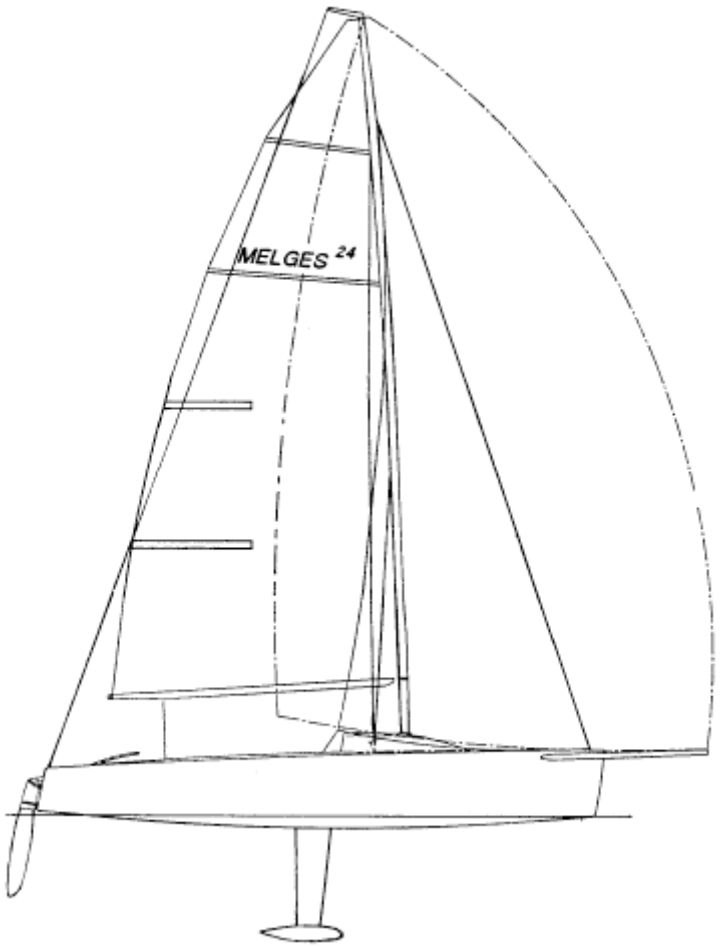
Melges 24 Measurement Handbook



Provided by the United States Melges 24 Class Association

USMCA

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On behalf of the USMCA, thank you for your willingness to act as an authorized measurer for the Class. To be a true test of the competitors, one design sailing assumes that the equipment is essentially identical. In a class with well over 800 boats world-wide, produced for nearly 20 years, the number of circumstances where significant variations may have arisen are innumerable. The Class relies on you to check for compliance in three specific circumstances:

1) Initial measurement of a hull and mast. The Class does not have complete records of the initial measurement of many boats produced before hull number 350. Many of these boats are actively sailed and remain competitive at the National, Continental, and World Championship levels and they must be certified by the Class in order to compete.
2) Re-measurement following repair or replacement of measurement-critical parts. The Class Rules state that a Certification is invalid upon changing of any items recorded on the hull certificate and that certain repairs must be conducted under the supervision of a measurer. This would include re-weighing prior to the removal of any manufacturer-installed corrector weights.
3) When directed to check any critical dimension by a protest committee or jury as evidence in a valid protest.

Keep in mind that you are not being asked to certify any hull or render an interpretation of the Class Rules. Your role is to provide objective data, record it on the International Melges 24 Class Measurement Form, and give this document to the owner. They, in turn, will submit it to the USMCA Technical Committee and request the required Certification.

This manual has been developed to help ensure that this data will be both reliable and valid. To measure accurately you must be intimately familiar with the Class Rules that apply to each measurement and the proper type and location of hull and mast fittings. Remember that if the Class Rules do not say that you can do something, then you cannot.

Take every measurement twice. If the two don't match, take a third to validate one of the first two.

Engage the owner in the measurement process. The more involved they are, the more they understand how the measurements are determined.

Finally, if you are unsure, ask. The District Governor or the Technical Committee Chairman should be able to help. If your question requires an interpretation of the rules, the answer will take a bit longer, but be confident that it will be accurate.

This manual has been organized in a logical sequence for measuring a boat. If you find yourself measuring a number of boats at once, it is perfectly acceptable to alter the order. Where appropriate, this has been highlighted in the manual.

Thank you once again for helping to keep one-design racing of the Melges 24 just that. We couldn't do it without you.

USMCA Technical Committee tech@usmelges24.com

Illustration 1

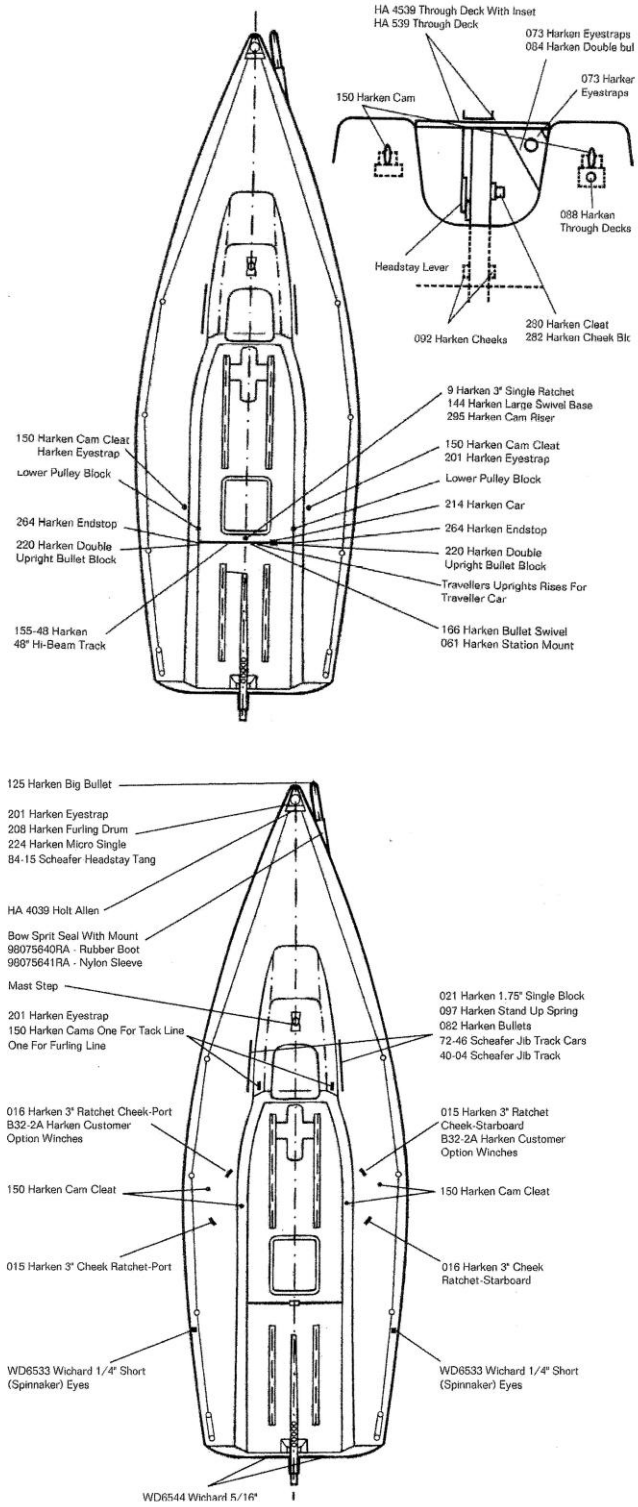
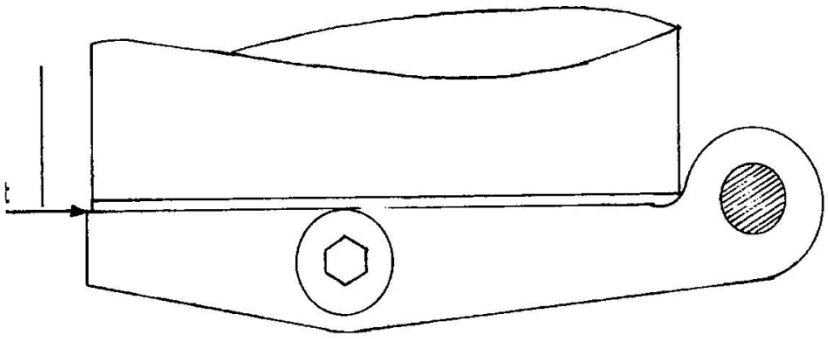


Illustration 2

Mast datum point



Mast Foot

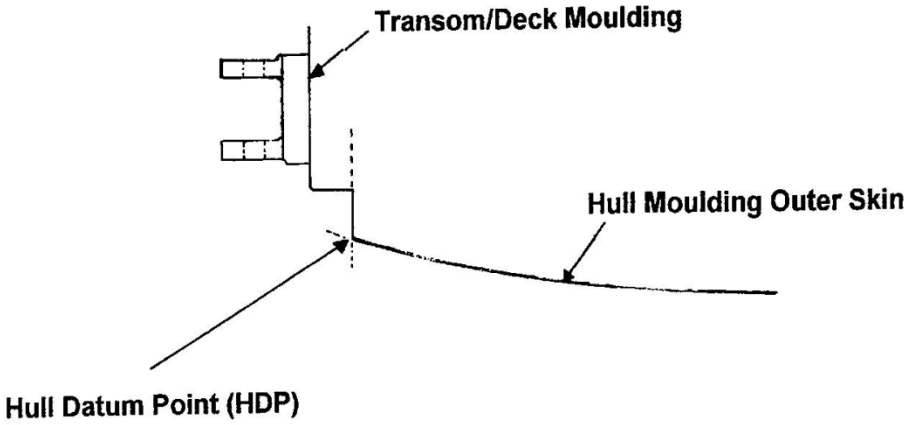
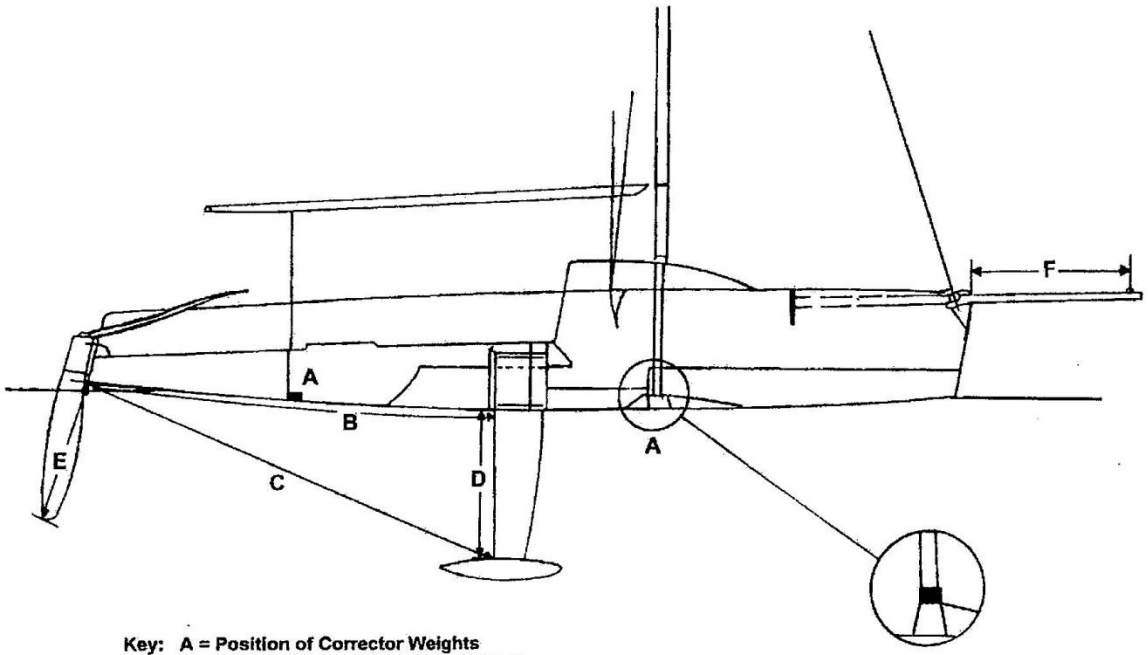


Illustration 3



Key: A = Position of Corrector Weights
B = 3482 →3494mm (Class Rule E 3.3.1)
C = 3784 →3823mm (Class Rule E 3.3.2)
D = 1195 →1215mm (Class Rule E 3.3.3)
E = 1220mm max. (Class Rule E 4.3.2)
F = 1400mm max. (Class Rule C 6.3.2)

Equal weights secured on either side of mast compression post

Illustration regarding dimension C corrected 5th February 1998

Form 1 (Download at http://www.sailing.org/2107.php)

2009
International Melges 24 Class Measurement Form

Authority*: International Sailing Federation,
c/o Sailing International Limited, ISAF Secretariat, Ariadne House, Town Quay,
Southampton, Hants, SO14 2AQ. United Kingdom.
*The International Sailing Federation (ISAF) is not a Member National Authority (MNA).

Boat Details

National Letters .....

Sail Number/ICA Plaque Number .....

Name of Boat .....

EU Craft Identification Number (CIN) .....

Serial Number of Keel Fin .....

Owners Name .....

Owners Address .....

.....

Weight of boat including any correctors ..... **kg**

Weight of Correctors ..... **kg**

The original of this form must be submitted to the boat's National Authority or National Class Association if they have been appointed by the MNA, for a full measurement certificate to be issued.

OWNERS DECLARATION

I undertake to race this International Melges 24 only so long as I maintain it in conformity with the Class Rules.

I also undertake that corrector weights (if any) will not be altered or removed except when carried out in conjunction with an official re-weighing by an approved International Melges 24 Class measurer, and that only spars, sails etc., which have been measured and found in accordance with the rules, will be used.

Signature..... Date.....

	Rule	Measurement	Min	Actual	Max
1	F.3.6	Combined keel fin and bulb weight.	300kg		313kg
2	D.6.2	Forward edge of mast step from aft face of furler drum recess.	2405mm		2415mm
3	D.6	Are deck fittings in the prescribed places?	----	Yes/No	----
4	C.8.2	HDP to intersection of fin trailing edge and hull.	3482mm		3494mm
5	C.8.2	HDP to intersection of bulb top and fin aft edge.	3784mm		3823mm
6	C.8.2	Underside of hull to top of bulb.	----		1215mm
7	C.8.3	HDP to trailing edge rudder tip.	----		1220mm
8	C.8.3	Rudder head parallel to transom +/- 2mm.	----	Yes/No	----
9	F.3.5 & F.4.5	Do rudder, fin and bulb fit templates?	----	Yes/No	----
10	C.9.5	Bowsprit extension.	----		1400mm
11	F.3.5	Weight of complete mast with all rigging.	28kg		----
12	F.3.5	Tip weight of mast.	10kg		----
13	F.3.4.	MHP to Lower mast point.	710mm		----
14	F.3.4.	MHP to upper mast point.	----		9528mm
15	F.3	Does mast and rigging comply with all other requirements of the rules?	----	Yes/No	----
16	C.9.4	Boom band distance from aft edge of the mast.	----		3800mm

MEASURERS DECLARATION

I certify that I have taken the measurements on this form and that to the best of my knowledge the boat conforms to all of the rules and specifications at present in force of the International Melges 24 Class except as I have stated below.

Comments .....

.....

Name ..... Date .....

Address .....

Signature .....

N.B. Boats may be measured by an In House Certification (IHC) process, but shall be checked at regular intervals by an independent Melges 24 Class Measurer. If IHC is used, the above shall be filled in by the builder and written so across the Measurers Declaration.

BUILDERS DECLARATION

I certify that this Melges 24 has been built and completed to the rules and specifications of the International Melges 24 Class and the copyright Holder and any fees paid.

Name of Builder .....

Signature ..... Date .....

Form 2

ISAF International Authority

USMCA Member National Authority
U.S. Melges 24 Class Association

USMCA National Class Association

- INTERNATIONAL MEASUREMENT CERTIFICATE -

(As required per RRS 78)

IMCA

Boat Name: [Boat Name]

Sail N°: USA-[Sail No] **Owner:** [Owner Name]

Builder: Melges Performance Sailboats **Address:** [Address]

Hull ID N°: [Hull ID]

⇒ ***Certificate based on Measurement Form dated :***

- First Measurement completed: N/A by: N/A

Keel Weight: N/A kg. Keel serial number: N/A

Corrector Weights at first measurement: N/A kg

- Last Measurement completed: N/A *by:* N/A

Complete Boat Weight inc Correctors: N/A kg

Corrector Weights: N/A kg

Certificate Number: 1000xx

Date of this Certificate: October 20, 2008

Certificate authorised by: Bill Carleton **acting for the .**

Email : m24tiburon@gmail.com

IMCA Official Stamp

Owner's Declaration

I undertake to race this Melges 24 only so far as I maintain it to conform with the International Melges Class Rules. I also undertake that corrector weights (if any) will not be altered or removed except when carried out in conjunction with an official re-weighing undertaken by an approved Melges Class Measurer. At such time or upon a change of to any of the details shown on this certificate I will return it to my Revalidation Authority.

Owners Signature : ..... Date: .....

- To be valid this certificate needs to be signed by the owner. -

Preparation of the Boat for Measurement

In advance of the measurement appointment, you will find it helpful to contact the owner with instructions on how to prepare the boat for the process. If the owner has a prior measurement certificate ask them to provide it for comparison.

- The boat must be dry throughout
- All sails and sheets shall be removed
- The engine, bracket, fuel can, and engine tray shall be removed
- Remove the companionway hatch covers
- Remove the anchor, chain, and rode
- Remove the manual bilge pump, bucket, and lanyard
- Remove the companionway hatches
- Remove all optional portable equipment including mooring lines, fenders, cushions, coolers, lights, pfd's, etc.
- It is not necessary to remove any permanently mounted timing or navigational/tactical equipment, however if they have a battery or power source, it shall be removed.

Ask the owner to place these items so that you can observe that they are present. Look in all compartments below to ensure that there is no water or remaining items on the boat. Keel crane recess must be dry. Make note of any corrector weights present matched on either side of the mast step compression post and/or on the front side of the bulkhead at the back of the engine storage compartment. Corrector weights must be permanently secured.

Inform the owner that the mast must be removed to complete the measurement. This may be done in advance, or after the boat has been weighed. They should have sufficient assistance available to ensure that this can be done in a timely way.

Boats cannot be weighed properly in rain or when subject to significant winds. If these conditions exist the weighing must be rescheduled.

Mast Step, Deck Fittings, and Bowsprit Extension

Completed on the trailer.

Tools required:
Tape measure in millimeters
Class Rules

Record the sail number and HIN on page one of the measurement form. The HIN will be MEB24*******. The first three numbers are the sail number, followed by a letter and three other numbers (date of manufacture.) Check that the sail number matches the ISAF plaque if present and the HIN.

Measure and record on item 2, page 2 of the measurement form the distance from the front edge of the mast step to the aft edge of the furler drum recess. This measurement must fall between 2405mm and 2415mm inclusive.

Observe that the layout of the deck fittings is consistent with the descriptions in the Class Rules and Illustration 1. It is not necessary to measure the location of each, however if the fitting is positioned in a non-standard way or appears over/undersized, then you may measure to ensure compliance. Record your observation on item 3, page 2 of the measurement form.

With the bowsprit retracted note that it does not extend beyond the stem.

Fully extend the bowsprit and cleat the “pole out” line. Measure and record on item 10, page 2 of the measurement form the distance from the stem to the center of the eye strap that secures the tack line block at the end of the pole. This measurement cannot exceed 1400mm.

Keel and Boat Weight

Completed at an overhead hoist.

Tools required:
Load cell calibrated and capable of accurately weighing .1 kg approved by the USMCA Technical Committee

Weigh and record the keel lifting eye alone. This number will be subtracted from the measured weight of the keel and bulb.

Record the keel serial number on page one of the measurement form if it is present. This will begin with the letters DY.

Insert the keel lifting eye, hang the load cell from the hoist hook and attach to the keel lifting eye. Do not attach the lifting straps. Position the boat so that the keel lifting eye is directly below the hoist.

While sitting in the cockpit to observe that the weight of the keel and bulb are accurate have the hoist operator lift the keel approximately 10cm so that the keel bulb is lifted off the trailer, but is not in contact with the bottom of the boat. It should hang loosely in the trunk and should not be in contact with the Delrin bearings. Let it hang in position for approximately 10 seconds. Record the total weight. Subtract the weight of the lifting eye and record this amount on item 1, page 2 of the measurement form. This weight must be between 300kg and 313kg inclusive.

Lower the keel. Remove the keel lifting eye.

Weigh the lifting straps and note this weight. It will be subtracted from the total weight of the boat. Attach the lifting straps. Back the trailer to the edge of the bulkhead so that the rudder may be hung on the transom with tiller and tiller extension and is clear of the ground. Attach the hoist and load cell to the straps. Ensure that you can clearly see the readout for the load cell. Have the hoist operator lift the boat until the keel is completely extended and the bulb is 10cm or so above the trailer. The bulb should not touch the trailer at all. Let it hang for ten seconds. Note the weight, subtract the weight of the lifting straps.

If this measurement was conducted with the mast stepped and boom attached you may now record the resulting weight on page one of the measurement form. If the mast was down during this process its weight and that of the boom must be added to the total after the mast measurement is complete. The total weight shall be 809kg or greater.

Underside Measurements

Complete while the boat hangs from the hoist with keel extended and rudder hung from the transom.

Tools required:
Tape measure in millimeters
Sharpie marker

Move the boat completely over solid ground and lower it slightly if necessary so that the underside is easily reached. Identify the Hull Datum Point (HDP on Illustration 2) as described in the Class Rules. Mark this point for consistency of measurements.

Measure and record on item 4, page 2 of the measurement form the distance from the HDP along the underside of the hull to the intersection between the trailing edge of the keel fin and the hull. (Measurement B on Illustration 3) This number must be between 3482mm and 3494mm inclusive.

Measure and record on item 5, page 2 of the measurement form the distance between the HDP and the intersection of the trailing edge of the keel fin and the top of the bulb. (Measurement C on Illustration 3) This measurement must be between 3784mm and 3823mm inclusive.

Measure and record on item 6, page 2 of the measurement form the distance from the underside of the hull to the top of the bulb along the trailing edge of the keel fin. (Measurement D on Illustration 3.)This measurement shall be between 1195mm and 1215mm inclusive.

Measure and record on item 7, page 2 of the measurement form the distance from the HDP to the trailing edge tip of the rudder. (Measurement E on Illustration 3.) This measurement shall not exceed 1220mm.

The next two measurements are intended to ensure that the rudder head is parallel to the transom. One is taken at the location of the upper gudgeon and one is taken at the lower gudgeon. Measure the perpendicular distance from the transom at the bottom edge of the upper gudgeon to the leading edge of the rudder head. Measure the perpendicular distance from the transom at the top edge of the lower gudgeon to the leading edge of the rudder head. These two distances must be within 2mm of each other. Record your observations on item 8, page 2 of the measurement form.

The templates for rudder, fin and bulb are not currently available for use for field measurements. Leave item 9 blank.

You have completed all hull measurements at this time and the boat may be lowered to the trailer and the portable equipment replaced.

Mast and Boom Measurement

Complete with the mast removed from the boat, all rigging attached and halyards pulled to their top positions. An instrument bracket may be left on the mast, but any instrument shall be removed. The backstay batten may remain attached. Any masthead wind indicator shall be removed. The boom and vang shall be removed. Remove any padding from the mast base.

Tools required:
Load cell calibrated and capable of accurately weighing .1 kg approved by the USMCA Technical Committee
Tape measure in millimeters
Sharpie markers in contrasting colors
2 saw horses

Place the mast forward side up on the saw horses. Identify the Mast Datum Point (MDP on Illustration 2) as described in the Class Rules. For consistency mark this point for all subsequent measurements. Note that all the rigging as required and allowed by the Class Rules is in place. Record your observation on item 15, page 2 of the measurement form.

Loosely secure shrouds, forestay, and backstay to the lower section of the mast and coil and attach halyard tails. Find the center of balance using a webbing strap. Mark this point. Attach the strap to the load cell, center the strap on the mark and lift the rig to find the weight of the mast. Subtract the weight of the strap and record the result on item 11, page 2 of the measurement form. This weight shall not be less than 28kg.

If the boat was weighed without the mast this weight is added to the hull weight and the weight of the boom and vang, with the total recorded on page one of the measurement form.

Position the mast foot centered on one saw horse. Move the strap and load cell to the top of the mast and center the strap over the top mast band. Lift only the top of the mast with the strap, holding the mast foot in place to determine the mast tip weight. Subtract the weight of the strap and record the result on item 12, page 2 of the measurement form. This weight shall not be less than 10kg.

A note about mast and boom limit bands: Class Rules require 15mm wide limit bands in a contrasting color and track stops at the maximum hoist for the main and maximum outhaul. A band marking the mast at the location of the top edge of the boom is also required. These may not be present. Instruct the owner that they must be restored and mark the spars with the proper location as you measure. Measurement 13 is the top edge of the lower mast band. Measurement 14 is the bottom edge of the upper mast band. Measurement 16 is the inboard edge of the boom band.

Rotate the mast 90 degrees and attach the boom to the gooseneck. If there is no lower mast band, mark the mast at a point even with the top of the boom when it is held perpendicular to the mast. Measure and record on item 16, page 2 of the measurement form the distance from the aft surface of the mast at this point, along the top of the boom to the front edge of the boom band. This measurement cannot exceed 3800mm.

Remove the boom. Measure and record on item 13, page 2 of the measurement form the distance between the MDP and the top edge of the lower mast band. (top of boom mark if lower mast band not present.) This measurement shall not be less than 710mm.

Measure and record on item 14, page 2 of the measurement form the distance from the MDP to the lower edge of the upper mast band. This measurement shall not exceed 9528mm.

Final Instructions

Double check that all measurements have been recorded. Record any comments on the comment section of the measurer's declaration. Complete name, contact information, date, and sign. Make a copy for yourself. Give the original to the owner and inform them that they need to email a scanned copy of the form to the Technical Committee Chairman with a request for certification. tech@usmelges24.com.

In the event that some aspect of the measurement is not in compliance with the Class Rules you may use your discretion to permit the owner an opportunity to correct it if the change is minor, does not impact your own timetable, and the plan of correction as described to you is reasonable. If not, please notify the Technical Committee Chair that the measurement was incomplete and keep the unsigned, original measurement form yourself. You may provide the owner with an unsigned copy in the event that they wish to have the measurement completed by another measurer after the correction without re-measuring all of the dimensions that you found to be in compliance. Please note on the comments section if a specific dimension was corrected and re-measured.

A note about corrector weights:

Many boats have them installed from the manufacturer. Their positioning is specifically prescribed by the Class Rules. It is difficult if not impossible to establish the weight of correctors without removing them, so please note their location and approximate weight. If weights are in non-standard positions or appear to be recently or temporarily attached this should be noted as well.

In the unlikely event that a boat is underweight, corrector weights will need to be added. Do not undertake to do this yourself. Recommend that they contact Melges for the weights and instructions on their installation. They may contact you to complete the measurement when that job is done. Remember that no boat left the manufacturer underweight. If a boat measures under then it has been modified in some way.

Some owners may contact you requesting that you re-weigh the boat so that they may remove corrector weights that are no longer necessary. While this is possible, exercise special caution. Require that they describe in some detail the reasons they believe the boat may now be overweight. Carefully inspect all parts of the boat for added weights or water. Ensure that no extra equipment is on board and if it is really close, err on the side of requiring the weights to remain in place.