



Dragon Tuning guide

INTRODUCTION

The purpose of this tuning-guide is to give our clients in the Dragon class some guidelines on how to get the most out of their North Sails. The tuning-guide is made by Lars Jensen and Theis Palm and was finished in September 1998.

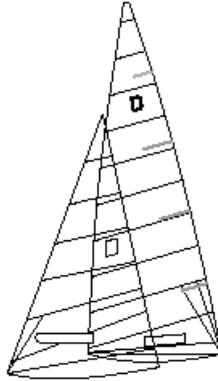
Always experiment and try finding your own trim using these guidelines. The weight of the crew, the balance of the boat, the stiffness of the mast together with specific local wind and sea conditions all have influence on the fastest and final trim.

MAST TRIM

Before stepping the mast in the boat, some very important measurements have to be made to follow this tuning-guide.

1. Lead the upper shrouds and forestay along the mast, the upper have to be out of the spreader tips. Pull them as hard as you can and put a mark on all three wires at the height of the black mark at the gooseneck. These three marks are now used to check if the mast is straight from side to side in the boat, and to check the mast rake.

2. All measurements are made from station 4, (you find station 4 between the forestay and the mast) which is marked on both port and starboard side of the hull with a dot. Draw a line in between the points. From the middle of this line to the front end of the mast (without spinnaker pole track) the distance



should be 82 cm on a Petticrow and 81,5 on a Børresen.

3. The mast rake is set by first fixing the forestay on the deck 1,86 cm from the front side of the mast. (This is the max. distance allowed in the class-rules). Then measure the distance from the black mark on the forestay to the deck (along the forestay). It should be 1,22 m on a Petticrow Dragon and 1,19 on a Børresen. The mast rake is never adjusted.

4. The top upper shrouds proper position are located measuring perpendicularly from the line on station 4 to where the shroud enters the deck. This distance should usually be 86 cm, but for light crews (230-250 kg) and light winds (0-8 knots) we recommend a distance of 83 cm.

5. The lower shrouds are placed in the hole just behind the top shrouds (approx. 3 cm), so that they don't hold the mast back when going downwind.

6. The marks on the top shrouds (from step 1) are now used to

control if the mast is placed in the middle of the boat. This is done best by measuring the distance from the mark to the deck. This should be the same on both sides. It is very important, that the mast is pressed in the deck.

7. The running backstays are marked in the following manner: Adjust both stays, so that the forestay is just tightened. Make sure that both stays are pulled evenly (this can be checked with a tension-meter). Put a tape-mark on the wire 15 cm from the edge of the lead through the deck. This is the maximum tension on the running backstay and equals a pressure of about 320 kg. This mark is now used as a reference point in different winds.

8. The jumpers are adjusted by pulling the permanent backstay. Then look up along the sail track and check that the jumpers are equally tight in both sides. If this is not the case, they should be adjusted till the mast is completely straight. As the wind increases, keep the mast straight by adjusting the jumpers.

9. Many different tension-meters are used to measure rig-tension. Even tension-meters of the same kind tend to vary quite a lot. To give you an idea of the different measurements, we have used a Loos Gauge Type B. To get a more precise reading cut the plastic of the upper shroud about 1,2 m above deck. The Gauge should read 30 units in middle winds (approx. 10 knots). This should have the leeward upper shroud just a little tight while sailing. This is the basis setting. In light

NORTH SAILS ONE-DESIGN

SUNDKROGSKAJ 8 · DK-2100 COPENHAGEN, DENMARK

TEL: (+45) 39 20 40 90 · FAX: (+45) 39 20 44 12

E-MAIL: INFO@DK.NORTHSAILS.COM



Dragon Tuning guide

winds (0-6 knots) the turnbuckles are loosened 3 full turns. In heavy winds (19 knots +) the turnbuckles are tightened 3 full turns from the basis setting.

10. The bottom shrouds are tensioned, so that the mast is completely straight in the boat up to 20-22 knots. From here on tighten them till the mast drops 5-10 cm off to leeward at the forestay fixture - the exact measure depending on crew weight.

SAIL TRIM

Runners and permanent backstay: We have three different base settings for running and permanent backstay controls, depending on wind strength. Light (0-6 knots), medium (7-18 knots) and heavy winds (19+ knots). In light air the running backstay should be completely loose, but tightened 3 cm in 6 knots. Pull progressively - from 3-10 cm in medium conditions and 10-15 cm in strong winds. The permanent backstay is set in very light winds to keep the top batten parallel to the boom. When the wind picks up the running backstays are taking over. In medium and strong winds just pull the permanent backstay to support the top of the mast and in more than 20 knots to open the sail as well. The mast pusher shall be in a neutral setting except for in winds over 24 knots where it should be pushed 1-2 cm forward.

MAINSAIL

The mainsheet together with the traveller are critical in setting the

shape of the sail and small adjustments can have a big effect on speed and pointing. In light winds trim the sail by pulling the traveller car to windward and pulling the sheet until the top batten is parallel to the boom. It is important that the boom doesn't pass the centerline. As the wind increases pull the sheet harder and ease the traveller down. In medium winds trim for power. The top batten shall be kept parallel to the boom by trimming the sheet harder and then adjusting the traveller accordingly. If the wind increases even more keep on pulling the sheet while easing the traveller little by little. In heavy winds, as the running backstay pressure is increased, pull the mainsheet harder to keep pressure on the leech. Trim so that the top batten falls 2-3 degrees off to leeward. Keep the rudder pressure from increasing too much by easing the traveller. The mainsail should never flutter. This will make you loose pointing ability. The outhaul is also an important factor when trimming as it controls the draft in the bottom of the mainsail. In light winds (0-6 knots) the sail should be 3 cm from the mark. In medium winds (7-18 knots) about 1,5 cm from the mark and in more wind than this pull the sail all the way to the mark.

GENOA

In light winds (0-6 knots) it's very important that the halyard is not too tight. Leave small creases along the luff. The sheet is pulled so that the foot of the genoa just touches the shroud at the deck. Leave a distance of 4-6 cm from the leech to the spreader tip by trimming the

barberhaul. In medium winds (7-18 knots) increase halyard pressure but still leave small creases along the luff, pull the sheet tighter so that the sail touches the shroud 10-12 cm at the deck. The distance from leech to spreader tip should be 2-3 cm. In heavy winds keep on pulling the halyard as the wind increases, but just as much as to make the creases disappear, the sail should touch the shroud 12-25 from the deck, trim the barberhaul leaving the leech 3-5 cm from to the spreader tip. When the wind passes 20 knots, ease the barberhaul leaving the leech 5-8 cm from to the spreader tip.

SPINNAKER

The spinnaker is set leaving the two clews at the same height by playing the spinnaker pool up and down. Leeward barberhaul is set completely loose. In very light winds you might have to keep pressure on the spinnaker by luffing a little. In medium winds the pole is set 30 cm above the gooseneck mark on the mast. Keep the barberhaul loose. Sail the boat as low as possible. In stronger winds the height of the pole is not adjusted. If the boat is too unstable, pull the leeward barberhaul. Keep sailing as low as possible - just be careful of capsizing.

If you have any questions regarding trim or Dragon sailing in general, please contact Lars Jensen or Theis Palm.

Good luck on the water!

NORTH SAILS ONE-DESIGN

SUNDKROGSKAJ 8 · DK-2100 COPENHAGEN, DENMARK

TEL: (+45) 39 20 40 90 · FAX: (+45) 39 20 44 12

E-MAIL: INFO@DK.NORTHSAILS.COM