

## North Sails Tuning Guide J/80

In the last five years we have actively been involved in J/80 racing, in order to develop sails and sail trim. The experiences it gave us we have summarized in this second version of our trim guide. Sail design is continuously developed and our exciting models are vigorously tested in our design programs and on the water.

Measurement and settings that we recommend in this trim guide are the ones that we have found to be the quickest for the J/80. Since crew-weight, sailing conditions and style of sailing vary you might find that some of your settings will differ from ours. The purpose of this trim guide is to present you with a fast rough trim and a good set up for finer adjustments.

We hope that this trim guide will help you be more successful and, most of all, have more fun sailing.

The trim guide is divided in to three sections:

### 1 Preparations.

### 2 Sail trim.

### 3 Crew work.

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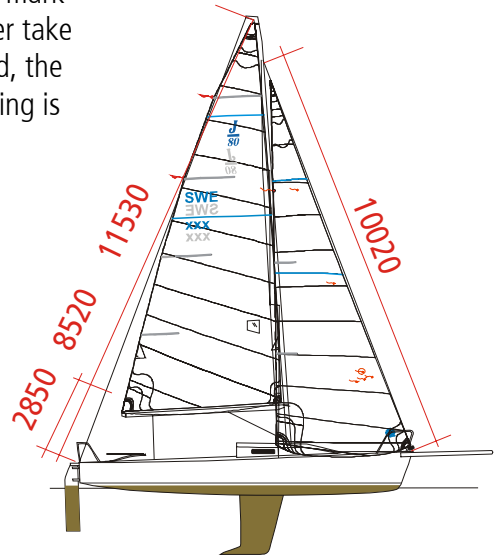
## 1 Preparations

Practice, practice, practice!! They say that every mark rounding can be worth a minute on the course, a small reflection is that this is also the time between first and last boat. That is a long time and the major differences are made mostly at roundings and the first minutes after starting. Accelerating away at the start is very important to practice. The hoist at the first windward mark is also crucial, especially if it is a jibe set. Practice your approach towards the leeward mark and learn how to handle the three different types of gennaker take down. You do not have to be a superstar in a J/80 to succeed, the boat is easily maneuvered and easy to sail, but efficient training is the key to success.

### Rig setting

J/80 is a well balanced boat that does not produce much weather helm. To get good pressure on the rudder, needed to get good height on the beat, the mast must rake aft.

In order to achieve this the forestay should be 10020 mm from top attachment to attachments below the Harken roller. Standard forestay are often shorter and so the forestay has to be lengthened with a toggle over the Harken roller. Smaller amounts of rake gives better strong wind qualities since the mast is kept straighter and this increase the forestay tension.



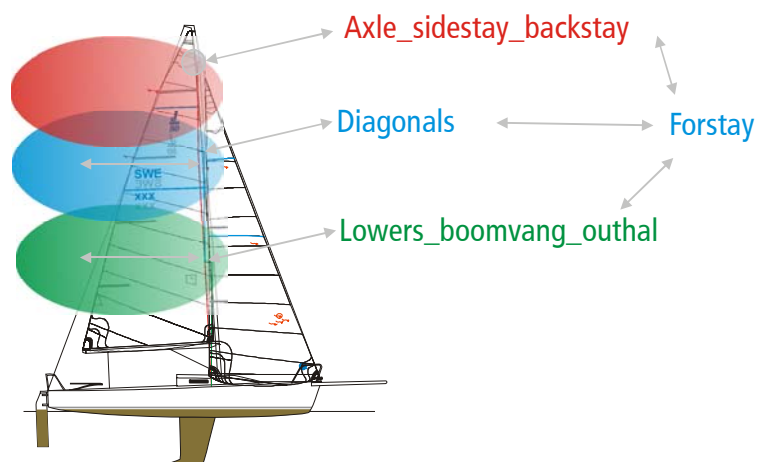
The Backstay is cut to 8520 and each leg shall measure 2850 mm.

The mast foot is positioned 240 mm from backside of mast to main bulkhead. The mast should then just touch the aft side of the deck hole. Place the standard rubber pieces to center the mast sideways and to protect the aft and forward sides of the mast.

Set the rig up in the following way.

1) Slack off the lowers and intermediates, tighten the cap shrouds so they are hand tight. Measuring with the main halyard to the chain plates check that the mast is straight in the boat by. Adjust as necessary.

2) Next, vang the backstay on so the caps go loose. Tighten them with equal turns on both port and starboard until they are again hand tight. Slack the backstay and measure the tension in the caps with a LOOS B gauge. Adjust until you hit 28 on the gauge.



3) Tighten the lowers again with equal turns, looking up all the time too make sure the mast stays in column. Tighten so that they measure 20 on the LOOS B gauge. This will give pre-bend of 30cm

4) Tighten the intermediates so that they measure 18 on the LOOS gauge.

5) Follow the Quick Tuning Guide for further reference.

This is the medium wind set-up and makes sure that the forestay sags 8cm when going to windward.

In lighter winds the lowers should be eased a turn to give the forestay a little extra sag.

Conversely, in winds over 16 knots the lowers are tightened somewhat to give less sag. In harder winds the backstay is used to straighten the forestay. A well tuned mast makes this method very effective.

### **Back stay**

Trimming of the backstay is the key to boat speed in all winds. In light winds a light pull in the backstay lets the draft in the mainsail sit at around 50%, in medium winds the forestay is straightened with the help of a medium pull on the backstay and in hard wind a flat mainsail is achieved by fully trimming the backstay hard. Make reference marks on one of the backstay split wires so that trim is repeatable over different wind strengths.

### **Mainsheet**

The most dynamic and important trim function on a J/80. Mark the mainsail base setting with a indelible pen.

### **Outhaul**

With the outhaul eased the lower sections of the mainsail a very full. The outhaul is used to flatten these lower sections when beating. Like all boats in full power conditions the outhaul should be eased slightly and with increasing breeze the lower sections should be continuously flatten. A trim scale should be placed at the end of the boom so you can estimate how much you need in varying conditions.

### **Cunningham**

The mainsails cunningham is used in winds over 12 knots to move the draft forwards at the same time flattening out the sail. The foredeck crew adjusts the cunningham with the use of a 3:1 purchase.

### **Kicker**

The kicker is used to adjust the mainsails twist on runs. Bare in mind to use a North Sails kicker protector.

### **Jib Sheet**

A window in the luff of the mainsail enables the jib trimmer to see the leach of the jib in relation to the lower spreader. A trim scale should be placed on the under side of the spreader so that quick jib trim

can be relocated from tack to tack. A good place to start is one hole back from the chain plates. In harder winds the car can be moved back one further hole. Drill extra holes in the track as seen later on in this Tuning Guide.

### Halyard tension

Just like the mainsail the jibs depth and draft position is controlled by the jib halyard. Mark with an indelible pen.

### Halyard

Mark all halyards with an indelible pen. Take off all the wichard snap shackles, tie with a knot instead on all halyards and the gennaker tack.

## 2. Sail trim

The J/80 has a lot of sail area for its size and therefore can become very over pressed in strong winds. The saying "twist is fast" is always true and the telltales on the main should always be flying free.

In strong winds a J/80 is more like a dinghy and needs much flatter sails. This means that the mainsail must be deep and powerful in its form to power the boat in light winds, but at the same time be able to be completely flatten in strong.

In winds between 6 and 12 knots our design is at its maximum power. In lighter winds the leech has to be open to help flow around the sail. In harder winds the leech has to be opened again but now because crew weight no longer will hold the boat upright so power must be drained of.

### Mainsail

In really light winds, between **0 and 2 knots**, the mainsail should be trimmed so that the leech is as open as possible. The traveller should be trimmed 30 centimeters to windward of the centerline and the mainsheet should be eased so that the end of the boom sits 20 centimeters to lee of centerline. The outhaul is eased 4-5 centimeters from the black line. Backstay, Cunningham and kicker are completely loose.

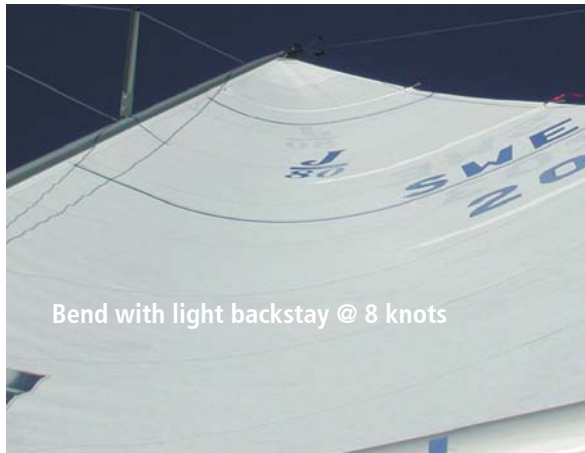


When the wind increases to **6 knots** sheet the mainsail harder so that the boom nears the centerline of the boat. The top telltale should just start to flick back behind the leech, the mid telltale should be free flying. The backstay should be tightened slightly so that draft is placed at around 50%.

With **8 knots** the mainsheet is tightened even more and the traveller is eased down to about 20 centimeters to windward of the centerline. The mainsheet can now be tightened slightly more but not so much as for the top telltale to stand behind the sale for more than 20 % of the time. The boom should now be on the boats centerline. The outhaul is now 20 millimeters from the black band. The cunningham should still be loose.

With **10 to 12 knots** of breeze the mainsail is flattened slightly by bending the mast through mainsheet and backstay. Mainsheet is tightened so that the top telltale stands behind the sail for 20% of the time. Harder sheet enables the boat to take more height. The boom should still be in the middle of the boat but the outhaul should now be all the way out to the black band and the cunningham should be adjusted so that most of the wrinkles in the luff, but not all, should disappear. This is maximum power trim, if your crew is light you will be over powered soon, if you are heavy you will be able to hold this trim longer.

Depending on the weight of the crew full power situation should be met at around 12-14 knots of wind. To minimize the healing moment and to increase speed with this wind strength more back stay is needed, and the traveler should be lowered to the center line.



The mainsheet should be used so that the mains top telltale is not stalled. This will reduce speed in these wind strengths. The mainsheet is the most dynamic trim function and should be trimmed continuously with every puff and lull. The backstay is also a very important trim function in medium to heavy breezes. Through the fact that in the gusts the back stay flattens both the mainsail and the jib so that the boat stays flat and fast. But for example in a situation where extra height is needed (say for instance rounding the leeward mark with a boat to lee) easing the backstay will close the leach and the boat will sail high without losing drive. Through playing the backstay mainsail trim can be prioritized between extra speed or extra height. With about **16 knots** the cunningham can be tightened so hard that all the wrinkles disappear in the luff of the main. Draft is moved forwards and the leach is opened even more.

In winds over 20 knots the main should be completely flat and the sails lower third should do all the work. Out hall, cunningham and kicker should be on all the way. The kicker makes the mast bend in the lower third making the mainsail even flatter. The traveller should be 15 centimeters below the center line. How much power the mainsail gives is regulated by the backstay.

Don't be afraid to put a little bit of extra on. In gusty winds the playing of the back stay is not quick enough to keep the boat on it's feet without the

TARGETSPEED UPWIND IMS					
J/80					
© Copyright North Sails Sweden 2002 <span style="float: right;">2002-03-06</span>					
TWS	BSPEED	AWA	TWA	AWS	Headsail
2	2,0	25	50	3,6	
4	4,0	25	50	7,3	
6	4,7	26	47	9,8	
8	5,4	27	44	12,5	
10	5,7	28	43	14,7	
12	5,8	29	42	16,7	
14	5,9	30	42	18,8	
16	5,9	31	43	20,8	
18	6,7	29	40	23,5	
20	6,0	34	43	24,7	
22		#Värdefel!			
24		#Värdefel!			
26		#Värdefel!			
28		#Värdefel!			
30		#Värdefel!			

traveller being dumped at the same time. The traveller should be eased so that the boat finds it's balance, especially in big waves (which are often found at these wind strengths). With the right trim the boat should be leaping over the waves. If the boat feels heavy or wants to gripe to weather it is a sign that the mainsail has too much power.

When the mainsail is properly trimmed, i.e. flat and with an open leach the boat should feel well balanced and easy to steer.

## Jib

Three functions control the jib; sheet, lead position and halyard tension. The sheet works on twist and how flat the sail should be sheeted. The jib should have the same angle attack up the entire height of the luff and the leach should match the mainsails shape. The lead position dictates the depth of the jib in the lower third and the amount of power the leach produces.

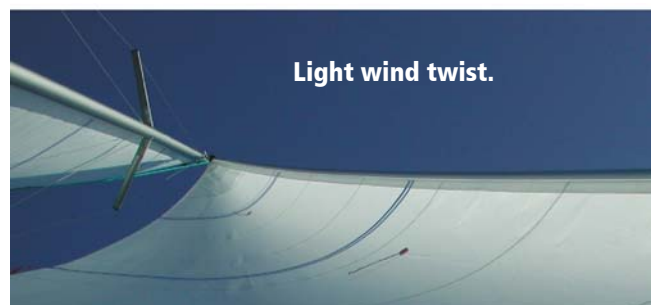
Fast trim - flat water: The lead position should be aft so that the lower part of the jib is flat and the middle batten is parallel with the center line.

Power trim - waves: Lead position moved forwards to give a deeper bottom third and close the leach slightly.

Halyard tension controls draft position, mainly in the top. Slight amount of halyard tension in light and medium winds gives the sail it's designed form. In stronger winds it helps with more halyard tension to twist the jib open, and helps the draft from slipping backwards. In winds between **0-10 knots** the lead position should be adjusted so that the luff of the jib brakes or backs evenly when the boat luffs up. If it backs in the top first the lead position is too far aft and vice versa. Halyard tension should be lightly applied. In really light winds small wrinkles should be seen running away from the forestay.

In **over 10 knots** the head of the sail should back slightly before the lower 2/3's of the sail. This enables the helmsman to steer a much wider and varied angle to the wind. Sheeting should be adjusted so that the leach telltale above the top batten flies straight aft. This is good reference for the jib sheet trimmer to look at through the mainsails spreader window.

Just like the mainsail the jib should be flattened and twisted in hard winds. Forestay tension is increased using the backstay. Halyard tension is tensioned very hard, and the lead position is moved about two holes back. The upper half of the luff now backs slightly earlier than the lower half when luffing. In very hard and gusty winds it's probably easier to ease the sheet slightly to open up the slot between the main and the jib to give a slightly more easily controlled boat. This also applies in a sloppy sea when twist and drive are an important factor.





## Upwind Tuning

Wind strength knots	0-6	8-14	16-20	22-
Side stays	- 2 turns.	30	+ 1 turn.	+ 1 turn.
Boom outhaul	4 cm	2 - 0 cm	0	0
Mainsheet boom position	40-20 cm lee	0-40 cm lee	40-60 cm lee	60-70 cm lee
Traveller	50 cm to wind	20 cm to wind	0 –15 cm lee	15-30 cm lee
Backstay	Light	Se trimguide		
Cunningham, mainsail	Loose	Small wrinkles	No wrinkles	Hard
Boom vang	Loose	Just tight	Tight	
Jib sheet	Maximum without telltale stalling			
Jib car position	Even bubble		Bubble in the top first	
Halyard	Small wrinkles	No wrinkles		Very hard

## Downwind

Mainsail: On a run the mainsail should be trimmed with depth to give the boat extra drive. The elliptical shape of the north mainsail gives a large and even draft in the lower part of the sail. Directly after the windward mark backstay and cunningham should be completely released. The outhaul should be released 5-8 centimeters from the black band. The kicker should be adjusted so that the top batten is parallel with the boom. On a tight reach, especially in strong winds, the kicker must be eased so that all pressure disappears from the sail. This is to prevent broaching. Reaching in hard conditions the outhaul doesn't need so be released, the pressure in the main is already enough!

## Spinnaker Setup

When setting up the spinnaker gear, be sure that the tack line goes over the lazy sheet (the sheet going to the opposite side of the boat). This ensures that the spinnaker will gibe to the inside, between the head stay and the luff of the spinnaker as opposed to around the outside of the luff of the spinnaker and in front of the boat.

## Spinnaker Trim

Like all spinnakers, the spinnaker sheet should be eased until the luff carries a slight curl. The real trick to flying the sail and having the best downwind performance is to maintain constant dialogue between the skipper and trimmer to keep pressure in the sail without sailing too high and losing sight of VMG (velocity made good to the mark). As a general rule the boat sails downwind at 135 degrees to the true wind, jibing through 90 degrees. As the breeze builds, it is possible to sail deeper angles while maintaining good speed. One trick to get down the course fast in strong breeze is to sail nearly dead downwind with the tack line eased out 12 to 18 inches. Heal the boat to windward and ease the sheet out. This rotates the chute out from behind the main's wind shadow, exposing maximum sail area to clear air.

Experiment with this a bit and you will quickly get the "Feel" for how low you can go without stalling the chute behind the main.

## Wing and Wing

At some time there are tactical advantages to pulling the wing and wing trick out of the bag. In breezes of over thirteen to fifteen knots it is possible to bear off to dead downwind heel the boat to windward and flip the main to the other side.

The trick to making this work is heeling the boat to windward and keeping it from rocking and rolling. As soon as the spinnaker starts to look unstable and might collapse, quickly flip the main back over and head up onto a normal jibing angle. When things settle down, flip back to the wing on wing, and get going downwind again. The time to use this is if you are looking to make the leeward mark and can gain by not throwing in two jibes.

*One important note:* This mode is less stable than sailing jibing angles and so can only be used when the boat is not rocking and rolling around. Get the crew to move their weight around to keep the boat from rolling to keep the boat from rolling to leeward and the time spent on the wing can be longer. It will definitely get some wows back at the yacht club bar.

## Spinnaker maneuvers

The J/80 can be handled well around the entire course with a crew of 4. We will detail the maneuvers for all four people; helmsman, middle / aft (M/F), middle / forward (M/F), and forward (FWD) crew members.

### Setting

1. M/F presets the pole, pulls the spinnaker out of the companionway, makes sure halyard is in front of spreaders.
2. M/A pre-feeds tack line and hands tail to helmsman for rounding.
3. FWD crew hoists halyard at the helmsman's command.
  - M/F feeds out spinnaker
  - M/A furls jib quickly.
  - Helmsman pulls the tack line final distance.

Getting the jib furling is key to a successful quick set. This allows the spinnaker to have clear air almost immediately. The helmsman must remember not to ease the mainsheet too much as to trap the spinnaker behind the boom and against the spreaders.

## Jibing the Spinnaker

The gybing maneuver of the Asymmetrical spinnaker is very different than most people are used to. North Sails has developed a "small-boat" technique that makes turning the J/80 a bit easier and results in a successful gybe without a wrap in the sail.

First and foremost, get a trimmer who is excitable and aggressive and wants to pull harder than a horse during each jibe. This helps to get the sail around the forestay in a hurry. The speed of the trimmer is very important!!

- Step One: Get every body ready and make sure that the old spinnaker sheet is free to run. Pull all slack out of the tack line.

GYBEANGEL TRUE J/80 <small>© Copyright North Sails Sweden 2002</small>	
TWS	ANGEL
2	
4	<b>135</b>
6	<b>141</b>
8	<b>148</b>
10	<b>156</b>
12	<b>166</b>
14	<b>168</b>
16	<b>167</b>
18	<b>165</b>
20	<b>162</b>
22	
24	
26	
28	
30	



- Step Two: The skipper or another crewmember takes the old sheet. As the boat is slowly turned dead downwind, the sheet is eased to maintain proper trim. We have the skipper ease the sheet because they have a better feel for how the boat is turning through the gybe. Once the clew is near the head stay, the trimmer pulls on the new sheet and the forward /middle crew overhauls the new sheet directly from the clew of the sail ( on the windward side of the boat ). It helps to have a mark on the spinnaker sheet at the point where the clew is forward of the head stay.
- Step Three: Once the sail clears the head stay and begins to fill on the new jibe the Skipper and the forward person work together to pull the boom across onto the new jibe. The skipper turns the boat up onto the new course. The trimmer eases the sheet out to its proper trim for the new course.

Quite often this is an ease of up to six feet of line. Anticipate the boat loading up on the new jibe. Have the crew ready to move to windward to flatten the boat to accelerate out of the jibe.

### **Spinnaker Takedowns**

Takedowns with Asymmetrical Spinnaker are often the trickiest maneuvers. We always takedown on the port side on a normal Windward / leeward or triangle race course unless a gybe-set is guaranteed. There are three basic types that should handle any approach to the leeward mark; windward drop, leeward drop, and the "Mexican".

#### **Windward**

As you approach the leeward mark, make sure the halyard is ready to run and unfurl the jib. Make your approach to the mark a little high so you can bear off downwind to relieve some of the pressure on the spinnaker. When ready, the middle / forward crew hauls the spinnaker around the head stay with the lazy sheet. Once you have the sail in hand, the forward crew eases the tack line to gather the foot of the sail. Be sure to keep the foot taught and on the deck so the sail stays out of the water. The halyard should be blown as soon as the foot is out of danger. You don't want to go shrimping! Retract the pole, clean up and have a great rounding.

#### **Leeward**

As you approach the mark, be sure the halyard and the tack line are free to run.

##### *Option A. Tack Blow-Away*

Have the forward / middle crew grab the spinnaker sheet. When they are ready, blow the tack line and begin to gather the sail. Release the halyard when the foot is nearly all gathered and the sail is under control. Retract the pole, clean up and have a great rounding.

##### *Option B. Floater Drop*

Over trim the sail so the foot is stretched tight. Have the forward / middle crew grab the spinnaker sheet. When they are ready, blow the halyard. Quickly gather the sail along leech with the foot tight. DO NOT release the pole until the sail is under control in the boat. Ease the pole and the tack line to complete the takedown. Clean up the cockpit and have a great rounding.

#### **The Mexican**

From America's Cup fame comes the Mexican, a simultaneous gybe / douse. As you approach the leeward mark on starboard tack, you need to jibe to round to port. Be sure the halyard is free to run and the jibe unfurled. Just before the jibe, over trim the spinnaker to tighten the foot. Have the middle / forward crew grab the spinnaker sheet close to the clew of the chute. As the helmsman jibes the boat

the crew should begin pulling in the sail, making sure the foot gets on the deck and not in the water. Proceed with the takedown just like a windward takedown.

### Conclusion

There is no substitute for practicing boat and gennaker handing especially in a big breeze, try if possible to put some time aside for pure practice time as well as competition time. You will find that once you have the confidence to really throw the boat around in a breeze that it's you making all the gains at the top and bottom marks not the other guys!

Try and really focus on the important issues before the start of the race, work at knowing your rig settings and have a waterproof note book on the boat to record your settings every time you race. The J/80 is a really great boat to sail and once you have mastered some of the above the results will start to come. Also do not forget to keep in close contact with your sailmaker , at North Sails we are always ready to help.



Good Luck and Happy Sailing!

