TASK CATALOGUE

FOR THE 9TH
FAI WORLD PARAMOTOR CHAMPIONSHIPS

Popham Airfield, Basingstoke, UK.
20th-27th August 2016

ORGANISED BY: BRITISH MICROLIGHT AIRCRAFT ASSOCIATION (BMAA)

ON BEHALF OF THE FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

Note: These championships are held in conjunction with the 15th FAI World Microlight Championships. For reasons of simplicity, the task catalogue for the Microlight Championships has been produced as a separate document.

Organizer Address:	British Microlight Aircraft Association
	The Bullring, Deddington, Banbury, Oxon, UK OX15 0TT
Telephone:	+44 (0)1869 338888
FAX:	+44 (0)1869 337116
Email:	general@bmaa.org
Official Web Site	http://bmaa.org

AUTHORITY

This Task Catalogue is to be used in conjunction with the Local Regulations. The General Section and Section 10 of the FAI Sporting Code take precedence over the Local Regulations and Task Catalogue wording if there is ambiguity.

CLARIFICATION

Classes PF1, PF2, PL1 and PL2 are “Paramotors”

CONTENTS

AUTHORITY 1
CLARIFICATION 1
CONTENTS 1

1. Introduction 2
1.1 INTRODUCTION 2
1.2 TASK TYPES 3

2. Navigation Tasks 4
2.1 PURE NAVIGATION 4
2.2 PRECISION NAVIGATION 4
2.3 CURVE NAVIGATION 5

3. Economy Tasks 8
3.1. PURE ECONOMY 8
3.2 ECONOMY & NAVIGATION 8
3.3 SPEED TRIANGLE AND OUT AND RETURN 8

4. Precision Tasks 10
4.1. PRECISION LANDING 10
4.2. PRECISION SHORT LANDING 11
4.3 BOWLING LANDING 12
4.4 PRECISION CIRCUIT IN THE SHORTEST TIME (‘Japanese slalom’) 12
4.5 PRECISION CIRCUIT IN THE SHORTEST TIME (‘Generic slalom’) 13
4.6 SLOW / FAST SPEED RANGE 13
4.7 THE EIGHT 14
4.7 PRECISION WING CONTROL 16
4.8 PRECISION WING CONTROL – GROUND HANDLING 17

1. Introduction

1.1 INTRODUCTION

This catalogue describes tasks which may be set in the 2016 FAI World Paramotor championships. It includes some new tasks that have been tried out satisfactorily in national competitions.

1.1.1 PRINCIPLES

The objective of the tasks set in Classic Competitions is to emulate real-world piloting situations, testing the skills of pilots against each other in a manner that can be quantified simply and fairly, without danger to pilots. Flying such tasks should be an enjoyable experience. Thus the guiding principles of the 2016 championship in the United Kingdom might be characterized by four keywords that have guided UK national championships for many years now:

SAFE - FUN - SIMPLE - FAIR

SAFE
Safety must of course be paramount. 2015 saw a number of fatalities and serious accidents, mostly arising from flying slalom courses on increasingly high-speed wings. For those pilots who accept to take such risks there are a dedicated series of cat. 1 FAI slalom competitions. Classic competitions should provide an alternative to these, by remaining true to the spirit of inclusivity in which they were designed, providing a mix of safe (and predominantly up-wind) slalom and other precision tasks to make up approximately 33% of the score values. Such tasks should also be scored according to formulae that do not encourage dangerous risk taking.

FUN
We fly paramotors primarily because it is fun. It follows from this that when more tasks are flown in a competition, it is far more enjoyable for all pilots, in addition to giving them more opportunities to fully demonstrate their skills and win medals. A Competition Director faces a difficult challenge in setting tasks that are suitably complex to test the best pilots in the world, without slowing the pace of competition. Tasks for different classes can and should be run independently in order to utilise the airspace most effectively and maximise the opportunities for flying. These tasks should be of sufficient length to challenge pilot skills by having to fly over new and different terrain.

SIMPLE
Competition tasks can be simple without being easy. There are many tasks listed in annex 4, many of which have not actually been used in Classic FAI competitions for many years. In order to simplify the competition, only three tasks each from navigation and economy have been selected. This will enable shorter briefings, and reduce the risk of confusion (particularly when language is a barrier), marshalling problems, and long delays for scores to be released.

FAIR
Fairness is another central tenet of international competition. Tasks should be designed primarily to measure pilot skill and to minimize elements of random chance affecting the score. Classic competitions should reward pilots for having a balanced skill set and flying balanced equipment. This drives the design direction for the aircraft. In particular, it is the nature of classic competitions to encourage the development and use of aircraft that are optimal for all three task types: precision, navigation, and economy

1.2 TASK TYPES

1.2.1 GENERAL

Tasks fall into Three Categories:

A Flight planning, navigation estimated time and speed. No fuel limitation.

B Fuel economy, speed range, duration. Fuel limited.

C Precision

The proportion of each task type to be used is 1/3:1/3:1/3, as stated in S10, 4.29.3.

Any task may be set more than once, either identically or with variations.

Distances should be as long as possible referring to the recommended still air range of the competing aircraft stated in S10 4.17.7.

In any task requiring pre-declaration of speed or elapsed time the Director may set up hidden gates through which the pilot would fly if on the correct flight path.

The Director may set a time period for completion of a task in addition to the last landing time.

Where 2m Pylons are defined in tasks, at the discretion of the Competition Director these may be replaced by 8 or 12m (+- 1m) inflatable pylons.

2. Navigation Tasks

2.1 PURE NAVIGATION

Objective

This is a time-limited task in which the pilot must fly a course of their choosing from a given array of turn points, with the objective either to collect as many turn points as possible, or to cover as much distance as possible within the time limit. The pilot must cross a start gate and finish gate for the task, and may also be required to pass particular intermediate gates during the task, as specified at the briefing. There are no pre-declaration elements. Unless otherwise briefed, pilots will perform a free launch from their designated deck.

Scoring

Pilot score = $1000 \times \frac{NBp}{NBmax}$

Where, according to briefing;

Either:

NBp = The number of turn points a pilot collects in the task.

NBmax = The maximum number of turn points collected in the task.

OR

NBp = the distance flown by the pilot in the task.

NBMax = the maximum distance flown in the task.

Landing

After crossing FP, pilots will proceed to land. Unless otherwise briefed, they will perform a standard deck landing at their designated decks.

After landing they will secure their aircraft and take their loggers to the download office.

2.2 PRECISION NAVIGATION

Objective

Fly a circuit at a constant speed in each leg, estimating arrival times to known turn points.

Planning

A circuit will be defined by a start (SP) and finish (FP) points, with a small number of intermediate turn points (TP). All turn points will be known before take-off. Legs between consecutive points will normally be straight segments, but some of them may also be well defined arcs of circumference. As an additional aid, the organiser may also give the length of each leg.

Pilots will receive the collection of turn points at a specified start-of-planning time (PT) and will plan their flight individually. PT for each pilot will be published in advance.

Pilots will fill in a declaration sheet indicating their estimated times of arrival to every turn point in the circuit, including the finish point. Estimated times will be given in seconds counted from SP. Planning may be done in quarantine, or not, according to the briefing. Pilots will hand their declaration to a marshal before take-off.

A variant of this task may be flown in which no pre-declaration is made by pilots. The speeds for each leg (used in scoring the hidden timing gates) will be calculated from their time of arrival at the turn points (as indicated by the GPS track).

Take-off

The director may choose to run the task with take off at a designated time or allow pilots to take off immediately after handing their declaration to the marshal.

Unless otherwise briefed, pilots will perform a free launch from their designated deck.

Flight

After take-off, pilots will fly to the start point (SP) where the clock starts. They will fly each leg at a constant speed that should be consistent with their declarations. The speed in each leg may be different, but it must be constant along each leg.

There will be an undetermined number of hidden time gates along the legs. There will be a small bonus for speed along the whole course, that may include planning time if briefed. Navigation ends at the finish point (FP).

SP	→	AA	→	BB	→	CC	→	DD	→	FP
T = 0	Hidden gates	Ta	Hidden gates	Tb	Hidden gates	Tc	Hidden gates	Td	Hidden gates	T

Landing

After crossing FP, pilots will proceed to land. Unless otherwise briefed, they will perform a standard deck landing at their designated decks.

After landing they will secure their aircraft and take their loggers to the download office.

Scoring

Hidden time-gate score: The difference between the time of arrival estimated by the pilot and the real crossing is the time error for a gate.

Ei = Absolute error in seconds in gate i with a tolerance of 5 seconds and a maximum of 180.
Hi = 180 – Ei (Points obtained in gate i). Time gates not crossed score 0.
Qt = $\sum$ Hi (Sum of all gate points)

Speed score

Tstart = Time of crossing SP or time when the pilot starts planning (according to briefing)
Tfin = Time of crossing FP
T = Tfin – Tstart
Tmin = Minimum time in the class
Qv = 200 * Tmin / T

Total

Q = (Qh + Qt) * (1 + Qv / 1000)
P = 1000 x Q / Qmax

Task-specific penalties

Up to 100% penalty for backtracking, as defined at the briefing.

20% penalty for an excessive delay between effective take-off and crossing the start point.

2.3 CURVE NAVIGATION

Objective

Precisely fly the course defined by an arbitrary line drawn on the map, with time estimations and a time limit.

Planning

A course will be defined by a start (SP) and finish (FP) points and a line drawn on a map, with a small number of intermediate timing gates (TG). All TG points will be known before take-off.

Pilots will fill in a declaration sheet indicating their estimated times of arrival to every TG in the circuit, including the finish point. Estimated times will be given in seconds counted from SP. Planning may be done in quarantine, or not, according to the briefing. Pilots will hand their declaration to a marshal before take-off.

Take-off

Pilots must hand their declaration sheet to the marshal before take-off. Unless otherwise briefed, pilots

will perform a free launch from their designated deck.

Flight

Time will start when the aircraft crosses the start point. Then pilots will precisely fly the course trying to cross the time gates in order at their estimated times. Navigation and timing end at the finish point.

There will be an undetermined number of hidden gates to validate the course. Gates must be crossed in order and proper direction. Crossing the same gate more than once in any direction invalidates the gate. Example: The sequence 1-2-4-3-5-6-5-7 will be evaluated as 1-2-4-6-7, a total of five correct gates.

Time will be measured at five known time gates (TG) and checked against pilot declarations. If a time gate is crossed more than once, time will be extracted from the first crossing. There will be a small bonus for speed along the whole course, that may include planning time if briefed.

SP	→	TG1	→	TG2	→	
T=0	Hidden gates	T1	Hidden gates	T2	Hidden gates	

Scoring

Hidden gate score

Nh = Number of hidden gates in the task
H = Number of hidden gates correctly crossed (crossed once, in order and proper direction)
Qh = 900 x H / Nh

Known time-gate score (when the course includes known time gates). An expected time of arrival (ETA) to each gate will be calculated based on the pilot's declaration. The difference between the ETA and the real crossing is the time error for a gate.

Ei = Absolute error in seconds in gate i with a tolerance of 5 seconds and a maximum of 180.
Hi = 180 – Ei (Points obtained in gate i). Time gates not crossed score zero.
Qt = $\sum$ Hi (Sum of points from all five timing gates, maximum 900)

Speed score

Tstart = Time of crossing SP or time when the pilot starts planning (according to briefing)
Tfin = Time of crossing FP
T = Tfin – Tstart
Tmin = Minimum time in the class
Qv = 200 * Tmin / T

Total

Q = (Qh + Qt) * (1 + Qv / 1000)
P = 1000 x Q / Qmax

Task-specific penalties

Up to 100% penalty for backtracking, as defined at the briefing.

20% penalty for an excessive delay between effective take-off and crossing the start point.

2.4 DECLARATION SHEET

The following declaration sheet may be used in tasks 2.2 and 2.3.

Time gate	Estimated time of arrival in seconds counted from the start point (SP)
SP	0 s
FP	

Pilot _____

Comp. No. _____ Team _____ Class _____

Task No. _____ Date _____ Time _____

Pilot's Signature

Marshal _____

Marshal's Signature:

3. Economy Tasks

3.1. PURE ECONOMY

Objective

Take-off with a measured quantity of fuel and stay airborne for as long as possible and return to the deck.

Special rules

- Free take-off within the time window.
- Flying outside the permitted flight area defined in the briefing will incur penalties.
- Land outside the airfield boundary: Score zero. Land inside the airfield boundary but outside the deck: 20% penalty.

Scoring

Pilot score = $1000 \times \frac{Tp}{Tmax}$

Where:

Tp = The pilot's time,

Tmax = The longest time taken to complete the task

3.2 ECONOMY & NAVIGATION

Objective

This is a fuel-limited task in which the pilot must fly a course of their choosing from a given array of turn points, with the objective either to collect as many turn points as possible, or to cover as much distance as possible, whilst still retaining enough fuel to return to the deck. The pilot may also be required to pass certain intermediate gates during the task, as specified at the briefing.

Special rules

- Outlanding: Score zero.

Scoring

Pilot score = $1000 \times \frac{NBp}{NBmax}$

Where, according to the briefing:

Either:

NBp = The number of turn points a pilot collects in the task

NBmax = The maximum number of turn points collected in the task

OR

NBp = the distance flown by the pilot in the task.

NBMax = the maximum distance flown in the task.

3.3 SPEED TRIANGLE AND OUT AND RETURN

Objective

With limited fuel, to fly around a circuit in the shortest possible time and then, with the pilot's remaining fuel fly in a given direction as far as possible and return to the deck.

Description

The fuel quantity allowed will be defined in the briefing.

Part 1: Speed; This is an imposed course with a start gate and a finish gate used for timing.

Part 2: Distance; The pilot then flies in a direction either imposed or of their choosing (as specified in the briefing) to a point of pilot choice and returns to the deck.

Special rules

- Land out before completing part 1: Score zero.
- Land out before completing part 2: Score zero for part 2.
- Failure to takeoff or land entirely in the deck: 20% penalty.

Scoring

Pilot score = $\left(500 \times \frac{tMin}{tp}\right) + \left(500 \times \frac{dp}{dMax}\right)$

Where:

tp = the pilot's time,

tMin = The best time (Part 1)

dp = the pilot's distance

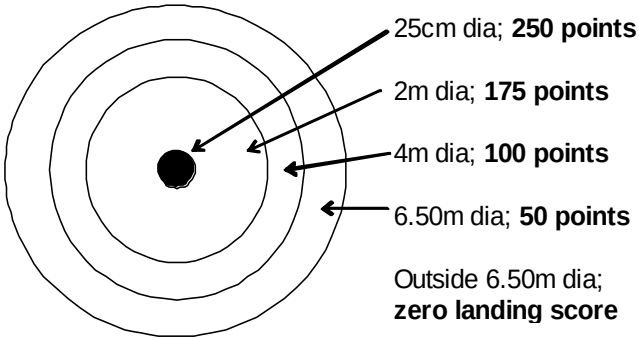
dMax = the greatest distance (Part 2)

4. Precision Tasks

4.1. PRECISION LANDING

Objective

To land with engine off as near as possible to a target.



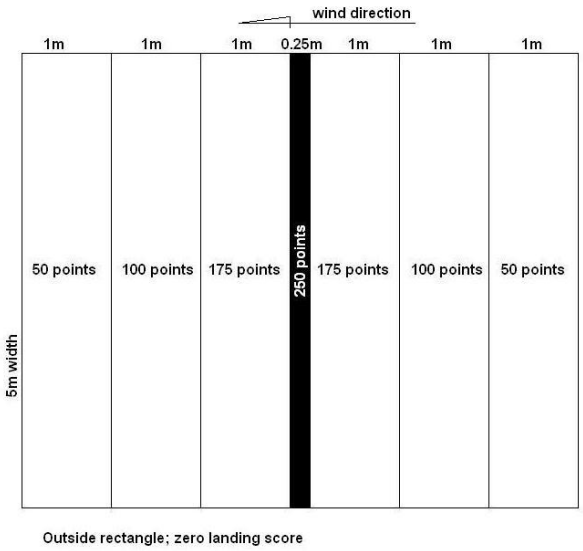
Description

This task is normally conducted as part of the landing process after another task has been completed. The pilot climbs to at least 500ft overhead the target, cuts the engine and tries to make a first touch as near as possible to the centre of a target consisting of:

- A series of concentric circles for PF1 and PF2 classes.
- A series of 5m wide parallel strips for PL1 and PL2 classes

Special rules

- The circuit to be flown will be detailed at briefing.
- The first touch of the ground by the pilot's foot (PF) or the aircraft wheels (PL) is the point from which the pilot's score will be derived. A first touch on the line scores the higher score. When more than one PL wheel touches simultaneously, the point chosen is the one in favour of the pilot.
- There will be no penalty applied for any part of the aircraft touching the ground prior to the first scoring touch of the foot or wheels, so long as a 'good' landing is achieved, as described in S.10 A3, 3.3.5.
- Contestants will be awarded a zero landing score for:



Engine not stopped before the gate.

Gate not passed correctly.

Falling over as a result of the landing.

Scoring option 1: without normalization:

Pilot scores directly according to where they make the first touch of the ground, as indicated on the diagrams.

Scoring option 2: with normalization:

Pilot score = $250 \times \left(\frac{Np}{Npmax}\right)$

Where

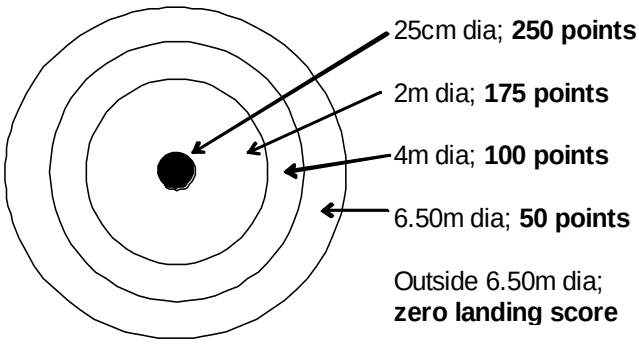
Np = the pilot score according to where they make the first touch of the ground

Npmax = the maximum score achieved by any pilot.

4.2. PRECISION SHORT LANDING

Objective

To land with engine off as near as possible to a target, and come to a complete standstill within a specified distance.



Description

This task is normally conducted as part of the landing process after another task has been completed. The pilot climbs to at least 500ft overhead the target, cuts the engine and tries to make a first touch as near as possible to the centre of a target consisting of:

- A series of concentric circles for PF1 and PF2 classes.
- A series of 5m wide parallel strips for PL1 and PL2 classes

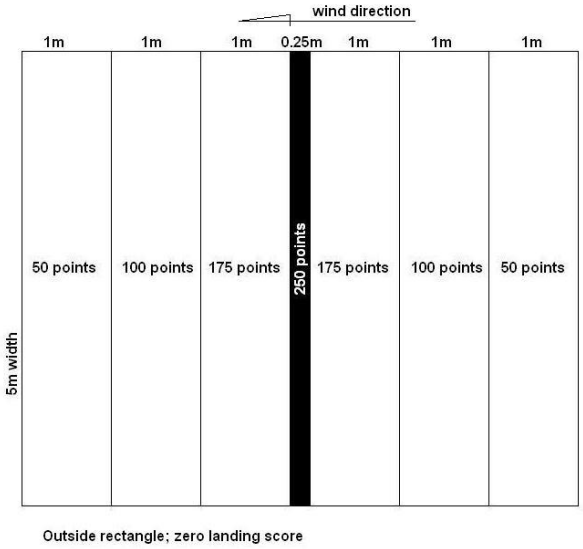
Once the pilot has made their first touch for scoring, the must come to a complete standstill within a stopping boundary. This will be defined by:

- A circle of 13m diameter centered on the target for PF1 and PF2 classes.
- A line parallel to the target strips, an appropriate distance upwind (to be defined in the briefing), for PL1 and PL2 classes

A complete standstill will be counted if both feet are inside the boundary for PF classes and all wheels are inside the boundary for PL classes. The wing may overfly the pilot and land outside the boundary without penalty.

Special rules

- The circuit to be flown will be detailed at briefing.
- The first touch of the ground by the pilot's foot (PF) or the aircraft wheels (PL) is the point from which the pilot's score will be derived. A first touch on the line scores the higher score. When more than one PL wheel touches simultaneously, the point chosen is the one in favour of the pilot.
- There will be no penalty applied for any part of the aircraft touching the ground prior to the first scoring touch of the foot or wheels, so long as a 'good' landing is achieved, as described in S.10 A3, 3.3.5.
- Contestants will be awarded a zero landing score for:



Engine not stopped before the gate.

Gate not passed correctly.

Falling over as a result of the landing.

Failing to come to a complete standstill inside the stopping boundary

Scoring option 1: without normalisation:

Pilot scores directly according to where they make the first touch of the ground, as indicated on the diagrams.

Scoring option 2: with normalisation:

Pilot score = $250 \times \left(\frac{Np}{Npmax}\right)$

Where

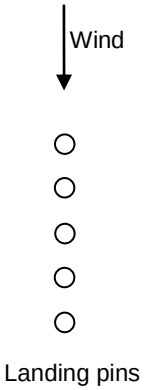
Np = the pilot score according to where they make the first touch of the ground

Npmax = the maximum score achieved by any pilot.

4.3 BOWLING LANDING

Objective

Land with the engine off, hitting as many pins as possible.



Landing pins

Description

5 or more pins are placed along a line into wind in the landing area at regular intervals between 1 and 2 m.

The pins are 50 cm high for PF classes and 100 cm high for PL classes and they are covered by dense foam. Pins will be simply standing on the ground. A pin is said to be hit when when the it is knocked down.

Pilots will fly to 500ft and cut the engine before crossing a briefed gate.

They will fly a minimum of 60 seconds and will try to hit as many pins as possible before touching the ground. Each pin knocked down before touching the ground is scored as a successful hit.

Scoring option 1 (without normalisation):

Pld = 50 points for each pin hit (maximum of 5 pins / 250 points used for this scoring option)

Scoring option 2 (with normalisation):

Pilot score = $250 \times \left(\frac{Pld}{Pldmax}\right)$

Where

Pld = the number of pins hit successfully

Pld max = the maximum number of pins successfully by any pilot

Penalties

Not crossing the gate or crossing it engine on: zero landing score.

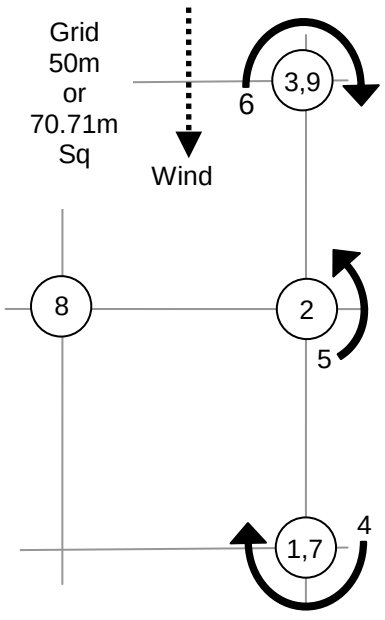
Flying less than 60 seconds with no engine: zero landing score.

Falling over during landing or two knees on the ground: zero landing score.

4.4 PRECISION CIRCUIT IN THE SHORTEST TIME ('Japanese slalom')

Objective

To strike a number of targets laid out in a given order in the shortest possible time and return to the deck.



Description

4 pylons 2m in height are laid out on

- On a 50 m x 50 m grid for PF1 and PL1 classes,
- On a 70,71 m x 70,71 m grid for PF2 and PL2 classes.

The pilot enters the course into wind and strikes target 1. At this point the clock starts. The pilot then strikes targets 2 and 3. He then returns to fly clockwise around target 1 (strike 4), anticlockwise around target 2 (strike 5) and clockwise around target 3 (strike 6). He then returns to strike target 1 (strike 7), target 4 (strike 8) and target 3 (strike 9). The clock stops when target 3 (strike 9) is kicked.

Special rules

- Pylons 1 & 3 must be rounded in a CLOCKWISE direction and pylon 2 must be rounded in an ANTI CLOCKWISE direction. The aircraft may touch the target so long as the pilot's body can be seen to round it correctly
- A strike on target 1 starts the clock, a strike on target 9 stops the clock.
- Failure to strike the first or last target or touch the ground at any point between them: score zero.

Scoring

$$t_{pen} = t_{pil} + mv_{pen}$$

$Q = (T_{best} / T_{pen})$

Where

t_{pil} = the measured pilot's time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (20 seconds)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalisation

4.5 PRECISION CIRCUIT IN THE SHORTEST TIME ('Generic slalom')

Objective

To strike a number of targets laid out in a given order in the shortest possible time. Note: In this task catalogue the "Pylon Square" task as used in FAI Slalom Competitions has been removed – variations of it may still be used, described under this task as a "Generic Slalom".

Description

Between 2 and 12 targets are laid out on a course not exceeding 3Km in length. Targets may be sticks or electronic timing gates. Intermediate targets may also be min. 8m inflatable pylons.

The pilot enters the course into wind and strikes target 1. At this point the clock starts.

The pilot then flies the course to strike all the other targets in the given order, a strike on the last one stops the clock.

Special rules

- A strike on target 1 starts the clock, a strike on the last target stops the clock.
- Any part of the aircraft touching an inflatable pylon: score zero.

Scoring

$$t_{pen} = t_{pil} + mv_{pen}$$

$Q = (T_{best} / T_{pen})$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (in seconds, given in the briefing)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

4.6 SLOW / FAST SPEED RANGE

Objective

To fly a course as slowly as possible and then as fast as possible in order to demonstrate as wide a speed range as possible.

Description

A slow course consisting of four equally spaced 'kicking sticks' between 150m and 300m long is laid out in a straight line.. A fast course of similar length consisting of a start gate and a finish gate aligned parallel to the slow course is also laid out nearby. These gates will be electronic timing gates.

Both courses are laid out approximately into wind

The pilot makes a timed pass along the slow course, returns to the start, and then makes a second timed pass along the fast course in the same direction.

Special rules

In the slow course:

- The pilot must strike all four sticks in the slow course.
- The clock starts the moment the pilot kicks the first stick and stops the moment he kicks the fourth stick.
- The pilot may have 3 attempts at kicking the first stick on each run.
- If the pilot misses the second or third stick then he is considered 'too high', penalty 50% for each stick missed.
- If the pilot or any part of his Paramotor touches the ground or the fourth stick is missed: Vp2 = null and Ep = zero
- If the pilot zigzags: Score zero.

In the fast course:

- The time starts when crossing the start gate and ends when crossing the finish gate (no stick kicking) as briefed.
- If the pilot or any part of his Paramotor touches the ground: 50% penalty
- The pilot may have three attempts at crossing the finish gate to stop the timer.

Scoring

Q = TSlow / TFast

Pilot score = 1000 x (Q/Qmax)

Where:

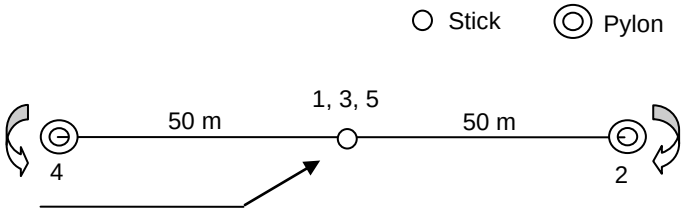
TSlow = the pilot's elapsed time on the slow course

TFast = the pilot's elapsed time on the fast course

4.7 THE EIGHT

Course description

The courses consists of one central target and another two sticks or pylons 50 m away on both sides.



Flying the course

The pilot enters the course as indicated by the arrow and strikes the central target. At this point the clock starts. The pilot flies around the pylon ahead of him clockwise (strike 2), then strikes the target (strike 3), then the other pylon counter clockwise (strike 4) and strikes the central target (strike 5). The course is repeated twice, the clock stops on strike 9.

The course may be flown in a mirror image pattern consistent with the description above.

If briefed, the course may be flown only once, accumulating a total of 5 possible targets.

Special rules

- A strike on target 1 starts the clock, a strike on the last target stops the clock.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.
- Any part of the aircraft touching an inflatable pylon: score zero.

Scoring

$$t_{pen} = t_{pil} + mv_{pen}$$

$Q = (T_{best} / T_{pen})$

Where

t_{pil} = the measured pilots time (seconds)
m = the number of missed targets
v_{pen} = the time penalty for each missed target (seconds)
t_{pen} = the pilots time (after penalties for missed targets)
t_{best} = the best time (after penalties for missed targets)
Q = the task value before normalization

4.7 PRECISION PARABALL

Objective

Deliver balls to a target (basket or hole) or as close to the target as possible, either by carrying or hitting with feet, as quickly as possible.

Description

The target is a hole or basket between 0.5-2m in diameter. The optimum is a hybrid of hole and basket; a hole with edges between 20-50cm above ground. Construction should be light for safety reasons but strong enough to hold the force of a flying ball and to keep balls inside.

Between 3-5 soft or half-empty balls of different sizes are placed downwind from the target on marked start positions. The distance between the balls and the target should be between 20–50m.

The pilot approaches a ball, collects it with his feet and carries it to the basket. Alternatively the pilot can kick the ball towards the target. This is repeated with the other balls until all the balls are in the basket or time is up.

A maximum task time limit is set. Timing starts with the touch of the first ball, the first attempt to touch a ball or when passing the first ball. Timing ends when the last ball enters the target (or when the maximum time limit is reached).

Scoring is based on the time taken from start of task until all balls are in the target. If the maximum time limit is reached, the number of balls in the target is counted and the distances of the remaining balls from the target are measured.

Special rules

There are no limitations to the number, angle, speed or height of approaches to the balls and the technique for hitting or carrying the balls.

Balls must stay in the target. Bouncing out from the target will give the result according to the distance from the target.

The pilot may contact, and move on, the ground but the wing may not touch the ground before time is up. The penalty if the wing touches the ground before the end of the time limit = score 0 for time.

The maximum time limit assigned to this task depends on the amount of balls, distances, the balls' properties, target size and weather conditions. For example, with 3 balls a suitable time limit is 3 or 4 minutes.

The maximum time limit is signalled by a marshal with an appropriate (red) flag. Results are then measured from this state. If a pilot is carrying a ball when the time limit is reached, he is allowed up to 30 seconds extra time to deliver the ball to the target. This extra time finishes when the pilot next drops the ball, giving the pilot one chance to deliver the ball to the target.

Pilots must land in the landing deck immediately after the task is performed. Pilots must then remove all of their equipment from the task area immediately.

Details and changes to these rules will be briefed.

Scoring

Balls delivered into the basket will score maximum points
Balls inside the radius of 5 m from the edge of the basket: 50 % of ball score
Balls moved from its original location but outside of the 5 m radius: 20 % of ball score
Balls not moved from their original position: no points

N = balls carried into the basket minus penalties depending on the ball's position.
T = time in seconds from the start signal to the finishing the task

Pq = 700 * N / Nmax
Ps = 300 * (180 – T + Tmin)/180
Q = Pq + Ps
P = 500 * (Q / Qmax)

4.7 PRECISION WING CONTROL

Objective

Land and display precise control of the wing before taking off again.

Description

This task will normally be flown in wind conditions in which a reverse launch is possible.
A straight course consisting of two targets is laid out facing approximately into wind. The precise distance between the taregts is arbitrary but they should be a minimum of 100m apart.
The pilot enters the course into wind. They must strike the first target to start their time. They must then land in between the two targets, bringing the wing completely to rest on the ground with the lines seen to be slack.
When a marshal has confirmed that the lines are slack, they will show a green flag as a signal that the pilot may take off again.
The pilot will then launch and kick the second stick to stop the timer.

Detailed rules

- A valid strike on a target is:

EITHER one where the pilots or any part of the Paramotor has been clearly observed to touch it.

OR when electronic sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- The clock starts the moment the pilot strikes the first target and stops the moment he strikes the second target.

- The pilot may have 3 attempts at striking each target.

- If the pilot relaunches the wing before being shown a green flag by the marshal they will incur 100% penalty for the task.

- If a launch fails the pilot may make as many attempts as they need to relaunch the wing, within the specified time limit.

- The maximum time allowed for a pilot to complete the course is 3 minutes.

Scoring

Q = 250 * (Tbest/Tpil)

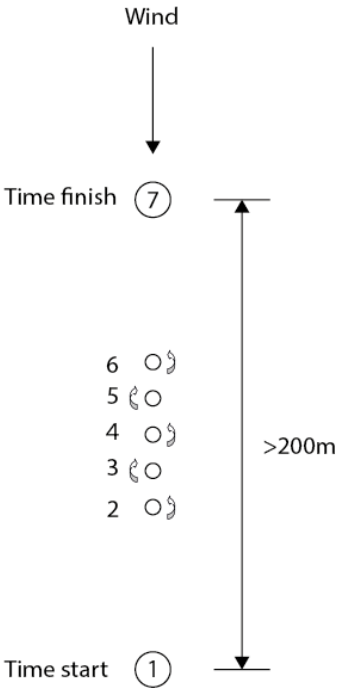
Where

Tpil = the pilot's time
Tbest = the best time

4.8 PRECISION WING CONTROL – GROUND HANDLING

Objective

Land and display precise control of the wing before taking off again.



Description

A straight course consisting of two targets is laid out facing approximately into wind. The precise distance between the targets is arbitrary but they should be a minimum of 200m apart.

At the approximate center point between the targets a minimum of five pins are placed in line with the targets, 2m apart from each other. The pins are small plastic cones of the type used in sports training.

The pilot enters the course into wind. They must strike the first target to start their time. They must then land before the first pin, keeping the wing flying in the air above them.

Whilst kiting the wing, they should walk or run through the course of pins, turning in alternate directions around each one to follow a slalom course. The body of the pilot must be clearly observed to pass outside of the line of pins when making each turn, and they must not touch any of the pins.

After the pilots has passed the final pin, they will then launch as quickly as possible and strike the second target to stop the timer.

Detailed rules

- A valid strike on a target is:

EITHER one where the pilot or any part of the Paramotor has been clearly observed to touch it.

OR when electronic sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- The clock starts the moment the pilot strikes the first target and stops the moment he strikes the last target.

- The pilot may have 3 attempts at striking each target.

- The pilot may turn either to the left or to the right when rounding the first of the pins, so long as they alternate the turn direction on each subsequent pin.

- If the wing drops to the ground whilst the pilot is running through the slalom course they may relaunch it as many times as they need within the specified time limit.

- The maximum time allowed for a pilot to complete the course is 3 minutes

- Each pin that is touched by the body of the pilot in the course counts as a missed pin.

- Each time the pilot fails to turn outside the line of pins it counts as a missed target.

Scoring

tpen: = t_pil + m * v_pen

Q: = 250 * (Tbest/Tpen)

Where

tpil = the measured pilots time (seconds)
m = the number of missed targets
vpen = the time penalty for each missed target (in seconds, as defined at the briefing)
tpen = the pilots time (after penalties for missed pins)
tbest = the best time (after penalties for missed pins)