

## General explanations of the changes

Explanations have been written in blue text and are to be deleted when the rules are finalised.

In editing the changes or inclusions, the encrypted or hidden line spacings, tabs, indents and the like were found to be inconsistent and very difficult to manipulate. This would have occurred over time from input by different people with different skills in publishing. To repair these issues, most of the encryptions have been neutralised. Line spacing has been achieved by using the ENTER key where practical. Care was taken to keep the formatting as close as possible to the original layout.

### 5.6. SLOPE SOARING MODELS

#### 5.6.1 General Rules

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

~~Aero model~~ **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**, (i.e. ~~not rotating or ornithopter type surfaces~~). Models with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum mode. The models must be controlled by the pilot on the ground using radio control connection. ~~Any variation of geometry or area must be actuated at distance by radio.~~

*(Explanation above: The amended paragraph below is a combination of the above and the current Seven Cell Electric Glider description. The wording has been simplified so that fliers with non-aeronautical backgrounds can more easily decipher the intended meaning. The original explanation also mentions the word, rotating. When these rules were developed in the mid 1960s, there may not have been model gliders which had all-moving wings or if you like, rotating wings for the roll control. Hence, the sections deleted are deemed not necessary.)*

##### 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.**

*(Explanation above and below: b) and c) have been added to the rules to provide an alternative when there is no lift to fly the models nor fly the models with safety or where a cancellation of the contest is imminent. The days are well and truly over where fliers nowadays are prepared to travel long distances to regular glider meets only to have the event called off due to a lack of lift. Electrified gliders under controlled conditions are a sensible answer to reduce the one in three contests on average that have been cancelled in the past three decades.)*

##### 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. 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 dm<sup>2</sup>~~  
~~Maximum Flying Mass..... 5 kg~~  
~~Loading on St ..... between 12 and 75 g/dm<sup>2</sup>~~  
**Maximum Surface Area (St) - 150 dm<sup>2</sup>**  
**Maximum Flying Mass - 5 kg**

***Loading on St between 12 and 75 g/dm<sup>2</sup>***

*(Explanation above on the previous page: This rule has not changed. Only the tabs and alignments have been improved.)*

- 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. no bolt or 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.*

*(Explanation above: This paragraph is in other areas of the glider rules so it has now been included in the slope rules section here. This is to avoid anyone taking advantage of this situation.)*

- 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.***

*(Explanation above: This rule has been changed to ensure that each contestant is given every opportunity to remain competitive throughout the day by completing the event if possible.)*

- 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.*

*(Explanation above: The first part of this rule has been added to fall in line with MAAA requirements. The second part is to ensure that only when a substantial amount of entrants have brought along electrified gliders, can a contest begin.)*

- 5.6.1.3.** *A pilot is permitted only one helper.*

- 5.6.1.4.** *The model may be relaunched during ~~both the rounds. aerobatic and pylon racing tasks.~~*

*(Explanation above: Self-explanatory.)*

- 5.6.1.5.** *Flying will normally proceed when the wind velocity is between 8 and 80 km/hr (5 and 50 mph, 2.25 and 22.5 m/s). However, these limits may be varied by the Contest Director depending upon the site and conditions prevailing. **The Contest Director shall determine whether or not the conditions are suitable for flying.***

*(Explanation above: This rule has been simplified. Rarely have measuring instruments been used at slope contests. Visual assessment is more than adequate to sum up the conditions.)*

5.6.2. ~~Rules for Slope Soaring Contests~~ **Rules for Slope and Pylon Combo**  
*(Explanation above: This contest has been renamed because more contests have now been added to these rules.)*

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

- 1) ~~pylon racing, and~~ **Pylon Racing and**
- 2) ~~aerobatics.~~ **Aerobatics.**

*(Explanation above: Here, capital letters have been added where appropriate and a comma removed.)*

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

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

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

- d) In the event of a ~~mid-air~~ **midair** collision, the heat may be reflown if a claimant signifies this intention immediately. The reflly 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 ~~mid-air~~ **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)** ~~seven minutes of launch time~~ will be scored. The pilot ~~must~~ **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 ~~the launching of the model.~~ **performing** the manoeuvre.

*(Explanation above: A seven-minute time limit has not been used for several decades. Likewise, having to announce the optional manoeuvre prior to launching. In reality, conditions on the day of a contest are rarely optimal, so these two factors are determined moreso by the prevailing conditions rather than the existing rule. The Contest Director usually overrides this rule. This rule has now been changed to reflect what actually takes place at a slope soaring contest.)*

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

*(Explanation above: There have been times where three and even four models have been allowed to fly at the same time depending on the weather conditions or other factors on the day of a contest. The decision should be left up to the Contest Director. This rule has now been changed to reflect what actually takes place at a slope soaring contest.)*

**Note:** It shall be left to the discretion of ~~judges and~~ **the** Contest Director as to whether flying conditions are unsuitable for continuation of an aerobatic 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 judges' **Contest Director's** decision plus ~~one minute for gain of height.~~ **a given time, if one is set, to gain height.**

5.6.2.3.1. Manoeuvres	K Factor
1. Two consecutive loops ----- < delete hyphens	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.

*(Explanation above: The only change here is to remove an invisible tab, which will show up at the end of the first line with the 'Show/Hide' button clicked on. The invisible tab has already been corrected here.)*

*As this is also a new event, the bold and italic text for amendments were not included and thereof what you see has been set out exactly as it would be in the final copy. Only the blue text needs to be deleted.*

**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](http://mountainglidingaustralia.com.au)

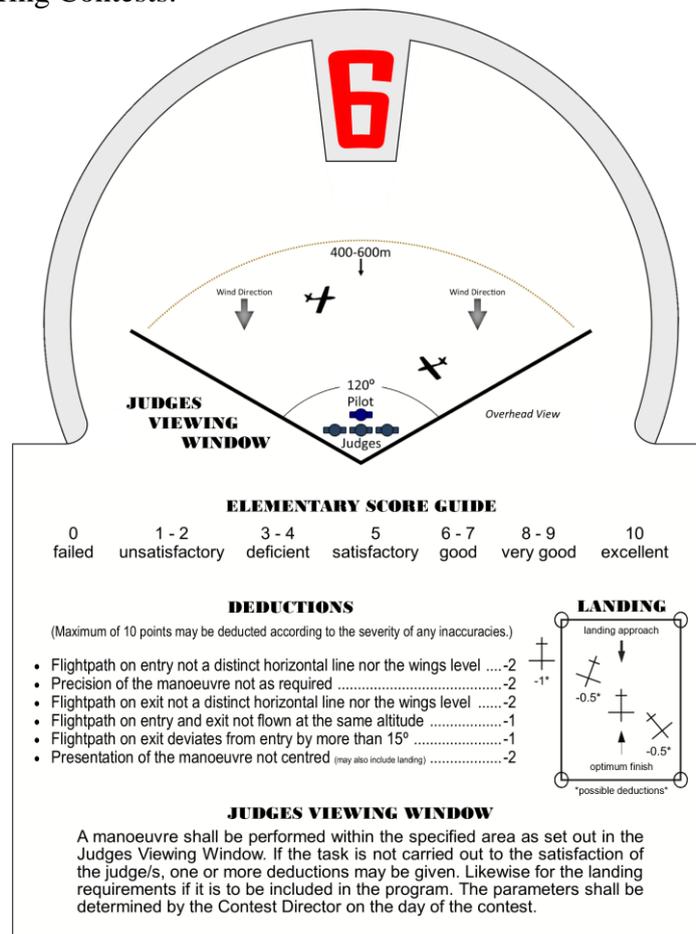
*(Explanation for below: Sections 5.6.3.1., 5.6.3.2. and 5.6.3.5. are designed to encourage novice pilots and give them a better chance at competing against their more experienced opponents. At the same time this program provides a wider range and more challenging set of manoeuvres to all who enter this event. Novice pilots can now compete on near equal terms with their peers and not fall behind the bunch as we've seen in past events.)*

**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)

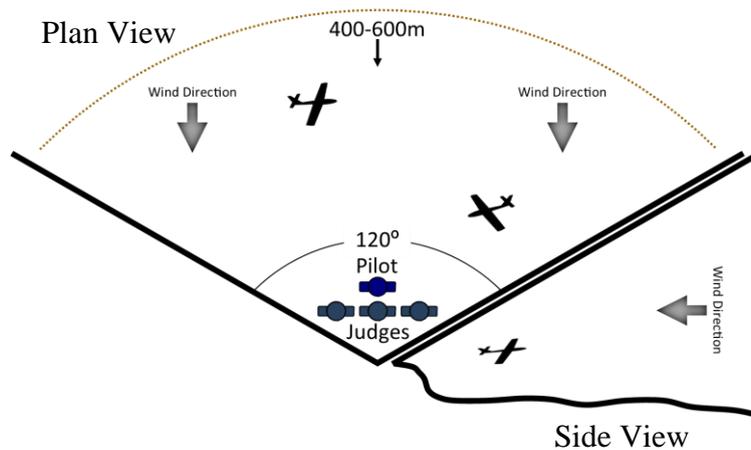
**5.6.3.2.** Should a pilot not wish to nominate a manoeuvre from either of the two groups available in each round, a manoeuvre from a lower group can be chosen. In this situation only, can a manoeuvre be repeated.

**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.



*To the editor: After deleting any unnecessary text, please enlarge this diagram to fit the page.*

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 any inaccuracies.



5.6.3.5.	<b>Manoeuvres</b>	<b>K Factor</b>
	1. Two Inside Loops	1
	2. Axial Roll - optimum roll rate 2-3 seconds	1
	3. Inverted Flight - maintain level inverted flight for 5 seconds	1
	5. Two Stall Turns - perform in opposite directions	1
	6. Optional Manoeuvre #1	
	7. Optional Manoeuvre #2	

**Optional Manoeuvres**

{	- Extended Loop - maintain level inverted flight for 2 seconds	1.5
	- Barrel Roll	1.5
	- Circle	1.5
	- Top Hat - no rolls	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
	- Reverse Cuban 8	2.5
	- Reverse Double Immelmann*	2.5
	- Spins x 3	2.5
	- 8 Point Roll	2.5
{	- Cuban 8	3
	- Double Immelmann*	3
	- Inverted Figure 8 - inward or outward	3
	- Inverted Spins x 3	3
	- Outside Loops x 2	3
	8. Pattern - Inside Loop, Axial Roll, Figure 8	4
	9. Slope Circuit and Landing - upwind leg, cross leg, downwind leg, half descending 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.

*(Explanation above: This note has been added primarily for beginners who enter a contest with only a rudder/elevator model.)*

*As this is also a new event, the bold and italic text for amendments were not included and thereof what you see has been set out exactly as it would be in the final copy. Only the blue text needs to be deleted.*

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](http://mountainglidingaustralia.com.au)

5.6.4.1. **The Task:** Two contestants shall fly off against each other in a round-robin duel. The challenger in each duel shall select and perform two manoeuvres of his or her choice from one of the applicable lists below. The defender shall perform the same two manoeuvres. The same manoeuvres can be selected and repeated throughout the rounds. The same landing shall be performed by both contestants, that's if the landing is to be included.

5.6.4.2. **Landing:** If the weather conditions permit, additional points can be awarded for the Slope Circuit & Landing. Example: Upwind leg, cross leg, downwind leg, half descending circle and land.

5.6.4.3. **Scoring:** Contestants can score a possible 3 points for the best manoeuvre, 1 point for the second best manoeuvre or 2 points if the manoeuvres are inseparable. The overall winner is to be decided by tallying the points.

5.6.4.4. **The Tactics:** The objective for both the challenger and the defender is not only to perform well but to try and outwit each other. Pilots must carefully select manoeuvres that they can perform well. Knowing one's own piloting skills 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 glider 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 shall be given for that manoeuvre. This rule also includes the landing.

5.6.4.6. **Manoeuvres**

**Manoeuvres - Open** in alphabetical order

Axial Roll - roll rate 2 seconds	Double Immelmann*
Axial Roll x 3	Double Immelmann Reverse*
Axial Roll x 4 Point	Inverted Flight - invert for 5 seconds
Axial Roll x 8 Point	Loop Extended - invert for 2 seconds
Barrel Roll - civilian type	Loop Inside
Circle	Loop Inverted
Circle Inverted	Loop Triangular
Cubin 8	Loop Triangular Reverse
Cuban 8 Reverse Loop	Loop Square
Figure 8 - inward	Rectangular Circuit
Figure 8 Inverted - inward	Spins x 3
Figure 8 - outward	Spins Inverted x 3
Figure 8 Inverted - outward	Stall Turns x 2
	Top Hat - no rolls

**Manoeuvres - Novice** in alphabetical order

Barrel Roll  
 Circle  
 Figure 8 - inward  
 Figure 8 - outward  
 Loop Inside  
 Loop Extended  
 Loop Square  
 Rectangular Circuit  
 Spins x 2  
 Stall Turn  
 Top Hat - no rolls

**\* Immelmans \***

To overcome a glider's expected loss of momentum during the roll procedures, there is a provision for the glider to be rolled at any point along the horizontal sections, rather than at the exit points of the half loops, which is required for powered model aircraft.