

1. Hull.

It is not necessary in the early stages of learning to sail the Mirror that you have the perfect hull. Within approximately twelve months it is possible that the sailor will be held back by inferior equipment. If there has been rapid improvement in sailing skills and / or results on the race course, then a noticeable drop in the improvement rate more than likely it is time to upgrade to a more competitive boat. A tapering off of the sailor's keenness is also a telltale sign. Resale value in the Mirror Class usually means that what you pay for a second hand boat is recovered when you upgrade. New Boats go against the trend and will drop some value. Basically the cheaper the boat the less it drops each year. When it comes to buying a new hull look carefully at the builder's reputation in the class. Unless his boats are winning on the race course then you are taking unnecessary risks.

A top Mirror must be **minimum weight, stiff, and very fair** in its hull lines. The bottom finish must be **glass smooth**.

2. Foils.

(Centreboard & Rudder) Must be very **stiff, maximum** size, well shaped and extremely fair and glass smooth. Weight is secondary, however if they can be light and stiff then that is ideal. A bad centreboard is **extremely** detrimental to performance. Small chips and scratches mean a **huge** loss in performance.

3. Spars.

The MAST should be 50mm tube with 2mm walls (not the light walled section). It is essential that the mast be stiff.

The BOOM must be as big as the rules allow. 43mm and **VERY SQUARE** to provide the stiffest possible section. **STIFFNESS** is more important than weight. A stopper chock on the top of the boom for the vang is better than screwed or bolted fittings. Any holes at this point will lead to a broken boom. The timber grain should be **LONG** and **STRAIGHT** (not wavy) for best strength.

The GAFF should be both **STIFF** and **LIGHT**, with 'D' shape (rounded front) for windage. The bend with an 11kg weight in the centre should be 11 to 15mm for and aft not more. Sideways bend should be 12 to 16mm. The gaff halyard must attach as low on the gaff as allowed with a strap around the gaff, not a hole in the front which weakens and bends the gaff excessively at this point. It is essential to have a rubber (squash ball) on the halyard which will be jammed hard between the mast and gaff when the gaff halyard is tensioned.

The gaff halyard must pass through the spinnaker pole ring (**snotter**) on the front of the mast on its way to the bottom of the mast. You can use the mainsail cunningham purchase as a temporary tackle when rigging to help pull the gaff halyard very tight. It should then be locked off in a wire lock or a **toothed** rack. Cleats will not hold without slipping slightly. The wire size should be 2.5mm, diameter not less.

(3. Spars Cont.)

The **SPINNAKER POLE**. Should be 25mm diameter tube with 1.6mm walls, maximum length and have very good end fittings. The topping lift and kicker are best fitted in the centre of the pole stowed on the boom. The topping lift is adjustable and the kicker a fixed length, with a stopper to prevent the pole skying, and a shock cord retriever on it's end to take up the slack when the pole is stowed.

4. SAILS.

MAIN. Should be full cut with little luff curve and made from medium finish fabric. (If hard yarn tempered then it must be light fabric) the most successful design to date is my 265. The tack should be adjustable within a range of 100mm from the mast while sailing. The outhaul must be easily adjusted (on the boom top with a 4:1 purchase).

JIB. Is a medium fullness sail with the drive aft for sheeting on the tank top. It must be maximum area It should be from very hard "yarn tempered" fabric. My design 172 has become a "standard" and matches the 265 mainsail. Mirror Class rules prevent adjustment while sailing so final adjustment must be made to the jib height before going on to the water.

SPINNAKER. Is a flat sail when compared to the class maximum. My standard spinnaker has evolved over twenty years of experimentation and has optimum fullness for good all round performance. There is no real advantage in a spinnaker of this size using half ounce cloth. Shape retention and performance life of the sail is superior with three quarter ounce cloth.

5. RIG DIMENSIONS.

MAST RAKE.
(Measured from the mast head sheave pivot to the transom top)

Light winds (0-10kts) = 3.66m *3-67 min LEAST*
Medium wind (7-17kts) = 3.64m *RAKE*
Heavy wind (15+ kts) = 3.60m *3-2 max MOST*

The forestay has a small turnbuckle for rig tensioning, NOT LACING.

RIG TENSION.
(Measured with a loose tension gauge 500mm up the sidestay)

Light wind / flat water = 16
" " / rough water = 12
Medium wind / flat water = 20
" " / rough water = 16
Heavy wind / flat water = 24
" " / rough water = 20

JIB SHEET DEADEYE. 2.0 metres Measured from the centre of the forestay chainplate to the centre of the deadeye. Positioned as close inboard on the side tank as the cleat will allow.

JIB setting.

Drifting. 0-4kts.	Tack low to tank top, tension luff with wrinkles.
Light winds 3-10kts	Tack above bow 2cms. No luff wrinkles.
Medium 8-18kts	Tack at bow level. Firm luff tension.
Heavy 18+ kts	Tack fully down. Hard luff tension.

For these settings to work the forestay needs to be attached halfway down the bow chainplate, with the jib luff adjustment from the lowest point of the chainplate rack

The settings will need to be constantly altered for optimum performance.

If the water is rougher than normal for the amount of wind you are in, (eg. "ocean" conditions) then the jib needs to be slightly higher for all wind ranges except the drifter and the gale.

EVERY POSSIBLE SHEET AND ADJUSTMENT MUST BE MARKED, CALIBRATED AND RECORDED. IT IS NOT POSSIBLE TO TUNE UP FOR ALL CONDITIONS BY GUESSWORK.

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