



International Moth Class Rule Changes – 2012

From the IMCA Rules Working Group

Introduction:

Following resolutions agreed upon at the 2011 AGM, a Rules Working Group was formed with the remit to investigate the legality of solid wing sails, come up with proposals to amend the rules to allow wing sails and at the same time do a general tidy up of the rules to ensure that the majority of the current fleet remain truly legal as the boats are sailed today, whilst also eliminating unnecessary rules and tighten up rules where required.

This document intends to summarise the main changes with a little background, and then goes into more detail, listing every change in wording, spelling, punctuation or grammar.

The working group's general philosophy with these proposed rule changes is to keep the intentions of the current rules the same, and tighten up on some areas of the rules that were not very clear or open to interpretation. It is intended that the vast majority of current boats would still measure under these new rules, and few will actually notice a change.

Overview:

The incentive for a review of the rules was the appearance of some solid wing rigs within the class, but there had been concerns over a number of areas of the class rules for several years, and the wings were a catalyst for a much-needed update.

The main areas of concern are:

- The variability of sail area with differing rig styles.
- Treatment of solid wings & the one sail rule.
- Luff length & growing head angles.
- Rudder gantries.

Sail Area:

The original intention of the sail area rule within the class was to limit the total effective area of all items that propel the boat. Over the years with different rig configurations being developed the rules have been amended to try and take account of these, but they now leave us in the current position where you have different effective areas depending on the configuration chosen;

- Round mast and boltrope sail: ~50mm mast + 8m² sail.
- Sleeve luff sail: 8.26 m² total area before the 50mm x luff length pocket allowance.
- 90mm Wing mast: 8.46 m² total area due to the 90mm wing mast being able to fit through a 90mm ring, and then fitting a 8m² sail to it.
- Solid wing sail or large chord wing mast: Either 8.46 m² or 8.0 m² depending on how you interpret the word "part" in rule 9.5.

This is a large topic, and the area that required the most work. We currently have a number of area options available depending on the mast and sail combination used which is not ideal, so we need to move towards a clear system of measuring the rig area. Our new sail/rig rules need to be flexible enough to accommodate a wide variety of rigs.

One Sail:

There was much debate amongst the Rules Working Group about the interpretation of this rule with regard to two element solid wings, and other possible configurations. Technically a two element wing could be argued to be within the rules because it features a structural front element (which can feature some measured sail area) and has a 'sail' portion set behind it. With many of these items not defined in our existing rules though it became complex.

For the purposes of considering the rules moving forwards, the reality is that the intention of the Moth class rules is to have one sail. A two-element wing is using two aerodynamic sections in close proximity to gain a performance advantage (commonly referred to as the 'slot effect') not achievable using a single sail or aerofoil section. If we wish to remain true to the one sail spirit of the class, this should be reinforced. The intention of this rules revision is to limit rig configurations to single sail or aerofoil element only. Vertical slots would not be permitted, but articulated solid wings would be allowed as a method of achieving camber in a solid section. The wording of this is hard to achieve though and may not cover every conceivable configuration at this time. It therefore may require further revision, or updates in the measurement manual as we move forwards.

Luff Length:

There are two areas of concern with the luff length/measurement band rule at the moment. Firstly the current trend with the soft sails is to increase the amount of sail that is actually above the mast. Some is required for structure, but it is being pushed a bit too far. This extra is proposed to be deducted from the allowable luff length. Secondly is the option of restricting excessive head angles. A potential area of concern with growing head angles, and the ability of solid wings to exploit this. It is intended that rigs are of the same basic shape, so that rigs fit essentially inside a box.

Rudder Gantries:

When sailing slowly most gantries touch the water. While most are not designed to increase the waterline length of the hull as they are set away from it, modern gantries are being faired to reduce their drag when they do encounter the water, and offer lower windage when foiling. The line between fairing for reduced drag and increased waterline length is blurred and needs clarification. The plan is to limit gaps outside of the structural attachment to the hull of not less than 30mm.

Summary of Changes:

The intention is to measure the whole driving area of the sail plan above the lower measurement band. Any previous luff allowances are gone, there is a head angle rule to limit head angles, and the mast below the lower band shall pass through a 90mm ring like the boom. Where possible the existing rule wording remains for familiarity, however many rules have been tidied up.

The wording of the wing single element rule may require further work in the future, but being specific to solid wing sails many of the 'but what about' soft sail configuration questions are covered as long as they satisfy the one sail rule.

Key changes include:

- The boat shall carry only one sail when racing, with the total measured area of sail and mast being not greater than 8.25m². For the purpose of this rule, only the mast area above the lower measurement band shall be measured, unless the mast is enclosed by the sail. The area of any boltrope or footrope is excluded from the overall sail area.
- Sail area shall be measured by triangulation in the case of soft sails or via the half girth method for wings or wing masts in accordance with the IMCA Measurement Manual. *(Which will include portions of the ISAF Guide to sail measurement).*
- In line with the one sail rule, wing sails if used shall be of a single element configuration only.

- In order to limit extreme head angles, the head angle shall not exceed 110 degrees.
- If the sail extends above the top of the mast the lower band shall be located 5185mm below the top of the luff of the sail when it is set on the mast.
- Any boom section, or mast spar below the lower measurement band shall be capable of passing through a ring of 90mm internal diameter, excluding fittings. The area of these items shall not be included in the total measured area.
- The pre 2005 sail rule references are removed (measuring triangular sails)
- Sail numbers to be increased in size to assist with identification on the racecourse with a grandfathering on current sails.
- To reduce fairing of a gantry to the hull it shall be at least 30m away from the hull except at the structural connection points to the hull.
- Definitions have been updated and now include references to the standard ISAF Equipment Rules of Sailing where applicable.

Appendix A - Specific Changes:

Title Block:

Previous revisions & effective date of changes updated.

Colon added after *Authority*, *Date of International Status*, & *Previous Revision* to match the use of one after *Effective Date*.

Layout of the rule:

Section A: Administration (To contain current rules 1-4)

Section B: Specification of an International Moth (Rules 5 - 12)

Section C: Definitions

Note: In line with conventional practice, definitions are to be highlighted in bold throughout the rule where used.

Numbering:

Currently we have a section title, and then list points under that from 1 onwards. The correct format is to use the title number and then the point below that as *title.number*. In the current rules we actually change to this format for rule 11 and 12, having not used it elsewhere in the rule.

1.1

The Moth class rules are open class rules. It is proposed to add the following line to the opening sentence in accordance with ERS definitions. *“and these rules are open class rules”*.

Remove the word “class” before rules. They’ve just been introduced with the full correct phrase, there is no further need to use “class rules” rather than just “rules” which is more commonly used throughout the whole document.

1.3

IMCA acronym added after the first use of “International Moth Class Association” in the main body of the text. Full stop added to the end of the sentence.

Replace “make” with “issue”, remove “the” from in front of ISAF, and add a comma mid-sentence so the full text reads: “The International Moth Class Association (IMCA) may issue interpretations, which must be ratified by ISAF before coming effective.

1.4

Remove “the” from in front of ISAF.

1.6

Improve the English in the sentence so that it now reads:

“Neither ISAF nor the IMCA accept legal responsibility with respect to the rules, or any claim rising therefrom.”

2.1

“World Association” removed from the text, and IMCA used on its own.

At the first use of AGM add “Annual General Meeting” in front.

Remove both uses of “and minuted”.

Remove “the” from in front of ISAF. Add a “the” in front of IMCA World Secretary.

2.4

Amend “direct” to read “directly”.

In final sentence replace “on” with “upon” and “sale” with “delivery”. In reality the plaque will be delivered with the boat, not at the moment of sale which could be many weeks apart.

2.5

Proposed new wording for first sentence to shorten rule slightly.

Rule 2.1 (Part A, B or C) mentioned specifically instead of just referring to rule 2.

3.2

Replace “owner” with “competitor” and start the sentence with “Each” instead of “The”. This keeps us in line with the language used in the ISAF RRS.

3.3

Add “boat’s” in front of ICF plaque to clarify the sentence.

Change “boats” to “competitors” in the line about World Championship finishing position sail numbers. It is intended that the sailor keeps the number, not the boat, as this would lead to confusion when boats are sold on.

3.4

This rule has been in for a few years now, and it should now be compulsory that the sail number shall be the plaque number, and thus this rule is proposed to be deleted. The current ISAF Plaques are number of countries old numbering systems (particularly GBR) and there is a need to have unique identifiers.

3.6

Proposed to remove this rule. Very few people actually submit a boat name for their boat officially anyway, so it is impossible to police.

3.7

Change to formatting with “certification control” and “fundamental measurement” in bold as they are defined terms. Reference to the proposed boat name removed.

3.8

Propose to delete this rule as it is an administrative procedure and can be clarified within the class measurement manual, or constitution.

3.9

Replace “at all times” with “when racing”, and “owner” with “competitor”. This keeps us in line with the language used in the ISAF RRS.

3.10

Remove “the” from in front of ISAF and include a comma there.

3.11

Remove the reference to the sail number as the ICF plaque number will be the sail number.

4.1

Finish the first sentence after “equipment” to avoid the multiple use of and. Amend the final sentence to read “The measurer shall sign the declaration form that the boat complies with the class rules.

4.2

Replace “he” with “the measurer”.

Amend the phrase “anything which” to “anything that”.

4.3

Small text changes to replace “themselves” and “they” with “the measurer”, and the associated grammar along with that. Add in the word “otherwise” in between “is” and “an” near the end of the sentence.

4.4

Correct the spelling of “representative”.

4.5

This is a redundant rule as it has already been covered by rule 3.9. Proposed to delete.

4.6

Correct the spelling of “committee” and “representative”. Add a hyphen to re-measurement. Replace “liable” with “subject”.

5.1

Remove the sentence about where copies of the class insignia can be found, and add to the first sentence “to the pattern held by the ISAF and IMCA.” An up to date CAD file and various image files of the class insignia will be made available on the IMCA website. If it is widely available they is no need for the second sentence, which actually doesn’t give any real further information.

5.2

Delete the text “national letters and sail number or the” as the plaque number is the defining number.

Rule 3.3 states: “*The sail number shall be the same number as the ICF plaque preceded by its national letter*” so it is not appropriate to mention national letters and sail number within rule 5.2, when they are previously defined as being part of the same thing. Rule 5.2 only needs to refer to the ICF Plaque number. The country code should not be applied as this is more information than on a typical plaque and isn’t very helpful for boats sold on overseas.

5.3

The Race committee at the Belmont Worlds found that sail numbers were illegible in the middle of the long start line and when approaching the gate and finish at high speed. It is proposed to change to ISAF spec 300mm high numbers used by small boats from 3.5m – 8.5m length. At the moment we use the lower limit of 230mm minimum height in accordance with our hull length. The last sentence

would be added to avoid a wholesale immediate change of the world fleet. Add in the phrase “This changes rule G1.2(b).” as this is required by RRS rule 86.1(c).

6.1

Replace the word “attached” with “removable” in front of rudder fittings and stem fittings. This is to prevent rudder or stem fittings being constructed as part of the boat, and resulting on Moths that are harder to transport around than the current fleet standard.

Swap “rudder fittings” and “stem fittings” around to have a common order of wording.

Note: Many gantries are bonded to the hull, or part of the rudder gantry connection is bonded to the hull and extends beyond the overall hull length. This is currently allowed, but was discussed at an EGM a few years back. The feeling then was that a rudder gantry that was laminated as part of the original hull structure was not something the class would like to see. (Visions of the box structures out of the back of modern 14’s came to mind). The gantry is less of an issue than the bow actually is. More recently there are some boats that feature a deck mould that goes fwd of the hull. The forward point of the hull could be considered to be part of the stem fitting as the forestay is connected there.

A change of wording to force rudder and stem fittings to be removable would remove any doubt, It could be considered to make life harder for home builders, but most new boats feature adjustable gantries anyway, and the removable nature reinforces the ease of shipping of the boats. (“Removable” may need to be defined in the measurement manual as a bonded on structure is removable with a hacksaw!)

6.1.1

Add the word “fittings” after rudder to keep the language used in the definitions consistent through the rule.

Note: When sailing slowly most gantries touch the water. While most are not designed to increase the waterline length of the hull as they are set away from it, modern gantries are being faired to reduce their drag when they do encounter the water, and offer lower windage when foiling. The line between fairing for reduced drag and increased waterline length is blurred and needs clarification. A gap rule is proposed to be added to clarify the options available in gantry design now that windage is being given more attention.

“Outside of the structural connection points to the hull, the gantry shall be at least 30mm away from the transom surface, and the extension of the hull shell” has been added to the rule.

6.1.2

Expand the wording to “rudder fittings and stem fittings” to allow the highlighting of defined terms and to keep a common order of phases.

6.3

It is proposed to title this rule “hollows” and include rules 6.3.1 and 6.3.2.

6.3.2

Replace “waterline” with “waterplane” to keep the language used in line with the definitions.
Full stop after 6.1

6.3.3

Delete the word “fin” and amend to allow rudder foils, with the new wording:

'Any foil, excluding the rudder and any rudder mounted foil, shall protrude out of the hull from below the static waterplane.'

The existing rule starts with "Any fin or foil" yet we define foil as "Any centreboard, fin, hydrofoil used for lift, stability or lateral resistance". So the word fin should be removed from the rule. Having defined foil to not include the rudder it is not necessary to then say "excluding the rudder" but it is probably worth leaving in for clarity.

Foil is defined as above, and rudder is defined as "A steering device mounted to the hull." We have a vertical rudder foil which is used for steering, and another foil on the bottom of that which is used for lift. This foil however does not protrude out of the hull from below the static waterplane, and thus contravenes rule 6.3.3. Hence the new proposed wording.

6.4

Move. We have a section 12 in the current rules titled 'Alterations to the Racing Rules of Sailing', yet rule 6.4 remains in the hull section.

7.1

Remove the repeat of "Boats shall have". There was a mis-type in the original rule with 'Boats shall have' featuring twice. Add "or bag" after "one tank" as the first line in the rule discusses tanks or bags. Amend the final sentence to replace "shall undertake a buoyance test" with "the measurer may undertake a buoyancy test". Remove the grandfather clause for older boats.

7.2

Remove rule. Rule 7.2 actually implies that the only way a measurer can satisfy himself that the buoyancy compartments are effective is to do a flotation or air test. The option of a visual inspection is not given. The word shall is used, rather than may. Thus a flotation or air test is mandatory. Yet this is not common practice. Propose to delete rule 7.2.

Rule 8: Spars

There were two options with regard to the rig rules, combining them into one section title 'Rig' or updating the current format. When starting with a blank sheet on the rig rules you soon end up with a similar breakdown of rules so the existing format was kept for consistency. Where possible the original language of the rule is to be used.

8.1

We currently do not define mast, yet do define spars. So changed the wording to 'spars'.

8.2

In the current rules it is not clear if the measured area within the mast is bound by the measurement band limits. The requirement is for the sail to be set within the bands, but there is no mention of the measured area within a spar. This could be exploited with more area being set in the spar, and effectively gaining luff length. The addition of the phrase "sail area" would prevent this.

A new rule 8.6 defines the limits on any spar section below the measurement band.

8.5

Many sleeve luff sails have more than just a piece of webbing projecting above the mast. While it would be possible to get sailmakers to bring this under control again it is most practical to make the sails with a little bit of the luff tube extending beyond the mast tip webbing for durability reasons.

It is proposed to add a rule that requires that the lower measurement band would need to be moved up by the amount of extra at the tip to prevent any sails taking advantage of any extra above the mast tip and also pushing the lower measurement band limit. While all the current sails set easily above the lower band, technically many of the existing sails are infringing the current rules, and this rule addition would serve to maintain the legality of the current equipment.

8.6

In specifying that we will measure the total measured area of sail and mast as will be mentioned in the following sail section of the rule, and by including the phrase 'sail area' in rule 8.2 there is a requirement to limit the size of spars below the lower measurement band.

In line with the current rules it is proposed that all spars shall be capable of fitting through a 90mm ring below the measurement band. This would not affect most of the fleet but there may exist one or two wing masts with soft sail combinations out there that would require modification.

Booms are also mentioned in this rule to give them an absolute limit rather than having an area addition to the sail area only if they do not fit through the ring.

Rule 9: Sails

The sail rules would be simplified quite a bit and re-ordered slightly. Many of the more minor sail measurement topics would be covered in the measurement manual, and any references to the old method of sail measurement before 1st Jan 2005 removed.

9.1

With all of the possible variations in measured sail area possible within the current rules it is proposed to remove any luff area allowances and measure the actual area of the rig above the lower measurement band. This allows us to more accurately control the actual sail areas used irrespective of configuration.

The sail area figure used within the rule would change to 8.25m², which is the maximum theoretical size under the current rules for a standard sleeve luff sail configuration in use by more than 99% of the World fleet.

Clarification is made in this rule that any spar area below the lower measurement band is not included in the total measured area.

9.2 old removed and renumbered

There is no need to refer to a measurement procedure for sails measured before 2005. Propose to delete this rule. Any grandfathered sails from this period are either no longer in use, or should be re-measured.

9.3

Soft sails shall still be measured via the method of triangulation and sections of the ISAF guide to sail measurement will be included into the IMCA Measurement Manual to clarify matters with regard to sail measurement.

Wing sails, or wing masts shall be measured via the half girth method outlined in the ISAF guide, hence the addition of this phrase into the new rule.

The phrase about areas of luff or foot rounds being added or subtracted as the case may be is a measurement detail outlined in the procedure. It is not felt to be a line required in the rules.

'Sail area shall be measured by triangulation in the case of soft sails or via the half girth method for wing sails or wing masts in accordance with the IMCA Measurement Manual.'

9.5

This rule was historically the subject of much debate in the past. What exactly does the rule mean by 'part'? How that part is defined is questionable, and no mention is made on the method of area measurement, hence the proposal to better define how spars are measured in the rule.

This rule in its current form is proposed to be deleted and the measurement of spar area defined in the sail area rule 9.2, and the spar rule 8.6.

9.6

In line with the proposal to no longer have a luff allowance and measure the actual sail area, this rule is no longer required.

9.7

There are no enclosed booms in use, and rather than come up with a generic boom area and make the total sail area include this, it is proposed to enforce that the boom shall fit through a ring of 90mm and its area is not included in the total area.

With a variety of boom sizes and shapes in use a new rule proposal featuring boom area would be hard to make fair to all. This rule change also avoids the chances of a boom being included within a wing sail and gaining extra sail area from that. To the best of our knowledge there are no booms in use that would fail to meet this rule change. The current fleet would not be affected by this.

9.8 & 9.9

The area of boltrope and footrope being excluded from the overall sail area, and the possible area gain in oversized battens are measurement details that are better suited to be in the measurement manual. Proposal to delete these rules.

9.10

This rule basically says the same as the phrase 'The inside edges of these bands define the limits to which the sail may be set' in rule 8.2. Proposal to delete.

New Sail Rules

The following rules would be added to the sail section of the rule:

Wing Sail restrictions

Further to the one sail rule it is proposed to add a rule that clarifies the potential configurations available with a wing sail. Wing sails if used shall be of a single element configuration only. No slots shall be visible in the section whilst sailing. In order for a slot to be effective it must be of a size such that it is possible to see through it when set. Restriction in this manner would prevent full two element sections but would allow articulated flaps on a primary aerofoil to achieve camber.

The wording of this rule could be very complex, but it is proposed to keep it simple in the main body of the rule, and explain it further with diagrams in the measurement manual.

Luff Length

'The luff length shall not exceed 5185mm.'

For clarity it was felt that the luff length should be defined beyond just the initial discussion on measurement bands to clarify the matter for rigs of different configurations.

If this rule was taken to its natural limit it could be made to include the information about the measurement bands as well, and replace rules 8.2, 8.3, and 8.4. Very few of the current boats in the fleet feature a top measurement band, yet much of our rules discuss one.

The rules could be simplified considerably by grouping the spar and sail rules into one section called 'Rig' and use the following rule for luff length and measurement bands:

'The luff length shall not exceed 5185mm. A measurement band not less than 15mm wide shall be marked on the spar at this distance to define the lower limit to which the sail shall be set, measured from the top of the luff of the sail when rigged for sailing.'

Head Projection

Some within the fleet are concerned that there may be a trend to develop extreme head angles like those seen recently in the 18ft Skiff fleet. While this may be a development that many would welcome and consider coming with its own trade-offs, there is a concern that a solid wing could take advantage of an extreme head angle to gain rig height, and effective aspect ratio. A solid wing could take advantage of this to a greater extent than a soft sail.

Proposal to include a new rule:

*'No part of the sail may project above a reference line passing through the **Throat point** drawn at 110° from the **Luff**.'*

An early proposal for a version of this rule was to use a maximum dimension diagonal limit which would be an effective method for current sails. However it would be less effective for different rig configurations, and for a wing mast and sail combination the sail would need to be rigged up on the boat complicating the measurement process.

10

Rule 10 should probably be broken down into two parts – the one person bit, and the anti windsurf rule / righting moment part. The word 'crew' is used in the definitions, and so it is proposed to change 'helmsman' in rule 10.1 to 'crew'.

It is possible to consider that this rule forbids some mainsheet systems that sheet from the boom as they involve no blocks attached to the hull, only to the boom. The rule refers to how the righting moment of the crew weight is transferred to the sail though, and current configurations satisfy this rule with their rigging without need to consider the sheet system.

11.2

Add an "a" between consistently and catamaran.

12.1

The spelling of controlling is corrected.

Remove "or" from in front of foiling in the first sentence and replace with a comma.

Replace "pull the sheet controlling" with "pump".

Appendix A: Definitions.

This is probably the area of the rules that will require the most input from ISAF. Some changes are just updates, some are a tidy up of the rules, and others are required due to the wording used within the rule.

In order to avoid continual reference to the ISF Equipment Rules of Sailing, when in bold in the main text and not listed in the definition list, the ISAF RRS shall be referred to.

Static waterplane – Delete the reference to winged or flexible transoms. This can be moved to the measurement manual if it is felt to still be applicable in any way.

Hull - The wording is bad here. There should be an “and” or “or” before “racks”. In the definition it excludes rudder fittings, but doesn’t mention stem fittings, yet rule 6.1 excludes attached rudder fittings and stem fittings for the purpose of measurement. Add stem fittings, and the word “and” before hiking racks.

Wings or hiking racks - Change to the single term “hiking racks”. Having a choice of word in the definitions does not seem correct.

Rudder - Finish the sentence with the phrase “ and rudder fittings.” As it currently is, our gantry mounted rudders are not defined as rudders because they connect to rudder fittings, not the hull.

Note: Defining the gantry as non buoyant is a little tricky given that many are constructed out of foam sandwich or sealed hollow tubes. We may need to mention it in the measurement manual with regards to a purpose of providing reserve buoyancy. We clearly do not want box gentries, but the current rule may be a bit strict on current versions if taken to the limit.

Foil - Add an “or” before hydrofoil.

10 – 20 are to be deleted as many of these are old definitions required for use with the old method of sail area measurement and are no longer referred to within the rules.

21 – “Commercially Built” is a phrase that is not used anywhere in the rule. Propose to delete.

Add definitions for:

Sail – An item of equipment attached to the rig, used to propel the boat. May consist of a soft sail set on spars or a wing sail.

Wing sail – A rigid or semi rigid structure (encompassing a traditional mast and mainsail structure), similar to an aircraft wing orientated to provide propulsion from the wind.

Soft sail – A sail where the body of the sail is capable of being folded flat in any direction without damaging any ply other than by creasing.

Adam May
IMCA Chief Measurer
Chairman – IMCA Rules Working Group
July 2012