the aeroplane, the observations and reasons for any adjustments that are made.
- If this check is being done at the field – RESERVE THE TRANSMITTER FREQUENCY BEFORE STARTING THE CHECK (if applicable). Confirm that the frequency is an approved-SAMAA frequency.

5.3 Check list

Structure

1. Check wing for warps.

2. Check ailerons.
 - (i) method of attachment (hinges pinned, etc.)
 - (ii) check aileron to wing gap and temporarily seal with tape if excessive.
 - (iii) movement (correct direction and adequate movement, especially if two servo's fitted in wing.
3. Check centre section of wing for strength, and wing overall for stiffness.
4. Check that tailplane is on straight and square, and securely fixed.
5. Check that fin is on straight and square, and securely fixed.
6. Check the method of attaching tail surfaces to fuselage.
7. Check rudder and elevator hinges (pinned), and control surface gaps.
8. Check rudder and elevator movements.
 - (i) correct direction and amount of movement, (adequate, or excessive).
 - (ii) kwiklinks and pushrod locks correctly fitted to both ends of push rods.
9. Check method of mounting engine or motor.
 - (i) type of mount.
 - (ii) correct type and number of bolts and lock-nuts, or screws.
 - (iii) servo linkage, movement correct.
 - (iv) no metal-to-metal linkages to cause noise.
10. Check fuel tank.
 - (i) is it at the correct level?
 - (ii) position: can it move or rotate?
 - (iii) correct plumbing to tank; are the pressure and clunk systems okay?
 - (iv) filter(s) fitted.
11. Check nose wheel or tailwheel (whichever fitted).
 - (i) drag.
 - (ii) correct direction of movement.
 - (iii) amount of movement.
 - (iv) linkages okay, no metal-to-metal links.
 - (v) tracks straight when servo is at centre.
 - (vi) properly mounted with bracket
 - (vii) nose wheel shaft nearly vertical or slight aft rake
12. Check main wheels.
 - (i) drag/binding.
 - (ii) method of attachment to fuselage, and wheels to axles.
 - (iii) tracking straight.
 - (iv) position of wheels relative to CG.

5.4 **Radio installation**

1. Check servo tray and/or aileron servo attachment.
 - (i) trays screwed down correctly.
 - (ii) servos mounted correctly on grommets and eyelets.
 - (iii) screws in servo output arms.
 - (iv) kwiklinks on push rods fitted and adjusted correctly.
 - (v) no binding of output arms or push rods over full servo throw, including trims.
2. Check battery
 - (i) position, method of fixing. Can it move and alter CG, etc.?
 - (ii) check battery voltage under load.
 - (iii) set up fail safe settings.
 - (iv) check switch position and movement of switch
3. Check receiver position and protection, and isolation from vibration.
4. Check position of aerial.
 - (i) restraint inside fuselage, not under tension.
 - (ii) away from servos and output arms.
 - (iii) method of attachment to fin and/or tail plane.
 - (iv) not doubled-back on itself.
 - (v) not inside fuselage alongside metal control rods?
 - (vi) protected at exit point of fuselage.
 - (vii) not inside carbon fibre fuselage
 - (viii) Is aerial correctly orientated? (2.4GHz)
5. Linkage on servos.
 - (i) no metal-to-metal contact.
 - (ii) nyrod outers glued both ends, supported in middle of a long run.
 - (iii) end of control rods properly restrained.
6. Foam rubber packing/isolation (not plastic foam) where necessary.
7.
 - (i) Servo leads okay and plugged into receiver properly.
 - (ii) Servo lead plugs anchored/captured into receiver.
8. Check linkage to elevator, rudder, ailerons, throttle, and nose wheel.
 - (i) method of attachment.
 - (ii) throttle travel correct or override provided.
 - (iii) nose wheel shock absorber (on leg and linkage).
 - (iv) clearance of aileron linkages when wing attached to fuselage.
 - (v) kwik-links or clevises locked in place.

9. Check movement of servos.
 - (i) servos move smoothly, no grinding noises, jerkiness, or buzzing.
 - (ii) no binding during full throws and trims.
 - (iii) all moving in the correct directions relative to stick movements on ailerons, elevator, rudder, throttle, and nose wheel.
 - (iv) set up rates if thought necessary.
 - (v) check fail-safe settings on servos. (Engine or motor to low idle – balance of servos to hold.)
 - (vi) set all trims to zero, if required, adjust mechanical settings.
 - (vii) programme in exponential if thought to be beneficial.
 - (viii) special check on direction if two aileron servo's fitted.

5.5 Assembly

1. Check if covering of total aeroplane okay.
2. Check wing incidence and tailplane incidence (decalage).
3. Check thrust line of motor/engine.
 - (i) viewed from side for down thrust.
 - (ii) viewed from top for right thrust.
4. Check all control surfaces are aligned with flying surfaces, i.e. elevator to stab, rudder to fin, and ailerons to wing.
5. Check position of Centre of Gravity.
6. Method of attaching wing to fuselage (bolts, rubber bands, plug-in).
7. Wing square on fuselage.
 - (i) viewed from front, back, and top.
 - (ii) check aerial, servo leads, or battery wire not trapped.

5.6 Engine checks

1. Propeller.
 - (i) correct size for engine.
 - (ii) correct type for engine (not pure nylon).
 - (iii) prop nut tightened with wrench, spanner, socket.
 - (iv) propeller balanced
 - (v) spinner if used, tight
2. Glow plug.
 - (i) correct type.
 - (ii) firmly tightened, but not over tight. Washer/seal present.

3. Carburettor.
 - (i) mounted firmly, with rubber O-ring seal.
 - (ii) idle adjusted correctly.
4. Fuel.
 - (i) tank full with correct type fuel.
 - (ii) filter recommended in fuel line.
5. Silencer.
 - (i) check that the silencer is an approved, unmodified unit.
 - (ii) check that the silencer is properly attached to the engine.
 - (iii) if deemed excessively noisy, add baffles or modify.

NB: WARN ABOUT THE DANGERS OF A SPINNING PROPELLER

6. Start engine.
 - (i) check high-speed setting, set intermediate setting.
 - (ii) check for fuel foaming.
 - (iii) check idle, adjust so that engine or motor stops on pulling throttle trim back on the Tx.
 - (iv) re-check over full rev range and sort out problems.
 - (v) engine maintains revs with nose of aeroplane held up vertically.
 - (vi) check that the noise level is within SAMAA and club limits when engine is at full revs.

5.7 Range checks

1. Identifying frequency of transmitter
2. Peg on frequency before operating transmitter
3. Output meter on the transmitter reading correctly and in the "green" at plus 9.6V.
4. Check receiver battery voltage under load.
5. Check operating range with transmitter aerial collapsed.
(Should be at least 30 metres, see manufacturer's specification)

5.8 Buddy box

1. Correctly connected, and control surface movements correct.

NOTE Explain adjustments to the pupil and let him observe, learn, and participate with the necessary checks and adjustments and range check, and buddy box settings.

SECTION 6

Requirements for Solo test

From the "Solo proficiency test score sheet" it can be seen that the flying manoeuvres required are basic. This is intentional. The reason for this test is to demonstrate to the two SAMAA silver rated pilots that the beginner or pupil, has enough knowledge of the club procedures and the experience and ability to fly, **without an instructor present. When he is on the flightline with other pilots flying, he must not be a liability or danger to those present, including spectators and their property, at the flying field.**

The solo test will be judged by two SAMAA silver-rated pilots or better, neither of whom taught the pupil. The oral and model check tests must be carried out, and must be followed by one flight as detailed on the Solo proficiency test sheet. If, in the views of the judges the pilot is competent, then he passes. If the judges are uncertain of the pilot's ability they may:

- (i) have him re-do the manoeuvres they were unhappy with, or
- (ii) have him re-do the preflight or the whole test flight

Please note that if:

- (i) **The pilot does not have his SAMAA card with him, or**
- (ii) **if the model used, is in the views of the judges not airworthy, or representative of models generally flown at the club (see 8.2), NO TEST will be done.**

A Solo rating fulfills the requirement of the SAMAA insurance for flying unaccompanied on the flight line with other pilots present.

The first two items, oral (general and safety) and pre-flight, will require some homework from the pupil.

These solo tests will be conducted in a formal manner, with the correctly qualified persons present at the tests. After the test, the duly signed test papers will be approved by the club safety committee or chairman, placed on file, and a copy forwarded to the SAMAA office by hand, fax, post, or e-mail. The solo certificate will be posted to the pilot, or may be collected if more convenient.

Here follows a description of the requirements for flying and judging the manoeuvres. The majority of the manoeuvres must be flown in front of the pilot and judges, with a defined centre line to orientate the manoeuvres.

Take-off into the wind

The runway used will be the one nearest into the wind, and the pupil will be required to do a take-off which consists of the following:

- Announce take-off, and apply power smoothly

- Keep reasonably straight down the runway on take-off
- Lift off, keep straight, climbing slowly, (not hanging on propeller) for at least 5 seconds
- Do a gentle turn away from the pits/runway.

Left hand and right hand circuits

Here the pupil must demonstrate his ability to do circuits while maintaining a reasonable altitude level.

- After take-off, climb to a reasonable height
- Pupil to announce intention, i.e. left or right circuit, when the aeroplane is in front of him
- Proceed to do the turns (four left, or four right).
- When the turns are complete, repeat the manoeuvre in the opposite direction

Uncertainty or lack of control or coordination in flying, will result in re-test of this manoeuvre.

Horizontal eights

This manoeuvre has a smooth transition in between the two circles.

The model approaches in straight and level flight, performs a quarter circle turn away from the pilot, before reaching the centre line, followed by a 360° turn in the opposite direction. This is then followed by a 270° turn in the original direction. The manoeuvre is complete after the model has passed the pilot in straight and level flight in the direction of the original entry into the manoeuvre.

Dead-stick landing

At some point in the test, the judges will tell the pupil to cut the aeroplane's motor/engine. This command will always be in such a position that he will be able to land safely on the runway.

- On receiving the command to cut, the pilot shall throttle the motor or engine back to idle/stop.
 - The pilot must judge the circuit and approach so as to be able to safely reach and land into the wind on or near the runway in use.

Landing

See 7.2.15, except that landing on or near the runway is acceptable. Landing on the pit side of the runway or in an uncontrolled manner, resulting in a crash, will mean a test failure.

6.2. **Solo proficiency test sheet**

On page 10 is a "Solo" test sheet, divided into:

**NB. Please check SAMAA membership card, to validate membership****(a) Oral and Pre-flight check**

This part of the Solo test is the more difficult part, as it requires that the pupil knows and understands, the club and the SAMAA rules, and can safely operate his model aircraft, when others are flying.

This above test is in two parts:

(1) The Oral test

This is in the form of random questions which will be asked, and answered to the satisfaction of the judges. A list of the types of questions appear on pages 11 and 12.

(2) The pre-flight check

This will be based on the SAMAA instructors check list (per section 5 of this booklet).

This is a hands-on test, where the pupil checks out the model aircraft in front of the judges, and shows that he understands the problem areas of a model which could cause an accident, and which will need regular checking.

As stated elsewhere, a lack of knowledge on the frequency control system, the basic club rules, safety rules, and field rules will ensure a failed test.

(b) Flying

The pupil will be required to fly one flight in accordance with the Solo test sheet, in a conventional and acceptable manner, using approved radio equipment, and a suitable model aircraft. Remember that this is a test of a pilot's skill level, and the pilot's ability to safely handle the aircraft. It is not a test of aircraft type, and the Solo test may also be taken with a park-flying, or foamie-type aircraft.

The judges have the right, if doubt exists, to have the pilot repeat any of the manoeuvres listed.

The Solo test is scored on a simple pass or fail... the pilot can either safely and recognisably perform a particular manoeuvre, or not. The judges will inform the pupil whether he has passed or failed, and at their discretion, advise of him of flying shortcomings. Their decision is final. A test may be redone a second time on the same day provided that there is time and the judges believe he is capable of passing the test. If, at any time during the flying test, a pilot fails a manoeuvre, the judges will instruct him to land, since there is no point in continuing the flight. However, they may request a pilot to re-fly a manoeuvre to satisfy themselves that the pilot has the skill to safely perform the manoeuvre.

		Only one flight	
No.	Description/name of manoeuvre	Judge 1	Judge 2
Oral test - eight questions regarding flying, safety, club rules, SAMAA rules (tick only ✓)		No scores. Tick only if manoeuvre done correctly.	No scores. Tick only if manoeuvre done correctly.
Pre-flight check of aircraft and radio done to satisfaction of judges (tick only ✓)			
1	Controlled take-off into wind		
2	Left-hand circuit - end of circuit parallel to runway		
3	Right-hand circuit - end of circuit parallel to runway		
4	Two horizontal figure eights (<i>one upwind, and one downwind</i>)		
5	Simulated dead-stick landing - engine at low speed		
6	Landing approach from left		
7	Landing approach from right		
8	Landing into wind		
No numerical scores assigned to manoeuvres. Tick only ✓ if completed to satisfaction.			

Please complete the following information, to be captured/verified on the SAMAA database.

PILOT NAME Test location

Date of test Pilot's home club

Pilot's SAMAA no. Expiry date of membership

Pilot's cellphone no. e-mail address

Pilot's signature

Judge 1 name Signature Rating

Judge 2 name Signature Rating

Club chairman/proficiency officer recommendation

Comments

6.3 Typical questions to be asked, when testing all proficiency ratings

Answers to all these questions should have been covered by your instructor during teaching the pupil pilot to fly, and if not, are addressed published at the back of this publication. It may also be found on www.samaa.org.za

1. Where do you find the rules or operational procedures applicable to model aircraft flying, and have you read them?
2. Who manages the safe use of airspace, and are model fliers answerable to this body?
3. To which group is SAMAA and its members affiliated?
4. Do you need to be a member of any organisation or club to fly?
5. Where can you legally fly?
6. Do you need a permit to fly?
7. What is your standard procedure when you arrive at the club?
8. What do you do if you are a visitor at a club and wish to fly?
9. What checks have you done before you go out to fly?
10. Why must you secure the frequency spot and place your peg on it before switching on your transmitter? What do you do if there is a peg on your frequency spot?
11. What do you do if you want to fly and your frequency spot is not on the board?
12. What would you do if you want to fly but left your frequency peg at home?
13. What would you do if you are about to fly, and when you switch on your transmitter the meter shows red or under 9 volts?
14. How do you know that your receiver battery is okay to fly, for the first flight, and then for subsequent flights?
15. How often do you do a radio range check?
16. Which areas of your club field are you not allowed to overfly (no-fly zone) and why?
17. When you fly, should you have a person/spotter with you on the flightline?
18. What is the legal height at which you may fly your model aircraft?
19. What would you do if you see a full-size aircraft or helicopter flying near or over your flying field?
20. Why is it dangerous to lean over the engine to adjust the needle valve when the engine is running, or at full throttle?
21. Why do club safety rules state that you should not taxi your aeroplane in the pit area?
22. What would you do if your engine stalls on the threshold/runway prior to take-off and other pilots are waiting to take-off?
23. What would you do if on take-off, just after becoming airborne, your aeroplane turns towards the pit/spectator area?
24. How do you know what direction the circuit is to be flown?
25. Which runway do you use for take-off and landing?

26. If there are pilots standing, say three (3) metres from and halfway down the runway and you needed the full runway for take-off, what would you do?
27. Where do you stand when flying?
28. If you are going to land and see someone on the runway trying to retrieve an aeroplane, what would you do?
29. If you were lined up ready for take-off and during your final check you notice:
 - A servo glitching
 - That the tailplane is loose
 - That the aeroplane is vibrating badly
 - That the wing is skew
 - That the undercarriage is skew or loose
 - That some covering is loose – what would you do?
30. What would you do if you were a pilot on the flight line and heard:
 - Someone shouting "DEADSTICK" – when you were about to take-off?
 - Someone shouting "LANDING" – when you were about to take-off?
 - Someone shouting "crossing runway"?
31. If you are the most senior person at the field and the duty officer is not present, what would your duty be?
32. If you see a child running in the pit area, what would you do?
33. If you are the duty officer for the day, what would you do:
 - If someone is flying recklessly and ignoring the safety rules?
 - If after a verbal warning they still persist in ignoring the rules?
34. What are your duties if you are the safety officer of the day?
35. What is a "fail safe" receiver setting and how do you set it up?
36. Why are lithium polymer batteries more dangerous than ordinary batteries?
37. Why are electric motor-driven models dangerous?
38. When and where may you safely power up an electrically-driven model aircraft?
39. What could happen if you turn off your transmitter without first disconnecting the power to the electric motor of your model?
40. How do you know the state/condition of your flight and transmitter battery packs?
41. What would you do if you notice that you forgot to switch off your transmitter an hour or so ago, and want to fly again?
42. What would you do if it starts to rain while you are flying?
43. What would you do if there is lightning while you are flying?
44. Where do you fly, launch, or land a glider, either electric or bungee/winch launched?
45. Where do you fly a helicopter at your field, and if on the main field how may you fly?
46. What would you do if you are flying and a cell phone on you rings?
47. What would you do if you feel ill or faint while you are flying?

48. What would you do if you lose sight of your aeroplane while flying?
49. What would you do if you are in a thermal going up and want to get down?
50. What would you do if the throttle on your aeroplane sticks at full throttle whilst flying?
51. Why does an aeroplane pull to the left on take-off?
52. What precautions should be taken when circumstances require landing downwind?

SECTION 7

Information, requirements, and conditions for proficiency tests

7.1 Bronze and Silver proficiency tests

7.1.1 Requirement for SAMAA Bronze and Silver tests are as follows:

No proficiency test may be judged or signed off by an instructor, who was not present at the test, or who taught the pilot undergoing a test.

Tests for Solo and Bronze

These tests may be judged by any **two members with at least SAMAA Silver** status. Only one flight required; preflight check and questions must be answered satisfactorily.

Tests for Silver

This test may be judged by **two members with at least SAMAA Gold** status. Questions mandatory. Note: Only one flight required for Silver.

7.2 Gold and Instructor proficiency tests

7.2.1 Requirement for Gold and Instructor Proficiency tests:

- (i) Applicant must complete the Gold and Instructor proficiency application form, and email to admin@samaa.org.za. Application form may be found on the SAMAA website – www.samaa.org.za
- (ii) The SAMAA office staff will assign judges from surrounding clubs to judge proficiencies, where practical and without cost.
- (iii) The SAMAA will nominate the club where the test must be flown, where practical, and without cost to the pilots and judges.
- (iv) Preferably three (3) dates to be selected/nominated for proficiency flying.
- (v) The applicant will be advised of who the judges will be, and at which club for testing, and the judges' contact details will be forwarded to the applicant to arrange a time with the judges.
- (vi) Applicant to make sure that a spotter/caller accompanies him and that scoresheets are available when flying the proficiency.
- (vii) Gold and Instructor proficiency may be flown on the same day.

- (viii) No proficiency test may be judged or signed off by an instructor who taught the pilot undergoing the test.

(ix) ***All new Gold or Instructor proficiency tests are subject to a 14 day cool-off period before the pilots are allowed to fly at an airshow.***

Tests for Gold

This test will be judged by **two members. One Gold and one at least Instructor, both assigned by the SAMAA office.** Questions are mandatory.

Tests for Instructor

This test will be judged by two judges, one of whom shall be a **SAMAA Instructor and the other a SAMAA Instructor Judge, both assigned by the SAMAA office.**

Questions are mandatory.

NB! No pilot will be allowed to do an Instructors proficiency test without having first passed the Gold proficiency test.

SAMAA has provided for the following proficiency tests:

The Solo proficiency	The Bronze proficiency
The Silver proficiency	The Gold proficiency
The Instructor proficiency	

Sample score sheets are printed in this booklet. The score sheets are designed to be used for two rounds of whichever test the pilot has chosen, (only one flight required for Solo, Bronze, and Silver), and are to be scored by both judges. These tests will be arranged and conducted in a formal manner, with the appropriately-approved persons present at the tests. The original test papers for Solo, Bronze, and Silver will be submitted to the club committee for approval and will require ratification by the main club committee before being sent to SAMAA, to be entered into the database proficiency register. The original test sheets for Gold and Instructor will be sent directly to the SAMAA office for ratification, and will be entered into the database proficiency register. Clubs are requested to keep a copy of each test sheet sent to the SAMAA office.

7.2.2 Scoring

The scoring system for the proficiency tests (except Solo) will be based on the same basic principles as for aerobatic flying and judging, i.e. **out of a maximum total of 10**, per manoeuvre.

It must be pointed out that the purpose of these tests is to determine the proficiency of the pilot rather than a heavy accent on the accuracy of flying the manoeuvres. It must also be emphasised that the landing approach pattern is probably one of the most important aspects of the proficiency tests, and therefore competent approaches from both base legs are essential for the attainment of the particular proficiency merit.

The scoring standard used has been set by the SAMAA instructor judges, and although more relaxed than that used for FAI competitions, is still stringent, especially for instructors proficiency. On each scoresheet is a preflight check, and questions on safety and flight line procedure.

Please note that both the preflight check and questions are a pass or fail, and the final score is unaffected by this item **but obviously a fail in the preflight check, or the questions, is a test fail.**

The divisor used is the number of manoeuvres flown and scored. The final score is the average of the sub-totals. The average score must equal or exceed the passing percentage required, and **no manoeuvre** may score less than the minimum score of 3, 4, or 5 as specified for that particular proficiency test.

A minimum score for a manoeuvre for say a Silver, requires one eight or two sevens, to offset a minimum score of four, to achieve the ultimate percentage!

Manoeuvres are generally performed in front of the pilot and judges, with a defined centre line to aid with the optimum placement of manoeuvres.

7.2.3 Test failure

In any of the proficiency tests, a score **less than the minimum** specified for any one manoeuvre means that the test is failed.

7.2.4 Repeat test

Two attempts at the same proficiency level will be allowed on the same day, provided time permits.

7.2.5 Time before a re-test

If a pilot has failed both attempts at a proficiency level, he will have to wait and practice for one month before a retest will be allowed. The complete test will be redone, and no cognizance will be taken of previous attempts.

7.2.6 Level of entry

A pilot may do his first test at any level up to Gold. A pass at any level of proficiency automatically qualifies the pilot for the levels below.

7.2.7 Proficiency badges

The initial badge awarded for any proficiency level is presently for free. If the qualifying pilot wishes to purchase the badges of the levels below that which he has qualified for, he may do so at a cost of R30-00, which is the current price (as at 2019) and is subject to increase by the suppliers.

7.2.8 Time-out

Should a pilot, for some valid reason, such as to refuel or as a result of a dead-stick, require to land, he shall be entitled to continue, and shall in no way be penalized, provided he requests time-out and then proceeds to land in a controlled manner on the runway in use. After the problem has been rectified, he will resume his test at the point where it was interrupted.

7.2.9 Time between flights

A pilot will be given, if he so requests, or if circumstances rule, a break between flights. The length of this break will be at the discretion of the judges, without undue delay to others who have also been scheduled for proficiency testing.

7.2.10 Pilot's briefing

A pilot's briefing will be held at the beginning of the test session. The judges will host this session. All pilots doing tests will be properly briefed as to what is required of them. At this time the candidates must clear any queries they have on the tests to be performed or the manoeuvres required.

7.2.11 Debriefing

If time permits, a debriefing will be held by the judges and the results of the proficiency tests will be made available.

7.3 **Manoeuvres for proficiency tests**

7.3.1 Preflight check and questions

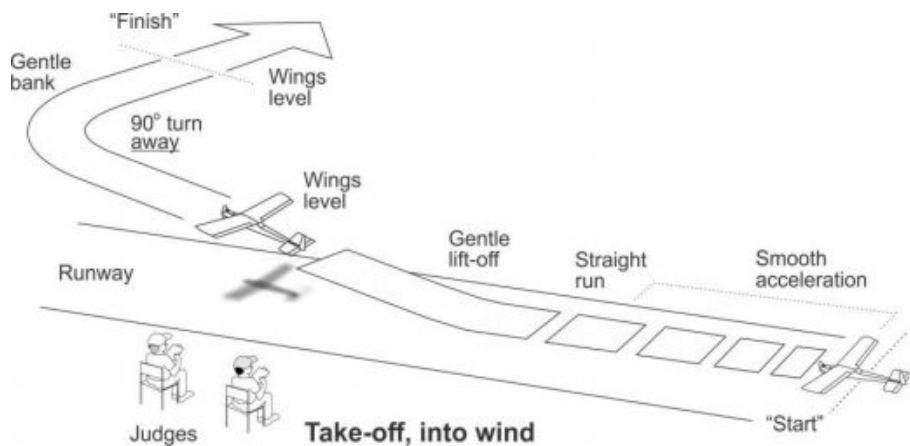
The preflight check **shall be done** by the pilot prior to the flight testing portion of any test being done. It must be done on the model aeroplane and must be a complete safety and airworthiness check, to clearly demonstrate to the judges that the pilot understands the workings of the model. Points 3.3 and 3.4 give the requirements for a preflight check.

The pilot **is required** to answer a number of questions related to model and club safety, and regulations, as asked by the judges. Examples of these are generally as shown on pages 11 and 12 of this booklet.

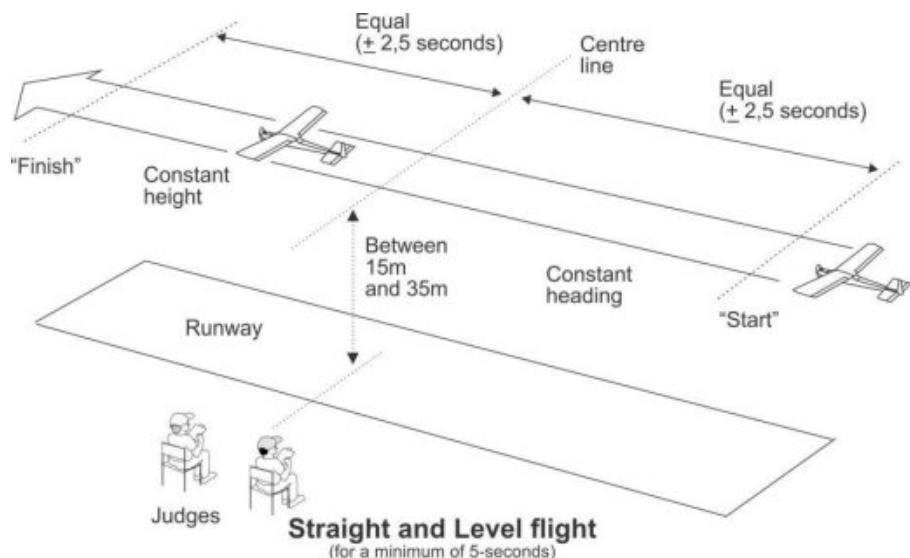
Note: a failure in either of the above sections **is a test failure**.

7.3.2 Take-off into the wind

The take-off will be judged on model control, particularly use of rudder, use of throttle, length of run, and angle of ascent. Where a tail dragger is used for the test, a reasonable amount of swing on initial acceleration should be tolerated. The take-off should start from a standstill, and is complete when the model has performed a 90° turn away from the pilot, runway, and pits.



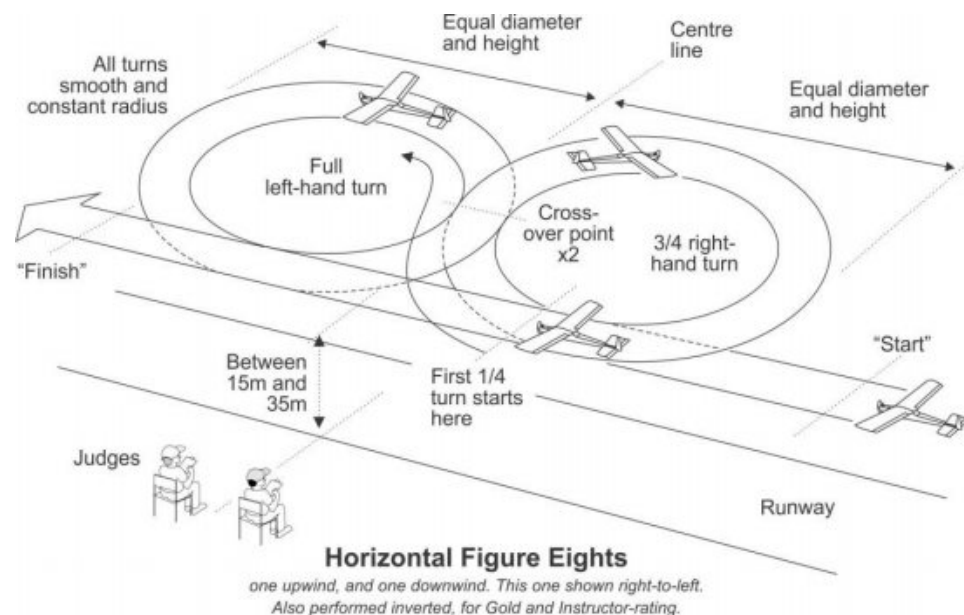
7.3.3 Straight and level flight into wind for a minimum duration of five seconds at an altitude of between 15 and 35 metres.



7.3.4 Two horizontal figures of eight

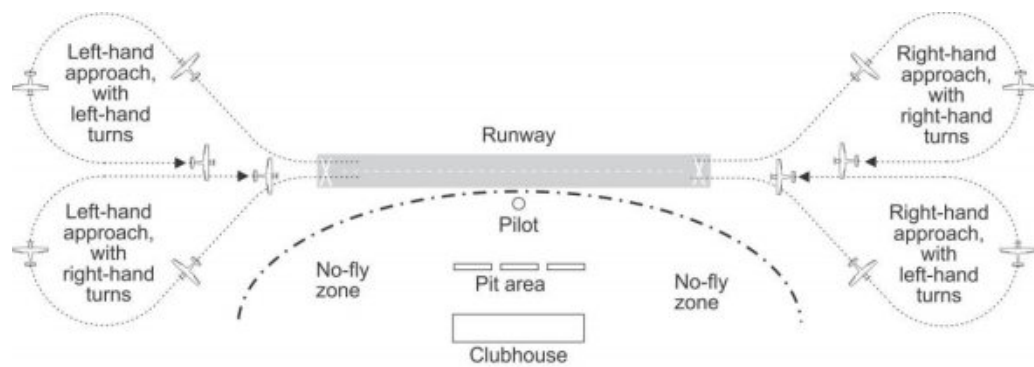
One is performed one into wind, the other downwind, both longitudinal axes shall be parallel to the runway of take-off. Altitude will be maintained within reasonable limits, and consistency of the figure of eight will be judged, taking into account wind strength. Altitude should be between 15 and 35 metres.

The model approaches in straight and level flight, and before reaching the centre line, performs a quarter circle turn away from the pilot, followed by a 360° turn in the opposite direction. This is then followed by a 270° turn in the original direction. The manoeuvre is complete after the model has passed the pilot in straight and level flight in the direction of the original entry into the manoeuvre, and approximately the same altitude as the entry.

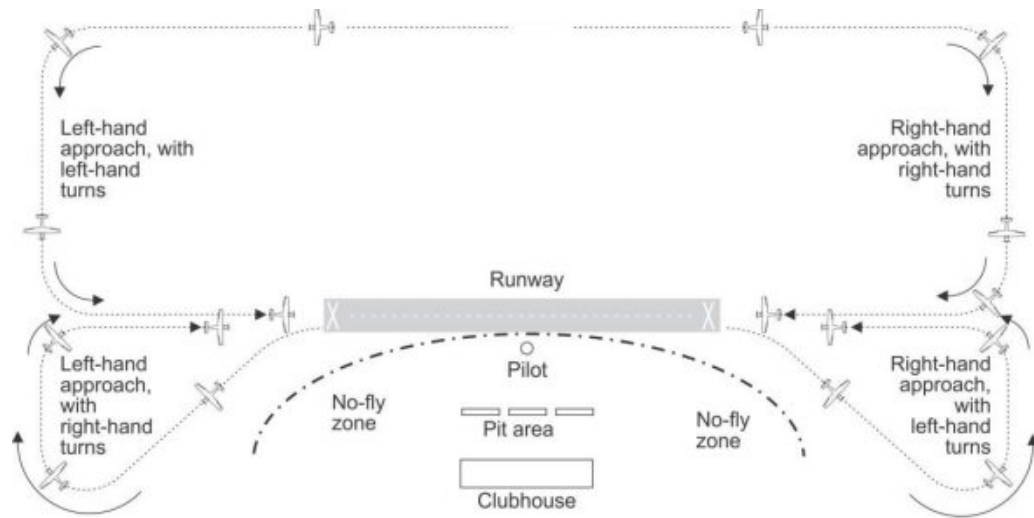


7.3.5 Landing approaches from both sides and both bases

The pilot will demonstrate to the satisfaction of the judges, that he can make a satisfactory **approach** to within 3 metres of the runway centre, from either direction, and from both left and right base legs, on **both** attempts of the test. The sketches below will clarify how the approaches should be made to prevent the pilot flying **in the no-fly area**, and not above or behind the club house. The criteria for a pass in this test is whether the pilot can plan, execute the turns correctly, and land the aeroplane safely from any direction of approach, with any combination of turns.



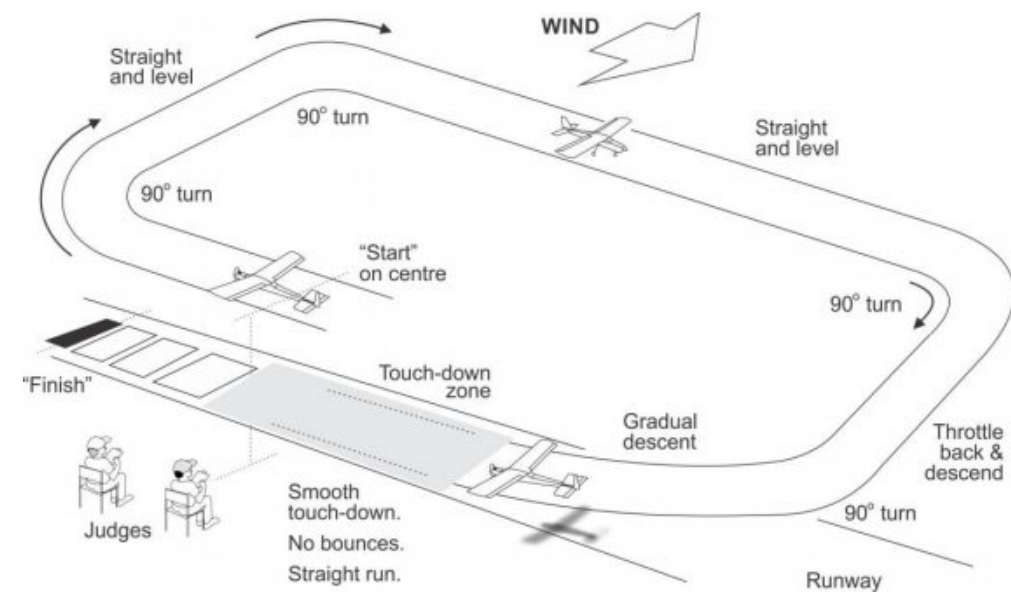
"Dogbone" landing approaches



Rectangular landing approaches

7.3.6 The landing

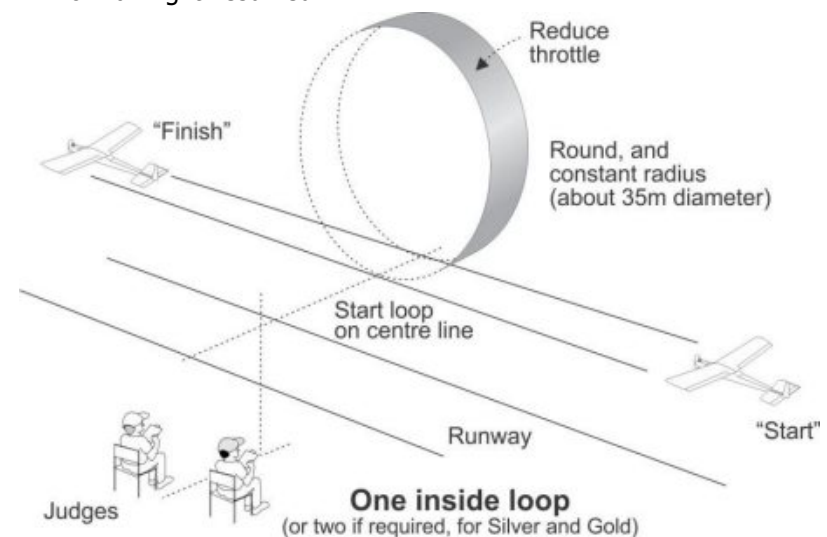
The landing must be straight into wind on the active runway, and the touch-down should be within the first one-third of the runway length. The model aircraft must run reasonably straight, and come to a stop without running off the runway. A small bounce, particularly with a tail dragger will be tolerated.



Rectangular landing approach and landing

7.3.7 One inside loop

From straight and level, parallel to the runway of take-off, the model pulls up on the centre line, and completes a circular loop, and resumes straight and level flight on the same heading and altitude as entry. The throttle may be reduced at the top of the loop as appropriate to the type of aeroplane, and the loop completed, after which the throttle is opened and normal flight resumed.



One inside loop
(or two if required, for Silver and Gold)

7.3.8 **Slow low pass into wind**

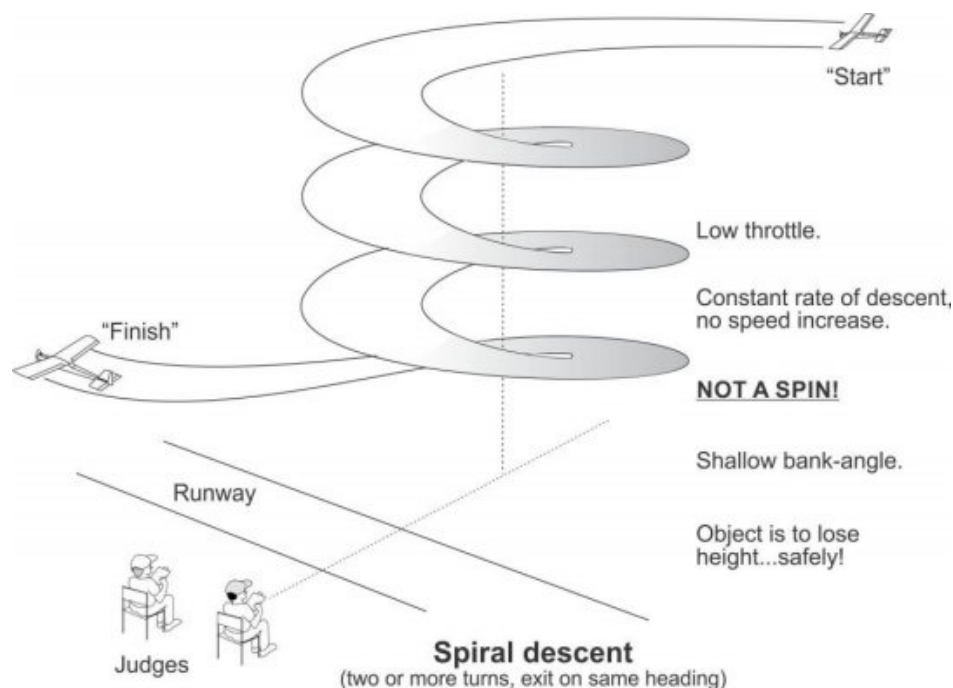
Straight and level at about 5 metres above the far side of the runway, throttle back to a safe low speed, and do a controlled low pass into wind, parallel to the runway in use, maintaining altitude and heading.

7.3.9 **One horizontal axial roll**

Start from straight and level. Fly the model aircraft into wind, or downwind if preferred, parallel to the runway of take-off. Model must perform a complete 360° roll axially, to the left or right, until a full roll is completed, with the wings level and with the aeroplane at the same heading and at the same altitude as at the entry.

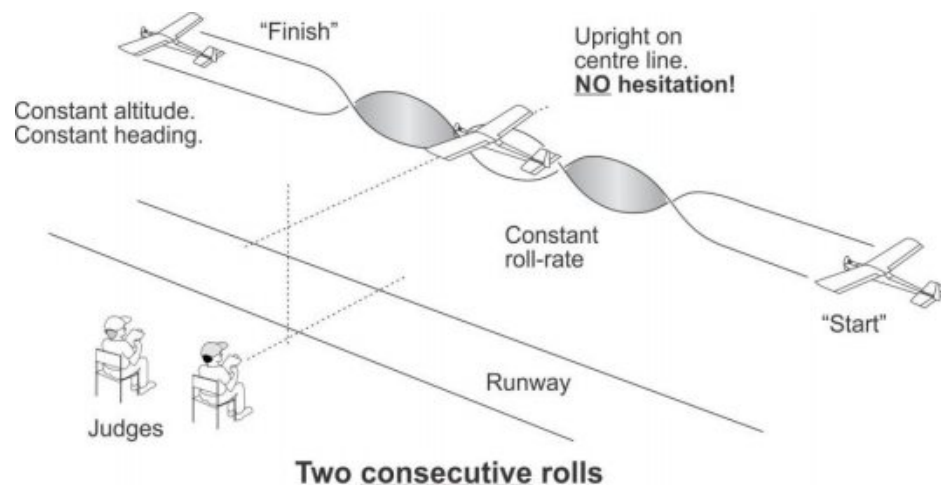
7.3.10 **Spiral descent**

This is **not a flat spin**; the motor nose of the model aircraft must always be below the tail. Method for performing a spiral descent is as follows: obtain sufficient height, and from level flight, throttle back motor/engine, add some up elevator, apply rudder, and if required, some aileron. Allow model aircraft to spiral for 2 – 3 turns, in a 10-15 degree nose-down attitude, in a helical corkscrew-type descent. Recover in level flight. Again, this is **not a spin**, and the speed is reasonably constant, with the object being to safely reduce height.



7.3.11 **Two consecutive horizontal rolls**

The manoeuvre starts from straight and level flight, flown into wind or downwind if preferred, parallel to the runway of take-off. Model aircraft to roll axially to left or right until two consecutive rolls are finished. The recovery must be at the same heading and altitude as the entry. Slight changes in altitude, depending on the aircraft type will be acceptable; heading to remain constant. Note that the two rolls must be consecutive, and any hesitation between the two rolls will be severely downgraded.

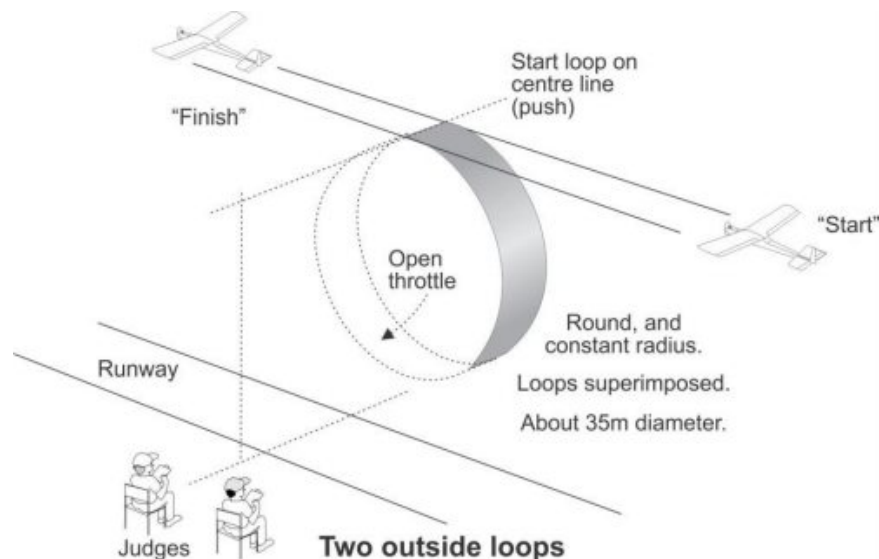


7.3.12 **Emergency landing**

For this manoeuvre, the pilot will be informed to cut throttle, in a safe and appropriate place, and to then safely land. An idling motor or engine will be acceptable, and the pilot must land into the wind on the runway of take-off. The use of the throttle, or landing off the runway scores zero.

7.3.13 **Outside loops**

Pilot to obtain sufficient height flying downwind, parallel to the runway of take-off. From straight and level, reduce the throttle setting, apply down elevator to dive down and complete a circular outside/negative-G loop. Open throttle at about the 4 o'clock position (or 8 o'clock if from left), with the model aircraft pushing back up to entry altitude to complete the loop. Wings to remain level during the outside loop.



7.3.14 **Crosswind landing**

As per normal landing, but rudder **and/or** aileron must be applied to keep the aeroplane tracking down the runway before landing.

7.3.15 **Landing sequence**

See also 7.3.6. The landing sequence must be of the rectangular approach type, and pilot must demonstrate the ability to control the rate of descent and throttle setting. The final approach and touchdown must be smooth and demonstrate a consistent rate of descent and speed. All landings shall be on the runways. Where no runway exists, landings will be within 3 metres of the assumed centre line of a runway. Acceptance will be at the discretion of the judges and their decision shall be final.

7.3.16 **Recovery from unusual attitudes.**

The judges will, while the pilot is under test, and sometimes with his hands off the Tx, place the aircraft in an unusual flight attitude on two separate occasions during the flight, and the pilot will demonstrate his ability to recover from the unusual attitude, the first reaction being to close the throttle. This may be dependant on the circumstances at the time. The other, more-preferred method, is to blank off the pilot's view to his aircraft with a clip board. Ask him to push the Tx sticks into the upper left or right corners, so that the model aircraft ends up in an unusual attitude, from which the pilot is required to recover safely, after view has been restored.

7.3.17 **Fast low pass downwind**

The pilot must fly his model aircraft straight and level, downwind, at a high throttle setting, at about 6 metres above the ground, on the far side and parallel to the runway in use.

7.3.18 **Inverted horizontal figures of eight**

See also 7.3.4, but inverted. Pilot must fly two inverted figures of eight, one into the wind the other downwind, with longitudinal axes parallel to the runway of take-off. Altitude must be maintained within reasonable limits and consistency of the figure eight will be judged, taking into account wind strength. The model aircraft approaches in straight and level flight, rolls inverted, and before reaching the centre line, performs a quarter circle turn away from the pilot, followed by a 360° turn in the opposite direction. This is then followed by a 270° turn in the first direction. The manoeuvre finishes with a roll to upright, back into straight and level flight, on its original heading and altitude.

SECTION 8

Miscellaneous information on proficiencies

8.1 **Proficiency status**

Obtaining a proficiency rating has a number of advantages:

- (i) It improves a pilot's flying skills
- (ii) It defines where and when pilots may fly certain models within the SAMAA system with specific proficiencies. These are specified below:

For fixed-wing proficiency levels:

SAMAA Solo Allows you to fly at your club without a competent person in attendance when others are flying.

SAMAA Bronze Same privileges as a Solo qualification. Some clubs use the Bronze level as their lowest level of qualification.

SAMAA Silver: This is the minimum level that pilots should try to achieve, as it gives them a number of advantages:

- (a) Most clubs will allow a pilot with a silver proficiency, to teach a pupil pilot to fly, although there is usually a 6-month probationary period between the pilot achieving his silver merit, and the time he is allowed to teach others to fly, but this period is not prescriptive.
- (b) With a silver proficiency, a pilot will be allowed to participate in, and fly a model aircraft at an airshow at his own club.
- (c) A silver proficiency will qualify a pilot to test a pupil pilot for a Solo or Bronze rating, with another examiner, with the proviso that he may not test the pupil if he taught him to fly.

- (d) The silver qualification is generally accepted as the entry qualification to fly in competitions. It qualifies a pilot to fly large models over 12kg but less than 25kg, twin-engined models, and pylon racing aircraft if a pilot has done the additional tests, and obtained the required SAMAA or SIG "Permit to Fly" certification.
- (e) A Silver proficiency will allow a pilot to participate in many special events, like float flying, cross country, etc. where although the event is at a non-registered site, the public are not present and the risks are low.
- (f) A Silver proficiency will allow a pilot to fly a turbine-powered model aircraft, usually a jet. This qualification is equivalent to a Jet Solo, where the pilot has been tested on the safe operation of a turbine engine.

SAMAA Gold: A Gold proficiency will:

- (a) Allow a pilot to fly at any airshow, display, or event at a SAMAA-registered or temporary-approved field or site, in the presence of spectators. It qualifies a pilot to fly large models of over 12kgs but less than 25kgs. *(As of 2020, a change has been requested to the regulations. When approved by the SA Civil Aviation Authority and promulgated, a pilot may apply to the SAMAA Management Committee for a permit to fly a model aircraft with weight in excess of 25kgs.)*
- (b) Allow a pilot to judge proficiencies for Solo, Bronze, and Silver, with another qualified examiner.

SAMAA Instructor:

This proficiency rating allows:

- (a) a SAMAA Instructor to fly a fixed-wing aeroplane in any event, airshow, demonstration, exhibition, etc.
- (b) a SAMAA instructor to judge proficiency tests for SAMAA Solo, Bronze, Silver, Gold, and Instructor proficiency (the latter subject to having an instructor judge present when testing an instructor test).
- (c) a SAMAA Instructor to fly at a full-size airshow when invited.

SAMAA Instructor Judge:

This allows a SAMAA-appointed Instructor Judge to test pilots (with another SAMAA Gold-rated judge present) for any SAMAA proficiency status, up to Gold, and with another SAMAA Instructor, up to SAMAA Instructor.

It should be noted that the appointed position of a SAMAA Instructor Judge is subject to review by the SAMAA management committee. If it is found that an instructor judge is not committed to performing the duties expected from him, then he will be informed by SAMAA that his appointment is revoked.

8.2 Type of aircraft

What type of aircraft may be used to fly a proficiency test? Any model aircraft type that can do the manoeuvres listed, to the satisfaction of the judges. The model aircraft used must be able to fly the manoeuvres correctly, i.e. a loop for instance must be approximately 35 metres in diameter and the aircraft must fly around this loop, not flop over at the top.

So, choosing an electric, flat wing foamy will actually penalise a pilot's scores, especially in windy weather unless he is a good flier. But, the final proof of the suitability of the model aircraft, will be at the discretion of the two judges scoring the test, and their scoring will decide if the candidate passes. Whether the model is electric, glow, or otherwise, is not important; the object is: can it fly the sequence to the satisfaction of the judges and clearly demonstrate that the pilot is proficient?

8.3 Use of gyros

No test will be conducted with the use of gyros. Although this equipment is commercially available, the purpose of a proficiency test is to assess the skill of the pilot, and not the price or sophistication of electronic stabilization devices. If such equipment is on board a model aircraft, the pilot undergoing the test must clearly demonstrate that such equipment has been disabled for the duration of any proficiency test.

8.4 Validity of proficiency status

Pilots with SAMAA proficiency qualifications must be aware that a lapse of **three years** in SAMAA membership, will automatically cancel any proficiency rating above Solo. A written, motivated request from a pilot's club chairman and one other club committee member, is required to reinstate a pilot's Solo level proficiency status with the SAMAA.

8.5 Central register of proficiency and badges

8.5.1 The SAMAA office will keep a database of all proficiency tests passed. It is expected that clubs will organise the proficiency tests and the judges will sign off the proficiency tests and send a copy to the SAMAA office to be recorded.

The club must, for security, keep a copy in its records. The SAMAA office will in due course issue the relevant certificates and badges, and print the qualifications obtained on the SAMAA pilot's membership card.

8.5.2 Should a proficiency test not be accepted by the SAMAA office for whatever reason, a message must be sent to the club for follow-up/clarification.



Proficiency test score sheet (August 2020)

BRONZE

NB. Please check SAMAA membership card, to validate membership

		Only one flight	
No.	Description/name of manoeuvre	Judge 1	Judge 2
Pre-flight check of aircraft and radio done, and six questions answered to satisfaction of judges (tick only ✓)		All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.
1	Take-off into wind		
2	Slow low pass into wind		
3	Two horizontal figure eights (one upwind and one downwind)		
4	One inside loop		
5	Straight and level flight for 5 seconds		
6	Landing approach - right hand turns, from left-hand side of field		
7	Landing approach - left-hand turns, from right-hand side of field		
8	Landing approach - left-hand turns, from left-hand side of field		
9	Landing approach - right-hand turns, from right-hand side of field		
10	Landing into wind		
Minimum score per manoeuvre		3	3
Score sub-total for Judge 1		a	
Score sub-total for Judge 2			b
FINAL PERCENTAGE SCORE (a + b ÷ 2.0 = %)			
Passing percentage is... 50%		50%	
If less than minimum score of 3 is achieved for any manoeuvre, the attempt is deemed a failure.			

Please complete the following information, to be captured/verified on the SAMAA database.

PILOT NAME Test location.....

Date of test Pilot's home club

Pilot's SAMAA no. Expiry date of membership

Pilot's cellphone no. e-mail address

Pilot's signature

Judge 1 name Signature Rating

Judge 2 name Signature Rating

Comments



Proficiency test score sheet (August 2020)

SILVER

NB. Please check SAMAA membership card, to validate membership

		Only one flight	
No.	Description/name of manoeuvre	Judge 1	Judge 2
Pre-flight check of aircraft and radio, and six questions answered to satisfaction of judges (tick only ✓)		All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.
1	Take-off into wind		
2	Straight and level flight for 5 seconds		
3	Two horizontal figure eights (one upwind and one downwind)		
4	One roll		
5	Two consecutive inside loops		
6	Landing approach - right hand turns, from left-hand side of field		
7	Landing approach - left-hand turns, from right-hand side of field		
8	Landing approach - left-hand turns, from left-hand side of field		
9	Landing approach - right-hand turns, from right-hand side of field		
10	Landing into wind		
Minimum score per manoeuvre		3	3
Score sub-total for Judge 1		a	
Score sub-total for judge 2			b
FINAL PERCENTAGE SCORE (a + b ÷ 2.0 = %)			
Passing percentage is... 50%		50%	
Less than minimum score of 3 for any manoeuvre, the attempt fails.			

Please complete the following information, to be captured/verified on the SAMAA database.

PILOT NAME Test location.....

Date of test Pilot's home club

Pilot's SAMAA no. Expiry date of membership

Pilot's cellphone no. e-mail address

Pilot's signature

Judge 1 name Signature Rating

Judge 2 name Signature Rating

Comments



Proficiency test score sheet (August 2020)

GOLD

NB. Please check SAMAA membership card, to validate membership

		Judge 1		Judge 2	
No.	Description/name of manoeuvre	Flight 1	Flight 2	Flight 1	Flight 2
Pre-flight check of model aircraft, and radio, and six questions answered to satisfaction of judges.(tick only ✓)		All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.
1	Take-off into wind				
2	Straight and level flight - 5 seconds				
3	Two horizontal figure eights (one upwind, and one downwind)				
4	Two consecutive rolls				
5	Two inside loops				
6	One inverted horizontal figure eight				
7	Slow low pass into wind				
8	Spiral descent (minimum two turns, objective to lose height)				
9	Emergency landing (called anytime during flight)				
10	Landing approach - right hand turns, from left-hand side of field				
11	Landing approach - left-hand turns, from right-hand side of field				
12	Landing approach - left-hand turns, from left-hand side of field				
13	Landing approach - right-hand turns, from right-hand side of field				
14	Landing into wind				
Minimum score per manoeuvre		4	4	4	4
Score sub-totals for Judge 1		a	b		
Score sub-totals for judge 2				c	d
FINAL PERCENTAGE SCORE (a + b + c + d ÷ 5.6 = %)					
Passing percentage is... 60%		60%			
Less than minimum score of 4 for any manoeuvre, attempt fails.					

Please complete the following information, to be captured/verified on the SAMAA database.

PILOT NAME Test location

Date of test Pilot's home club

Pilot's SAMAA no. Expiry date of membership

Pilot's cellphone no. e-mail address

Pilot's signature

Judge 1 name Signature Rating

Judge 2 name Signature Rating

Comments



Proficiency test score sheet (August 2020)

INSTRUCTOR

NB. Please check SAMAA membership card, to validate membership

		Judge 1		Judge 2	
No.	Description/name of manoeuvre	Flight 1	Flight 2	Flight 1	Flight 2
Pre-flight check done to satisfaction of judges (tick only ✓)		All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.	All manoeuvres scored out of maximum 10.
1	Take-off into wind				
2	Take-off crosswind				
3	Straight and level flight - minimum of 5 seconds				
4	Two horizontal figure eights (one upwind, and one downwind)				
5	Two outside loops from top (or with half rolls from bottom)				
6	Spiral descent (minimum two turns, objective to lose height)				
7	Two consecutive rolls				
8	Two inverted horizontal figure eights (one upwind, one downwind)				
9	Unusual attitude recovery 1				
10	Unusual attitude recovery 2				
11	Emergency landing (called anytime during flight)				
12	Fast low pass, downwind				
13	Slow low pass, into wind				
14	Landing approach - right hand turns, from left-hand side of field				
15	Landing approach - left-hand turns, from right-hand side of field				
16	Landing approach - left-hand turns, from left-hand side of field				
17	Landing approach - right-hand turns, from right-hand side of field				
18	Landing into wind				
19	Landing crosswind				
Instructor's training procedures in place...YES or NO?					
Minimum score per manoeuvre		5	5	5	5
Score sub-totals for Judge 1		a	b		
Score sub-totals for Judge 2				c	d
FINAL PERCENTAGE SCORE (a + b + c + d ÷ 6.8 = %)					
Passing percentage is... 60%		60%			
Less than minimum score of 5 for any manoeuvre, attempt fails.					

Please complete the following information, to be captured/verified on the SAMAA database.

PILOT NAME Test location

Date of test Pilot's home club

Pilot's SAMAA no. Expiry date of membership

Pilot's cellphone no. e-mail address

Pilot's signature

Judge 1 name Signature Rating

Judge 2 name Signature Rating

Comments



Telephone 011-973-3679
admin@samaa.org.za

Application, to be tested for **GOLD & INSTRUCTOR proficiency**

- The SAMAA office administrator will source judges from surrounding clubs, to judge proficiencies.
- Testing shall be done at a club other than the applicant's regular club, if at all possible.
- The applicant must specify three (3) dates for proficiency testing.
- The applicant will be advised of who the judges are, and at which club the test will be conducted. The judges' contact details will be forwarded to the applicant, for him to arrange a time with the judges.
- The applicant must ensure that a caller/spotter accompanies him, and that score sheets are available when arriving for the proficiency test.
- Gold and Instructor proficiencies may be flown on the same day, time permitting.
- NB. No pilot shall be allowed to do an Instructor proficiency test, without first having passed a Gold proficiency test.
- It is strongly recommended for applicants to thoroughly study the Proficiency Booklet for Fix-Wing proficiencies, and to at least practice the Gold and Instructor flying schedules, so that tests may be conducted efficiently and with minimum waste of time.

Application, to be tested for: **GOLD RATING** ☐
INSTRUCTOR ☐

Applicant Name and Surname

SAMAA number Membership expiry date

Current SAMAA proficiency

E-mail address

Club affiliation (which primary club are you a member of?)

Secondary club that you may belong to

Preferred dates for proficiency test: Date 1

Date 2

Date 3

Home/physical address

City/Town

Home telephone Work telephone

Fax number Cellphone number

Postal address

Postal code

Signature of applicant

Date

Signature of guardian (if under-age)

SECTION 12

Answers to questions in proficiency booklet (pages 11 and 12).

- Q. Where do you find the rules or operational procedures applicable to model aircraft flying, and have you read them?
A. *The SAMAA Manual of Procedures on the SAMAA website.*
- Q. Who controls the use of airspace; are model fliers answerable to this body?
A. *The SA Civil Aviation Authority. Yes, model fliers are answerable, but through the SAMAA.*
- Q. To which group is SAMAA and its members affiliated?
A. *The Aero Club of South Africa*
- Q. Do you need to be a member of any organisation or club to fly?
A. *Yes, and no. Non-members are operating illegally, and are not covered by insurance. SAMAA membership provides insurance.*
- Q. Where can you legally fly?
A. *At any SAMAA-registered club, and at a site or event that has been approved for purposes of a fly-in, airshow, demonstration, exhibition, etc.*
- Q. Do you need a permit to fly?
A. *No. Unless you request exemption for a specific event, or type of aircraft. SAMAA membership is equal to a "permit".*
- Q. What is your standard procedure when you arrive at the club?
A. *Impound transmitter. Check who else is already at the club/site.*
- Q. What do you do if you are a visitor at a club and wish to fly?
A. *Look for a club committee member, or the safety officer. Produce SAMAA membership card, and request permission to fly.*
- Q. What checks have you done before you go out to fly?
A. *At the field, a pre-flight check, range check, battery check, wind strength and direction.*
- Q. Why must you secure the frequency spot and place your peg on it before switching on your transmitter? What do you do if there is a peg on your frequency spot?
A. *To avoid shoot-downs. Wait for flier to land, or meanwhile identify flier on my spot.*
- Q. What do you do if you want to fly and your frequency spot is not on the board?
A. *Enquire from a club committee member, or safety officer.*
- Q. What would you do if you want to fly but left your frequency peg at home?
A. *Ask safety officer for a replacement peg.*

13. Q. What would you do if you are about to fly, and when you switch on your transmitter the meter shows red or under 9 volts?
A. I won't fly, until the battery can be fully charged.
14. Q. How do you know that your receiver battery is okay to fly, for the first flight, and then for subsequent flights?
A. Test battery with a battery checker or volt meter.
15. Q. How often do you do a radio range check?
A. Before the first flight of the day.
16. Q. Which areas of your club field are you not allowed to overfly (no-fly zone) and why?
A. Pit area, spectator area, people, clubhouse, buildings, power lines, parking area, and directly over active runway. For safety reasons.
17. Q. When you fly, should you have a caller/spotter with you on the flightline?
A. Yes, it is recommended but not compulsory.
18. Q. What is the legal height at which you may fly your model aircraft?
A. 400ft, unless at a park flying site, in which case it is 150ft.
19. Q. What would you do if you see a full-size aircraft or helicopter flying near or over your flying field?
A. Land safely as soon as possible.
20. Q. Why is it dangerous to lean over the engine to adjust the needle valve when the engine is running or at full throttle?
A. Loose clothing or the Tx neck strap may contact prop or entangle.
21. Q. Why do club safety rules state that you should not taxi your aeroplane in the pit area?
A. Safety. It could collide with other models and people and cause damage or injury.
22. Q. What would you do if your engine stalls on the threshold or runway prior to take-off, and other pilots are waiting to take-off?
A. I will remove my model from the runway to give them preference.
23. Q. What would you do if on take-off, just after becoming airborne, your aeroplane turns towards the pit/spectator area?
A. I will close throttle and try to steer clear of danger. In the worst case, I will dump the model aircraft.
24. Q. How do you know what direction the circuit is to be flown?
A. Usually judging by the wind direction, watching aircraft already flying, and safety officer instruction.
25. Q. Which runway do you use for take-off and landing?
A. Nearest into wind direction, on assigned runway.

26. Q. If there are pilots standing, say three metres from and halfway down the runway, and you needed the full runway for take-off, what would you do?
A. I would advise them, and request them and their spotters to be vigilant.
27. Q. Where do you stand when flying?
A. In the designated pilots box.
28. Q. If you were going to land, and you see someone on the runway trying to retrieve an aeroplane, what would you do?
A. I shall abort the landing, and go around until the runway is clear.
29. Q. If you were lined up ready for take-off, and during your final check you notice:
- A servo glitching
- That the tailplane is loose
- That the aeroplane is vibrating badly
- That the wing is skew
- That the undercarriage is skew or loose
- That some covering is loose – what would you do?
A. I will remove my aircraft from the runway, and inspect the faults. I will fix the faults, if it is possible to do so at the flying site.
30. Q. What would you do if you were a pilot on the flightline and heard:
- Someone shouting "DEADSTICK" – when you were about to take-off?
- Someone shouting "LANDING" – when you were about to take-off?
- Someone shouting "CROSSING RUNWAY"?
*A. - I will vacate the runway soonest
- I'm already on the runway. The other flier has to do a go-around.
- I will ask my caller to inform me about the situation, and if it requires action from me.*
31. Q. If you are the most senior person at the field and the duty officer is not present, what would your duty be?
A. I will assume the role of safety officer.
32. Q. If you see a child running in the pit area, what would you do?
A. I would identify the parents and bring it to their attention.
33. Q. If you are the duty officer for the day, what would you do:
- If someone is flying recklessly and ignoring the safety rules?
A. I would advise the safety officer.
- If after a verbal warning they still persist in ignoring the rules?
A. I would advise the safety officer, and request action. I will refrain from flying, and retreat to a safe area.
34. Q. What are your duties if you are the safety officer of the day?
A. I would ensure safe flying practices. Advise a change of runway, or change of circuit if there is a wind direction change. I would warn pilots of approaching full-size traffic, or any other matter which would jeopardise safety at the club, or the safety of persons and property.

35. Q. What is a "fail safe" receiver setting, and how do you set it up?
A. Automatic setting to low-idle throttle, and servo's to neutral, should there be interference, a glitch, or a brown-out. Set up the failsafe mode on the transmitter; switch off and observe the servo movements.
36. Q. Why are lithium polymer batteries more dangerous than ordinary batteries?
A. They may be susceptible to spontaneous combustion if damaged, or if improperly charged and maintained.
37. Q. Why are electric motor-driven models dangerous?
A. Accidental contact with the propeller does not arrest the stroke, as it would with an internal-combustion engine.
38. Q. When and where may you safely power up an electrically-driven model aircraft?
A. Arm the circuit only on the runway, prior to checks and taking-off.
39. Q. What could happen if you turn off your transmitter without first disconnecting the power to the electric motor of your model?
A. The receiver may receive a stray signal and power up the motor.
40. Q. How do you know the state/condition of your flight and transmitter battery packs?
A. By checking with a battery checker, or observing the power/voltmeter on the Tx.
41. Q. What would you do if you notice that you forgot to switch off your transmitter an hour or so ago, and want to fly again?
A. I would do battery check, and charge the batteries if necessary.
42. Q. What would you do if it starts to rain while you are flying?
A. I would land as soon as possible, and remove my equipment to shelter.
43. Q. What would you do if there is lightning while you are flying?
A. I will land immediately, and seek shelter. But I would firstly have checked atmospheric conditions before taking-off.
44. Q. Where do you launch, fly, and land a glider, either electric, or bungee, or winch-launched?
A. At the designated launch and land area for glider activity. I will fly out of the circuit if shared with power flying.
45. Q. Where do you fly a helicopter at your field, and if on the main field, how may you fly?
A. At the designated helicopter flying area. I will hover at the designated helipad, and if permitted, I will fly in the circuit with fixed-wing aircraft, without causing obstruction or inconvenience.
46. Q. What would you do if you are flying, and a cell phone on you rings?
A. I should not have a cellphone on me while flying and on the flightline.
47. Q. What would you do if you feel ill or faint while you are flying?
A. I will immediately ask my caller to take over and land the aircraft.
48. Q. What would you do if you lose sight of your aeroplane while flying?
A. I will ask my caller to help spot the aircraft, and advise others on the flight line. I will pull into a tight loop to hopefully see more than a silhouette, or a glint off a wing. I will close the throttle.
49. Q. What would you do if you are in a thermal going up and want to get down?
A. I will initiate a spiral descent to lose height safely.
50. Q. What would you do if the throttle on your aeroplane sticks at full throttle whilst flying?
A. I will jiggle the throttle stick to see if the servo arm or pushrod can be dislodged. If this fails, I will try to fly into tall grass on the far side of flying field. I will not attempt to fly until the fuel runs out, as the Rx battery may be drained if the servo is jammed, drawing too much battery power
51. Q. Why does an aeroplane pull to the left on take-off?
A. Due to the torque effect of the counter-clockwise rotation of the propeller.
52. Q. What precautions should be taken when circumstances require landing downwind?
A. I will approach the runway with caution, and with adequate airspeed to prevent a stall. I will announce my intentions to other pilots on the flight line.