CHOOSING RIGS

for Marblehead class yachts

introduction

The unrestricted nature of the class rules and the relatively large number of rigs permitted in this class means that the cost of providing rigs for a competitive Marblehead usually far exceeds the cost of the hull.

As the rigs are often retained for further use when the yacht is replaced, it makes good sense to carefully consider their choice.

Correct choice of rigs at the planning stage will help to make your yacht more competitive over a wide range of conditions and maximise your benefit from the expenditure made.

first steps

Understanding the limitations in the class rules

Three sail measurement groups (each comprising a mainsail and a headsail) with the full measured area, but with different aspect ratio, are permitted to be recorded on the certificate. These are termed A, B and C sail measurement groups and must be (current class rules) in descending order of height.

The maximum height of the tallest rig is restricted to 2160 mm measured from the deck to the head of the mainsail. It is normal for the tallest rig (designated A rig) to match or come close to this limit to maximise the boat's performance in light airs.

There may be two additional mainsail/headsail pairings, which are smaller in all respects, within each of these A, B and C certificated sail measurement groups.

For example there will often be C2 and C3 mainsail/headsail pairings which have the same (or smaller) foot lengths as the C certificated sail measurement group but which have progressively lower total rig heights.

There may also be B2 and B3 mainsail/headsail pairings which have the same (or smaller) foot lengths as the B certificated sail measurement group but which are even lower than the C3 rig.

In extreme cases an owner may have an A2 mainsail/headsail pairing which is very slightly smaller than the A certificated sail measurement group sizes but with super light sails, and perhaps an A3 mainsail/headsail pairing which is really very small for sailing in extreme conditions.

There is no minimum height limit for any rig and so the decision about how small to make the smallest rig is down to making a judgement about the likely maximum strength of wind you will encounter (at any given venue) and how important it is for you always to be able to sail competitively.

Possibly there is scope to improve the Marblehead class rules by introducing a well chosen minimum rig height value.

At an event (current class rules) it will be permitted to use up to a maximum of six mainsail/headsail pairings.

where should you start?

Consider how many mainsail/headsail pairings (rigs) you intend to finish with

Your decision about ***how many rigs*** *will have a bearing on which* ***size and type of rigs*** *those should be and, if you do not wish to start by purchasing all of them,* ***which rigs should be purchased first****.*

Most competitive Marblehead owners will have 5 rigs. Some will have more than this especially if they are travelling regularly to major open events and do not wish to be let down by not having small enough sails.

Many owners manage very well with 4 rigs. If you do not plan to sail at major events and are prepared to spend time sailing with the wrong rig, or not sailing because you do not have small enough sails, then as few as 2 or 3 rigs may suffice.

swing rig or conventional rig?

Swing rigs

These offer the advantage of lower cost for a given level of quality because of their simplicity. They are somewhat easier to tune and maintain. If you have not used this type of rig before, don't let the appearance put you off. With practice the rig handles perfectly well and the performance in lighter winds is wonderful.

Conventional rigs

Many prefer to use a conventional Bermuda rig on their boats. In an attempt to keep weight low and rig performance high it has become normal to use shrouds and spreaders in conjunction with high stiffness carbon spars for the tallest rig. The tallest rig has to work well in very light airs and so the added stiffness of a pocket luff mainsail is not a practical proposition.

Lower rigs are often the so called **shroudless rig** type. This is simply a normal Bermuda mainsail/headsail rig with a very stiff mast which does not need shrouds to hold it up. The absence of spreaders and shrouds makes the use of pocket luff mainsails simple with these rigs. Performance is improved significantly by taking this step.

One reason for the popularity of conventional rigs is their apparent superior performance in heavy winds. The boat is easier to handle especially off wind and on a reach. Many people are happier using a rig which looks ‘normal’ to them. Keeping the headsail goosewinged on running courses can be difficult.

Recent developments

The period from 1992 to 2000 has seen a steady move towards using a swing rig for the tallest, A rig and shroudless conventional rigs for all the lower rigs. Not all have followed this pattern and some continue to use all swing rigs while others use all conventional rigs.

After 2000 many of the top results have been achieved with a conventional A rig.

The habit of designing hulls with a raised foredeck and a lowered deck where the mast is placed has enabled conventional rigs with a mainsail luff as long as the luff on a swing rig to be used. This has promoted light airs performance, partly by getting the sail area higher and partly by gaining extra ‘free’ area.

After the 2012 world championship it seemed clear that it was again necessary to use an A swing rig in order to have the best performance in light airs. Nevertheless, at the upper end of the wind speed range for an A rig, a conventional rig with shrouds and spreaders is generally capable of better performance around the course.

For some years now SAILSetc has been making pocket luff mainsails that are well shaped and comparatively wrinkle free when the sail is twisted off. The pocket luff sail generates less drag than alternative attachment methods and the result is a closer winded, or faster, boat.

Choose a pocket luff mainsail for the B rig and lower rigs where the extra weight of sail does not prevent the sail from working well. Originally these sails could not be rolled for delivery but our current method allows them to be rolled for delivery like other sails

Whereas lower rigs perform far better if pocket luff mainsails are used, the tallest rig has to work well in very light airs and the extra weight and stiffness of the pocket luff is too much of a handicap

The use of pocket luff sails accentuated the need to have the centre of rotation of the main boom coincident with the centre of rotation for the mainsail i.e. on the centre of the mast. We developed gooseneck 12B to provide this. Use it with pocket luff mainsails for best results.

which rigs are recommended?

A RIG

In 1992, for the first time in four years, one of the yachts placing in the top ten at the RM National Championship used a 'conventional' A rig rather than a swing rig. Top results have been totally dominated by boats using swing rigs in light airs up to 2001 when the UK national championship was won by a boat NOT using an A swing rig. The 2002 and 2003 UK national championship was also won by boats not using swing rigs.

The SAILSetc swing rigs are suitable for a wide range of yachts. The mast tubes we use are now all in high modulus carbon. Hence the 92 Series kit, A(92), is sufficiently stiff even for the most stable designs.

On designs like ASTRA, ROK and PRIME NUMBER featuring a raised foredeck the swing rig will give very good results in light airs up to a 15 degree heel angle. Above that heel angle stability begins to become the predominant factor and a conventional rig placed lower in the hull can be expected to give better results.

The conventional A rig (we suggest using with shrouds and spreaders) is suitable for ASTRA, ROK, PRIME NUMBER and other similar designs and is capable of giving excellent results in light airs as well as a breeze.

The last SAILSetc production Marblehead QUARK design reverted to a flat deck used and is normally used with an A swing rig and all conventional rigs below that.

B RIG

My own preference was for a swing rig until 1992. Since 1992 I have used a conventional shroudless rig with an 1800 or 1850 mm mainsail luff length. Thanks to the very stiff mast tubes the 92 Series B+ swing rig and the 1850 conventional shroudless rigs are suitable for use on all current designs.

C RIG

Since 1988 I have used a conventional shroudless rig of 1600 mm mainsail luff length and this seems the safe option for all designs.

LOWER RIGS

If the C Rig is a conventional shroudless rig then all the lower rigs will normally be the same.

COMMON OPTIONS

Gizmo on an A swing rig.

Shrouds and spreaders should be used with an A conventional 'shroudless' rig.

Ball raced goosenecks may be included in the conventional shroudless rig kits.
Ball raced gooseneck with axis on the mast centreline, item 12B, is a useful refinement.
Ball raced head fittings, items 25-100 may be included in the conventional shroudless rig kits.
Flat wire for standing rigging instead of round wire in all kits.
Pocket luff mainsails on all B and C rigs

SIZES OF RIGS – for a boat with a flat deck like PARADOX

The following selections, although not necessarily the only possible combinations, will give good coverage of wind speed range and excellent performance in a wide range of conditions.

3 Rigs

A SWR	B+ SWR	C1 SWR
A SWR	1600 SHR	1300 SHR
2050 SHR	1600 SHR	1300 SHR

4 Rigs

A SWR	B+ SWR	C1 SWR	C2 SWR
A SWR	B+ SWR	1600 SHR	1300 SHR
2050 SHR	1800 SHR	1600 SHR	1300 SHR

5 Rigs

A SWR	B+ SWR	C1 SWR	C2 SWR	C3 SWR
A SWR	B+ SWR	1600 SHR	1400 SHR	1200 SHR
2050 SHR	1800 SHR	1600 SHR	1400 SHR	1200 SHR

6 Rigs

A SWR	B+ SWR	C1 SWR	C2 SWR	C3 SWR	B2 SWR
A SWR	B+ SWR	1600 SHR	1400 SHR	1200 SHR	1000 SHR
2050 SHR	1800 SHR	1600 SHR	1400 SHR	1200 SHR	1000 SHR

7 Rigs

A SWR	B+ SWR	1600 SHR	1400 SHR	1200 SHR	1100 SHR	1000 SHR
2050 SHR	1800 SHR	1600 SHR	1400 SHR	1200 SHR	1100 SHR	1000 SHR

Code SWR = SWING RIG SHR = SHROUDLESS RIG

SIZES OF RIGS – for a boat with a lowered deck at the mast like PRIME NUMBER & QUARK

The following selections, although not necessarily the only possible combinations, will give good coverage of wind speed range and excellent performance in a wide range of conditions.

3 Rigs

2150 SHR	1700 SHR	1300 SHR

4 Rigs

2150 SHR	1850 SHR	1600 SHR	1300 SHR

5 Rigs

2150 SHR	1850 SHR	1600 SHR	1400 SHR	1200 SHR

6 Rigs

2150 SHR	1850 SHR	1600 SHR	1400 SHR	1200 SHR	1000 SHR

7 Rigs

2150 SHR	1850 SHR	1600 SHR	1400 SHR	1200 SHR	1100 SHR	1000 SHR

Code SHR = SHROUDLESS RIG

PROPORTION MAINSAIL & HEADSAIL

Our conventional shroudless rig kits use Marblehead SERIES sails as standard components. These are available in two different mainsail/headsail proportions i.e. 'O' Series 62%:38% (500/300*) and 'V' Series 59%:41% (475/325*) (* ratios of measured area in square inches).

Until PRIME NUMBER all our boats were built for the 59%:41% proportion. There is no apparent performance difference although some people believe the larger headsail rig is better on reaching and off wind courses, and this seems to be the most popular choice for other designs.

PRIME NUMBER and QUARK use slightly different proportions between mainsail/headsail which are closer to the 'O' Series sails. There are slight differences in the sizes of sails that we make for these boats to enable the rig to fit the boat correctly.