

CHOOSING RIGS

for Ten Rater class yachts

introduction

The unrestricted nature of the class rules and the relatively large number of rigs permitted in this class can mean that the cost of providing rigs for a competitive Ten Rater can exceed the cost of the hull. However the size and stability of the boats and tradition in the class seems to suggest it is possible to enjoy competitive sailing with only 3, 4 or 5 rigs.

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

The class rules require that the largest mainsail and largest headsail are measured to determine their surface area.

- An unlimited number of alternative mainsails may be owned and used providing each has measurements equal to or smaller than the measured mainsail.
- An unlimited number of alternative headsails may be owned and used providing each has measurements equal to or smaller than the measured headsail.
- All the sails need to be certified by an official measurer before use.
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The class rules restrict the luff of the largest mainsail to between 1990 and 2200 mm. The majority of boats have rigs that use a 2100 mm mainsail luff length which is a good compromise that has evolved in the modern class over the last 15 years or so. Choosing 2100 mm mainsail luff length is a safe and logical choice.

If you want to be more competitive in light winds you would choose a No 1 rig with a mainsail luff of 2200 mm. The drawback of this choice is that the width of all the lower sails has to be reduced to 'fit inside' the measurements of the largest, measured, rig. This means the performance in stronger winds will be reduced.

If you are not so concerned with light air speed and want to be more competitive in stronger winds then you would choose a No 1 rig with a 2000 mm mainsail luff. This means all the lower rigs can also be wider and performance in all stronger winds is improved.

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 rigs** those should be and, if you do not wish to start by buying all of them, **which rigs should be purchased first**.*

Most competitive Ten Rater owners will have 3 to 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 3 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 may suffice.

Having only one rig will probably mean you often cannot sail competitively, and may be a significant danger to other boats in high winds due to lack of control.

If you have a Marblehead which has small rigs it may be that you can adapt the smallest to provide small rigs suitable for your Ten Rater. This is an excellent use of these resources that will not be needed very often anyway.

swing rig or conventional rig?

Swing rigs

Although these offer the advantage of lower cost for a given level of quality because of their simplicity they do not seem to have caught on in the Ten Rater class in Great Britain.

A swing rig has been tested on the SAILSetc DIAMOND with very indifferent results. Consequently the rig has not been used for serious competition. Several other boats have been rigged with rig and sails provided by SAILSetc. The owners seem happy with the performance of their boats.

Conventional rigs

Except for the No 1 rig, true conventional rigs with shrouds, spreaders etc are now rarely used by the better placing competitors. They have been replaced by the so called **shroudless rig**. This is simply a normal Bermuda mainsail/headsail rig with a very stiff mast which does not need shrouds to hold it up.

In an attempt to save keep weight low and rig performance high it has become normal to add shrouds and spreaders for the tallest rig only. The tallest rig has to work well in very light airs and so a pocket luff mainsail is not a practical proposition. The addition of shrouds and spreaders is not a problem.

Recent developments

For many 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 No 2, or B rig, and lower rigs where the extra weight of sail does not prevent the sail from working well. These sails can now be rolled and packed for delivery by post

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.

Experience has shown that the stability of a modern 10R and the effort to keep rig weight down tends to bend the masts of No 2 and even No 3 rigs enough to spoil the setting shape of the mainsail. Use of shrouds for these rigs (no spreaders) seems to help considerably.

Use of a rig which is dimensionally the same as the No 1 rig, but with the top 100 mm of the mast and mainsail cut away and a pocket luff mainsail, has given excellent results at the top end of the wind speed range for a No 1 rig. Shrouds are used. Because the rig keeps its shape better than a lighter No 1 rig its use can be extended into stronger winds where the only option would be to change to a No 2 rig.

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 on the DIAMOND design. For boats with a shallower recess on the deck near the mast the 12NIOU (as used on the NIOUTRAM Marblehead) gooseneck will probably be a better choice.

which size rigs are recommended?

Ten Rater Series Sails

The rig kits we supply match and include sails from the SAILSetc Ten Rater Series. This provides a number of mainsail/headsail luff choices and freedom to choose the ratio of mainsail to headsail area. The document MIT 22 details the way sail sizes can be chosen.

However, if you want custom sail sizes with your kits these can be provided at an additional charge.

No 1 RIG

The conventional shroudless No 1 rig (we suggest using with shrouds and spreaders) is an ideal choice and is capable of giving excellent results in light airs as well as a breeze.

No 2 RIG & LOWER RIGS

The shroudless rigs used with either eyelet luff or pocket luff mainsails.

COMMON OPTIONS

Shrouds and spreaders with a No 1 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.

Flat wire for standing rigging instead of round wire in all kits.

Pocket luff mainsails on all No 2 and lower rigs – can now be rolled for delivery.

SIZES OF RIGS

The following mainsail luff 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

2200	1900	1600	where very light wind is frequent
2100	1800	1500	what has been used by many owners for DIAMOND
2100	1900	1700	as above but better where very strong wind is rare
2000	1700	1400	as above but better where light wind is rare

4 Rigs

2200	1900	1600	1300	where very light wind is frequent
2100	1800	1500	1250	what has been used for DIAMOND
2100	1900	1700	1500	as above but better where very strong wind is rare
2000	1700	1400	1100	as above but better where light wind is rare

5 Rigs

2200	1900	1600	1300	1100	frequent light winds & some strong wind
2100	1800	1500	1250	1100	for a well prepared DIAMOND
2100	1900	1700	1500	1250	better where very strong wind is rare
2100	1900	1700	1400	1100	where strong wind is rare
2000	1700	1400	1200	1000	where light wind is rare
2000	1800	1600	1400	1200	where light and very strong wind is rare

MEASURED SAIL AREA and PROPORTION MAINSAIL & HEADSAIL

Our Ten Rater shroudless rig kits use Ten Rater Series sails as standard components. These are available with mainsail luff lengths of 2100, 2000, etc down to 1000 mm. Headsail luff lengths are designed to give a 4/5ths fractional rig.

Any total measured sail area and common mainsail/headsail proportions can be achieved to provide a rig that will maximise the rating of your boat and balance the helm as required. The document MIT 22 details the way sail sizes can be chosen.

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