

5.6.

SLOPE SOARING MODELS

5.6.1 General Rules

5.6.1.1. a) **Definition of a Radio Controlled Glider**

Model aircraft which is not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except control surfaces. The models must be controlled by the pilot on the ground using radio control connection.

b) **Definition of an Electric Powered Radio Controlled Glider**

Model aircraft which is provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except control surfaces. The model must be controlled by the pilot on the ground using a radio control connection.

c) **Operation of an Electric Powered Radio Controlled Glider at Slope Contests.**

Should the conditions at a slope contest be such whereby there is not enough lift to fly the gliders safely or at all, the Contest Director may allow the use of electric powered gliders. In this situation, a time limit can be set for the gliders to gain height then perform the manoeuvres with the motor switched off. Elaborated details of the procedures for electric gliders and their use are in the Manual of Procedures (MOP) titled Slope Soaring Contests, which can be downloaded from the MAAA website.

Note: Paragraph B. 3.1. of Section 4b (Builder of the Model) does not apply to this section.

5.6.1.2. **Characteristics**

There are no restrictions on the model except that it must comply with the general FAI limits:

Maximum Surface Area (St) - 150 dm²

Maximum Flying Mass - 5 kg

Loading on St between 12 and 75 g/dm²

5.6.1.2.1 No fixed or retractable arresting device is allowed to slow down the model on the ground during landing, i.e. bolt, saw-tooth like protuberance, etc. The underside of the model must not have any protuberance other than the towhook and surface control linkages. The towhook must not be larger than 5mm in frontal width and 15mm in frontal height.

5.6.1.2.2. A pilot may fly any number of models during a contest ~~but may not~~ and can exchange models during working time only if the aircraft being used at the time is damaged or malfunctions. In this situation, the pilot can re-join the other contestant/s in a suitable time-slot chosen by the Contest Director.

5.6.1.2.3. There must be at least four contestants for an event to be held and there must be at least four contestants with electrified gliders at the start of the contest before these models can be used.

5.6.1.3. A pilot is permitted only one helper.

5.6.1.4. The model may be relaunched during the rounds.

5.6.1.5. The Contest Director shall determine whether or not the conditions are suitable for flying.

5.6.2. **Rules for Slope/Pylon Combo**

5.6.2.1. The contest is a two task event for radio controlled gliders, specifically:

- 1) Pylon Racing and
- 2) Aerobatics.

Flying the two tasks constitutes a round. A minimum of two rounds must be flown.

5.6.2.2. **Task One - Pylon Racing**

a) Course. The course is to be a nominal 100 metres with fifteen full laps to be flown.

b) Start. A 'sail boat' type start will be used with one minute to gain height and a countdown for the last ten seconds before racing and timing starts.

c) There will be a working time of five minutes from the order to "race". Those models, whether air-borne or not, that have not completed the course at the end of the working time will be allocated a notional time of

$$15 \\ 5 \times \text{-----} \text{ minutes} \\ \text{No. of full laps flown}$$

If no model completes the 15 laps within the working time, the heat will be reflowed.

d) In the event of a midair collision, the heat may be reflowed if a claimant signifies this intention immediately. The reflow will take place as soon as possible but not before the start of the following round.

Note: Models may be replaced within a round only in the event of a midair collision.

5.6.2.3. **Task Two - Aerobatics**

a) Manoeuvres are to be flown in the order presented in these rules and only those completed within the nominated time (if one is set) will be scored. The pilot should announce the start and finish of each manoeuvre. However, no penalty will be given if a pilot forgets these announcements. The Contest Director may modify or delete manoeuvres in adverse conditions. The optional manoeuvre (see list) must be nominated to the judges prior to performing the manoeuvre.

b) There will be at least two judges. Multiple models can share the same time slot, alternating manoeuvres where practicable.

Note: It shall be left to the discretion of the Contest Director as to whether flying conditions are suitable for continuation of an aerobatic a flight. A flight aborted under these circumstances may be continued when conditions improve. The time allowed for completion shall be the unexpired working time when the pilot receives the Contest Director's decision plus a given time, if one is set, to gain height.

5.6.2.3.1. Manoeuvres	K Factor
1. Two consecutive loops	1.0
2. Single axial roll	1.0
3. Inverted flight (5 seconds)	1.0
4. Three turn spin	1.0
5. Two stall turns (opposite directions)	1.0
6. Optional manoeuvre (to be nominated from list below)	
- two outside loops	1.5
- four point roll	2.0
- three consecutive rolls	1.5
- inverted spin	2.5
- cuban eight	2.0
- inverted circle	1.5
7. Touch and Go	0.5
8. Rectangular pattern	0.5
9. Rectangular approach and landing	0.5

5.6.2.4. **Scoring**

- a) **Pylon.** Individual round scores will be calculated according to the following formula:

$$S = 500 \times \frac{(T_w + T_H)}{T_i}$$

- where:-
 T_w = time achieved by overall winner of that round
 T_H = time achieved by overall winner of that heat
 T_i = time achieved by competitor in that heat

i.e. the overall round winner is awarded 1000 points.

- b) **Aerobatics.** All manoeuvres will be scored from 1 to 10 with multiplying K factors as shown. The flier with the highest total score is awarded 1000 points with other scores pro-rata from this.

- 5.6.2.5. **Classification.** The average of the competitors score for the pylon rounds is added to the average score for the Aerobatic rounds to provide an overall score.

5.6.3. **Rules for the Ultimate Slope Aerobatics Challenge**

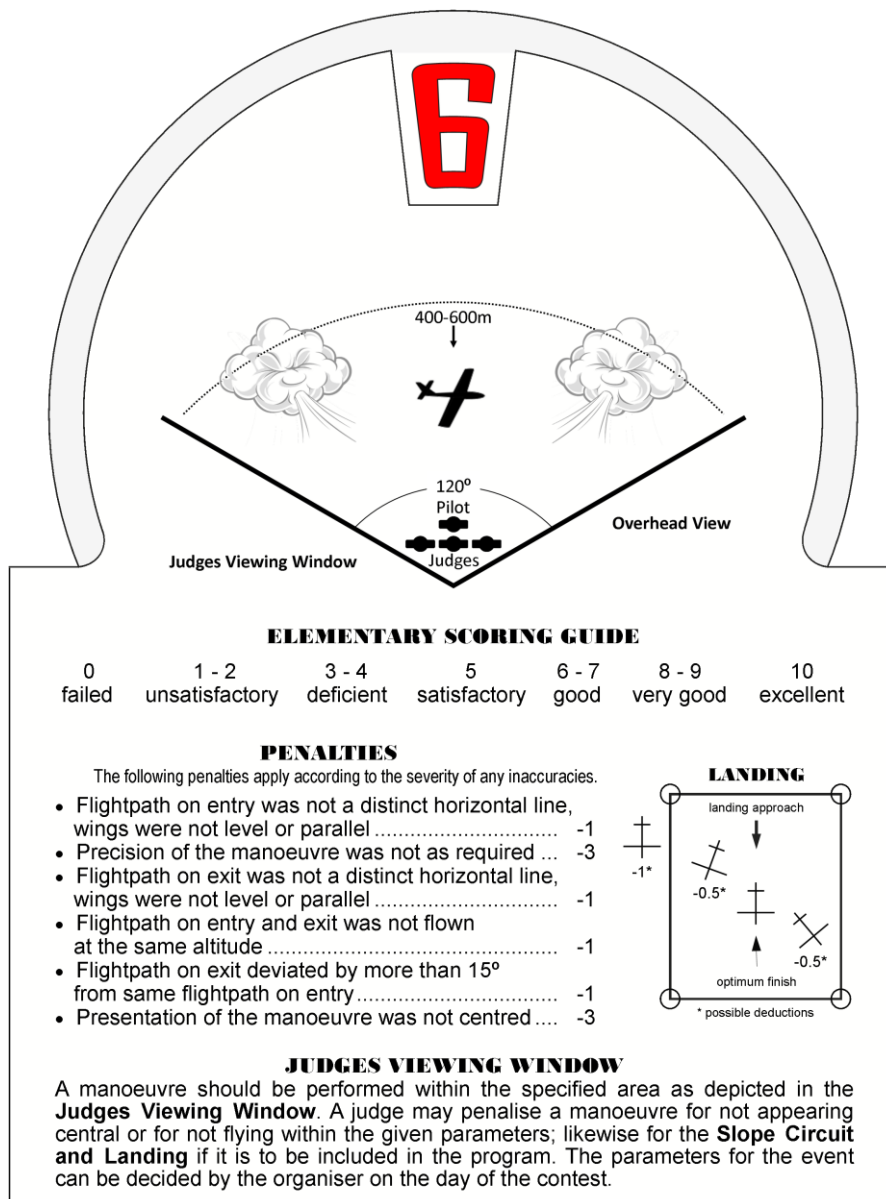
Note: Specific scoresheets and other useful guides to run this event are documented in a Manual of Procedures (MOP) titled **Slope Soaring Contests**. This can be downloaded from the MAAA website or from mountainglidingaustralia.com.au

5.6.3.1. **Group Order of Flying:** A pilot shall nominate two optional manoeuvres of his or her choice per round, choosing one of the following groups:

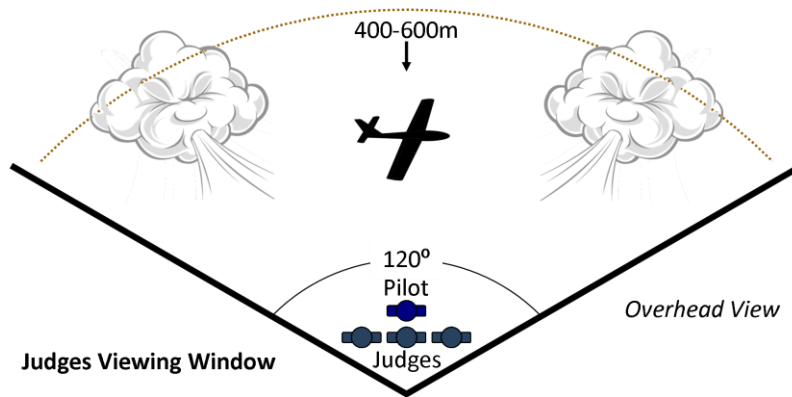
- Round 1 - groups 1 & 2 (K1.5 and K2)
- Round 2 - groups 2 & 3 (K2 and K2.5)
- Round 3 - groups 3 & 4 (K2.5 and K3)
- Round 4 - groups 1 & 4 (K1.5 and K3)

5.6.3.2. Should a pilot not wish to nominate a manoeuvre from either of the two groups available in each round, a manoeuvre from a lower group can be chosen. In this situation only, can a manoeuvre be repeated.

5.6.3.3. Judges Scoreboard: Instructions on how to make a scoreboard, as shown in the diagram below, can be found on the MAAA website in the Manual of Procedures (MOP) titled Slope Soaring Contests.



5.6.3.4. Judges Viewing Window: A manoeuvre must be performed within the specified area, as shown the diagram below. If it is not, the judges may penalise a manoeuvre according to the severity of the inaccuracy.



5.6.3.5. Manoeuvres	K Factor
1. Two Inside Loops	1
2. Axial Roll - roll for 3 seconds minimum	1
3. Straight and Level Inverted Flight - 5 seconds minimum	1
5. Two Stall Turns - in opposite directions	1
6. Optional Manoeuvre #1 to be nominated from the specified group below	
7. Optional Manoeuvre #2 to be nominated from the specified group below	
{ - Extended Loop invert for 2 seconds	1.5
{ - Barrel Roll	1.5
{ - Circle	1.5
{ - Top Hat rolls not required	1.5
{ - Triangular Loop	1.5
{ - Figure 8 inward or outward	2
{ - Inverted Circle	2
{ - Reverse Triangular Loop	2
{ - Square Loop	2
{ - 4 Point Roll	2
{ - Axial Rolls x 3	2.5
{ - Cuban 8	2.5
{ - Double Immelmann	2.5
{ - Spins x 3	2.5
{ - 8 Point Roll	2.5
{ - Outside Loops x 2	3
{ - Inverted Figure 8 inward	3
{ - Inverted Figure 8 outward	3
{ - Inverted Spins x 3	3
{ - Reverse Double Immelmann	3
8. Pattern (Inside Loop, Axial Roll, Figure 8 inward or outward)	4
9. Slope Circuit and Landing - first 3 legs level, last leg descending ½ circle	1

Note: If the model's primary control surfaces are rudder and elevator only (not ailerons and elevator) a pilot can replace the Axial Roll with the Barrel Roll and replace the Straight and Level Inverted Flight with the Extended Loop. In the case of the Extended Loop, only the inverted part of the manoeuvre will be judged.

5.6.4. **Rules for the One on One slope aero duel**

Note: Specific scoresheets and other useful guides to run this event are documented in a Manual of Procedures (MOP) titled **Slope Soaring Contests**. This can be downloaded from the MAAA website or from mountainglidingaustralia.com.au

5.6.4.1. **The Task:** Two contestants are to fly against each other in a round robin duel. The challenger in each duel is to perform two manoeuvres of his or her choice from the applicable manoeuvre lists below. The defender must perform the same two manoeuvres. Manoeuvres can be repeated throughout the rounds. The landing is to be performed by both contestants.

5.6.4.2. **Landing:** If conditions are suitable at the contest, additional points can be awarded for landing. The Slope Circuit and Landing can be used, i.e. outward leg, cross leg, downward leg, half descending circle and land.

5.6.4.3. **Scoring Guidelines:** Contestants can score a possible 2 points for a winning manoeuvre, 0 points for a loss or 1 point for a draw. The overall winner is to be decided from the tally of points in each heat. Placings: 1st, 2nd and 3rd.

5.6.4.4. **The Tactics:** The object of the duel is for the challenger and the defender to not only perform well but also to outwit each other. Each pilot must carefully select manoeuvres they can perform well. Judgement on both their own skill levels and limitations must be carefully weighed up and used to each other's advantage.

5.6.4.5. **Allowances:** Novices may use a helper to launch, stabilise the aircraft in flight or be coached on the landing. However, should a helper take control of the aircraft during the time any given manoeuvre is being performed, that is between the time the words *commence* and *complete* are announced, then no score will be given for that manoeuvre. This rule also includes the landing.

5.6.4.3. **Manoeuvres**

Manoeuvres - Open in alphabetical order

Manoeuvres - Novice in alphabetical order

Axial Roll roll rate 2 seconds	Double Immelmann*	Barrel Roll
Axial Roll x 3	Inverted Flight invert for 5 seconds	Circle
Axial Roll x 4 Point	Loop Extended invert for 2 seconds	Figure 8 inward
Axial Roll x 8 Point	Loop Inside	Figure 8 outward
Barrel Roll civilian type	Loop Inverted	Loop Inside
Circle	Loop Triangular	Loop Extended
Circle Inverted	Loop Triangular Reverse	Loop Square
Cubin 8	Loop Square	Rectangular Circuit
Figure 8 inward	Rectangular Circuit	Spins x 2
Figure 8 Inverted inward	Spins x 3	Stall Turn
Figure 8 outward	Spins Inverted x 3	Top Hat rolls not required
Figure 8 Inverted outward	Stall Turns x 2	
Immelmann*	Top Hat rolls not required	

*** Immelmans ***

Unlike a powered aircraft, which generally speaking does not lose momentum while it's performing aerobatics, a glider does not have the same luxury. Therefore an allowance has been made whereby the roll procedures can be executed at any time during the horizontal sections, rather than at the exit points of each half loop.