TASK CATALOGUE
FOR THE 6th
FAI EUROPEAN PARAMOTOR CHAMPIONSHIPS

Přerov Czech Republic
26th August - 2nd September 2017

ORGANISED BY:

LIGHT AIRCRAFT ASSOCIATION OF THE CZECH REPUBLIC

ON BEHALF OF THE FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

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Task Catalogue

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

CLARIFICATION - Classes PF1, PF2, PL1 and PL2 are "Paramotors"

Contents

1   INTRODUCTION

This catalogue describes tasks which may be set in 6th FAI European Paramotor Championships. It includes some new tasks that have been tried out satisfactorily in national competitions.

Flight planning and navigation tasks develop good pilot skills but they, too, affect the characteristics of competition aircraft so a Director must try to set a reasonable balance between tasks where ultimately speed is the advantage and economy is the advantage. These tasks should be as long as possible, so that pilot skills are tested by having to fly over new and different country.

This task catalogue is based on Annex 4 to SECTION 10 of FAI sporting code as well as the task catalogues prepared for previous World and European paramotor championships. We would like to use this opportunity to thank all the authors of these documents for their work.

1.1   TASK TYPES

Tasks fall into Three Categories:

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

B Fuel economy, speed range, duration. Fuel limited to maximum 15 kg for aircraft flown solo and 22 kg for aircraft flown with two people.

C Precision

The proportion of each task 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 which is not less than 100km for paramotors.

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. Pilots failing to be checked through such gates or who are observed flying a devious path to adjust timing/speed errors may be penalised. No information will be given at briefing on the existence or whereabouts of hidden gates, or the method by which they are controlled.

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 12m (+- 1m) inflatable pylons.

2 Navigation tasks

2.1 PURE NAVIGATION

Objective

To fly a course between as many turn points or markers as possible within the time window and return to the deck.

Scoring

$$P=1000*N_p/N_{max}$$

Where, according to briefing;

Either:

N_p = The number of ground markers and/or turn points a pilot collects in the task

N_{max} = The maximum number of markers and/or turn points collected in the task

OR

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

N_{max} = the maximum distance flown in the task.

P = pilot´s score after normalization

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).

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.

$$Qt = \Sigma \, Hi \text{ (Sum of all gate points)}$$

Where:

E_i = Absolute error in seconds in gate i with a tolerance of 5 seconds and a maximum of 180.

$H_i = 180 - E_i$ (Points obtained in gate i). Time gates not crossed score 0.

Speed score

$$Qv = 200 * T_{min} \, / \, T$$

Where:

T_{start} = Time of crossing SP or time when the pilot starts planning (according to briefing)

T_{fin} = Time of crossing FP

$T = T_{fin} - T_{start}$

T_{min} = Minimum time in the class

Total

$$Q = (Qt) * (1 + Qv \, / \, 1000)$$

$$P = 1000 \times Q \, / \, Qmax$$

Where:

Q = the task value before normalization

Q_{max} = best Q in task

P = pilot´s score after normalization

Task-specific penalties

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   NAVIGATION OVER A KNOWN CIRCUIT

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 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.

Scoring

Hidden gate score

$$Qh = 500 * H / N_h$$

Where

N_h = Number of hidden gates in the task

H = Number of hidden gates correctly crossed (crossed once, in order and proper direction)

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.

$$Qt = 500 \times \Sigma H_i / (180 \times N_t)$$

Where:

N_t = Number of known time-gates

E_i = Absolute error in seconds in gate i with a tolerance of 5 seconds and a maximum of 180.

$H_i = 180 - E_i$ (Points obtained in gate i). Time gates not crossed score zero.

Speed score

$$Qv = 200 * Tmin / T$$

Where:

T_{start} = Time of crossing SP or time when the pilot starts planning (according to briefing)

T_{fin} = Time of crossing FP

$T = T_{fin} - T_{start}$

T_{min} = Minimum time in the class

Total

$$Q = (Qh + Qt) * (1 + Qv / 1000)$$

$$P = 1000 \times Q / Qmax$$

Where:

Q = the task value before normalization

Q_{max} = best Q in task

P = pilot´s score after normalization

Task-specific penalties

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

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

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.

- Departure from view of the marshals or egress from the permitted flight area will incur penalties.

- Land outside the airfield boundary: Score zero. Land inside the airfield boundary but outside the deck: 20% penalty.

Scoring

$$P = 1000 * T_p/T_{max}$$

Where:

T_p = The pilot's time,

T_{max} = The longest time taken to complete the task

P = pilot´s score after normalization

3.2 ECONOMY & DISTANCE

Objective

To take off from the deck with a given quantity of fuel, fly as many sections as possible around a course of one or more sections and land in a landing deck.

Description

Each section must be approximately 1Km in length and must contain a landing deck. Lines of no return are arranged to prevent aircraft flying in the reverse direction to the general flow of traffic.

Special rules

- Pilots must not exceed 200ft height at any time.

- Exceeding the height limitations or failure of the complete aircraft to round a pylon does not score that section.

- Pilots should overtake on the outside of the course, they may overtake on the inside but will not score that section if the manoeuvre is considered to be overly aggressive.

- If the pilot or any part of his Paramotor touches the ground during the task and takes off again, score zero.

- Flying back across a 'line of no return' score zero.

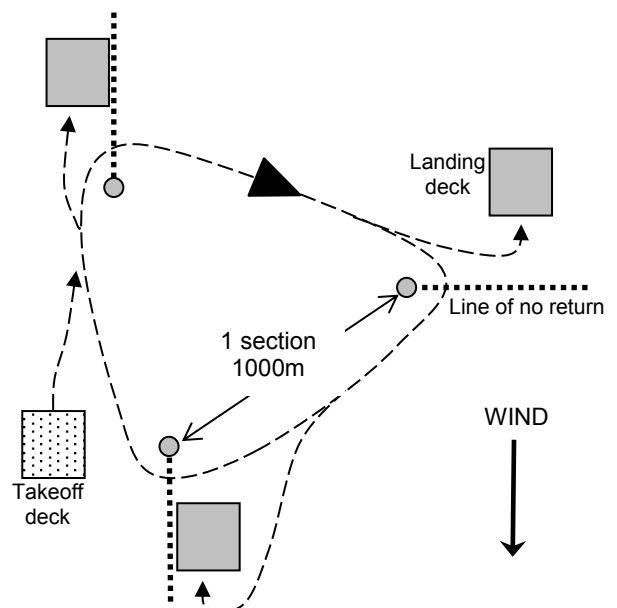- Failure to land in a landing deck: 20% penalty.

Scoring

$$P = 1000 * L_p/L_{max}$$

Where:

L_p = The number of whole sections completed by the pilot

L_{max} = The maximum number of whole sections achieved in the task.

P = pilot´s score after normalization

3.3 SPEED TRIANGLE AND OUT AND RETURN

Objective

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

Description

Fuel quantity allowed: (Suggested: 6 litres)

Part 1: Speed; The pilot take off time is noted. The pilot flies to one or more turnpoints and returns to the deck where he is timed.

Part 2: Distance; The pilot then flies in a given direction 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

$$P = (500 * T_{min}/T_p) + (500 * D_p/D_{max})$$

Where:

T_p = the pilot's time,

T_{min} = The best time (Part 1)

D_p = the pilot's distance

D_{max} = the greatest distance (Part 2)

P = pilot´s score after normalization

3.4 AREA TRIANGLE AND SPEED

Objective

With limited fuel fly a triangular course with the objective of creating a triangle of maximum possible area. The first leg will be scored for speed.

Fuelling

A standard fuelling operation will be performed. Each class will have a designated amount of fuel.

Planning

A single start and finish point (SP/FP) will be given at the briefing.

No quarantine planning nor declaration is required.

Take-off

A standard take-off in open window will be performed. Unless otherwise briefed, pilots will perform a standard deck take-off from their designated deck.

Flight

Pilots will fly a triangle that starts and ends in the SP/FP point. The other two turn-points will be corners of the

triangle which the competitors may choose freely. These two free turn-points will be the points where the two

consecutive sides of the triangle intersect when a precision turn is flown, so the new leg crosses the previous leg.

The area within the triangle created by SP/FP and the two free turn-points points will be calculated to determine the triangle area score.

The first leg, from SP/FP to the first intersection, will be scored for speed. Timing will start at SP/FP and finish at the intersection of the first two legs before the start of the precision turn. Time taken will, therefore, exclude the turn itself.
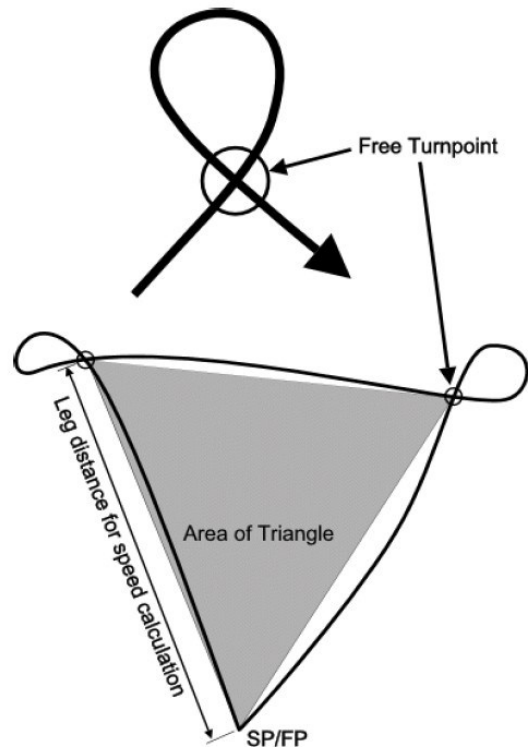
Landing

Landing will be performed inside the briefed airfield boundaries. Immediately after landing pilots will proceed to the quarantine area where a standard fuel check in quarantine will be performed.

Scoring

$$P = (700 * A / A_{max}) + (300 * V / V_{max})$$

Where:

A = Area of the triangle created by the SP/FP point and the first two track intersections.

A_{max} = Largest area in the class

V = Speed measured from SP/FP to the first track intersection

V_{max} = Fastest speed in the class

P = pilot´s score after normalization

Task-specific penalties

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

3.5   THREE LEGS

Objective

Take off with a given quantity of fuel, fly as long distance as possible along the three defined legs.

Fuelling

A standard fuelling operation will be performed. Each class will have a designated amount of fuel.

Planning

A single start and finish point (SP/FP) will be given at the briefing together with 3 turnpoints defining the legs.

No quarantine planning nor declaration is required.

Take-off

A standard take-off in open window will be performed. Unless otherwise briefed, pilots will perform a standard

deck take-off from their designated deck.

Flight

After take-off pilots will cross the SP/FP and fly as far as possible along three consecutive legs. Each leg starts at SP/FP point. Order of legs is up to pilot´s decision.

Scoring

$$Q = D_1 * D_2 * D_3$$

$$P = 1000 * Q/Q_{max}$$

Where:

D_1 = pilot's distance measured in straight line between SP/FP and the most distant point in the leg 1 (within the corridor)

D_2 = pilot's distance measured in straight line between SP/FP and the most distant point in the leg 2 (within the corridor)

D_3 = pilot's distance measured in straight line between SP/FP and the most distant point in the leg 3 (within the corridor)

Q = the task value before normalization

Q_{max}=best Q in task

P = pilot´s score after normalization

Task-specific penalties

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

4 Precision tasks

4.1   PRECISION TAKE-OFF

Objective

To make a clean take off at the first attempt in the deck.

Description

The pilot is permitted three takeoff attempts.

Special rules

- The pilot scores 250 points for a clean take off at the first attempt, 170 for the second, 90 for the third, zero for the fourth.

Scoring

Pilot score = Takeoff points:

1.attempt: 250 pts.

2.attempt: 170 pts.

3.attempt: 90 pts.

More attempts: zero
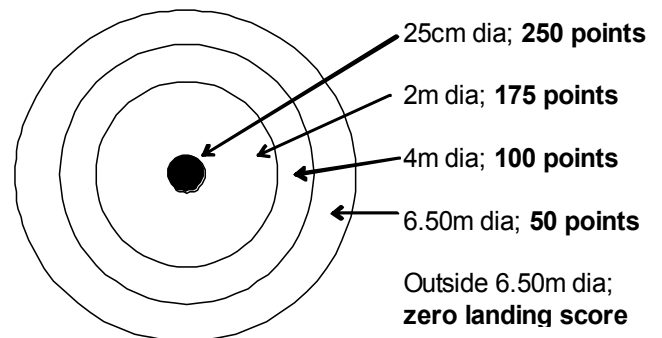
4.2   PRECISION LANDING

Objective

To land as near as possible to a target.

Description

The pilot climbs to 500ft overhead the target, cuts the engine before passing through a gate 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

25cm dia; **250 points**

2m dia; **175 points**

4m dia; **100 points**

6.50m dia; **50 points**

Outside 6.50m dia; **zero landing score**

This task may be split to separate Precision take-off and Precision landing tasks.

This task may be conducted as a part of landing process after another task has been completed.

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.

- Contestants will be awarded a zero score if the pilot or any part of the aircraft touching the ground outside the deck while undertaking the task.

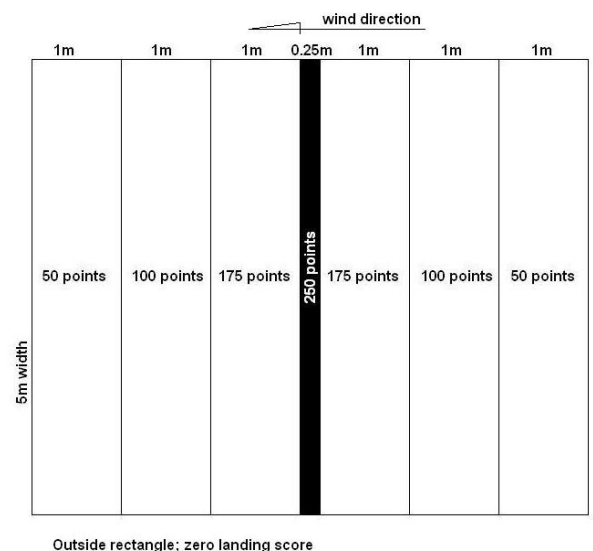- Contestants will be awarded a zero landing score for:

Engine not stopped before the gate.

Gate not passed correctly.

Falling over as a result of the landing.

Scoring

Pilot score = Landing points

Outside rectangle; zero landing score

4.3   PRECISION SHORT LANDING

Objective

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

25cm dia; **250 points**

2m dia; **175 points**

4m dia; **100 points**

6.50m dia; **50 points**

Outside 6.50m dia; **zero landing score**

Description

The pilot climbs to 500ft overhead the target, cuts the engine before passing through a gate 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
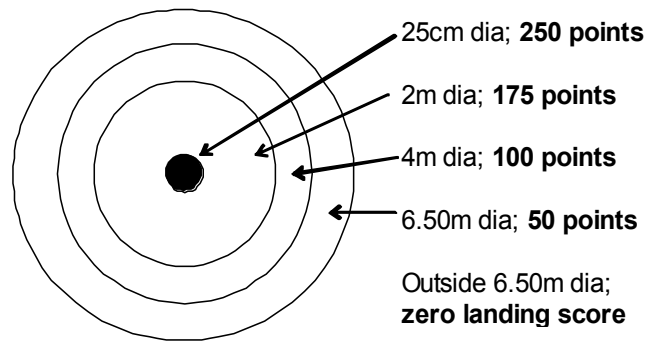
Once the pilot has made their first touch for scoring, they must come to a complete standstill within a stopping boundary. This will be defined by:

- 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.

- Contestants will be awarded a zero score if the pilot or any part of the aircraft touching the ground outside the deck while undertaking the task.
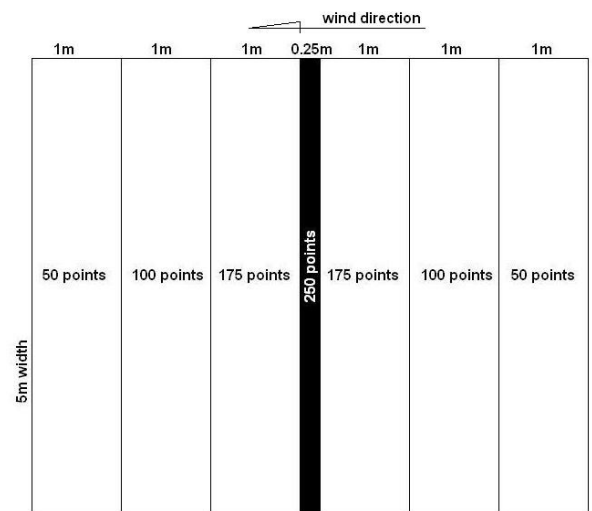
- Contestants will be awarded a zero landing score for:

Engine not stopped before the gate.

Gate not passed correctly.

Falling over as a result of the landing.

Outside rectangle; zero landing score

Scoring

Pilot score = Landing points

4.4 PRECISION CIRCUIT IN THE SHORTEST TIME ('CLOVER LEAF 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

- At the corners of a 70.71m square for PF1 and PL1 classes.

- At the corners of a 100m square for PF2 and PL2 classes.

A fifth target is set at the centre of the square.

The pilot enters the course and strikes the target T (strike 1). At this point the clock starts. The pilot flies around pylon 2 and returns to kick the stick T (strike 3), he then flies around pylon 4 and returns to kick the stick T (strike 5). This continues until all four pylons have been rounded. The clock stops when target T is kicked for the last time (strike 9).
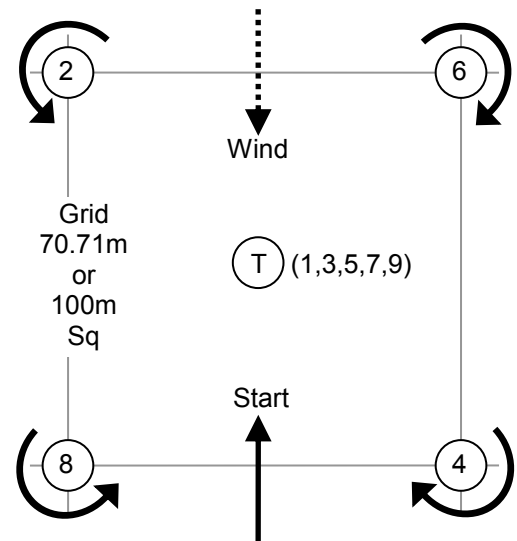
Special rules

- A valid strike on the target T is:

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

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

- To count as a strike, the pilot's body must be clearly seen to round each pylon and pylons 2 & 8 must be rounded in an ANTI CLOCKWISE direction and pylons 4 & 6 must be rounded in a CLOCKWISE direction.

- A strike on target 1 starts the clock, a strike on target 9 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.

- Failure to strike the first or last target or round at least one pylon or touch the ground at any point between them: score zero.

- The grid may be opened up to max. 100M at the briefing if the meterological conditions dictate.

Scoring

$$t_{pen} = t_{pil} + m * v_{pen}$$

$$Q = \left(\frac{t_{best}}{t_{pen}}\right)$$

$$P = 1000 * Q/Q_{max}$$

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
Q_{max} = best Q in task
P = pilot´s score after normalization

4.5 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

- 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 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- When targets are acting as pylons, to count as a strike, the pilot's body must be clearly seen to round it, pylons 1 & 3 must be rounded in a CLOCKWISE direction and pylon 2 must be rounded in an ANTI CLOCKWISE direction.

- A strike on target 1 starts the clock, a strike on target 9 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.

- Failure to strike the first or last target or touch the ground at any point between them: score zero.
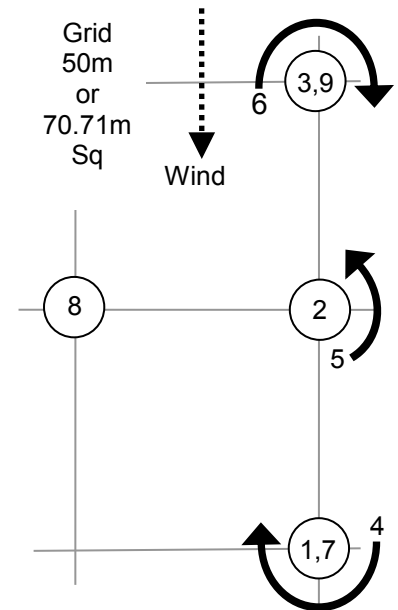
Scoring

$$t_{pen} = t_{pil} + m * v_{pen}$$

$$Q = \left(\frac{t_{best}}{t_{pen}} \right)$$

$$P = 1000 * Q / Q_{max}$$

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
Q_{max} = best Q in task
P = pilot´s score after normalization

4.6 FAST/SLOW SPEED

Objective

To fly a course as fast as possible and then as slow as possible (or vice versa).

Description

A straight course consisting of four equally spaced 'kicking sticks' between 150m and 300m long is laid out facing approximately into wind.

The course shall be flown twice. The order will be briefed (fast then slow or slow then fast).

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

There may be two courses but they must be of equal dimensions and orientation and separated by at least 200m flying distance.

Special rules

- A valid strike on a stick is:

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

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

- For each 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% course score for each stick missed.

- The maximum time allowed for a pilot to complete each course is 5 minutes.

In the slow course;

- 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;

- If the pilot or any part of his Paramotor touches the ground: Vp1 = zero and Ep = zero

- The pilot may have three attempts at kicking the fourth stick.

$$\text{Pilot score} = \left(0.25 \times Q \times \frac{Vp_1}{Vmax}\right) + \left(0.25 \times Q \times \frac{Vmin}{Vp_2}\right) + \left(0.5 \times Q \times \frac{Ep}{EMax}\right)$$

Where:

    Q = Maximum task score between 500 and 1000 points, as briefed.

    Vmax = The highest speed achieved in the fast course without penalties, in Km/H

    Vp1 = The speed of the pilot in Km/H in the fast course.

    Vmin = The lowest speed achieved in the slow course without penalties, in Km/H

    Vp2 = The speed of the pilot in Km/H in the slow course.

   Ep = The difference between the pilot's slowest and fastest speeds, in Km/H

    Emax = The maximum difference between scored slowest and fastest speeds after penalties, in Km/H

4.7 ROUND THE TRIANGLE

Course description

The course consists of 4 sticks to be kicked and another stick or pylon as a turn point.

The distance from stick 1 to 2 is 70.71 m, the side of the equilaterlal triangle is 60 m, and the distance between stick 2 to turnpoint 6 is 50 to 200 m.
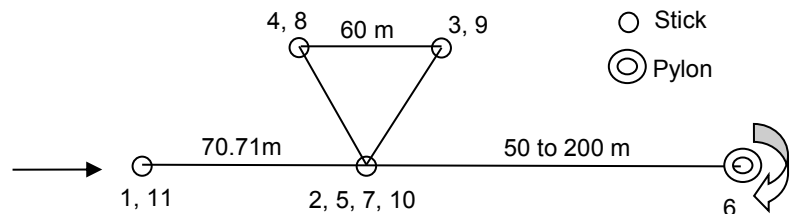
Flying the course

The pilot enters the course as indicated by the arrow and strikes the first target (strike 1). At this point the clock starts. The pilot flies kicking the sticks in the triangle (strikes 2, 3, 4 and 5), then ckockwise around pylon 6, returns to kick the sticks in the triangle (strikes 7, 8, 9 and 10) and then back to the initial stick (strike 11) The clock stops on strike 11.

Detail 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 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- The pilot's body must be clearly seen to round pylon 6 clockwise.

- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.

Scoring

$$t_{pen} = t_{pil} + m * v_{pen}$$

$$Q = \left(\frac{t_{best}}{t_{pen}} \right)$$

$$P = 1000 * Q/Q_{max}$$

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
Q_{max}=best Q in task
P = pilot´s score after normalization

Penalties.

Touch the ground at any point between first and last strikes: Zero score.

Any part of the aircraft crosses the crowd line or dangerous flying: DSQ

4.8   THE EIGHT

Course description

The courses consists of one central stick 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 kicks the stick (strike 1). At this point the clock starts. The pilot flies around the pylon ahead of him clockwise (strike 2), then kicks the stick (strike 3), then the other pylon counter clockwise (strike 4) and kicks the stick (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.
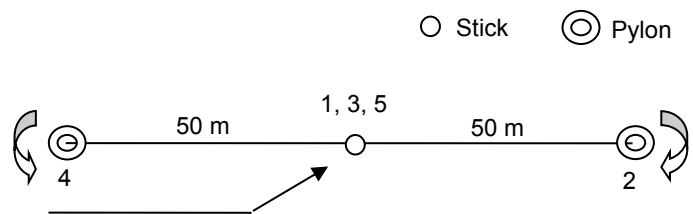
Detail rules

- 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 'kick stick' sensors which have been shown to meet the standard tests are used, a valid strike is one which is recorded by the device.

- The pilot's body must be clearly seen to round the pylons clockwise or anticlockwise as indicated.

- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.

Scoring

$$t_{pen} = t_{pil} + m * v_{pen}$$

$$Q = \left(\frac{t_{best}}{t_{pen}}\right)$$

$$P = 1000 * Q/Q_{max}$$

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
Q_{max}=best Q in task
P = pilot´s score after normalization

Penalties.

Touch the ground at any point between first and last strikes: Zero score.

Any part of the aircraft crosses the crowd line or dangerous flying: DSQ

4.9 THE PYLON SQUARE

Course description

Course consists of start gate finish gate and two to five pylons based on a standard configuration as shown in the diagram.

Flying the course

Pilot enters the course through the start gate, then he follows the course as briefed and leaves through the finish gate.

Detail rules

Every part of the aircraft must be clearly seen to round the pylons clockwise or anticlockwise as indicated at the briefing.

Pilots may have only one attempt at rounding each target except first and last targets where three attempts at each are permitted

The start and finish gates may be set inside or outside the square. The position will be briefed before the start of the task.

For the purpose of scoring, the start gate and the finish gate are not counted as targets.

Scoring

$$Q = \frac{N^3}{T}$$

$$P = 1000 * Q/Q_{max}$$

Where:

N = number of pylons rounded in correct order and correct direction of turn
T = time from passing the start gate to passing the finish gate in 10ths of seconds if timed manually or 100ths of seconds if timed electronically
Q = the task value before normalization
Q_{max}=best Q in task
P = pilot´s score after normalization

Penalties

The top surface of the wing may touch the pylons, if any other part of the aircraft touches the pylon that pylon shall be deemed to have not been rounded correctly. This provision is to make allowance for the pylon moving due to the wind, wake turbulence or the venture effect.
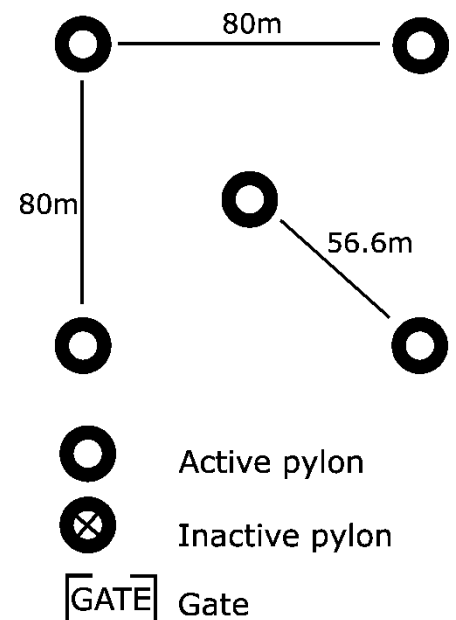
4.10 BOWLING LANDING

Objective

Land without engine, hitting as many pins as possible.

Wind

Description

5 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. They can simply stand on the ground or can be attached to a spring system like that of the kicking sticks. A pin is said to be hit when it is clearly seen by a marshal or electronic sensor, or when the pin falls down.

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

Landing pins

They will fly a minimum of 30 seconds and will try to hit as many pins as possible before touching the ground. Each pin hit before touching the ground will score 50 points (maximum 250 points).

This task may be combined with a precision take-off.

Scoring

Pld = 50 points for each pin hit (maximum of 250 points)

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.