

SAILING MANUAL FOR DRAGONS



INTRODUCTION

This Manual has been put together primarily for the benefit of new owners in the class and others interested in purchasing a Dragon or improving the overall racing performance.

Input has been received from previous World Champions, National Champions and a former Dragon sailor and Olympic Coach. However, as much of the advice and guidance is derived from these sources, current Dragon owners will find for themselves many hints for improving their technique

The intention behind this Manual is to make the transition from a new-comer to a race winner as easy, enjoyable and inexpensive as possible.

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CHAPTER 1

1. *Fitting Out And Rigging*

Discussions here are mainly the major items which affect the performance that a boat owner or intended owner should consider the matters when purchasing a boat.

The Dragon is relatively heavy boat when compared with more recent designs and methods of construction. However if the boat is close to the minimum weight allowed, the performance of the boat is only relative to the performance of other Dragons.

Dragons are a three crew, one design keel boat but the rules do permit small differences in set up which can create small performance differences.

Before purchasing a Dragon the weight of the hull is quite important as boats which have been in the water for some time, take on significant weight which is often difficult to reduce. A boat at minimum weight, or within the tolerances allowed by the rules, has a potential advantage over heavier boats.

Dragons are constructed out of wood or fibreglass but if their weight is the same, the performance will also be similar.

A Dragon should be weighed before purchase or to determine how to reduce weight of a boat already owned to reach the minimum.

The keel weight is 1,000 kg or plus 10 kg. As the all up weight without mast is 1,700 kg, a heavier keel can provide some advantages.

When racing a Dragon the keel and hull should always be clean and this means a hard stand or someone going over the side before each race to rub off any growth or slime.

2. Mast Boom and Rigging

(i) Mast

The mast in a Dragon differ but not greatly. The main issues are:

- *the overall weight of the mast and how it is distributed;*
- *how it is positioned in the boat; and*
- *the position of the mast foot and the tension of the rigging.*

The main objective when considering the mast weight is to get the mast to the minimum weight allowed by the rules (30 kg).

The tip weight should be not more than 13 kg.

This can be achieved by having the lower spreaders at the lowest permissible level above the deck and building up the weight of the mast to the minimum, by adding aluminum sleeve lower down in the mast, usually at deck level.

The mast needs to move at the step. The mast at the step should be able to move through its permissible movement allowed under the rules. This enables the mast, pivoting at the deck, to move as far forward when running down wind and as far aft when on the wind.

With regard to the rigging, the rule of thumb appears to favour a straight mast. This is achieved by first tensioning the jumper shrouds equally so the upper portion of the mast remains straight.

The cap shrouds should be tensioned firmly so as to keep the mast in a vertical position whilst on the wind. This may mean additional tension if the wind is strong.

Before sailing, check that the mast is centrally located in the boat by using the main sheet halyard against the outer edges of the hull close to the mast.

Lower shrouds should be firm at the outset, then fine tuned by adjustment on the wind to ensure that the mast is straight from base to tip

Forestay should be adjusted to allow the mast to move aft without the mast pressing against the deck otherwise it will induce unnecessary bend in the mast whilst working to windward.

The backstay should be marked at a point which prevents the mast going too far forward when running down wind in order to prevent undue loads on the mast at the deck.

Tension on the backstay when on the wind should only be increased when the wind strength increases (over 25 knots) to de-power the mainsail.

Deck chocking of mast is essential to help boat speed up wind and removed for down wind runs. This is best done by a lever or block and tackle for easy release giving full control of mast bend to suit mainsail and help hold forestay.

Running backstays are an important part to the Dragon's performance.

The runners are not there to prevent the mast from falling out of the boat. They are there to provide tension for the forestay.

An over tensioned runner and forestay can kill boat speed. In lumpy seas or light winds, the runner tension should be softer and the tension in strong winds increased.

A common mistake is to tension the runners prior to reaching the bottom mark after a spinnaker run, which tends to pin the foot of the mast in the aft position which will lead to slow up wind speed on the next leg.

The runners should be tensioned lightly prior to reaching the bottom mark and then re-tensioned when on the wind. If when tacking up wind there is doubt about the runner tension, release the runner and then re-tension it in accordance to the strength of the wind and the condition of the water.

(ii) *The Boom*

The outhaul should be tensioned to the outer mark and eased in light winds to give more depth to the mainsail and hence more power and eased completely when running down wind.

Cunningham is taught in winds above 8 knots and eased in lighter winds.

Boom vang is taught to keep the boom horizontal to the boat when travelling down wind and eased in strong breezes to prevent dangerous rolling. In these conditions Dragons can sink and they do. Move crew off deck and restrict crew movement . Prevent excessive roll and reduce crew weight moving aft.

3. *Fittings in General*

The principal of Dragon racing is to fight off the opposition and not keep fighting the boat and its fittings.

The fittings should be located so that they are easily accessible and have enough purchase so that they are easily handled.

As the crew will be on the windward rail when working to windward, this has to be considered when organising the position of the fittings so that they can be easily handled from the windward position.

CHAPTER 2

1. Tuning

The mechanics of tuning are the most difficult aspects of sailing to master. Whereas steering a boat at its top speed requires full concentration and hours of practice.

Tuning requires the willingness to be different and imaginative. In this way, if you see or hear of a new device or innovation, you can evaluate it in your mind and decide whether or not to try it.

An example of this is the various methods of storing the spinnaker pole, either against the mast, on the deck or along the boom.

Another example is the sheeting position of the mainsail, either middle sheeting or at the aft end of the boom,

Very often, useful information can be gleaned from other competitors or from other classes especially those with similar rigs.

2. Sails

Always buy your sails from well known Dragon sail makers not just for a price advantage.

The sails should be trimmed so that there is equal tension on the three sides of the sail except in heavy breezes.

The Genoa can be de-powered by raising the sheet block up from the deck to enable power to be spilled out near the cross trees.

The Mainsail can be de-powered by easing the boom vang.

Understanding why a boat can sail into the wind whilst the wind is blowing in the opposite direction is essential.

The sails have a centre of effort which is the strongest point of lift. Without a keel below the boat, the boat would slide sideways and then in the direction of the wind.

The average centre of effort of the Genoa and Mainsail and its position in relation to the keel allows the boat to move forward into the wind.

When the centres of effort of both sails is averaged over the average mass of the keel the boat will either have lee helm if the mast is too far forward or windward helm if the centre of effort is too far aft.

This weather or lee helm is adjusted by shortening or increasing the length of the fore stay.

CHAPTER 3

1. *Preparation for Races*

Races are usually lost at the start and when laying and rounding marks.

- *Arrive early before the start to give the crew time to settle down. Early enough to do one or two works to windward and one or two spinnaker runs with one or two jibes and rounding of marks.*
- *Determine which end of the starting line you wish to be when the gun is fired. Point the boat into the wind to determine from the compass, which end of the starting line is favoured.*
- *Start your run to the starting line from a position about 30 seconds from the gun, luff your boat to windward with about 10-15 seconds to go in order to dig a hole below you and the power up the boat to hit the line at full speed.*
- *Do not try to point the boat to high until full speed has been achieved.*
- *Get your mainsheet hand to keep you informed as to the boat's performance in relation to other competitors and to assist the helmsman develop the strategy.*
- *Going to championships fix all equipment through out the season and don't leave maintenance to the day of the championship. New sails should always be used on one or two occasions before regattas, mainsail especially. Genoas don't last too long in hard racing in Dragons. A Genoa may only last at its peak for about six races.*
- *Mainsails perform better after about half a season.*
- *Always have a good back-up set of sails, don't only rely on one set. Keep your best sails for championships.*

- *Crew weight is important, try to select crew to achieve weight limit, Sail the boat once or twice before the regatta for tuning and to increase boat speed. Talk between the crew is recommended during these tuning sessions to help improve the boat performance and crew handling but limit talk during the actual races.*

2. Tasks

The Dragon is a three-man (woman) boat so try to spread the tasks as far as possible to each of the crew. In other words, each crew member should be allocated 1/3 of the tasks.

- *The mid hand trims the mainsail to the strength of the wind, operates the runners, and hoists the spinnaker.*
- *The forward hand trims the genoa and attaches the spinnaker then trims the spinnaker.*
- *The helmsman concentrates on steering and tacking the boat. He also assist with the setting of the boat for the downwind run by easing the backstay, Cunningham and outhaul.*

When jibing, so that everyone knows what is happening, a suggestion is for the skipper to count slowly from one to ten and at five the jibe is half completed, and fully completed at ten.

When running down wind the mast should be as far forward as possible.

The compass is an important component on the boat and should be used constantly to determine whether the boat is on a lift or a knock. This should be used to evaluate if the other boats are on the inside of a lift or falling into you.

On the wind a Dragon, if trimmed correctly and in breezes above 8 kts, should point on the compass about 35 degrees to the wind, somewhat greater in lighter breezes.

If the boat is not pointing to this degree then there is something wrong with the trim, either the head sail is too tight or too loose. The leach of the headsail should be about 3 inches off the cross tree, or the mainsail is not properly trimmed or the runners are too tight.

The inside to a lift is the shortest distance to the weather mark so it is important to try to get on the inside of a lift. This means getting across on a knock if you determine that boats to weather of you are on an established lift.

Make sure that you are either on a lift or a knock before tacking. More than necessary tacks with a heavy boat is slow.

When tacking in practice, the helmsman should look behind to confirm that the wake is smooth and not snake like. A snake like wake is slow.

Down the wind, it is important the wind pressure is maintained in the sails. This involves the helmsman looking astern to determine where the breeze is and shying up to maintain pressure and running square when pressure has been acquired provided the rounding of the bottom mark is always at the forefront of the tactics.

Know the rules, protect other boats from blocking your wind and remember that in a five or seven race series, the crew will be better at sailing the boat at the end of the series than at the beginning, so constant practice cannot be more highly stressed.