

Dragon Tuning Guide

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 was compiled by Lars Jensen, Jorgen Schönherr and Theis Palm in January 2006.

MAST TRIM

BEFORE STEPPING the mast in the boat, some very important measurements have to be checked to follow this tuning-guide correctly:

1. Lead the upper shrouds and forestay along the mast, the uppers 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 top at the black mark on the mast. 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 taken 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). See the distance in the table opposite.

3. The mast rake is set by first fixing the forestay on the deck 1.86cm 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). See the distance in the table.

4. The upper shrouds' proper position is located measuring perpendicularly from the line on station 4 to where the shroud enters the deck. See the distance in the table. For light crews (220-240kg) we recommend to leave the shrouds in the forward position.

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

6. The marks on the upper shrouds (from step 1) are now used to check 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 straight from side to side and not being distorted at deck level.

7. Setting up forestay tension – put the mast in strong wind position (tension 20 on the uppers and 10 on lowers). Next, put the tension gauge on the forestay around the black mark. Pull runners until the gauge reads 30. Make a tape mark on runner exit above deck (2cm). Do the same on the other side. Now you are sure both runners have the same tension on the mark set-up. When you ease the runners until the forestay is just tight, the tape mark will be 20cm above the deck as the uppers are both the same length (in strong wind the tape mark is on the deck, medium winds 10cm from deck and in light 25cm).

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 on both sides. If this is not the case, they should be adjusted till the mast is completely straight.

9. For the rig tension measurements we have used a Loos Gauge PT-2. To get a more precise reading, cut the plastic of the upper shroud about 1.2m above deck. You will find all setting in the table opposite.

10. The lower 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 5-10cm off to leeward where the forestay meets the mast – the exact measurement is dependent on crew weight.

SAIL TRIM

Mainsail

THE MAINSHEET, together with the traveller, is 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 does not cross the centre-line.

As the wind increases pull the sheet harder and ease the traveller down. In medium winds, trim for power. The top batten should 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 lose 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 3cm from the Black Band. In medium winds (7-18 knots) about 1.5cm from the mark and in stronger wind than this, pull the sail all the way to the Black Band.

Genoa

IN LIGHT WINDS (0-6 knots) it is 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 4-6cm from the leech to the spreader tip by trimming the barber hauler.

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 above the deck. The distance from leech to spreader tip should be 2-3cm.

In heavy winds keep on pulling the halyard as the wind increases, but only enough to make the creases disappear, the sail should touch the shroud 12-25 above the deck. Trim the barber hauler leaving the leech 3-5 cm from to the spreader tip. When the wind passes 20 knots, ease the barber leaving the leech 5-8cm from to the spreader tip.

Spinnaker

THE SPINNAKER is set leaving the two clews at the same height by playing the spinnaker pole up and down. The leeward barber hauler is set completely loose. In very light winds you might have to keep pressure on the spinnaker by luffing a little and sailing slightly higher.

In medium winds the pole is set 30cm above the gooseneck mark on the mast. Keep the barber hauler 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 barber hauler. Keep sailing as low as possible – just be careful of capsizing.

Good luck on the water!
Your NORTH TEAM

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.

NORTH SAILS ON-THE-WATER DRAGON TUNING GUIDE



One-Design

WIND	LIGHT 0-5 KNOTS	MEDIUM 6-16 KNOTS	HEAVY 17- ~ KNOTS	COMMENTS & REMARKS
SAIL INVENTORY	Mainsail A-7 Genoa LJ-3 / MJ-6 Spinnaker CD-5 / FK-2	Mainsail A-7 Genoa MJ-6 / HD-6 Spinnaker CD-5	Mainsail HM-8 Genoa MJ-6 / HD-6 Spinnaker CD-5	The sea conditions and waves can change the wind range in the sail inventory
MAST RAKE	120.5 cm (Petticrow) 119.0 cm (BB)	121.5 cm (Petticrow) 119.0 cm (BB)	122.5 cm (Petticrow) 119.0 cm (BB)	Transfer 79 cm mark at mast from deck level to forestay. Measure along the forestay to deck level
MAST RAM	Mast 1.5 cm forward at deck level	Mast neutral	Mast 2.5 cm forward at deck level	If you struggle with pointing, pull the mast back
MAST POSITION	83.0 cm (Petticrow) 81.5 cm (BB)	83.0 cm (Petticrow) 81.5 cm (BB)	83.0 cm (Petticrow) 81.5 cm (BB)	Mast position is taken from station 4
JUMPERS (ADJUSTABLE) JUMPERS (FIXED)	Loose Loos gauge tension 6	Mast straight Loos gauge tension 6	Mast straight Loos gauge tension 6	Make sure the mast is straight from side to side
UPPER SHROUDS	Loos gauge tension 14 Minus 1 turn	Loos gauge tension 14	Loos gauge tension 14 plus 2 turns	Tension is taken without plastic
LOWER SHROUDS	Let the mast bend 1 cm to leeward at spreader level	Mast straight	Mast straight plus 1 - 1 1/2 turn so the mast bends to windward	When you set the mast straight, look up at the sail groove
BACKSTAY	Little tension in the very light	Just tight to prevent the mast top from moving in waves	Just tight to prevent the mast top from moving in waves	Little tension in the very light to pre-bend the mast and open the sail
RUNNERS DISTANCE FROM TAPE TO DECK	Slack to 13 cm	From 13 - 5 cm	From 5 - 0 cm this is maximum	Mark (tape) runners at through deck level such that the forestay reads 30 on the Loos gauge. This is the maximum runner setting.
MAINSAIL	Light sheeting; upper telltales flying straight back	Sheet until the top batten is parallel with the boom; upper telltales 25% on leeward side	Sheet until the main is flying nicely, the top batten is 2 degrees twisted to leeward, telltales are flying straight back	If you struggle with pointing, you must pull the sheet harder
MAIN TRAVELLER	To windward; boom on middle	To windward; boom on middle	On the middle and up to 15 cm to leeward	The boat has to be light on the helm
OUTHHAUL	3.0 cm from black band	1.5 cm from black band	All the way out to black band	The sail has to be flat along the boom in heavy wind
CUNNINGHAM	Loose	Loose - just remove wrinkles along luff	Just remove wrinkles along the luff	In very heavy winds, you can pull hard to move draft forward
BOOMVANG	Loose Make sure it is cleated for the run	Loose Make sure it is cleated for the run	Loose Make sure it is cleated for the run	On the reach and run pull so the top batten is parallel to the boom
GENOA SHEET	Pull so the foot just touches the shroud at deck level	Pull until the foot is touching 10 cm up at shrouds	Pull until the foot is touching 25 cm up at shrouds	
GENOA BARBERHAUL	Loose leech flying 15-18 cm from the spreader	Pull until the leech is flying 5 cm from the spreader	Pull until the leech is flying 8 cm from the spreader	
GENOA HALLYARD	Small wrinkles along the luff	Just remove wrinkles along the luff	Just remove wrinkles along the luff	Make sure the luff is NOT overstretched, this would make the boat very slow