



# International *Moth* Class

## Foiling Fleets

### Championship Race Management Guidelines

These guidelines replace the previous guidelines from 2017, updated 2024. Since then, the International Moth has seen through continued innovation in design, foil development and improved sailing techniques significant speed increases. These have not only made it more challenging to sail the Moth, but also more challenging to conduct Moth regattas. The guidelines are concentrating on topics that are Moth-specific, in particular courses and the Grand Prix finishing. For race officers without experience of Moth regattas, the Grand Prix finish is probably one of the most challenging parts of the race management for this class.

The aim of these guidelines is to help to conduct regattas that are fair and enjoyable for both the top sailor and the average weekend warrior. Hopefully the guidelines can also help to reduce the risk of collisions, which must be considered when boats are racing close with speeds of 20 - 25 knots.

Experienced Moth sailors from several countries have been involved in the work with these guidelines. In particular David Campbell-James, Tim Hancock, Scott Babbage and Hans Rasmussen; their words have been used throughout the document.

#### January 2023

*These guidelines are published for sailors, coaches and race officers as guidelines on how racing will be conducted, they are not rules. Failure to follow these guidelines is not grounds for redress..*

#### General Principles

- Races will not be started in winds of less than 5 6(six) knots but this may be increased to 6 8(eight) knots in rougher sea conditions. In addition, racing should NOT be started or continued if less than 50% of the fleet are foiling more than a 3 minute period.
- Races, once started, should only be abandoned if racing becomes unfair through lack of wind or large changes in wind direction. If less than 50% of the fleet are foiling for more than a 3 minute period the race officer should abandon the race.
- Moths should not race in winds averaging more than 25 knots, or with gusts over 30 knots, but this average may be reduced to 22 knots in rough sea conditions.
- No more than 75 boats should race in any fleet and only one fleet should race on the same course at the same time.
- The Race Committee should try, where possible, to avoid long waiting periods on the water particularly in heavier winds, preferring to wait on the shore rather than on the water
- Bow numbers may be used, but it is essential that the sail numbers are clearly visible and of contrasting colour to the sail.

*The indicated limits for weather restrictions was determined based on class voting in 2024, and it is noted that subjective wind limits **MUST** not be used. Any change to the indicated wind limits will require approval from the executive committee.*

#### Race duration

The target time for each race should normally be 20 -25 minutes. The Moth class aims to run multiple races per day, typically 3. This can be increased to a maximum of 4 races, if required. **Try to avoid consecutive race days where there are 4 races per day, especially if there is a long passage to the race area.**

The time between finishing one race and starting the next should be kept to a minimum. The target time should be 5 minutes from the last boat finishing to the orange attention signal for the next start, with not less than 2 minutes to the warning signal.

### **Weather conditions impact on the fleet**

A Moth is challenging to sail and this significantly increases with wind strength and sea state. Whilst wind strength is a factor in deciding whether to race or not, the sea conditions significantly impact on this and is often the key factor. Racing in higher winds and flatter water can be easier than less wind and short steep chop. The fleets ability to deal with the conditions will vary significantly with the influencing factors being ability and equipment. In general, Moths should not race in winds averaging more than 25 knots, or with gusts over 30 knots, but this average may be reduced to 22 knots in rough sea conditions.

Skill and equipment is also a key factor for the ability to get on foils at low wind speeds. **But starting in marginal conditions should be avoided. A few boats will be able to foil away from the starting line, the rest of the fleet will struggle to get on foils because of wind disturbance.** Moths can foil in a breeze with an average of 6 knots provided there are gusts above in order to initiate foiling. Therefore, races **shall should** not be started in **average** winds of less than 6 knots.

### **Courses**

The recommended courses (see attachments):

- Windward / leeward with windward and leeward gates (L)
- Windward / leeward with offset mark and leeward gate (LA)
- Windward / leeward with windward mark and leeward gate (L)

The preferred course is the L course with windward and leeward gates but as an alternative, LA is the next best course to use for the class. Only one of the two L course option should be included in the Sailing Instructions and used at any event.

The courses can be 2 or 3 laps, depending on available space, weather conditions and the regatta teams experience with the lap counting procedure (see under "Grand Prix finishing"). A 2 lap race is preferable particularly for fleets in excess of 40 boats.

An indication of course length is that in foiling conditions a Moth will sail a 1.2 nm windward/leeward course in approximately ten to twelve minutes. To meet the target time of 20 - 25 minutes, a course of up to 1.3-1.4nm may be required, this can cause challenges depending upon the venue.

The advantage of gate courses is that the boats will be more likely to use both sides of the course. Without gates, the left-hand side looking upwind will always be favoured. Another advantage of the windward gate is that a boat that understands their chosen windward mark, can go for the other mark in the gate. This means that only one tack instead of two is required. A standard gate width of 75 metres should be used, but this should increase to 80-100m when the wind is above 18 knots – particularly the leeward gate.

Another topic to consider is the lap counting procedure. It is imperative that the position of each boat is registered each time it passes the leeward mark or gate (see paragraph "Grand Prix finishing"). This is normally done by the staff on the race committee boat. This is of course more challenging on a gate course, where two or more boats can be passing the gate marks more or less simultaneously, than on a course with only one leeward mark.

The gate marks should be laid square to the wind, the distance between them should be 80 meters. This distance should be increased in rougher sea conditions, or with large fleets.

If no windward gate is used, the distance between the windward mark and the offset mark should be at least 60 meters. The offset mark should be smaller than the windward mark and preferable a different colour and/or shape.

To summarise:

- Gate courses are tactically more interesting because the fleet will be more spread out on both sides of the course.
- The lap counting procedure is more challenging on gate courses.
- 3 laps are more challenging for the fleet than 2 laps because of more mark roundings.
- 3 laps makes the lap counting procedure harder for the race committee team than 2 laps.
- To reduce the risk of collisions, 3 laps should be avoided in rough conditions.

## Starting

The U flag should be used as the initial starting flag. If the line is good with the fleet spread on the line, and there is a general recall, then the restart can be on the black flag. If the line is not good and there is bunching at one end of the line, then the start line should be adjusted and the restart should again be on the U flag. If a black flag is used and the line is still biased, or there is a wind shift, then the AP should be used rather than a general recall. The first start should only ever be a black flag, if the time to get racing completed is limited.

## The starting line

Because of the high speed, a Moth will sail a lower course upwind than most other boats. If the starting line is biased towards the pin end, as it might be seen in other boat classes, the Moths will have difficulties getting over the starting line on starboard tack. This will mean that some of the boats will make port tack starts, thus increasing the collision risk. Therefore, pin end biased starting lines should be avoided. The starting line should be square, or even slightly starboard end biased. The bias should be larger in light winds, where the benefit of foiling at the start are greater. Local conditions might also influence the size of the bias that is required to avoid port tack starters.

The recommended length of the starting line should be 1.5 times the length of the boat (4.4 metres x 1.5) times the number of boats, so for 25 boats the line should be 165 metres, but this may be increased in heavier winds to around 2 x the number of boats x boat length. There should be a pin end committee boat with good anchors, plenty of warp and with a large orange flag close to the bow of the boat. There should be no possibility of a boat's foils catching the anchor warp of the pin end boat, so a counterweight should be used on the warp.

## Grand Prix finishing

In the Moth class, there can be large differences in speed between the most experienced sailors and the least experienced sailors. It is not unusual in a race where the leader completes 3 laps, for some boats to complete only 1 lap. To avoid long waiting times for the experienced sailors, and not discourage the less experienced sailors, the Grand Prix finishing system should be used. The aim of the Grand Prix finishing system is to make sure that every sailor who finishes at least one lap, will get a score.

When the first boat has crossed the finish line, the committee boat should make a long sound signal and display a chequered flag (or similar as detailed in the sailing instructions), to indicate that the finishing line is "open", and the "Finishing Time Window" has begun. This flag should be large, to make it easy to see for the approaching boats. All subsequent boats should cross the finish line irrespective of whether they have completed all laps and will be scored according to their position and the number of laps they have sailed. Boats that fail to cross the finish line within the Finishing Time Window, will get a score based on their position the last time they rounded the leeward gate/mark.

The wording in the sailing instructions should be:

*"When the leading boat completes the course and finishes, the Race Committee signal boat will immediately display a chequered flag (or similar as detailed in the sailing instructions) with a long sound signal. This indicates the Finishing Time Window is now open. From this time, all boats shall cross the finishing line. All boats that cross the finishing line within 15 minutes after the leading boat has finished, shall be deemed to be finished irrespective of number of laps they have completed. Their position in the race will be noted from their finishing order and number of completed laps, with those having the most laps being recorded ahead of those with less completed laps. Boats that have completed 1 lap shall be ranked behind boats that have completed 2 laps and boats that have completed 2 laps shall be ranked behind boats that have completed 3 laps. If a boat after the Finishing Time Window has opened sails one more lap, this will not count as a completed lap in the scoring. This changes RRS 28.1 and A5.*

*Boats failing to cross the finishing line to complete one lap, within the Finishing Time Window, will be scored Did Not Finish without a hearing. This changes RRS 35, A5.1 and A5.2”*

Operating the Grand Prix finishing system is one of the most challenging tasks of conducting Moth regattas. The effective implementation will require:

- 1 or 2 race committee members to record each boat through the leeward gate and when the first boat finishes each boat crossing the finishing line. Recordings should also be made using a digital voice recorder.
- After completing the finishing a final finishing list is producing taking account of the number of laps sailed by each boat.
- Any queries can be checked from the digital recording.

### **Time limit**

If no boat has completed 1st lap within 25 minutes, the race shall be abandoned, except in conditions where the boats are lowriding where the time should be increased to 35 minutes.

### **Finishing Time Window**

The finishing time window is normally set at 15 minutes. This can be expanded by the race committee if there is a potential for a lowriding race.

### **Finishing line**

The finishing line should be positioned off the bow of the starting committee boat, to the starboard mark of the leeward gate. The length of the finishing line should be 60 metres.

### **Size of fleets**

No more than 75 boats should race together at the same time and if necessary, the fleet should be divided into groups. Only with prior agreement with the class, should this number be exceeded.

### **Foil change**

A boat shall not change its rudder, dagger board or the T-foils on them whilst afloat. The change may only be made in the launching area/ashore. A boat wishing to change foils shall sail to the launching area/ashore and back without help. In case of breakage, assistance to get to and from the launching area is allowed. This should be written in the NoR and/or the Sailing Instructions.

### **Equipment rule**

~~It is only allowed to use TWO sets of the following equipment during a championship – Sail, mast, boom, rudder with foil, daggerboard with foil. In case of breakage, it is allowed to replace broken equipment. This should be written in the NoR and/or the Sailing Instructions.~~

Competitors are only allows to use a maximum of two sets of the following equipment, per instance, during a championship.

- 2 Sails
- 2 Mast tips and 2 mast bases. (a one piece mast will be considered to be a mast tip and a mast base)
- 2 main verticals per application
- 2 main horizontals per application
- 2 rudder verticals per application
- 2 main rudder horizontals per application

The wording above allows a boat as a hypothetical example, that by design sails with twin rudders, the option to have 4 rudders, 2 for each application. The same concept applies to all foils.

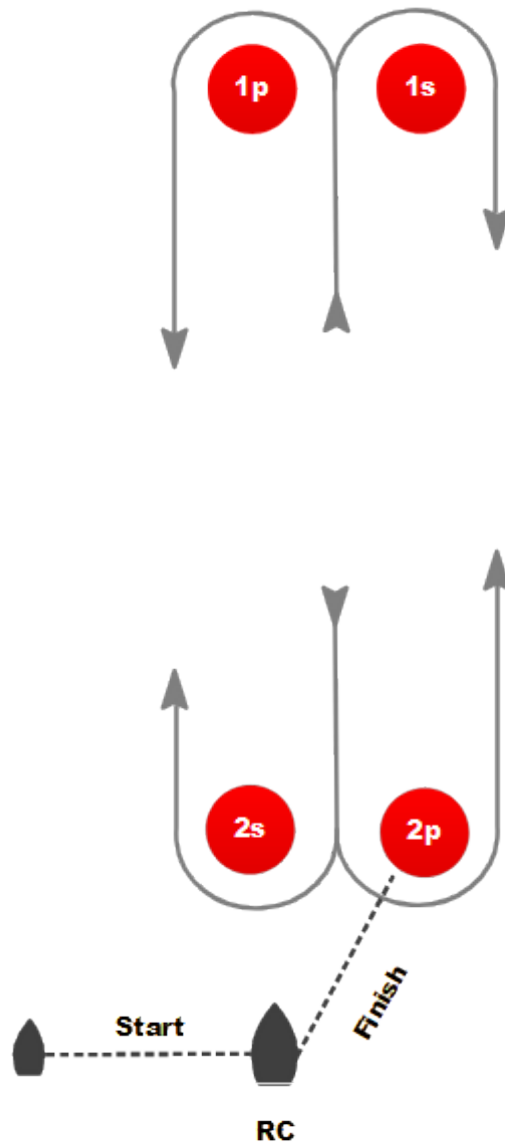
### **Removable Ballast**

Vessels may be fitted with Ballast on the hull, wings and foils only, however ballast can not be added or removed whilst afloat, and can only be changed while the vessel is ashore at the launching area. A vessel may not receive assistance to return to shore in order to change weights.

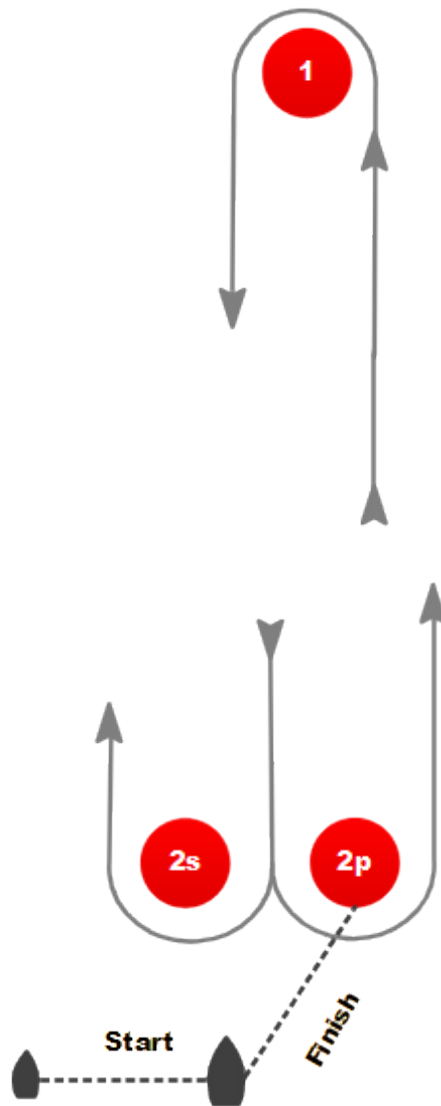
Ballast in the rigging, including ballast inserted in the mast and/or boom is considered to be movable ballast that may affect the vessel trim or stability, and therefore not permitted under Racing Rule of Sailing: Rule 51.

## **CHAMPIONSHIP COURSES**

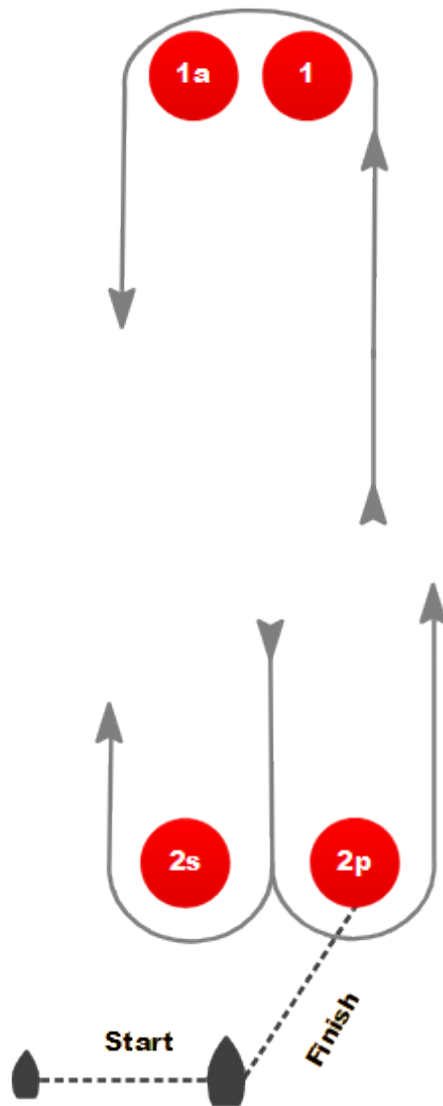
<b>L</b>	<b>COURSE: WINDWARD / LEEWARD</b>
<b>Signal</b>	<b>Mark Rounding Order</b>
<b>L2</b>	<b>Start - 1s/1p - 2s/2p - 1s/1p - Finish between RC and 2p</b>
<b>L3</b>	<b>Start - 1s/1p - 2s/2p - 1s/1p - 2s/2p - 1s/1p - Finish between RC and 2p</b>



<b>L</b>	<b>COURSE: WINDWARD / LEEWARD</b>
<b>Signal</b>	<b>Mark Rounding Order</b>
<b>L2</b>	<b>Start - 1 - 2s/2p - 1 - Finish between RC and 2p</b>
<b>L3</b>	<b>Start - 1 - 2s/2p - 1 - 2s/2p - 1 - Finish between RC and 2p</b>



<b>LA</b>	<b>COURSE: WINDWARD / LEEWARD with offset mark</b>
<b>Signal</b>	<b>Mark Rounding Order</b>
<b>LA2</b>	<b>Start - 1 - 1a - 2s/2p - 1 - 1a - Finish between RC and 2p</b>
<b>LA3</b>	<b>Start - 1 - 1a - 2s/2p - 1 - 1a - 2s/2p - 1 - 1a - Finish between RC and 2p</b>





## COURSE SET UP

<b>INTERNATIONAL MOTH START LINE, FINISH LINE and LEEWARD GATE Course Configuration</b>	
<b>START LINE</b>	8 x number of starters
<b>FINISH LINE</b>	60 metres
<b>LEEWARD GATE WIDTH</b>	80 metres
<b>WINDWARD GATE WIDTH</b>	80 metres

All lengths increased in windier conditions

