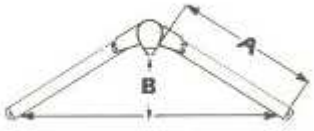
# MIRACLE TUNING GUIDE

There are many personalised methods of tuning Miracles for best performance. It is important to consider exactly what make of rigging and sails you are using to ensure you can maximise your success in the tuning of your boat.
It is worth checking with your sailmaker and mast supplier for their specific tuning advice. Another variable to consider is the total weight of the crew on board. Below is a standard variation of a basic guide to tuning a Miracle using some commonly used mast types and assuming a total crew weight of around 18 – 20 Stone.

**Mast: Alderbarren mast, Holt-Allen, Proctor**
The aim of this tuning guide is to help you get the most out of your Miracle. Although the following measurements should enable you to set your boat up close to its ideal settings, it is worth bearing in mind that it is only a guide and minor alterations may be required for different boats and helmsmen.

**Spreader Settings**
The two spreader measurements are spreader length and spreader deflection. Spreader length controls the sideways pressure on the mast and therefore affects the mast's sideways stiffness. It is measured from the side wall of the mast to the shroud (A).
Spreader deflection controls the pre-bend in the mast.
It is measured by putting a straight edge from shroud to shroud and then measuring from this edge to the nearest point on the luff grove(B).

**A=350mm**
**B=140mm**




**Rig Tension**
Increasing the rig tension reduces jib luff sag and straightens out the entry to the jib. This makes the jib point higher but less responsive to changes in wind strength and waves and therefore more likely to stall. Tension is measured on the shrouds; try to make sure tension is measured at the same height every time to maintain consistency. Eye level is usually a good height that can be repeated.

In wind strengths up to a force 3 sail with approximately 180lbs of tension on the shrouds. As the wind increases beyond this the rig tension should increase to between 240lbs and 280lbs.

**Mast**

The mast position is measured from the back of the transom. The measurement between the aft transom and aft of mast foot should be 2580mm.

Mast rake is measured from the top of the mast to the top of the transom. To measure this, hoist the jib with 180lbs. Cleat the main halyard in the normal position and then measure the distance to the top of the transom. It will vary between boats but should be in the range 5791mm – 5842mm.

**Jib fairleads**

The jib fairleads should be situated as far inboard as possible. They should be positioned so that when the jib is pulled tight the continuation of the jib sheet from the fairlead should meet a point 1170mm up from the base of the luff wire.

**Kicking Strap**

This is the most critical control when racing.

In very light winds you should just have the slack taken out of the kicker when sailing upwind.

As the wind starts to increase, aim to have the top leech telltale on the main flying approximately 80% of the time i.e. occasionally flicking behind the mainsail.

Downwind this telltale should be flying continuously.

Above 15 knots the telltale will fly no matter how much kicker is put on. The kicking strap then becomes a power control – if the boat feels underpowered let some off, if you are overpowered pull more on.

**Cunningham (Downhaul)**

The cunningham should only be used to de-power the mainsail in very windy conditions, however remember to release it when you are going downwind.

**Outhaul**

The outhaul should be pulled tight to the black band in all conditions when sailing upwind. The only exception to this is when sailing upwind in very choppy conditions and in approximately 10-12 knots when it can be eased up to 25mm to help power up the mainsail.

On the reaches the outhaul should be eased 35 – 50mm except on a close spinnaker reach when it is left on tight. On a planing 2 sail reach it can be eased 60mm.
When running the outhaul should only be eased 10 – 15mm to keep maximum sail area to the wind.

**Spinnaker**
A stopper knot should be put into the spinnaker halyard so that when fully hoisted, the head of the spinnaker is about 3 inches from the mast.
90% of the time the spinnaker pole should be set so that both the tack and clew (the 2 bottom corners of the spinnaker) are level. A guide to checking this is to look at where the spinnaker breaks when eased (top, middle or bottom). If it starts to curl near the top then the pole is too high and vice versa.
If the wind drops almost completely so that you are struggling to get the spinnaker to fly, dropping the pole a few inches can support the spinnaker and help it to set.